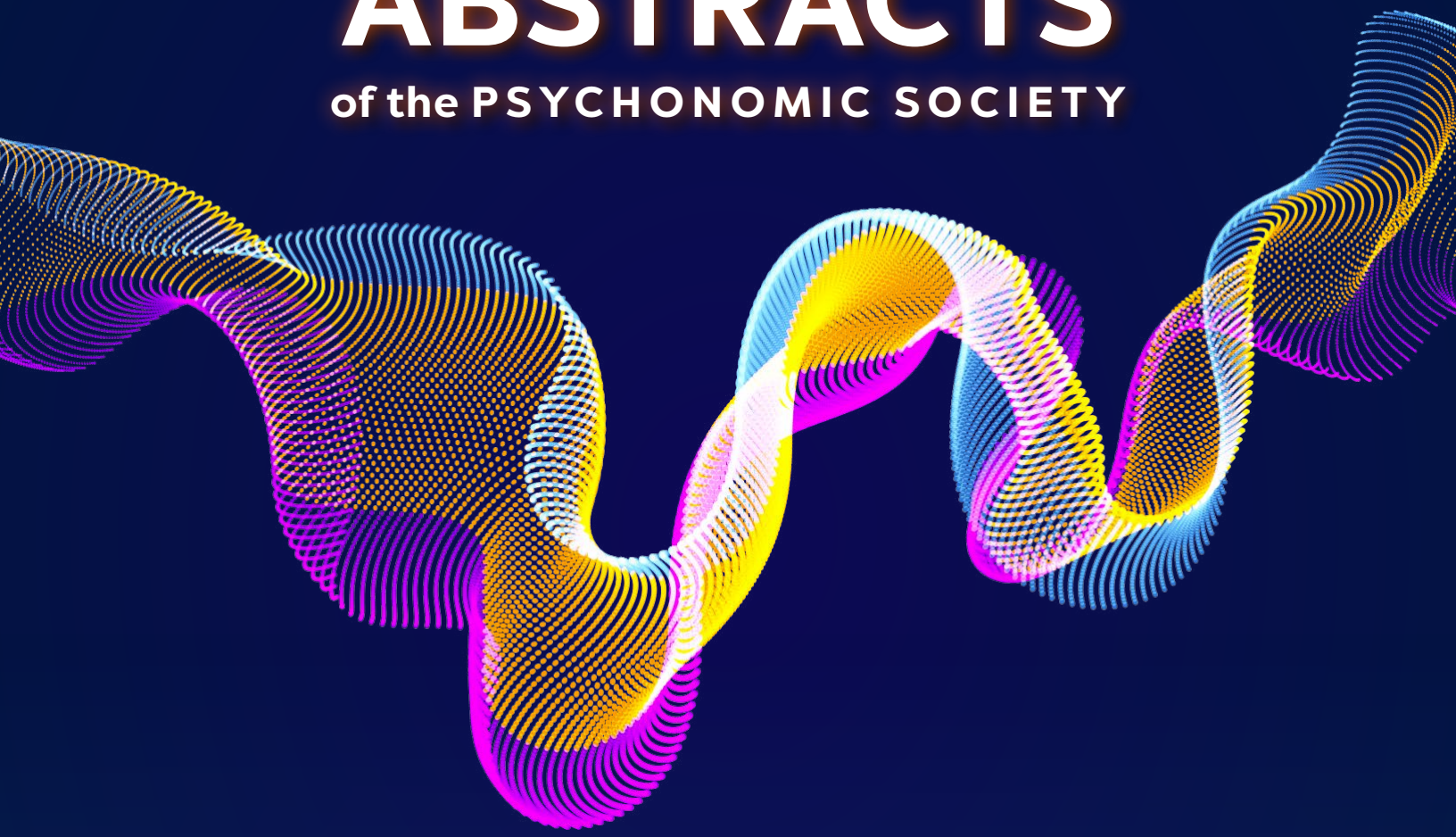
PSYCHONOMIC SOCIETY®

ABSTRACTS

of the PSYCHONOMIC SOCIETY



VOLUME 28 • NOVEMBER 2023

64th ANNUAL MEETING

Hilton San Francisco Union Square, San Francisco, California, USA
November 16–19, 2023

All times are listed in US Pacific Standard Time.

A PSYCHONOMIC SOCIETY PUBLICATION

www.psychonomic.org

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KEYNOTE ADDRESS

Biased: Uncovering the Hidden Prejudice That Shapes What We See, Think, and Do

Thursday, November 16, 7:30–8:30 PM US PST

Continental 5/6 (Tower 1, 2, & 3, Ballroom Level)

Jennifer Eberhardt
Stanford University, USA

Using a variety of methodological approaches, Dr. Eberhardt will highlight how racial bias can permeate our criminal justice system, our neighborhoods, our schools, and our workplaces—and what we can do to address it.

Captioning and an American Sign Language (ASL) interpreter will be available for this address. This event will be live streamed.

PSYCHONOMIC SOCIETY STATEMENT ON HARASSMENT

The Psychonomic Society is an inclusive and welcoming organization. Our annual and affiliate meetings and our professional communications should reflect those values. Society members, conference attendees, and virtual meeting participants should enjoy freedom of speech, freedom of thought, and freedom from harassment and discrimination of any kind.

We encourage members to be mindful of others' perspectives and to consider how a question, comment, or invitation might be received, particularly when there is a power differential between parties. Constructive criticism is an essential part of science. No participant should feel vulnerable to harassment or discrimination, nor should they endure a climate of fear or hostility, at our meetings or in our digital events.

Let's all work together to ensure that our values of inclusion, respect, and professionalism are ones that are enjoyed by all of our members and event participants.

GENERAL INFORMATION

REGISTRATION

Register online at www.psychonomic.org/2023registration. For those not attending the meeting in San Francisco, the Opening Session/Keynote Address and all symposia will be live streamed via Zoom. Registration is required for live-stream access (access instructions will be emailed in advance of the conference). Live streamed sessions are only available in real time. No other presentations will be live streamed or recorded. Please join us in person if you wish to view other presentations. The live streamed sessions will be permanently posted on the Psychonomic Society's YouTube channel in December. If you are attending in person in San Francisco, you do not need to register for the live stream links.

Although registration will be accepted until the time of the meeting, attendees are strongly encouraged to register early to avoid long lines on site and possible delayed or unavailable access to the live streamed sessions. The onsite registration desk will be located at the Hilton San Francisco Union Square in the Yosemite Foyer on the Ballroom Level, accessible via Towers 1, 2, and 3.

Members

Registration is FREE for members and includes unlimited access to the Keynote Address, symposia, talks, poster sessions, and receptions.

Nonmembers

The registration fee for guests and nonmembers is $75 USD. Membership in the Society is inexpensive and strongly encouraged, and it comes with many benefits, in addition to a complimentary registration for the Annual Meeting. To become a Society member, visit https://www.psychonomic.org/member.

Onsite Registration

The onsite registration desk will be located at the Hilton San Francisco Union Square in the Yosemite Foyer on the Ballroom Level, accessible via Towers 1, 2, and 3.

Become a Member!

Join the Psychonomic Society to connect with more than 4,300 cognitive and experimental psychologists from around the world! Our members include some of the most distinguished researchers in the field. Many of us are concerned with the application of psychology to health, technology, and education, and many of us use converging methods such as neuroscience and computational science to achieve our research goals.

Membership Categories

Member

Qualifications: Must have a PhD or equivalent in psychology or an allied field.
2023 Dues: US: $35 USD; Outside US: $20 USD

Fellow (by application only)

Qualifications: To be eligible for consideration, an applicant must (a) have a PhD or equivalent and be at least 3 years post PhD; (b) have published significant, peer-reviewed research beyond the doctoral dissertation, as evidenced by having at least six recent research publications in high-quality refereed journals, in addition to the publications resulting from the PhD; and (c) be actively involved in independent scientific research in psychology or allied sciences. Members wishing to apply to become Fellows can do so on a rolling basis, with applications reviewed twice a year.

2023 Dues: US: $75 USD; Outside US: $60 USD

Graduate Student

Qualifications: Actively enrolled in a graduate program in psychology or an allied field.
2023 Dues: $15 USD

Undergraduate Student

Qualifications: Applications require a letter certifying enrollment in an undergraduate program in psychology or an allied field.

2023 Dues: $15 USD

Emeritus

Qualifications: Fellows and Members in good standing who have retired may request Emeritus status.
2023 Dues: No Fee

Join online at
https://www.psychonomic.org/member.

GENERAL INFORMATION

CERTIFICATES OF ATTENDANCE OR PARTICIPATION

If you would like to receive a certificate of attendance/participation, please submit your request in writing to info@psychonomic.org.

PHOTOGRAPHIC RELEASE

As part of your registration for the 2023 Annual Meeting, the Psychonomic Society reserves the right to use photographs, videos, and any other images taken during the meeting for future marketing purposes. If you do not wish to have your photograph or video used for such purposes, please notify us at info@psychonomic.org.

HEALTH AND SAFETY

The safety of our members and meeting attendees is our top priority. Health and safety requirements apply to all participants who will be on site at the 2023 Annual Meeting, November 16–19, at the Hilton San Francisco Union Square in San Francisco, California, USA. As of April 3, 2023, the state of California, city of San Francisco, Hilton San Francisco Union Square, and the Psychonomic Society are not requiring vaccination, masks, or social distancing for the 2023 in-person meeting.

HOTEL RESERVATIONS

The Psychonomic Society has secured a special rate at the Hilton San Francisco Union Square for attendees of the 2023 Annual Meeting.

To take advantage of this special rate, you must book your room by October 23. **The hotel reservation cut-off date is October 23 or when the room block has been filled—whichever comes first.**

Hilton San Francisco Union Square

333 O'Farrell Street
San Francisco, California, USA 94102
+1 415-771-1400
sanfrancisco.hilton.com

Special Rates

Classic Rooms

- $239 USD single/double occupancy
- $259 triple occupancy
- $279 quad occupancy

(Plus appropriate taxes, currently 16.95%, fees, etc.)

Urban Contemporary Rooms

$259 single/double occupancy

$279 triple occupancy / $299 quad occupancy (plus appropriate taxes, currently 16.95%, fees, etc.)

Special Rate reservation deadline: October 23, 2023

Phone Reservations: +1 888-446-6677

Online Reservations: https://book.passkey.com/event/50552987/owner/1819/home

VENUE AND MEETING ROOMS

All spoken presentations, special events, and poster presentations will take place at the Hilton San Francisco Union Square.

Speaker Ready Room

Session chairs are encouraged to solicit papers from individuals in their sessions prior to the meeting and load presentations prior to the session in the speaker ready room.

Audiovisual support is available in the speaker ready room to help with loading presentations during the following hours:

Thursday, November 16. . . . . 4:00–7:00 PM US PST

Friday, November 17. . . . . .7:00 AM–5:00 PM US PST

Saturday, November 18 . . . . . .7:00 AM–5:00 PM US PST

Sunday, November 19. . . . . .7:00–11:00 AM US PST

Lactation Room

There is a lactation room at the hotel. Access instructions will be provided at the main Psychonomic Society registration desk. The room is equipped with a private area for nursing as well as refrigeration. Attendees may not use this room for babysitting purposes.

Weather/Conference Attire

San Francisco's average high in November is mid 60s °F and the low is low 50s °F; expect some rain. Meeting room temperatures tend to vary. Please bring a light sweater or jacket to all meetings.

GENERAL INFORMATION

THINGS TO DO IN SAN FRANCISCO

The 2023 Annual Meeting will be held in San Francisco, a city with as much to see as there is to do. Take a ride on an iconic cable car, walk down the winding hill of Lombard Street, or experience world-class dining all over the city. With a never-ending list of activities, tours, restaurants, and shops, San Francisco has something to offer everyone. Visit https://www.psychonomic.org/2023exploresf for more information.

SCIENTIFIC PROGRAM

2023 Program

There were 1,334 submissions, of which 1,323 were valid. Of the 1,323 placed on the program, 314 are spoken and 1,009 are posters. In addition, there are 5 accepted symposia.

Program History

YEAR–SITE	VALID SUBMISSIONS
2023–San Francisco	1,323
2022–Boston (hybrid)	1,326
2021–Virtual	1,297
2020–Virtual	1,294
2019–Montréal	1,507

Poster Sessions

Poster sessions are taking place in person. In-person poster sessions will take place in the Grand Ballroom of the Hilton San Francisco Union Square.

Abstracts and Program Book

The abstract book is provided as an interactive digital publication that can be downloaded as a PDF at https://www.psychonomic.org/page/2023program.

PROGRAM & CONFERENCE ORGANIZATION

The Secretary, Marianne Lloyd, has the responsibility for organizing the program, and the Program Committee reviews all submissions. They do so with the indispensable help of Lou Shomette, Executive Director; Lauren Bettcher, Director of Meetings; Lisa Delventhal, Director of Communications & Marketing; Heena Hira, Registration Specialist; Jerrod Liveoak, Senior Manager, Editorial & Content; Phyllis Milz, Finance Manager; Greg Muenzer, Member Services Specialist; Anna Navin, Meetings Administrator; Amanda Powers Snowden, Director of Membership & Operations; Julie Rogers, Senior Editorial & Content Manager; and Ryan Smith, Education Manager.

FUTURE MEETINGS

2024 New York, New York, USA, November 21–24
2025 Denver, Colorado, USA, November 20–23
2026 San Diego, California, USA, November 19–22

Scenes from the 2022 Annual Meeting

SPECIAL EVENTS

COFFEE BREAKS

FRIDAY, NOVEMBER 17–SUNDAY, NOVEMBER 19, 9:30–10:30 AM US PST
Continental Foyer/East Lounge

Complimentary coffee and tea will be available from 9:30 AM to 10:30 AM US PST on Friday, Saturday, and Sunday. Coffee may also be available at outlets in the hotel.

Friday and Saturday Coffee Breaks supported by Prolific

RECEPTIONS

Opening Reception

THURSDAY, NOVEMBER 16, 8:30–9:30 PM US PST (Immediately following the Keynote Address)
Continental Foyer/East Lounge

Opening Reception supported by Prolific

Diversity & Inclusion Reception

FRIDAY, NOVEMBER 17, 5:45–7:00 PM US PST
Continental 7/8/9

The Psychonomic Society celebrates scientific merit and the diversity of researchers in the field and the Society. Please join members of the Governing Board and the Diversity & Inclusion Committee for a reception open to all scientists.

Friday Reception

FRIDAY, NOVEMBER 17, 6:00–7:00 PM US PST
Grand Ballroom

Friday Reception supported by terracotta

Graduate Student Reception

FRIDAY, NOVEMBER 17, 9:00 PM–MIDNIGHT US PST
Location to be announced.

Saturday Reception

SATURDAY, NOVEMBER 18, 6:00–7:00 PM US PST
Grand Ballroom

Saturday Reception supported by terracotta

LUNCHTIME WORKSHOPS

Encouraging Future Scientists: Supporting Undergraduates at Psychonomics (UP)

FRIDAY, NOVEMBER 17, NOON–1:30 PM US PST
Continental 7/8

Organizers: Sharda Umanath, Claremont McKenna College, USA; Jen Coane, Colby College, USA; Nate Kornell, Williams College, USA; and Brooke Lea, Macalester College, USA

Panelists: Elizabeth Marsh, Brandeis University, USA; Tori Peña, Stony Brook University, USA; Öykü Ekinci, University of Alberta, Canada; and Raunak Pillai, Vanderbilt University, USA

Current undergraduate and graduate students are the future of the Psychonomic Society. The goal of this lunchtime workshop, which is now a regular event at the conference, is to welcome talented young scientists to Psychonomics, introduce a variety of career stories and career advice from cognitive psychologists, and encourage them to network with one another and more senior scientists.

The focus of this year's workshop is on beginning and succeeding in graduate school and beyond, with perspectives from current and recent graduate students. Building on last year's panel, which addressed how to apply to graduate school with advice from current graduate advisors, this year we are inviting current and recent graduate students. Specifically, we are inviting panelists and presenters at different stages in their career, ranging from first-year graduate students to post-doctoral fellows. We aim to model a future of cognitive science that is inclusive and diverse, where future scientists can see themselves being represented and belonging.

Information Session: Funding at the National Science Foundation

FRIDAY, NOVEMBER 17, NOON–1:30 PM US PST
Continental 9

Organizer: Betty Tuller, Program Director, Perception, Action, and Cognition Program, National Science Foundation, USA

Speakers: Betty Tuller, Program Director, Perception, Action, and Cognition Program, National Science Foundation, USA; Dwight Kravitz, Program Director, Cognitive Neuroscience Program, National Science Foundation, USA; and Jorge Valdes Kroff, Program Director, Linguistics & Dynamic Language Infrastructure Program, National Science Foundation, USA

You have a great research idea, but you need money to make it happen. You need to write a grant. Come hear program directors from the National Science Foundation (NSF) give insight into the inner workings of the funding process. The presentation and Q&A session provide lots of information relevant to the Psychonomics community, including current funding opportunities,

SPECIAL EVENTS

NSF merit criteria, and the review process. Specific topics include (1) how to find the appropriate program for your work, (2) how to apply for NSF funding, (3) the grant-writing process, and (4) tips for writing successful proposals. Come and get your questions answered! This presentation is not just for early-career scientists but also for those who think they know everything about the granting process. NSF opportunities and rules change all the time!

Choosing a Non-Academic Career Path: Industry Expert Panel

SATURDAY, NOVEMBER 18, NOON–1:30 PM US PST
Continental 7/8

Organizer: Monica Castelhano, Queen's University, Canada

Speakers: Christopher Madan (moderator), University of Nottingham, UK; Robert Rauschenberger, Exponent, USA (Premium Engineering & Scientific Consulting Firm); Kinnera Maturi, Block Financial Services, USA (User Experience Research at Cash App); Frank Kanayet, Meta, USA (Research Manager); Alex Wojaczek, Google, USA (Technical Infrastructure Program Manager); Tyler Davis, Facebook, USA (Quantitative User Experience Researcher); and Cassandra Jacobs, SUNY Buffalo, USA (formerly a Research Scientist, Workhuman Human Resources Services)

With the advancement of technology, including questions about AI, human behavior, and user experience (UX) of systems, many graduate students are interested in careers in industry. Many skills developed with degrees in cognitive neuroscience, cognitive science, or cognitive psychology are highly sought after by companies. In this Lunchtime Workshop, we have invited several industry researchers to talk about their journeys and their transition to industry and to provide advice for any graduate student or postdoc thinking about making this transition.

The Secret of NIH—Funding Psychonomic Science at the National Institutes of Health

SATURDAY, NOVEMBER 18, NOON–1:30 PM US PST
Continental 9

Organizers/Speakers: Todd Horowitz, National Cancer Institute, USA; and Melissa Treviño, National Institute on Aging, USA

How does National Institutes of Health (NIH) funding work? What are the latest funding announcements relevant for the Psychonomics community? This workshop will feature an introduction to the NIH funding process in general and a guide to navigating relevant NIH policies (such as clinical trials and data sharing), followed by a presentation on relevant funding interests and initiatives from across the NIH. These presentations will be useful for both early career scientists and veteran investigators.

JOGONOMICS

SATURDAY, NOVEMBER 18, 6:00 AM US PST
Hilton San Francisco Union Square Hotel Lobby

Organizers: Jeffrey Zacks, Washington University in St. Louis, USA; and Marianne Lloyd, Seton Hall University, USA

Join your fellow Psychonomes on a 5k or 5-mile run. You choose a distance that works best for you. Sign up for Jogonomics when you register for the meeting. Participants will meet in the Hilton San Francisco Union Square Hotel lobby to depart.

AWARDS AND BUSINESS MEETING

SATURDAY, NOVEMBER 18, 5:10–6:00 PM US PST
Continental 7/8/9

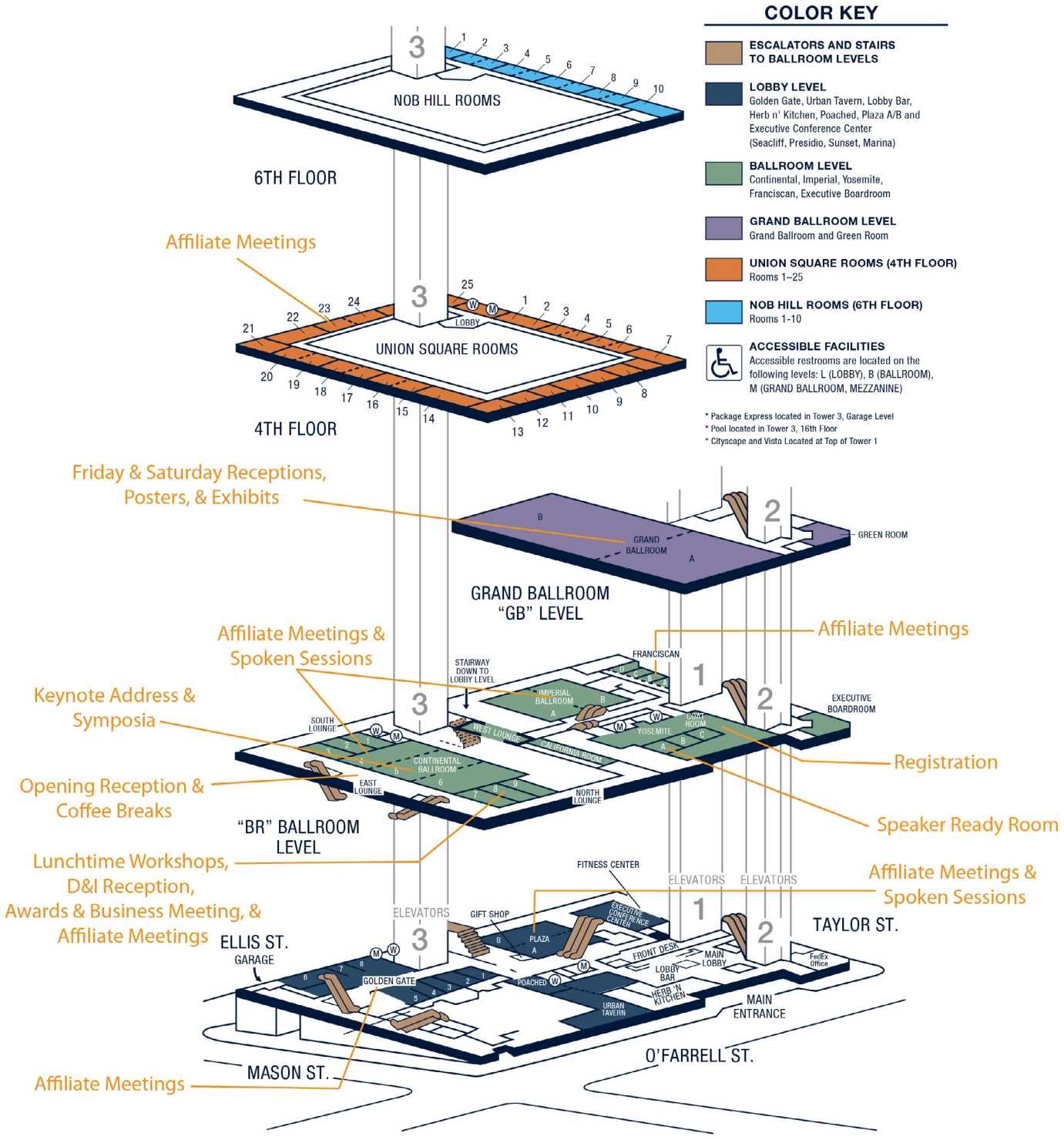
Join the Psychonomic Society's leadership as they honor the 2023 award recipients and provide updates on Society business.

Recipients of the following awards will be recognized:

- Clifford T. Morgan Distinguished Leadership Award
- Mid-Career Award
- Early Career Award
- Best Article Award
- J. Frank Yates Student Conference Award
- Graduate Conference Award
- Governing Board Service Recognition
- Outgoing Editor-in-Chief Recognition Award
- Keynote Speaker Award

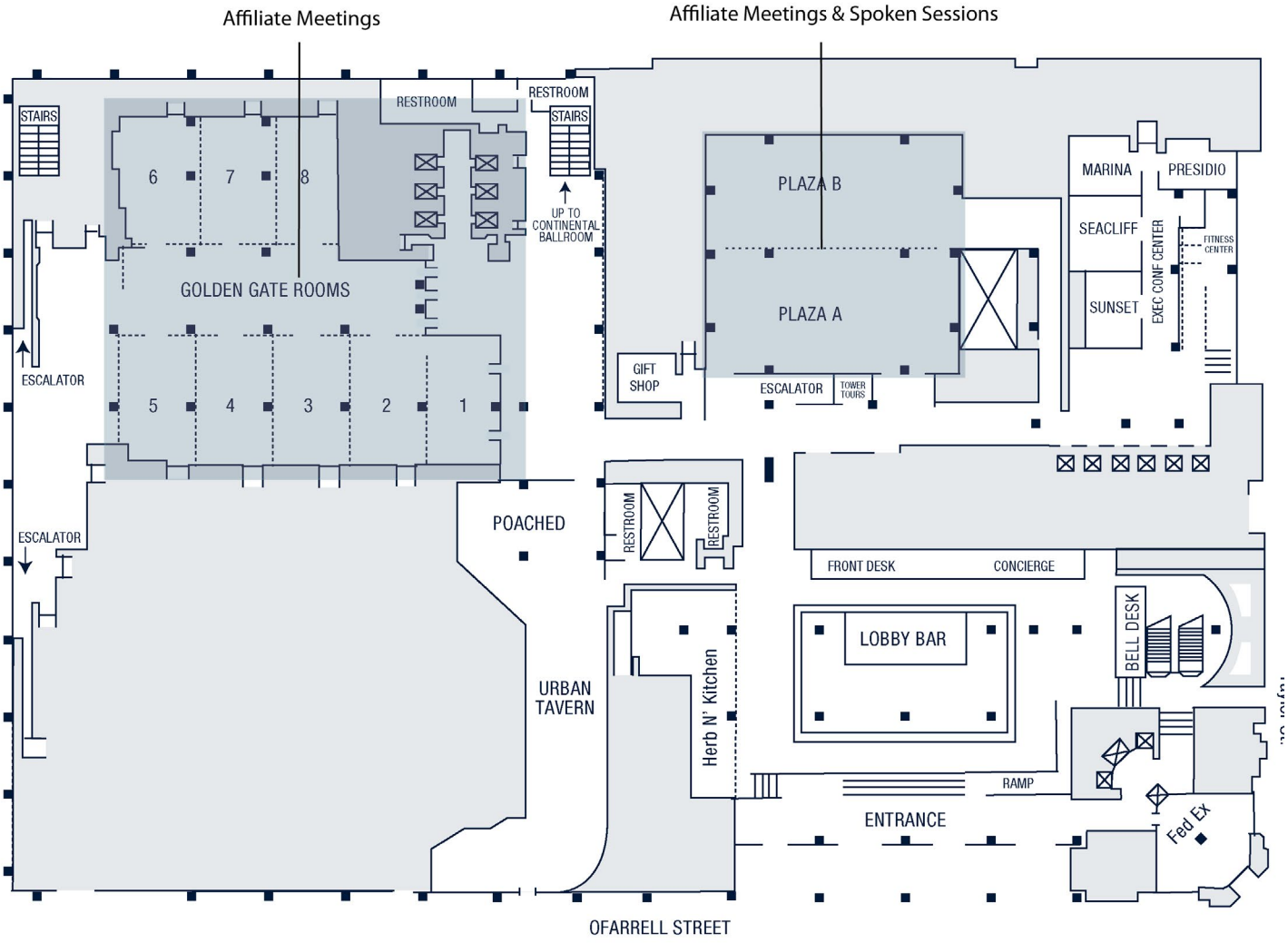
FLOOR PLANS

HILTON SAN FRANCISCO UNION SQUARE, MULTILEVEL OVERVIEW



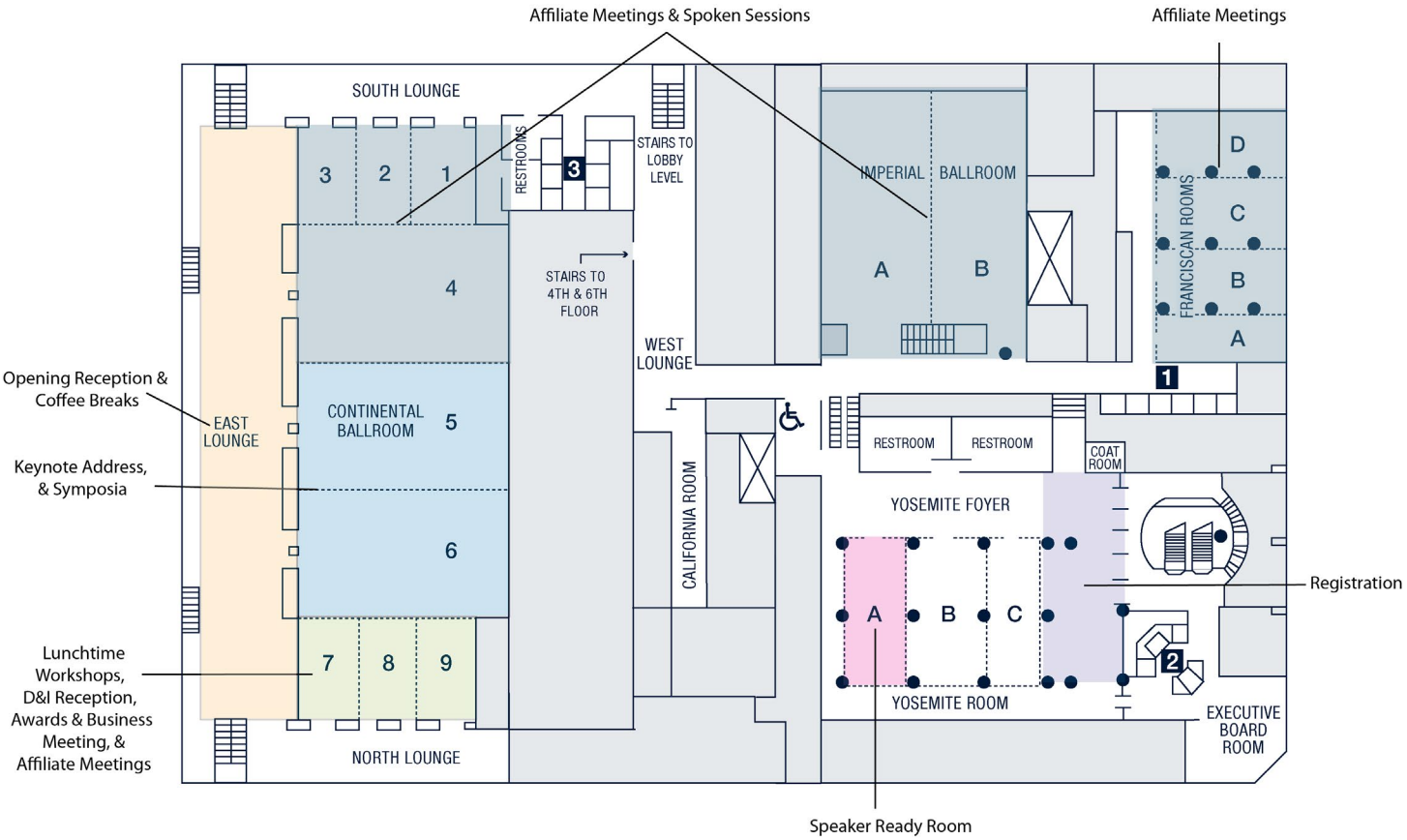
FLOOR PLANS

LOBBY LEVEL



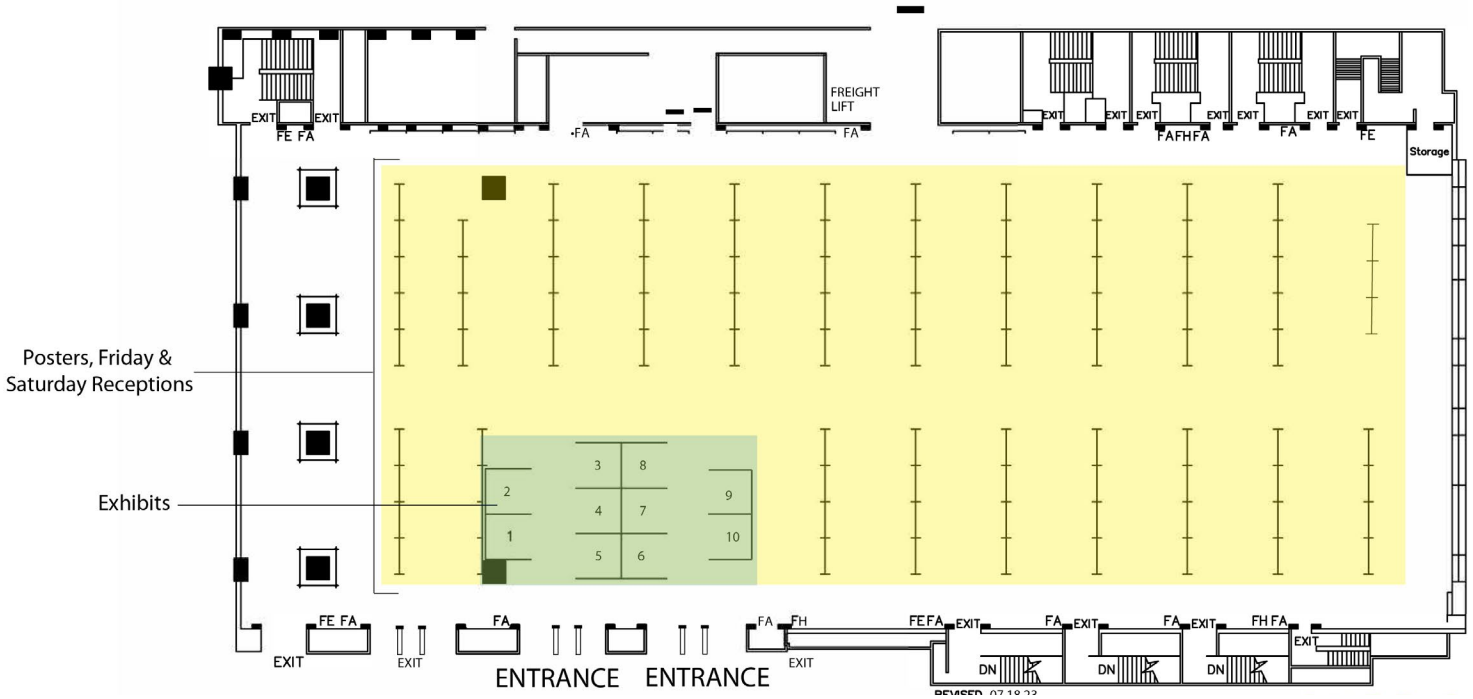
FLOOR PLANS

BALLROOM LEVEL

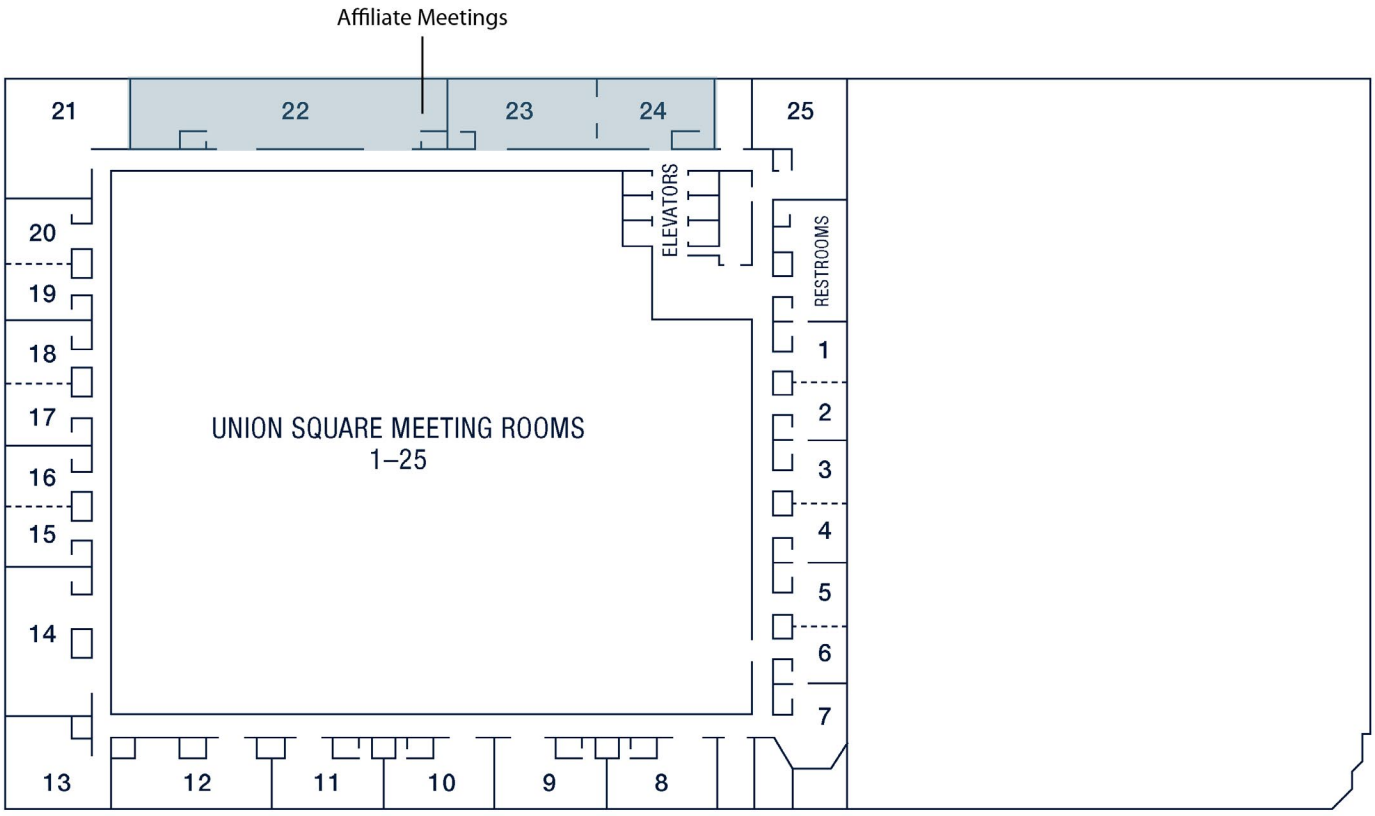


FLOOR PLANS

GRAND BALLROOM LEVEL *(Access from Tower 2 in Hotel Lobby)*



FOURTH FLOOR



SYMPOSIA

SYMPOSIUM I: TEMPORAL DYNAMICS OF AFFECT AND SURPRISE SHAPE LABORATORY AND REAL-WORLD MEMORIES

FRIDAY, NOVEMBER 17, 10:00 AM–12:00 PM US PST
Continental 5/6

Organizer: James W. Anthony, California Polytechnic State University, USA

Humans continuously update their predictions about the environment, and these changes coincide with surprises or affective states that drive learning and memory. Here, we examine how these factors alter the content and structure of memory across different timescales and modalities, ranging from lab-based studies using media stimuli to various real-world scenarios. First, David Clewett will show how emotion dynamics transform experiences into memorable episodes. Next, Alyssa Sinclair will demonstrate that anxiety and beliefs about learning change how we update knowledge in response to prediction error. In the third talk, Nina Rouhani will connect laboratory findings of mnemonic prediction-error effects to a longitudinal study of autobiographical and collective memory across three years. Following this, Kimberly Chiew will show the importance of preferences and expectations in memory for the high-stakes US elections of 2016 and 2020. Finally, James Antony will examine how model-derived surprise during sports viewing correlates with memory for events spanning from seconds to months. Altogether, these diverse approaches show how prediction and affect influence cognitive processing across many domains and levels of resolution.

Emotion as the Grammar of Human Memory—*David Clewett, University of California, Los Angeles, USA*

Reframing the Value of Errors Mitigates Anxiety-Related Learning Deficits—*Alyssa H. Sinclair, Duke University, USA*

Collective Events and Individual Affect Shape Memory—*Nina Rouhani, California Institute of Technology, USA*

Expectation Shapes Affective Response To and Memory For Real-Life Election Events—*Kimberly S. Chiew, University of Denver, USA*

Long-Term, Multi-Event Surprise Correlates with Enhanced Autobiographical Memory—*James W. Anthony, California Polytechnic State University, USA*

SYMPOSIUM II: THE BRIGHT AND DARK SIDE OF TECHNOLOGICAL DEVELOPMENT: A WINDOW ON ITS IMPACT ON PHYSICAL, PSYCHOLOGICAL AND SOCIAL WELL-BEING ACROSS THE LIFE-SPAN

FRIDAY, NOVEMBER 17, 1:30 PM–3:30 PM US PST
Continental 5/6

Organizers: Chiara Fini, Sapienza University of Rome, Italy; Vanessa Era, IRCCS Santa Lucia Foundation & Sapienza University, Italy; and Dimitris Bolis, Center for Neuroscience and Cognitive Systems at UniTn, Istituto Italiano di Tecnologia, Italy

The present symposium will contribute to the discussion about the pros and cons of technologically mediated interactions with the external environment across the lifespan. Prof. Porciello will review evidence on how technology may change atypical bodily self-representation through embodiment experiences and by providing new physiological measures. Prof. Wykowska will illustrate how social robots can ameliorate atypical social interactions, such as those characterizing autistic persons. The growing intrusion of technological devices in our culture, however, deserves a deep reflection. Prof. Gallagher will highlight how mental processes are "externalized" through and within technological devices, with a special focus on the consequences for the private dimensions of mental life. Crucially, the impact of technology evolves across the lifespan; in this regard, Prof. Costello will support the thesis that—being less embodied—older adults might benefit more from unmediated modes of being in relation with the world. Finally, Prof. Annalisa Setti will sustain that natural environments are ideal backgrounds to promote unmediated interactions with the world for the preservation of cognitive and sensorimotor resources.

Future Bodies: How Technology Will Change the Neuroscience of Bodily Representations—*Giuseppina Porciello, Sapienza University of Rome, Italy*

Social Robots for the Benefit of Humans—*Agnieszka Wykowska, Italian Institute of Technology, Italy*

Changing Your Mind: AI and Transparency—*Shaun Gallagher, University of Memphis, USA*

The Necessity of Physicality for Older Adults—*Matthew Costello, University of Hartford, USA*

Nature as Antidote to Disembodiment: Real and Technological Nature in Older Age People with Perceptual Sensitivity—*Annalisa Setti, University College Cork & The Irish Longitudinal Study on Ageing, Ireland*

SYMPOSIA

SYMPOSIUM III: DIVERSITY IN DISABILITY: EVIDENCE FROM DISABILITY IDENTITY AND RESEARCH *(DIVERSITY & INCLUSION SYMPOSIUM)*

FRIDAY, NOVEMBER 17, 3:45 PM–5:45 PM US PST
Continental 5/6

Organizers: Jill Shelton, University of Tennessee at Chattanooga, USA; and Morton Ann Gernsbacher, University of Wisconsin–Madison, USA

December 2020 marked the first United Nation's International Day of Persons with Disabilities. Although there were sufficient conversations surrounding disability, equity, inclusion, and access (DEIA), there is a continued need to cultivate a culture of inclusivity in the academic and scientific workforce. Despite the prevalence of people living with a disability, colleagues in our fields have limited knowledge of how disability affects our personal identities and professional lives. Notably, considerable diversity exists within the disability community, making it important to consider multiple perspectives of individuals with lived experience. We have assembled a group of inter-disciplinary scholars who possess both personal and professional expertise about the disability experience. We will discuss theoretical and empirical work that extends our understanding of disability identity, perceptions of the disability community, neurodiversity, and initiatives for support and empowerment. Importantly, we will integrate our own lived experience to provide real-world context. Our goal is to encourage our Psychonomic Society colleagues to become more knowledgeable and active in promoting DEIA initiatives.

Perceptions of the Disability Community and Initiatives to Promote Inclusivity—*Jill Shelton, University of Tennessee at Chattanooga, USA; Morgan J. Robinson, University of Tennessee at Chattanooga, USA; Joseph Carpenter, University of Tennessee at Chattanooga, USA; and Amanda Lesswing, University of Tennessee at Chattanooga, USA*

Discovering More About Yourself Through Research and Professional Development—*Karen Arcos, University of California, Santa Cruz, USA*

Are We WEIRDA? Ableist Sampling in Psychology Research—*Rain G. Bosworth, Rochester Institute of Technology, USA*

Strategic Advocacy: Individuals and Institutions—*Teresa Blankmeyer Burke, Gallaudet University, USA*

Autistic Identity Across Development: A Critique of "Regression" Into and "Outgrowing" Autism—*Steven Kapp, University of Portsmouth, UK*

Discussion of Diversity in Disability: Evidence from Disability Identity and Research—*Morton Ann Gernsbacher, University of Wisconsin–Madison, USA*

SYMPOSIUM IV: ATTENTIONAL CONTROL AS A PSYCHOMETRIC CONSTRUCT: CHALLENGES AND RESPONSES

SATURDAY NOVEMBER 18, 10:00 AM–12:00 PM US PST
Continental 5/6

Organizers: Julia Haaf, University of Amsterdam (UVA), Netherlands; and Alodie Rey-Mermet, UniDistance Suisse, Switzerland

Attentional control—also referred to as executive functions, cognitive control, executive attention, or inhibition—is our ability to maintain and implement a goal and goal-relevant information in the face of distraction. Recent research has highlighted the difficulty of establishing attentional control as a psychometric construct, that is, a reliable and valid construct that leads to robust patterns of individual differences across tasks and situations. While the reliability of experimental tasks used to assess attentional control has been extensively discussed, the validity of these tasks has yet to be thoroughly debated. The purpose of this symposium is to move the field forward beyond the reliability debate and explore the validity issues that we face when using attentional control tasks. The first talk will introduce the methodological and conceptual challenges. The next five talks will present diverging responses to these challenges. Finally, the symposium provides a rare opportunity for discussion between speakers and audience members on the current controversy around individual differences research of attentional control.

What Are the Challenges We Are Facing when We Aim to Establish Attentional Control as a Psychometric Construct?—*Alodie Rey-Mermet, UniDistance Suisse, Switzerland; and Gidon T. Frischkorn, University of Zurich, Switzerland*

Examining the Psychometrics of Attention Control—*Matthew K. Robison, The University of Texas at Arlington, USA*

The Toolbox Approach to Assessing Individual Differences in Attention Control—*Christopher Draheim, Lawrence University, USA*

Linking Issues of Validity and Reliability with the Signal-to-Noise Ratio in Attentional Control Tasks—*Julia Haaf, University of Amsterdam (UVA), Netherlands*

Formally Linking Computational Models of Attentional Control Tasks Can Help Validate Measures and Constrain Theory—*Maria Robinson, University of California, San Diego, USA*

Exploring the Potential and Limitations of Electrophysiological Measures of Attentional Control for Individual Differences Research—*Anna-Lena Schubert, University of Mainz, Germany*

SYMPOSIA

SYMPOSIUM V: FINDING THE WAY: ADVANCES IN SPATIAL NAVIGATION RESEARCH

SATURDAY, NOVEMBER 18, 1:30 PM–3:30 PM US PST
Continental 5/6

Organizers: Steven M. Weisberg, University of Florida, USA; and Nora Newcombe, Temple University, USA

Spatial navigation is a vital everyday task involving the coordination of sensory, cognitive, and physical systems. Yet, spatial navigation abilities vary widely across individuals. Thus, it is critical to understand the variety of skills and strategies involved in navigation and how to apply these findings toward supporting and enhancing navigation-relevant skills. In this symposium, we present research using a wide array of techniques, including navigation-relevant training, design and architectural analyses, VR/AR simulations, and psychometrics. We explore the significant implications in both applied and theoretical areas, including how cognitive psychology research can be more effectively used to improve daily life (particularly in older adults, and people with disabilities, who may have navigation difficulties). We also consider our research in the context of theories of cognitive training (e.g., far and near transfer) and information representation (e.g., cognitive maps and graphs).

Virtual Copetown: Integrating Spatial Relationships Across Separately Learned Routes—*Nora S. Newcombe, Temple University, USA; and Merve Tansan, Temple University, USA*

Individual Differences in Human Navigation Ability: Interactions with Brain Structure and Function—*Elizabeth R. Chrastil, University of California, Irvine, USA*

The Influence of Augmented Reality (AR) Cues on Wayfinding and Spatial Learning—*Sarah H. Creem-Regehr, University of Utah, USA; Yu Zhao, Vanderbilt University, USA; Jeanine K. Stefanucci, University of Utah, USA; and Bobby Bodenheimer, Vanderbilt University, USA*

Learning the Layout of Different Environments: Common or Dissociated Abilities?—*Mary Hegarty, University of California, Santa Barbara, USA; Chuanxiuyue (Carol) He, University of California, Santa Barbara, USA; and Alexis Topete, University of California, Santa Barbara, USA*

Age Differences in Spatial Navigation: Determinants and Consequences?—*Denise Head, Washington University in St. Louis, USA; Hannah Maybrier, Washington University in St. Louis, USA; Marta Stojanovic, Washington University in St. Louis, USA; Taylor F. Levine, Cleveland Clinic Lou Ruvo Center for Brain Health, USA; and Jennifer Shearon, Washington University in St. Louis, USA*

How Does the Brain Encode New Complex Cognitive Skills?— *Steven M. Weisberg, University of Florida, USA; and Arne Ekstrom, University of Arizona, USA*

PSYCHONOMIC SOCIETY'S
ONE WORLD
COGNITIVE PSYCHOLOGY
SEMINAR SERIES

2023–2024 One World Cognitive Psychology Seminars

Ven Popov
University of Zurich, Switzerland
September 27, 2023

Rebecca Treiman
Washington University in St. Louis, USA
October 25, 2023

Arturo Hernandez
University of Houston, USA
January 24, 2024

Malte Wöstmann
University of Lübeck, Germany
February 28, 2024

Danny Oppenheimer
Carnegie Mellon University, USA
March 27, 2024

Gregory Cox
University at Albany, SUNY, USA
April 24, 2024

Leah Fostick
Ariel University, Israel
May 22, 2024

All seminars will take place from 11:15 AM until 1:00 PM US Eastern Time.

psychonomic.org/oneworld

AWARDS

2023 CLIFFORD T. MORGAN DISTINGUISHED LEADERSHIP AWARD RECIPIENTS

The Psychonomic Society is pleased to announce the 2023 recipients of our Clifford T. Morgan Distinguished Leadership Award: **Fernanda Ferreira,** University of California Davis, USA; **Colin M. MacLeod,** University of Waterloo, Canada; and **James R. Pomerantz,** Rice University, USA.

Fernanda Ferreira

University of California, Davis, USA

Fernanda Ferreira is the Distinguished Professor of Psychology and member of the Graduate Program in Linguistics at the University of California, Davis. She received a BA (Honours) in Psychology in 1982 from the University of Manitoba and an MSc in Psychology in 1985, an MA in Linguistics in 1986, and a PhD in Psychology in 1988 from the University of Massachusetts, Amherst. Her research focuses on uncovering the mechanisms that enable humans to understand and generate language in real time and in cooperation with other cognitive systems. (Full bio)

Colin M. MacLeod

University of Waterloo, Canada

Colin M. MacLeod is Distinguished Professor Emeritus at the University of Waterloo. He received his BA from McGill University and his PhD from the University of Washington, both in Psychology. From the beginning, his research focus has been on attention and memory, with a strong interest in the role(s) played by learning. For 25 years, he was a professor at the University of Toronto at Scarborough, where his administrative experience included serving as Chair of the Division of Life Sciences (Psychology and Biology) and as Vice-Principal and Vice-Dean of the college. (Full bio)

James R. Pomerantz

Rice University, USA

James R. Pomerantz is a cognitive psychologist specializing in visual perception. He received his BA with distinction and high honors from the University of Michigan in 1968 and, following research at Bell Telephone Labs, his PhD from Yale in 1974. He taught at Yale, Johns Hopkins, and SUNY Buffalo before joining Rice University in 1988 as Elma Schneider Professor and Dean of Social Sciences, where he proposed and helped launch the Baker Institute for Public Policy, now ranked as the top university-affiliated think tank in the world. He moved to Brown University in 1995 as Professor of Cognitive and Linguistic Sciences, Brown University Provost, and VP for the Annenberg Institute for School Reform. (Full bio)

The 2023 Clifford T. Morgan Distinguished Leadership Award and Mid-Career Award Subcommittee members are Monica Castelhano (Chair), Queen's University, Canada; Jeanette Altarriba, University at Albany, SUNY, USA; Jan De Houwer, Ghent University, Belgium; Nurit Gronau, The Open University, Isael; Morton Ann Gernsbacher, University of Wisconsin–Madison, USA: Judith Kroll, University of California, Irvine, USA; and Jochen Laubrock, University of Potsdam, Germany. The recipients will be recognized at the Awards and Business Meeting on Saturday, November 18, 5:10–6:00 PM US PST. Read more about the award at www.psychonomic.org/page/leadershipaward.

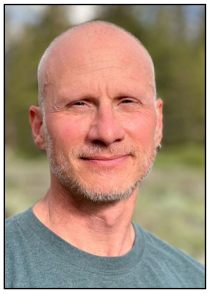
About Clifford T. Morgan

Born in 1915 in Minolta, New Jersey, Clifford Thomas Morgan received his undergraduate education at Maryville College and his PhD from Rochester University in 1939. Morgan held academic positions at Harvard University; Johns Hopkins University; University of Wisconsin; the University of California, Santa Barbara; and, finally, at the University of Texas. He was a founding member of the Psychonomic Society and the first Governing Board Chair, and he led the Society's journal program for many years. He passed away in 1976 in Austin, Texas.

AWARDS

2023 MID-CAREER AWARD RECIPIENTS

The Psychonomic Society is pleased to announce the recipients of the 2023 Mid-Career Award: **Aaron Benjamin,** University of Illinois Urbana-Champaign, USA; **Allejandro Lleras,** University of Illinois Urbana-Champaign, USA; **Elizabeth Marsh,** Duke University, USA; and **Kenneth Norman,** Princeton University, USA.



Aaron Benjamin

University of Illinois Urbana-Champaign, USA

Aaron Benjamin is Professor and Acting Head of Psychology at the University of Illinois Urbana-Champaign, where he also holds appointments in the Program in Neuroscience and at the Beckman Institute for Advanced Science and Technology. His research applies behavioral and computational approaches to basic and applied problems in human memory, attention, metamemory, and decision-making. (Full Bio)

Alejandro Lleras

University of Illinois Urbana-Champaign, USA

Alejandro Lleras is a Professor in the Department of Psychology at the University of Illinois Urbana-Champaign and at the Beckman Institute for Advanced Science and Technology, where he co-directs the Vision Lab. He serves as Associate Head for DEI in his department, he is on the Vision Sciences Society Advisory Board, and he is a Governing Board Member and founder of the Spark Society (a society to increase the participation and visibility of scholars from historically marginalized groups in cognitive psychology and cognitive sciences more generally). (Full Bio)

Elizabeth Marsh

Duke University, USA

Elizabeth Marsh is Professor and Chair of Psychology and Neuroscience at Duke University. She earned her undergraduate degree at Drew University and her PhD at Stanford University; she also completed a postdoctoral fellowship at Washington University in St Louis. Much of her research examines how people acquire, maintain, and update their knowledge, with a focus on false beliefs about the world. She has published more than 90 peer-reviewed articles and her work has been funded by the U.S. Department of Education, National Science Foundation, the Office of Naval Research, National Institute on Aging, and Google, among others. (Full Bio)

Kenneth Norman

Princeton University, USA

Ken Norman is the Huo Professor in Computational and Theoretical Neuroscience and Chair of the Department of Psychology at Princeton University. He received a BS in Symbolic Systems from Stanford University in 1993 and a PhD in Psychology from Harvard University in 1999, advised by Daniel Schacter. Prior to taking his faculty position at Princeton in 2002, Norman was a postdoctoral researcher in Randall O'Reilly's lab at the University of Colorado, Boulder. Norman is a fellow of the Association for Psychological Science and the Society of Experimental Psychologists. (Full Bio)

The 2023 Clifford T. Morgan Distinguished Leadership Award and Mid-Career Award Subcommittee members are Monica Castelhano (Chair), Queen's University, Canada; Jeanette Altarriba, University at Albany, SUNY, USA; Jan De Houwer, Ghent University, Belgium; Nurit Gronau, The Open University, Isael; Morton Ann Gernsbacher, University of Wisconsin–Madison, USA: Judith Kroll, University of California, Irvine, USA; and Jochen Laubrock, University of Potsdam, Germany. The recipients will be recognized at the Awards and Business Meeting on Saturday, November 18, 5:10–6:00 PM US PST. Read more about the award at www.psychonomic.org/page/midcareeraward.

AWARDS

2023 EARLY CAREER AWARD RECIPIENTS

The Psychonomic Society is pleased to announce the recipients of the 2023 Early Career Award: **Senne Braem,** Ghent University, Belgium; **Elizabeth Chrastil,** University of California, Irvine, USA; **Dora Matzke,** University of Amsterdam, The Netherlands; and **Sharda Umanath,** Claremont McKenna College, USA.

Senne Braem

Ghent University, Belgium

Senne Braem is an Associate Professor in the Department of Experimental Psychology at Ghent University, Belgium. Senne's research focuses on the interactions between cognitive control (or "executive functions") and different forms of learning, such as reinforcement learning, associative learning, fear conditioning, or learning via instructions. (Full Bio)

Elizabeth Chrastil

University of California, Irvine, USA

Elizabeth Chrastil is an Assistant Professor in the Department of Neurobiology & Behavior at University of California, Irvine, and is a fellow of the Center for the Neurobiology of Learning & Memory. She received her PhD from Brown University and did her postdoctoral work at Boston University. She also received an MS in Biology from Tufts University and a BA from Washington University in St. Louis. (Full Bio)

Dora Matzke

University of Amsterdam, The Netherlands

Dora Matzke is Associate Professor in the Department of Psychology of the University of Amsterdam and Chair of the Psychological Methods Unit. Dr. Matzke's research combines cognitive modeling with cutting-edge mathematical and computational methods, focusing on decision making in general, and the ability to stop (i.e., inhibit) inappropriate responses in particular. (Full Bio)

Sharda Umanath

Claremont McKenna College, USA

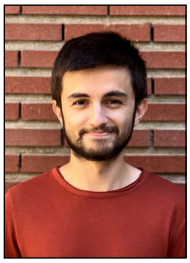
Sharda Umanath is an Associate Professor of Psychological Science and the Principal Investigator of the Umanath Memory and Aging Laboratory at Claremont McKenna College. She received an AB in Philosophy-Neuroscience-Psychology and Ancient Studies from Washington University in St. Louis in 2009 and her PhD in Cognitive Psychology from Duke University in 2014. (Full Bio)

The 2023 Early Career Award Subcommittee members are Monica Castelhano (Chair), Queen's University, Canada; Stephan Lewandowsky, University of Bristol, UK; Beatrice Kuhlman, University of Mannheim, Germany; Vishnu "Deepu" Murty, Temple University, USA; and Aidan Horner, University of York, UK. Recipients will be recognized at the Awards and Business Meeting on Saturday, November 18, 5:10–6:00 PM US PST. Read more about the Early Career Award at https://www.psychonomic.org/page/early_career_award.

AWARDS

2023 BEST ARTICLE AWARD RECIPIENTS

The Psychonomic Society is pleased to announce the recipients of the 2023 Best Article Awards.



Attention, Perception, & Psychophysics

Editor: Sarah Shomstein

Fatih Serin & Eren Günseli

"Internal Attention Is the Only Retroactive Mechanism for Controlling Precision in Working Memory"

DOI: 10.3758/s13414-022-02628-7

Behavior Research Methods

Editor: Marc Brysbaert

Florian Lange

"Behavioral Paradigms for Studying Pro Environmental Behavior: A Systematic Review"

DOI: 10.3758/s13428-022-01825-4

Cognitive, Affective, & Behavioral Neuroscience

Editor: Diego Pizzagalli

Elisa Porth, André Mattes, & Jutta Stahl

"The Influence of Error Detection and Error Significance on Neural and Behavioral Correlates of Error Processing in a Complex Choice Task"

DOI: 10.3758/s13415-022-01028-6

Cognitive Research: Principles & Implications

Editor: Sarah Creem-Regehr

Constance de Saint Laurent, Gillian Murphy, Karen Hegarty, & Ciara M. Greene

"Measuring the Effects of Misinformation Exposure and Beliefs on Behavioural Intentions: A COVID-19 Vaccination Study"

DOI: 10.1186/s41235-022-00437-y

Learning & Behavior

Editor: Lauren M. Guillette

Benjamin J. Abts & Aimee S. Dunlap

"Memory and the Value of Social Information in Foraging Bumble Bees"

DOI: 10.3758/s13420-022-00528-2

Memory & Cognition

Editor: Ayanna Thomas

Sarah Poulet, Annabelle Goujon, & André Didierjean

"Statistical Learning Guides Visual Attention Within Iconic Memory"

DOI: 10.3758/s13421-023-01394-7

Psychonomic Bulletin & Review

Editor: James R. Brockmole

Christopher Draheim, Richard Pak, Amanda A. Draheim, & Randall W. Engle

"The Role of Attention Control in Complex Real-World Tasks"

DOI: 10.3758/s13423-021-02052-2

The Psychonomic Society Best Article Award recognizes the best article published in each of the Psychonomic Society's journals during the last year. Selections are made by the editorial team of each journal. Award recipients (the lead author) receive a certificate and honorarium of $1,000 USD and will be recognized at the Awards and Business Meeting on Saturday, November 18, 5:10–6:00 PM US PST. Visit www.psychonomic.org/page/BestArticleAward for more information and to view previous recipients.

AWARDS

2023 J. FRANK YATES STUDENT CONFERENCE AWARD RECIPIENTS

Supporting Diversity and Inclusion in Cognitive Psychology

The Psychonomic Society Diversity & Inclusion Committee selected 12 recipients of the J. Frank Yates Student Conference Award for the 2023 Annual Meeting.

Christ Billy Aryanto
The University of Sheffield, UK

Abstract 3176: Does Sensory Discrimination Ability Account for the Relation Between Active Music-Making and Working

Xavier Celaya
Arizona State University, USA

Abstract 4020: Task Sequencing Does Not Systematically Affect the Factor Structure of Cognitive Abilities

Anthony Cruz
University of Western Ontario, Canada

Abstract 2049: Give Me a Break: Pausing to Reflect May Lessen Attenuation in Massed Learning

Alexa Gonzalez
University of Houston, USA

Abstract 2162: The Role of Causality in Understanding How Prior Event Knowledge Impacts New Learning

Hasibe Kahraman
Macquarie University, Australia

Abstract 2112: The Two Languages of the Bilingual Mind: An EEG Study into Cross-Language Morphological Transfer

Mirrah Maziyah Mohamed
University of Western Ontario, Canada

Abstract 1118: The Influence of Distributional Properties of Morphemes on Lexical Decision Latencies

Vanessa Oviedo
University of California Santa Cruz, USA

Abstract 1101: Interacting with Diverse Audiences Improves Communication Skills

Bre-Anna Owusu
McMaster University, Canada

Abstract 2164: Let the Music Play: The Beneficial Effects of Musical Rhythms on Verbal Working Memory

Eliany Perez
University of Florida, USA

Abstract 3096: The Role of Risk Tolerance in Navigation Strategy Decisions?

Alyssa Randez
Purdue University, USA

Abstract 1083: Cognitive Effort-Based Decision-Making and Individual Differences in Task Preferences

Hsin-Ping Tien
Academia Sinica, Taiwan

Abstract 3196: Differentiating the Cognitive Resource Involved in Motor Imagery and Execution: An Investigation with Dual-Task Interference

Belgin Ünal
University of Illinois Urbana-Champaign, USA

Abstract 2189: Judgments of Learning Reflect the Encoding of Contexts, Not Items: Evidence from a Test of Recognition Exclusion

Diversity & Inclusion Committee members include Zenzi M. Griffin (Chair), University of Texas at Austin, USA; Jeanette Altarriba, University at Albany, SUNY, USA; Karen Emmorey, South Dakota State University, USA; Rebecca Johnson, Skidmore College, USA; Belem Lopez, National Institutes of Health, USA (in her personal capacity); and Sharda Umanath, Claremont McKenna College, USA. Please join the committee in congratulating the recipients of the 2023 J. Frank Yates Student Conference Award. Each recipient receives an award of $1,000 USD and will be recognized at the Awards and Business Meeting on Saturday, November 18, 5:10–6:00 PM US PST. Visit https://www.psychonomic.org/page/yatestravelaward for more information.

AWARDS

2023 GRADUATE CONFERENCE AWARD RECIPIENTS

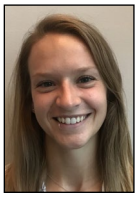
The Psychonomic Society Program Committee selected 15 recipients for the Graduate Conference Award for the 2023 Annual Meeting based on the quality of the abstracts submitted by student members of the Society.

Daniel Bialer
Cornell University, USA

Abstract 1134: Comparing the Effect of Liberal and Conservative Eyewitness Instructions for Simultaneous and Sequential Lineups

Joshua Buffington
University of Illinois Chicago, USA

Abstract 4026: Listening Fast and Slow: Investigating Neurocognitive Mechanisms of Verbal Statistical Learning



Alexa Bushinski
Purdue University, USA

Abstract 3093: Individual Differences in Spatial Navigation and Working Memory

Brooke Carlaw
Colorado State University, USA

Abstract 1178: Familiarity-Detection from Partially Occluded Faces: Do Separate Exposures to Different Facial Parts Combinedly Increase Familiarity with a Whole Face?

Katherine Churey
University of Guelph, Canada

Abstract 2187: Does Asking About Memory Change Later Performance? A Temporal Bias Analysis of Metamemory Reactivity

Madalin Marian Deliu
University of Salamanca, Spain

Abstract 3198: Plots for Depicting Multilevel Dependent Data in Meta-Analyses: Comparing Approaches that Aggregate Effect Sizes with Ones that Do Not

Melissa Evans
Vanderbilt University, USA

Abstract 1099: What Did You Ask? Recognition Memory for Questions Is Worse than Memory for Answers

Garrett Greeley
Stony Brook University, USA

Abstract 3101: Downstream Consequences of Collaborative Recall: Testing the Influence on New Learning and Protection of Original Learning

David Heath
University of Memphis, USA

Abstract 1116: Fine-Grained Differences in Sarcasm Perception and Categorization

Franziska Schäfer
Technical University of Darmstadt, Germany

Abstract 2188: Making Judgments of Learning During Learning Does Not Affect Performance in Short-Answer and Multiple-Choice Tests

Corey Shayman
University of Utah, USA

Abstract 3094: Relative Reliance on Auditory and Self-Motion Cues for Navigation

Jeremy Thomas
University of Alberta, Canada

Abstract 2142: Recombined Probes Test Mechanisms of Order Within Associations

(Continued on p. 22)

The 2023 Program Committee members are Michael J. Kane (Chair), University of North Carolina at Greensboro, USA; Aysecan Boduroglu, Koç University, Turkey; Monica Castelhano, Queen's University, Canada; Myra Fernandes, University of Waterloo, Canada; Zenzi M. Griffin, University of Texas at Austin, USA; and Heather Hill, St. Mary's University, USA. Each recipient receives an award of $1,000 USD and will be recognized at the Awards and Business Meeting on Saturday, November 18, 5:10–6:00 PM US PST. Visit https://www.psychonomic.org/page/graduatetravel for more information.

AWARDS

2023 GRADUATE CONFERENCE AWARD RECIPIENTS *(cont.)*

The Psychonomic Society Program Committee selected 15 recipients for the Graduate Conference Award for the 2023 Annual Meeting based on the quality of the abstracts submitted by student members of the Society.

Runhan "Brad" Yang
University of Illinois Urbana-Champaign, USA

Abstract 3025: Self-Pacing in Attention-Demanding Search Task Enhances Stimulus Discriminability and Reduces Uncertainty

Bugay Yildirim
Koç University, Turkey

Abstract 4129: Memory-Based Biases in the Attentional Blink: Within and Across Trial Interactions

Ece Yuksel
University of Florida, USA

Abstract 3097: This Is Not the Way: Global Directional Cues Do Not Improve Spatial Navigation in an Immersive Virtual Environment

The 2023 Program Committee members are Michael J. Kane (Chair), University of North Carolina at Greensboro, USA; Aysecan Boduroglu, Koç University, Turkey; Monica Castelhano, Queen's University, Canada; Myra Fernandes, University of Waterloo, Canada; Zenzi M. Griffin, University of Texas at Austin, USA; and Heather Hill, St. Mary's University, USA. Each recipient receives an award of $1,000 USD and will be recognized at the Awards and Business Meeting on Saturday, November 18, 5:10–6:00 PM US PST. Visit https://www.psychonomic.org/page/graduatetravel for more information.

AFFILIATES

AFFILIATE MEETINGS

Auditory Perception, Cognition, and Action

THURSDAY, NOVEMBER 16, 2023
8:00 AM–5:00 PM US PST
Imperial A

https://apcsociety.org

Bilingualism Matters Across the World

THURSDAY, NOVEMBER 16, 2023
12:00–2:00 PM US PST
Plaza B

https://sites.google.com/view/bilingualism-matters-world/home

Configural Processing Consortium

WEDNESDAY, NOVEMBER 15, 2023
8:30 AM–5:30 PM
Union Square 23/24

www.configural.org

Culture and Cognition

THURSDAY, NOVEMBER 16, 2023
9:00 AM–2:00 PM US PST
Imperial B

https://www.brandeis.edu/gutchess/culture-cog-preconference.html

International Association for Metacognition

THURSDAY, NOVEMBER 16, 2023
11:30 AM–4:00 PM US PST
Plaza A

https://iammetacognition.wixsite.com/metacognition

Object Perception, Attention, & Memory

THURSDAY, NOVEMBER 16, 2023
7:15 AM–5:00 PM US PST
Continental 4

http://www.opam.net/?page_id=20

Society for Computation in Psychology

THURSDAY, NOVEMBER 16, 2023
8:00 AM–5:00 PM US PST
Continental 1/2/3

https://computationinpsych.com/

Society for Judgment and Decision Making

FRIDAY, NOVEMBER 17–MONDAY, NOVEMBER 20, 2023
Times to be announced
Golden Gate Ballrooms

https://sjdm.org/

Society for Mathematical Psychology

THURSDAY, NOVEMBER 16, 2023
8:00 AM–5:00 PM US PST
Franciscan C

https://mathpsych.org/

SPARK Society

THURSDAY, NOVEMBER 16, 2023
2:30–4:00 PM US PST
Franciscan A/B

https://www.sparksociety.org/

Symposium for Individual Differences in Cognition

THURSDAY, NOVEMBER 16, 2023
8:00 AM–3:00 PM US PST
Franciscan D

https://caliberlab.wixsite.com/sidic2023

Tactile Research Group

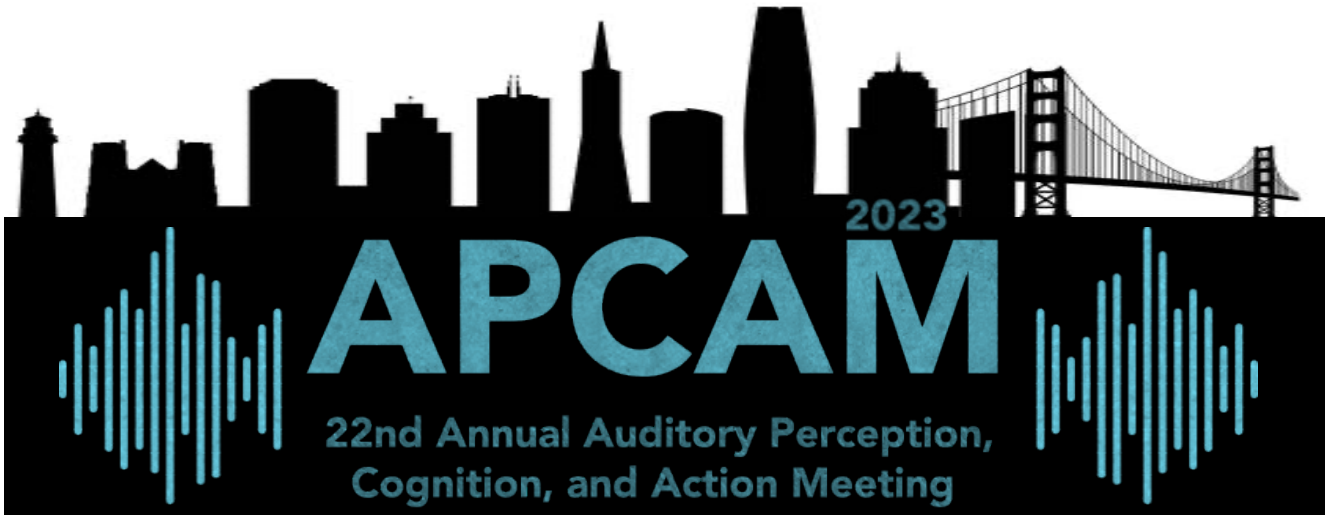
THURSDAY, NOVEMBER 16, 2023
9:00 AM–5:00 PM US PST
Union Square 22

https://www.facebook.com/tactileresearchgroup/

Women in Cognitive Science

THURSDAY, NOVEMBER 16, 2023
4:00–7:00 PM US PST
Continental 7/8/9

https://www.womenincogsci.org/



Thursday, November 16, 2023

Hilton San Francisco Union Square; San Francisco, California

8:00 am - 5:00 pm PST

Keynote address by Dr. Indre Viskontas

University of San Francisco, San Francisco Conservatory of Music

APCAM brings together researchers from various theoretical perspectives and empirical traditions to share research on auditory perception, cognition, and action. We offer a unique meeting in our broad inclusion of multiple theoretical and methodological perspectives on a wide range of basic and applied research.

APCAM is supported by the Psychonomic Society and by the Auditory Perception and Cognition Society. Brief reports based on accepted abstracts can be submitted for consideration for a special issue of *Auditory Perception & Cognition* focused on APCAM.

Organizers:
Timothy L. Hubbard (Chair)
J. Devin McAuley
Kathleen C. McCulloch
Kristopher J. Patten
Peter Q. Pfordresher
Hannah Shatzer

APCAM is committed to scientific merit, which entails inclusion of scientists regardless of gender, race, sexual orientation, disability status, country of origin, geographic location, and disciplinary expertise.

Visit www.apcsociety.org for more information.

BILINGUALISM MATTERS ACROSS THE WORLD

AT THE 2023 64th ANNUAL MEETING OF THE PSYCHONOMIC SOCIETY

THURSDAY NOVEMBER 16, 2023 NOON-2PM PST

LANGUAGE DIVERSITY IN THE MIX: CHALLENGES AND OPPORTUNITIES FOR COGNITIVE SCIENCE

Have you ever thought about language diversity and bilingualism and its implications for your research -whatever subfield of cognitive science you dwell in--? Well, if you have not, this workshop will get you to think about it!

With well over half the world's population speaking more than one language and transmigrating, our societies, as well as our "experimental samples" are becoming increasingly linguistically diverse and flexible. At the same time, bilingualism, and language diversity are increasingly being recognized as potential (although not the only) life-long factors that can impact brain function and structure. Given this premise, the question arises as to whether language variability is sufficiently taken into consideration in cognitive research at large.

Following Henrich's et al.'s (2010) proposal that suggests that much of the extant research in human cognitive neuroscience is based on limited samples drawn entirely from Western, Educated, Industrialized, Rich, and Democratic societies (WEIRD), the goal of this workshop is to discuss, opportunities, and challenges for designing experiments and interpreting results for future research across cognitive science!

Please join us for the 2023 Bilingualism Matters Across the World Affiliate meeting!

Follow the details for the workshop at this link:
https://bilingualismmattersworld.wordpress.com/

Bilingualism Matters Across The World Founder and Organizers
Eleonora Rossi (University of Florida)
Judith Kroll (University of California, Irvine)
Antonella Sorace (University of Edinburgh)

Fourth Culture and Cognition Preconference of the Psychonomic Society

Thursday November 16th, 2023
9 AM – 2 PM

In-person, at the Hilton San Francisco Union Square

Schedule

Welcome and Invited Talks: 9:00 am – 11:35 am
Open Q&A: 11:35 am – 11:55 am
Roundtable Discussions: 12:00 pm – 1:00 pm
Meet & Greet: 1:00 – 2:00 pm

Registration *(available early Sept)*

Limited space! Please visit:
https://www.brandeis.edu/gutchess/preconference.html

Welcome and Invited Talks

9-9:15am, Welcome

9:15-9:40am, Taka Masuda, University of Alberta, Canada

9 :40-10 :05am, Caroline Blais, Université du Québec en Outaouais, Canada

10 :05-10 :30am, Jeanne Tsai, Stanford University, USA

10 :30-10 :45am, Break

10:45-11:10am, Cristina Moya / Nicolás Restrepo Ochoa, University of California, Davis, USA

11:10-11:35am, Henry L. Roediger, III, Washington University in St. Louis, USA

11:35-11:55am, Open Q&A and Discussion with Speakers

Roundtable Discussions *(with light refreshments)*

12-1pm, Operationalizing the Study of Culture for Research in Cognition

Meet & Greet

1-2pm, Opportunity for informal follow-up and conversations

Founded and Organized by
Suparna Rajaram, Stony Brook University
Angela Gutchess, Brandeis University
2023 Co-organizer
Caroline Blais, Université du Québec en Outaouais

Student Organizers
Garrett Greeley, Stony Brook University
Francis Gingras, Université du Québec en Outaouais

This meeting is made possible through support from the Perception, Action, and Cognition and Cultural Anthropology Programs at the National Science Foundation and the Psychonomic Society

International Association of Metacognition

2023 BIANNUAL MEETING

Join Us

Date: Thursday, November 16, 2023

Location: Hilton San Francisco Union Square

Time (tentative): 11:30 - 12:00: Registration
12:00 - 4:30: Talks

The Study of Metacognition

Research on metacognition involves the study of what people know about their own cognition. Approaches to investigating metacognition include cognitive experiments, the study of individual differences, neuroimaging, educational applications, and computational modeling, and includes special populations defined by neuropsychological, clinical, life-span, and developmental dimensions.

The field of metacognition research has grown substantially in recent years. A scientific understanding of “cognition in the wild” will ultimately require an appreciation of the metacognitive monitoring and control processes that guide the development and refinement of those skills and behaviors.

Organizers

Nate Kornell
Monika Undorf

San Francisco, California

opam31

November 16, 2023

Join us to witness outstanding research by graduate and postdoctoral scientists at the annual Object Perception, Attention, and Memory conference.

Date and Location

Thursday, November 16, 2023
7:45 AM - 5:00 PM

Hilton San Francisco Union Square
San Francisco, California

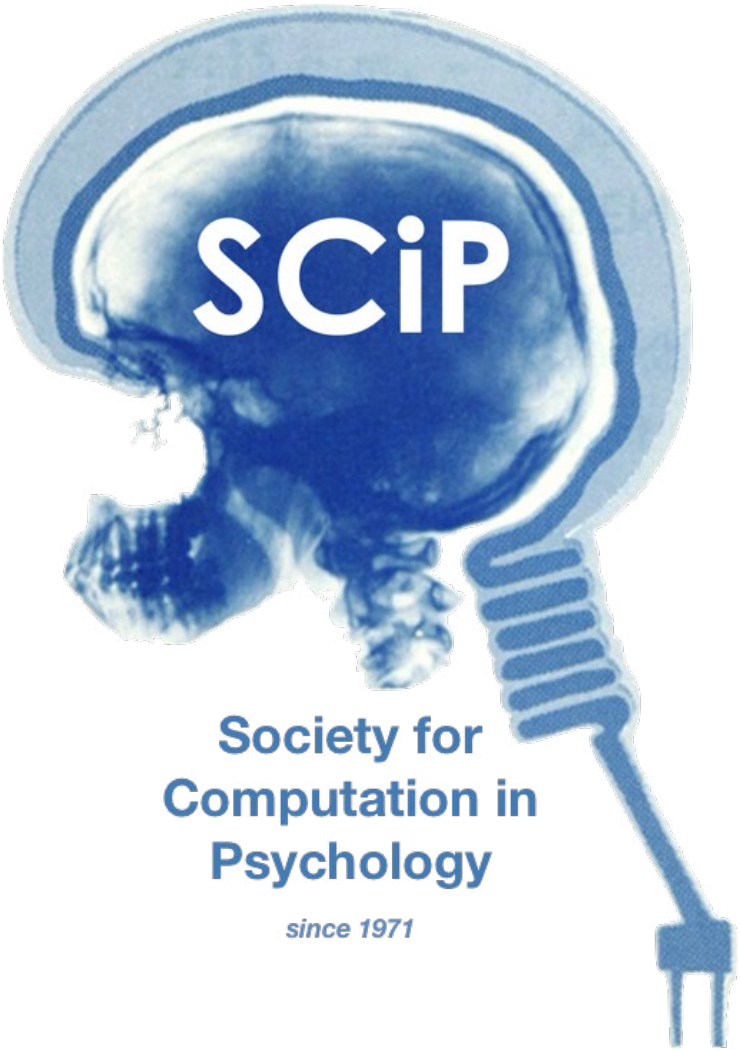
Keynote Address

Dr. James Brockmole
Professor of Psychology
University of Notre Dame
4:00 PM - 5:00 PM

Visit www.opam.net for more details

2023 Organizers

Chenxiao Guan
Han Zhang
Karolina Krzys
Ryan O'Donnell



The 53rd Annual Meeting of the Society for Computation in Psychology

Advancing Theory by Opening the Black Box: Uses of AI in Psychology

November 16th, 2023

https://computationinpsych.com/

2023 SOCIETY OF MATHEMATICAL PSYCHOLOGY

CAUSALITY IN MINDS AND MACHINES: PROBING THE MATHEMATICAL AND COMPUTATIONAL FOUNDATIONS

HOSTED BY: TOBIAS GERSTENBERG, THOMAS ICARD, ELIZABETH FOX

CAUSALITY IS THE CEMENT OF THE UNIVERSE, OR AT LEAST THE CEMENT OF OUR UNIVERSE. IN THIS WORKSHOP, ORGANIZED BY THE SOCIETY FOR MATHEMATICAL PSYCHOLOGY, WE BRING TOGETHER PSYCHOLOGISTS, AI RESEARCHERS, AND PHILOSOPHERS OF SCIENCE TO EXCHANGE PERSPECTIVES ON WHAT THIS CEMENT IS MADE OF, AND WHAT IT'S USEFUL FOR. WE WILL DISCUSS WHAT ROLE CAUSALITY PLAYS IN OUR UNDERSTANDING OF HOW MINDS AND MACHINES WORK, WITH A FOCUS ON COMPARING MATHEMATICAL AND COMPUTATIONAL APPROACHES TO MODELING CAUSAL LEARNING AND INFERENCE.

0900-0910	OPENING REMARKS
0910-1010	INVITED SPEAKERS*
1010-1030	BREAK
1030-1130	INVITED SPEAKERS*
1130-1230	LUNCH
1230-1330	POSTER SESSION
1330-1430	INVITED SPEAKERS*
1430-1450	BREAK
1450-1620	INVITED SPEAKERS*
1620-1700	PANEL DISCUSSION
1700-1710	CLOSING REMARKS

*INVITED SPEAKERS FROM PSYCHOLOGY, AI, AND PHILOSOPHY

THURSDAY 11.16.2023

MORE INFORAMTION:

MATHPSYCH.ORG

6th Annual Meeting of the

SPARK Society

Navigating the Academy with Friends: Conversations about inclusion, equity, and justice

Thursday November 16th, 2023
2:30-4:00 pm

Bring a friend to this interactive event as we have conversations, learn from each other, and expand our networks.

The SPARK Society's goal is to create networks and promote the professional development of historically excluded scholars of African American/Black, Latina/o/e/x, and Native American heritage in Cognitive Psychology and Cognitive Science. We achieve this goal by providing opportunities and information, recruitment and retention support, and mentorship across all ranks for historically excluded scholars, as well as building connections with allies and educating the broader community.

All are welcome!

SIDIC

SYMPOSIUM FOR INDIVIDUAL DIFFERENCES IN COGNITION

INAUGURAL MEETING
Thursday, November 16, 2023
Hilton San Francisco Union Square; San Francisco, California
8:00 am – 4:00 pm PST

Keynote address by Dr. Nora S. Newcombe

SIDIC is dedicated to communicating research on individual differences in cognition, broadly construed, providing an outlet for the international community of cognitive psychologists to present and discuss their work on inter-individual variation in mental processes, phenomena, and abilities. The symposium will embrace a wide spectrum of topic areas, from perception and attention to language comprehension and reasoning, and it will broadly foster a culture of diversity and inclusion, featuring contributions from younger investigators as well as established scientists.

SIDIC is supported by the Psychonomic Society

2023 Organizers:
Andrew R. A. Conway
Michael J. Kane
Kristóf Kovács
Dawn Michele Moore
John Protzko
Anna-Lena Schubert

Visit https://caliberlab.wixsite.com/sidic2023 for more information

SIDIC
SYMPOSIUM FOR INDIVIDUAL DIFFERENCES IN COGNITION

The 23rd Annual Meeting of Women in Cognitive Science

Thursday, November 16, 2023
Panel and Q&A: 4 - 6 PT
Social Hour & Speed Mentoring: 6 - 7 PT

Not traveling to SF? Join virtually with this Zoom link.

Prioritizing Your Visibility

Many service opportunities arise throughout a career: professional, institutional and community. How do you select those opportunities that will allow you to prioritize your visibility and support your research agenda? Our panel of speakers will share their experiences with a range of different service activities. What helped and what didn't? What choices would they make again?

Panelists:
Sarah Brown-Schmidt, Vanderbilt University
Monica Castelhano, Queen's University
Anne Cleary, Colorado State University
Bonnie Nozari, Indiana University

The panel will be followed by the presentation of travel awards, social hour, and speed mentoring event.

Join WiCS+ to receive information about virtual coffee hours, writing groups, networking hubs and more.

WiCS+ Leadership Team:
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Karin Butler, Sandia National Laboratory
Kristi Multhaup, Davidson College
Bonnie Nozari, Indiana University
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Connect with WiCS+ online:
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WiCS+ is affiliated with the Psychonomic Society and its activities are funded by the Perception, Action & Cognition program at the National Science Foundation.

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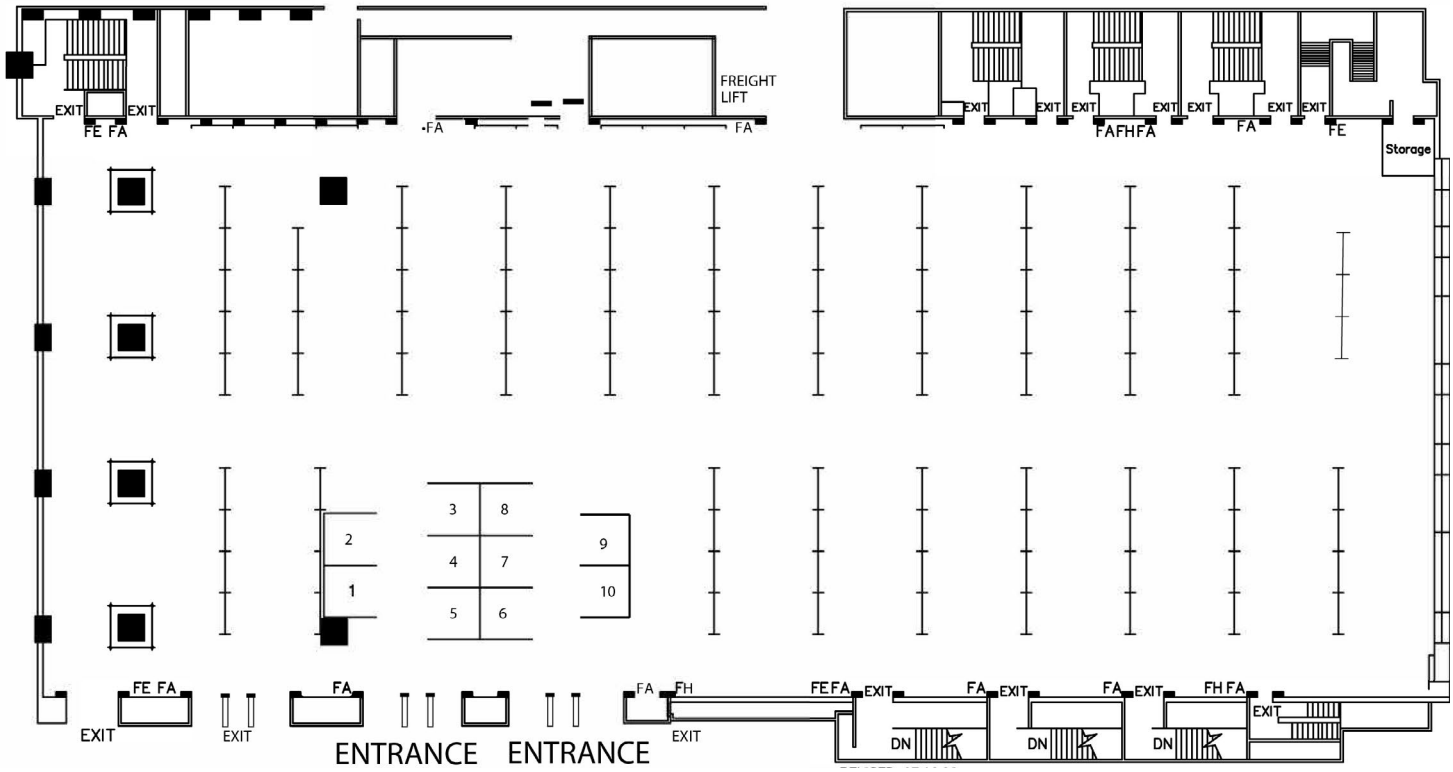
EXHIBITS

EXHIBIT HALL SCHEDULE

Attendees are encouraged to visit our exhibitors located in the Grand Ballroom at the Hilton San Francisco Union Square (Tower 2, Grand Ballroom Level). Exhibit hours are as follows:

Thursday, November 16 . . . . . 3:30–7:30 PM US PST
Friday, November 17 . . . . . 10:00 AM–4:00 PM US PST
Saturday, November 18 . . . . . 10:00 AM–4:00 PM US PST

EXHIBIT HALL FLOOR PLAN—GRAND BALLROOM



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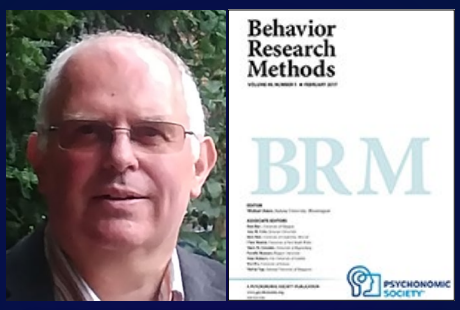
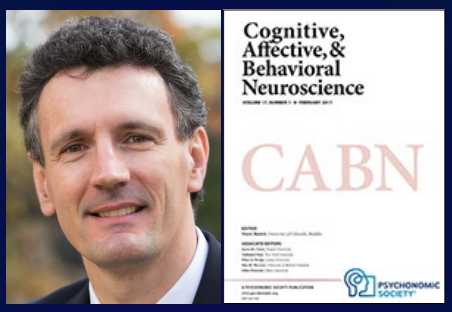


BEHAVIOR RESEARCH METHODS

Marc Brysbaert, Editor-in-Chief
Ghent University, Belgium



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PSYCHONOMIC SOCIETY DIGITAL CONTENT

Laura Mickes, Editor-in-Chief
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The Psychonomic Society is pleased to announce that **Erin Buchanan**, Harrisburg University, USA, and **Dora Matzke**, University of Amsterdam, The Netherlands, have been named the incoming Editors-in-Chief of Behavior Research Methods (BRM). They will begin their four-year terms as editors on January 1, 2024. Information on each of their coverage areas will be shared in the fall. The Psychonomic Society extends its deepest appreciation to **Marc Brysbaert**, Ghent University, Belgium, and his editorial team for their leadership and stewardship of BRM over the past four years. Brysbaert will conclude his term as BRM Editor-in-Chief on December 31, 2023.

The Psychonomic Society is pleased to announce that **Daniel Mirman**, University of Edinburgh, UK, has been named the incoming Editor-in-Chief of Psychonomic Bulletin & Review (PB&R). He will begin his four-year term on January 1, 2024. The Psychonomic Society extends its deepest appreciation to **James Brockmole**, University of Notre Dame, USA, and his editorial team for their leadership and stewardship of PB&R over the past four years. Brockmole will conclude his term as PB&R Editor-in-Chief on December 31, 2023.

IN MEMORIAM

Psychonomic Society Members • July 1, 2022–August 31, 2023

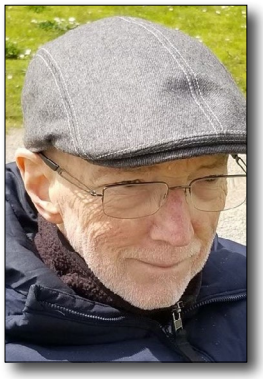
The Psychonomic Society honors deceased members by publishing obituaries on our website. If you know a member of our community who has recently passed away, please contact Colin MacLeod. Particularly valuable would be suggestions for who might write the obituary. For consistency, the text is to be no more than 150 words, adding one or two links to longer tributes published elsewhere.

LYLE E. BOURNE, JR. (1932–2023)

Lyle Bourne, former Chair of the Governing Board (1981–1982) and Publications Committee (1983–1985) of the Psychonomic Society, died on March 2, 2023. Lyle received his BA from Brown University (1953) and PhD from University of Wisconsin (1956). He taught at University of Utah (1956–1963) and University of Colorado Boulder (1963–2023), where he was the first Director of the Institute of Cognitive Science (1980–1983) and Chair of the Psychology Department (1983–1991). He also served as President of the Federation of Behavioral, Psychological, and Cognitive Sciences (1995–1997) and Editor of *Journal of Experimental Psychology: Human Learning and Memory* (1975–1980). His research explored conceptual behavior; mental arithmetic; classification skill acquisition; and training, retention, and transfer. His notable books include *Human Conceptual Behavior* (1966), *Psychology: Its Principles and Meanings* (with Bruce Ekstrand, 1973), and *Train Your Mind for Peak Performance* (with Alice Healy, 2014). We will miss his generous, gracious, thoughtful, and wise spirit.

More information about Lyle can be found here.

—*Alice F. Healy*



JAMIE I. D. CAMPBELL (1952–2022)

Jamie Campbell, Professor Emeritus at the University of Saskatchewan, passed away September 12, 2022. After a few years on the road as keyboard player in a rock group, Jamie received his BA from Queen's University (1979) and PhD from the University of Waterloo (1985). He completed a postdoctoral fellowship at Carnegie Mellon University, followed by an appointment at the University of Western Ontario. In 1990, Jamie moved to the University of Saskatchewan, where he remained until his retirement in 2021. Well-known for his quiet temperament, sharp wit, and broad knowledge, Jamie was a tireless academic whose substantial research on numerical cognition was highly recognized. His voluminous research and modeling of simple addition and multiplication within and across cultures demonstrated just how complex even the simplest cognitive functions can be. Jamie was a gifted teacher, mentor, colleague, and friend who will be sorely missed. He is survived by his life-partner, Professor Valerie Thompson.

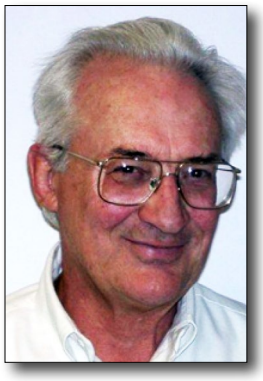
—*Jim Cheesman*

MARTIN A. CONWAY (1952–2022)

Martin Conway is remembered for his theoretical work on autobiographical memory, setting out the processes by which specific memories are shaped in an organisational hierarchy with the self at its core. One of six children, Martin was born in Darlington, UK. After finishing school without qualifications, he moved to London, where, in evening classes, he discovered psychology. His career started as a scientist at the Applied Psychology Unit in Cambridge in 1983. He then held lectureships at the Universities of Hertfordshire and Lancaster before moving to Bristol as Professor in 1993. At Bristol, he was head of department and then went on to serve in this role at Durham University, the University of Leeds, and City University (London). He is known for the International Conference on Memory and the journal *Memory*, both co-founded with Susan Gathercole. Martin was a keen poet and a Fellow of the Royal College of Arts.

—*Jim Cheesman*

IN MEMORIAM

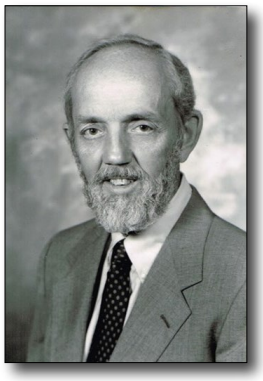


WALTER KINTSCH (1932–2023)

Walter Kintsch passed away on March 24, 2023, at the age of 90. He was born in Timișoara, Romania, and grew up in Austria. He received his PhD in 1960 from the University of Kansas and held faculty positions at the University of Missouri, the University of California, Riverside, and a visiting professorship at Stanford University before moving to the University of Colorado Boulder in 1968. He served as the president of APA's Division 3 and chaired the Psychonomic Society's Governing Board and the Cognitive Science Society's Governing Board. He edited *Psychological Review* and the *Journal of Verbal Learning and Verbal Behavior*. His research explored memory, knowledge representation, text/discourse understanding, and their intersection. Notable publications include the Kintsch and van Dijk (1978) text comprehension/production model and the construction-integration model (Kintsch, 1988). His intellect, creativity, and generosity will be sorely missed by lifelong spouse and collaborator Eileen Kintsch and family, friends, and colleagues.

More information about Walter can be found here and here.

—*Ernest F. Mross*



RAYMOND S. NICKERSON (1931–2022)

Ray Nickerson died on December 13, 2022. He attended Providence Bible College as an undergraduate. He then served 2 years in the U.S. Army before earning his master's degree (University of Maine Orono, 1959), and his PhD (Tufts, 1965). After 25 years at BBN Systems and Technologies, Ray returned to Tufts as a research professor. Here he ran the NSF-funded Laboratory for Probabilistic Reasoning. Ray was an expert in and champion of Applied Cognition, founding the *Journal of Experimental Psychology: Applied* in 1994. Ray will be remembered for the keenness of his scientific insight and his creative and illuminating approach to understanding the human mind. Ray and his wife Doris established the Daniel Raymond Nickerson Foundation to honor their son's memory and provide small grants to benefit people with disabilities. Ray is survived by three children, eleven grandchildren, and six great-grandchildren. He was predeceased by his wife Doris in 2016.

More information about Ray can be found here.

—*Holly A. Taylor*

STEPHEN E. PALMER (1948–2023)

Stephen E. Palmer, professor emeritus at the University of California, Berkeley, died on July 29, 2023. Born and raised in New Jersey, Steve earned his BA at Princeton and his PhD at University of California, San Diego. He joined the Berkeley faculty in 1975 and remained until retiring in 2009. Steve co-founded and directed the Berkeley Cognitive Science program (1990–2000) and was Editor of *Cognitive Psychology* (1986–1990). Steve served on the Psychonomic Society Governing Board (1996–2000; Chair 2001–2002) and Publications Board (1996–2001; Chair 2000–2002). Steve's research contributed enormously to understanding cognitive representation, perceptual organization, and aesthetics. He is well-known for his foundational book *Vision Science: Photons to Phenomenology*. An outstanding colleague and teacher, Steve challenged people to ask the hard questions and pursue answers with rigor and elegance. Steve will be deeply missed by his loving husband Avi, his family, countless students, and colleagues graced by his sharp intellect and profound kindness.

—*Karen B. Schloss and Joseph L. Brooks*

IN MEMORIAM

MICHAEL WERTHEIMER (1927–2022)

Michael Wertheimer was born in Berlin and was 6 years old when his family escaped Nazi Germany. They immigrated to New York, where Michael's childhood included visits from close family friends, such as Albert Einstein and Solomon Asch. He earned his PhD from Harvard University in 1952 before joining the faculty at Wesleyan University. In 1955, he moved to the University of Colorado Boulder, where he researched cognition and psycholinguistics before becoming a leading historian of psychology. Michael edited and authored some 50 books, including his celebrated volume, *A Brief History of Psychology*. He also coauthored a biography of his father, Max Wertheimer, the founder of Gestalt psychology. In 2020, he published his autobiography, *Facets of an Academic's Life: A Memoir*. Brimming with ageless energy, Michael was a dedicated scholar, an award-winning educator, and a trusted mentor. He passed away on December 23, 2022, survived by his beloved wife and family.

More information about Michael can be found here.

—*D. Brett King*

CONDENSED SCHEDULE

THURSDAY, NOVEMBER 16

Poster Session I with Authors Present . . . . . 6:00-7:30 PM PST, Grand Ballroom

Attention: Automatic Processing (1001-1005)
Attention: Cognitive Control (1006-1015)
Attention: Individual Difference (1016-1023)
Attention: Visual Search (1024-1031)
Bilingualism: Development and Individual Differences (1032-1036)
Cognition: Decision Making (1037-1047)
Cognition: Embodied Cognition (1048-1051)
Cognition: Judgment (1052-1061)
Cognition: Numerical Cognition (1062-1066)
Cognition: Other (1067-1079)
Cognition: Reward, Motivation, and Decision Making (1080-1085)
Cognition: Spatial Cognition (1086-1096)
Language: Discourse Processes (1097-1102)
Language: Other (1104-1110)
Language: Psycholinguistics (1111-1120)
Language: Speech Perception (1121-1131)
Learning and Memory: Eyewitness Identification (1132-1139)
Learning and Memory: False Memory (1140-1147)
Learning and Memory: Human Learning and Instruction (1148-1152)
Learning and Memory: Other (1153-1158)
Learning and Memory: Recall (1159-1165)
Learning and Memory: Recognition (1166-1172)
Metacognition (1173-1182)
Sensation and Perception: Multisensory Integration (1183-1187)
Sensation and Perception: Other (1188-1189)
Spatial Memory (1191-1195)

FRIDAY, NOVEMBER 17

Spoken Sessions and Symposia

Attention Capture (1-6) . . . . . 8:00-10:00 AM PST, Continental 4
Bilingualism I (7-12) . . . . . 8:00-10:00 AM PST, Plaza A
Recall I (13-18) . . . . . 8:00-10:00 AM PST, Plaza B
Visual Working Memory (19-24) . . . . . 8:00-10:00 AM PST, Imperial A
Metacognition (25-30) . . . . . 8:00-10:00 AM PST, Imperial B
Letter/Word Processing (31-36) . . . . . 8:00-10:00 AM PST, Continental 1 & 2

Symposium I: Temporal Dynamics of Affect and Surprise Shape Laboratory and Real-World Memories (SYM1-SYM5) . . . . . 10:00 AM-12:00 PM PST, Continental 5 & 6
Attention I (37-42) . . . . . 10:00 AM-12:00 PM PST, Continental 4
Bilingualism II (43-48) . . . . . 10:00 AM-12:00 PM PST, Plaza A
Decision Making I (49-54) . . . . . 10:00 AM-12:00 PM PST, Plaza B
Psycholinguistics I (55-60) . . . . . 10:00 AM-12:00 PM PST, Imperial A
Learning & Memory I (61-66) . . . . . 10:00 AM-12:00 PM PST, Imperial B
Animal Learning & Cognition (67-71) . . . . . 10:00-11:40 AM PST, Continental 1 & 2

Poster Session II with Authors Present . . . . . 12:00-1:30 PM PST, Grand Ballroom

Attention: Capture (2001-2008)
Attention: Cognitive Control (2009-2019)
Attention: Other (2020-2027)
Bilingualism: Comprehension and Production (2028-2037)
Cognition: Concepts and Categories (2038-2050)
Cognition: Development (2051-2057)
Cognition: Emotion and Cognition (2058-2069)
Cognition: Judgment (2070-2081)
Cognition: Reasoning/Problem Solving (2082-2089)
Cognition: Reward, Motivation, and Decision Making (2090-2095)
Cognition: Technology and Cognition (2096-2106)
Language: Letter/Word Processing (2107-2116)
Language: Psycholinguistics (2117-2126)
Language: Speech Perception (2127-2136)
Learning and Memory: Visual Working Memory (2137-2141)
Learning and Memory: Associative Learning (2142-2149)
Learning and Memory: Human Learning and Instruction (2150-2155)
Learning and Memory: Implicit Memory (2156-2161)
Learning and Memory: Recall (2162-2168)
Learning and Memory: Recognition (2169-2175)
Learning and Memory: Reward, Motivation, and Emotion (2176-2184)
Metamemory (2185-2190)
Performance: Cognitive Control (2191-2196)
Sensation and Perception: Vision (2197-2205)

CONDENSED SCHEDULE

FRIDAY, NOVEMBER 17 *(continued)*

Spoken Sessions and Symposia

Symposium II: The bright and dark side of technological development: a window on its impact on physical, psychological and social well-being across the life-span (SYM6-10) . . . 1:30-3:30 PM PST, Continental 5 & 6
Scene Processing (72-77) . . . 1:30-3:30 PM PST, Continental 4
Working Memory I (78-83) . . . 1:30-3:30 PM PST, Plaza A
Decision Making II (84-89) . . . 1:30-3:30 PM PST, Plaza B
Sensation & Perception I (90-94) . . . 1:30-3:10 PM PST, Imperial A
Learning & Memory II (95-100) . . . 1:30-3:30 PM PST, Imperial B
Statistics & Methodology (101-106) . . . 1:30-3:10 PM PST, Continental 1 & 2

Symposium III: Diversity in Disability: Evidence from Disability Identity and Research (Diversity & Inclusion Symposium) (SYM11-SYM16) . . . 3:45-5:45 PM PST, Continental 5&6

Poster Session III with Authors Present . . . 6:00-7:30 PM PST, Grand Ballroom

Animal Research: Animal Learning & Cognition (3001-3004)
Attention: Cognitive Control (3005-3014)
Attention: Divided (3015-3018)
Attention: Features and Objects (3019)
Attention: Visual Search (3021-3027)
Bilingualism: Comprehension and Production (3028-3035)
Cognition: Cognitive Aging (3036-3046)
Cognition: Decision Making (3047-3057)
Cognition: Emotion and Cognition (3058-3069)
Cognition: Music Cognition (3070-3081)
Cognition: Reasoning/Problem Solving (3082-3089)
Cognition: Spatial Cognition (3090-3097)
Cultural/Social Influences on Cognition (3098-3104)
Language: Letter/Word Processing (3105-3112)
Language: Psycholinguistics (3113-3122)
Language: Speech Perception (3123-3135)
Learning and Memory: Cognitive Skill Acquisition (3136-3141)
Learning and Memory: Human Learning and Instruction (3142-3150)
Learning and Memory: Reading (3151-3156)
Learning and Memory: Recall (3157-3163)
Learning and Memory: Recognition (3164-3172)
Learning and Memory: Working Memory (3173-3179)
Metacognition (3180-3190)
Sensation and Perception: Perception and Action (3191-3196)
Statistics and Methodology (3197-3202)

SATURDAY, NOVEMBER 18

Spoken Sessions and Symposia

Attention II (107-112) . . . 8:00-10:00 AM PST, Continental 4
Learning & Memory III (113-118) . . . 8:00-10:00 AM PST, Plaza A
Judgment (119-124) . . . 8:00-10:00 AM PST, Plaza B
Psycholinguistics II (125-130) . . . 8:00-10:00 AM PST, Imperial A
Emotion and Cognition (131-135) . . . 8:00-9:40 AM, PST, Imperial B
Cognition: Development, Embodiment, and Culture (136-141) . . . 8:00-10:00 AM, PST, Continental 1 & 2

Symposium IV: Attentional Control as a Psychometric Construct: Challenges and Responses (SYM17-22) . . . 10:00 AM-12:00 PM PST, Continental 5 & 6
Attention: Visual Search (142-147) . . . 10:00 AM-12:00 PM PST, Continental 4
Speech Perception I (148-153) . . . 10:00 AM-12:00 PM PST, Plaza A
Eyewitness Identification (154-159) . . . 10:00 AM-12:00 PM PST, Plaza B
Cognition I (160-165) . . . 10:00 AM-12:00 PM PST, Imperial A
Reasoning/Problem Solving II (166-171) . . . 10:00 AM-12:00 PM PST, Imperial B
Reading I (172-177) . . . 10:00 AM-12:00 PM PST, Continental 1 & 2

CONDENSED SCHEDULE

SATURDAY, NOVEMBER 18 *(continued)*

Poster Session IV with Authors Present.....12:00-1:30 PM PST, Grand Ballroom

Attention: Cognitive Control (4001-4010)
Attention: Features and Objects (4011-4017)
Attention: Individual Difference (4018-4025)
Bilingualism: Development and Individual Differences (4026-4031)
Bilingualism: Memory (4032-4040)
Cognition: Decision Making (4041-4050)
Cognition: Development (4051-4055)
Cognition: Emotion and Cognition (4056-4063)
Cognition: Judgment (4064-4070)
Cognition: Neural Mechanisms (4071-4076)
Cognition: Numerical Cognition (4077-4082)
Cognition: Reasoning/Problem Solving (4083-4088)
Cognition: Technology and Cognition (4089-4097)
Cultural/Social Influences on Cognition (4098-4105)
Language: Psycholinguistics (4106-4116)
Language: Reading (4117-4127)
Learning and Memory: Visual Working Memory (4128-4135)
Learning and Memory: Autobiographical Memory (4136-4140)
Learning and Memory: Human Learning and Instruction (4141-4149)
Learning and Memory: Prospective Memory (4150-4154)
Learning and Memory: Recall (4155-4161)
Learning and Memory: Recognition (4162-4170)
Learning and Memory: Test Effects (4171-4180)
Metamemory (4181-4186)
Performance: Motor Control (4187-4190)
Performance: Other (4191-4192)
Performance: Skill (4193)
Sensation and Perception: Vision (4194-4200)
Statistics and Methodology (4201-4206)

Spoken Sessions and Symposia

Symposium V: Finding the Way: Advances in Spatial Navigation Research (SYM23-SYM28).....1:30-3:30 PM PST, Continental 5 & 6
Discourse Process (178-182).....1:30-3:10 PM PST, Continental 4
Speech Perception II (183-188).....1:30-3:30 PM PST, Plaza A
Psycholinguistics III (189-194).....1:30-3:30 PM PST, Plaza B
Cognition II (195-200).....1:30-3:30 PM PST, Imperial A
Language Production/Writing (201-206).....1:30-3:30 PM PST, Imperial B
Learning & Memory IV (207-212).....1:30-3:30 PM PST, Continental 1 & 2

Learning & Memory V (213-218).....3:30-5:30 PM PST, Continental 4
Recognition I (219-224).....3:30-5:30 PM PST, Plaza A
Psycholinguistics IV (225-230).....3:30-5:10 PM PST, Plaza B
Reasoning/Problem Solving I (231-236).....3:30-5:30 PM PST, Imperial A
Decision Making III (237-242).....3:30-5:30 PM PST, Imperial B
Reading II (243-248).....3:30-5:30 PM PST, Continental 1 & 2

Poster Session V with Authors Present.....6:00-7:30 PM PST, Grand Ballroom

Attention: Capture (5001-5011)
Attention: Cognitive Control (5012-5021)
Attention: Consciousness (5022-5026)
Attention: Scene Processing (5027-5034)
Attention: Visual Search (5035-5042)
Bilingualism: Cognitive Control (5043-5049)
Cognition: Cognitive Aging (5050-5057)
Cognition: Concepts and Categories (5058-5066)
Cognition: Decision Making (5067-5078)
Cognition: Event Cognition (5079-5086)
Cognition: Spatial Cognition (5087-5094)
Cultural/Social Influences on Cognition (5095-5101)
Language: Discourse Processes (5102-5107)
Language: Language Production/Writing (5108-5115)
Language: Reading (5116-5126)
Language: Semantics (5127-5132)
Learning and Memory: Autobiographical Memory (5133-5137)
Learning and Memory: Eyewitness Identification (5138-5143)
Learning and Memory: False Memory (5144-5151)
Learning and Memory: Human Learning and Instruction (5152-5160)
Learning and Memory: Recall (5161-5166)
Learning and Memory: Test Effects (5167-5175)
Learning and Memory: Working Memory (5176-5186)
Performance: Cognitive Control (5187-5191)
Sensation and Perception: Audition (5192-5194)
Sensation and Perception: Multisensory Integration (5195-5197)
Sensation and Perception: Perception and Action (5198-5202)
Sensation and Perception: Touch, Taste, and Smell (5203)

CONDENSED SCHEDULE

SUNDAY, NOVEMBER 19

Spoken Sessions

Attention III (249-254) . . . . . 8:00-10:00 AM PST, Continental 4
Autobiographical Memory (255-260) . . . . . 8:00-10:00 AM PST, Plaza A
Event Cognition (261-265) . . . . . 8:00-9:40 AM PST, Plaza B
Sensation & Perception II (266-271) . . . . . 8:00-10:00 AM PST, Imperial A
Cognitive Aging (272-277) . . . . . 8:00-10:00 AM PST, Imperial B
Decision Making IV (278-283) . . . . . 8:00-10:00 AM PST, Continental 1 & 2

Cognition III (284-289) . . . . . 10:00 AM-12:00 PM PST, Continental 4
Associative Learning (290-294) . . . . . 10:00-11:40 AM PST, Plaza A
Learning & Memory VI (295-299) . . . . . 10:00-11:40 AM PST, Plaza B
Sensation & Perception III (300-305) . . . . . 10:00 AM-12:00 PM PST, Imperial A
Bilingualism III (306-311) . . . . . 10:00 AM-12:00 PM PST, Imperial B
Recognition II (312-317) . . . . . 10:00-11:40 AM PST, Continental 1 & 2

DESIGNATION OF AWARD RECIPIENTS

Throughout the abstract book, our distinguished award recipients are identified as follows:

Clifford T. Morgan Distinguished Leadership Award recipient

Mid-Career Award recipient

Early Career Award recipient

Best Article Award recipient

J. Frank Yates Student Conference Award recipient

Graduate Conference Award recipient

Symposia and Spoken Abstracts

THURSDAY–FRIDAY

Welcome/Keynote Address

Biased: Uncovering the Hidden Prejudice That Shapes What We See, Think, and Do

JENNIFER EBERHARDT, *Stanford University*, USA

Thursday, November 16, 7:30–8:30 PM US PST
Continental 5/6 (Tower 1, 2, & 3, Ballroom Level)

Opening Reception to Immediately Follow the Keynote Address

Attention Capture

Friday, November 17, 2023, 8:00–10:00 AM US PST, Continental 4

Chaired by Kirsten C. S. Adam, *Rice University*

8:00–8:20 AM (1)

Tipping the Balance of Attentional Priority: Suppressing a Distractor Enhances the Remaining Elements in a Perceptual Group. XIAOJIN MA, *Washington University in St. Louis*, RICHARD A. ABRAMS, *Washington University in St. Louis* — Salient stimuli tend to attract attention but can be actively suppressed when they are irrelevant to the task. The present study examined whether attentional suppression affects only the location of the salient distractor, or whether suppression has collateral effects on other portions of the scene. Previous studies have not found such effects. In order to amplify the influence of suppression, we conducted visual search tasks in which the relevant items were sometimes perceptually grouped with a salient distractor. We found that targets in the same group as the suppressed distractor were identified most efficiently, showing that suppression of the distractor also enhanced processing of the remaining elements in the group. Follow-up experiments ruled out the possibility that participants strategically prioritized the group containing the distractor and the possibility that attention was initially captured by the distractor and then rapidly disengaged from it. Our findings suggest that distractor suppression may bias the competition for representation against the distractor and in favor of elements elsewhere in the scene.

Email: Xiaojin Ma, xiaojinma@wustl.edu

8:20–8:40 AM (2)

First Encounters: Estimating the Initial Magnitude of Attentional Capture. KIRSTEN C.S ADAM, *Rice University*, JOHN SERENCES, *University of California, San Diego* — Salient but irrelevant information often captures our attention. To quantify attentional capture in the lab, participants typically complete dozens or hundreds of trials that contain salient distractors. However, presenting distractors frequently may also incidentally introduce a secondary task-set to resist distraction. In everyday life, we typically encounter distractions once, not dozens of times, creating a disconnect between capture in the lab and in the world. Here, we had a simple but important question: how large is capture when participants encounter a salient distractor for the very first time? We used a larger-than-typical sample size combined with a single capture trial (Exp. 1 N = 970, Exp. 2 N = 1025), and found that initial capture was ~9x-15x larger than the average size of capture in typical laboratory tasks (~370-580 ms). We also found evidence that initial capture was modulated by long- and short-term stimulus history, consistent with emerging theories about how history shapes attention. Our results suggest that participants are surprisingly successful at ignoring distractors in the lab, and that "one-shot" estimates may better reflect the full cost of capture by salient distractors.

Email: Kirsten Adam, kirsten.cs.adam@gmail.com

8:40–9:00 AM (3)

Managing Distraction Is Effortful. BRIAN A. ANDERSON, *Texas A&M University* — A wealth of evidence supports the idea that people can to some degree suppress the processing of physically salient distractors under certain task conditions. But why would people try to suppress distractors at all? A core argument against the striking fallibility of human attentional control is that the cost associated with having attention transiently captured by an irrelevant stimulus is trivial, yet the brain has evolved mechanisms to suppress distractors. In the present study, we test the hypothesis that managing distraction is mentally effortful, which could help explain the function of distractor suppression as a mechanism. Across four experiments, we find that participants are willing to exert physical effort to reduce the frequency with which they experience salient distractors, in proportion to the degree to which the distractors capture attention given the task context. This remained true when a subtle manipulation of distractibility was introduced via distractor heterogeneity across trials. We conclude that the need to reorient attention following attentional capture by a salient stimulus is perceived as mentally effortful, with such attentional demands capable of trading off with physical demands

Email: Brian Anderson, brian.anderson@tamu.edu

9:00–9:20 AM (4)

The Role of Salience in the Suppression of Distracting Stimuli. NICHOLAS GASPELIN, *University of Missouri*, BRAD T. STILWELL, *Binghamton University SUNY*, HOWARD E. EGETH, *Johns Hopkins University* — There has been a longstanding debate about whether salient distractors can involuntarily capture attention. As a potential resolution, the signal suppression hypothesis proposes that salient distractors can be suppressed to prevent capture. This account, however, has recently been questioned on the grounds that supporting studies may have used distractors that were not salient enough. This claim has been difficult to test because there are currently no well-established measures of salience. The current study introduces a new psychophysical method to estimate the salience of stimuli. We first used a subjective manipulation of salience to generate search displays. Next, we verified that the salience manipulation was successful using our new psychophysical approach. Finally, these

same displays were used in an attentional capture task where participants attempted to ignore the salient objects. If anything, high-salience distractors were easier to ignore than low-salience distractors. These findings directly challenge purely salience-based models of attentional control.

Email: Nicholas Gaspelin, ngaspelin@missouri.edu

9:20-9:40 AM (5)

Proactive Suppression is an Implicit Process that Cannot be Summoned on Demand. CHRISTOPHER HAUCK, *Oregon State University*, ERIC RUTHRUFF, *University of New Mexico*, MEI-CHING LIEN, *Oregon State University* — We examined whether proactive suppression can be applied on demand. A prompt cue indicated the to-be-ignored distractor color in the upcoming search display. Use of this cue was required to respond accurately. To assess distractor suppression, we presented a probe letter recall task (25% of trials). Letters appeared inside each of the six search display shapes and participants recalled as many as they could. In Experiment 1, the to-be-ignored color was fixed, allowing participants to learn to suppress it implicitly over trials. Here, probe recall accuracy was especially low for probe letters inside the to-be-ignored-color: a probe suppression effect. However, when the prompted to-be-ignored color varied from trial to trial, the probe suppression effect disappeared (Experiments 2-4). We conclude that when suppression of a color is required on demand; one cannot accomplish such suppression proactively but instead can only do so reactively, incurring a substantial time cost.

Email: Christopher Hauck, hauckc@oregonstate.edu

9:40-10:00 AM (6)

Estimating the Probability of Attentional Capture. ERIC RUTHRUFF, *University of New Mexico*, TAYLOR J. RIGSBY, *Binghamton University SUNY*, BRAD T. STILWELL, *Binghamton University SUNY*, NICHOLAS GASPELIN, *University of Missouri* — The present work addresses a major limitation in studies of attention capture that is impeding progress. Most such studies rely on RT-based measures that are well-suited to determining whether capture occurred. However, these measures cannot tell us what we really want to know: How often does capture occur? We developed a new technique for estimating the probability of capture and applied it to a spatial cueing paradigm. The results showed that the probability of attentional capture was surprisingly low. Even relevant-colored cues—which are among the most potent kinds of distractors—captured attention only about 30% of the time. We also applied our metric to previous studies using a range of salient stimuli. Our metric provides, for the first time, an index of capture strength that can be meaningfully compared across different experimental contexts. It can help to resolve or at least clarify current controversies in the literature.

Email: Eric Ruthruff, ruthruff@unm.edu

Bilingualism I

Friday, November 17, 2023, 8:00-10:00 AM US PST, Plaza A

Chaired by Anat Prior, *University of Haifa*

8:00-8:20 AM (7)

Cross-Modal, Cross-Language Stroop Effects in Deaf ASL-English Bilinguals. SADIE CAMILLIERE, *San Diego State University*, KAREN EMMOREY, *San Diego State University*, PETER C. HAUSER, *Rochester Institute of Technology*, MICHAEL MCKEE, *University of Michigan*, TAMAR H. GOLLAN, *University of California, San Diego* — Spoken language bilinguals show Stroop effects within and across languages (e.g., written Spanish words, color responses in English). Cross-language Stroop effects are often smaller, particularly in less proficient bilinguals. We investigated Stroop effects in deaf ASL-English bilinguals (aged 20-60+) using a method that allowed investigation of cross-modal Stroop effects. Participants named colors in ASL while responding either to written English color words or to color sign videos (showing a tinted hand). Participants responded more slowly to ASL signs than to written words but exhibited equivalent Stroop effects within and across languages in both response times (RTs) and errors. A small number of middle-aged to older participants showed larger across- than within-language Stroop effects in a composite measure (RTs/accuracy), a pattern that may be unique to bimodal bilinguals. These results suggest a semantic locus for bilingual Stroop effects and that response modality is an important factor in measuring cross-language Stroop effects.

Email: Sadie Camilliere, scamilliere6710@sdsu.edu

8:20-8:40 AM (8)

How Different Bilingual Experiences Affect Cognition and the Brain. JOHN G. GRUNDY, *Iowa State University* — Bilingualism is a complex construct and its various experiences have different effects on executive functions. In this talk, we briefly discuss three studies that exemplify this point. In the first study, we discuss how mouse-tracking strategies on Stroop and flanker tasks are modified by some bilingual experiences, but not others. In the second study, we discuss how brain signal complexity using EEG is modified by only certain bilingual experiences; critically, greater brain signal complexity is associated with delays in cognitive decline associated with age. This finding might be indicative of a cognitive reserve mechanism associated with bilingualism. Finally, the third study examines neural mechanisms associated with bilingualism by examining white matter integrity in the brain. We show that no differences emerge between monolinguals and bilinguals for whole-brain white-matter tracts, but bilingualism modifies several specific white-matter regions of the brain, and that both age and age of second language acquisition modify this relationship. We conclude with a discussion on the importance of looking at the different facets of bilingualism when examining the effects of bilingualism on cognition and the brain.

Email: John Grundy, grundy@iastate.edu

FRIDAY

8:40–9:00 AM (9)

Does the Dominant Language Always Require More Inhibition During Bilingual Language Production? IRING KOCH, *Rheinisch-Westfälische Technische Hochschule Aachen University*, MATHIEU DECLERCK, *VUB Brussels, Brussels Centre for Language Studies*, GRETA PETERSEN, *Rheinisch-Westfälische Technische Hochschule Aachen University*, DANIEL RISTER, *Rheinisch-Westfälische Technische Hochschule Aachen University*, WOLFGANG SCHARKE, *Rheinisch-Westfälische Technische Hochschule Aachen University*, ANDREA M. PHILIPP, *Rheinisch-Westfälische Technische Hochschule Aachen University* — Speaking two or more languages requires bilingual language control. In our study, we examined inhibitory control assessing n-2 repetition costs when switching three languages (L1 [German], L2 [English], L3 [French]). These costs denote worse performance in n-2 repetitions (e.g., L2-L3-L2) than in n-2 non-repetitions (e.g., L1-L3-L2), indicating persisting inhibition. In two experiments (n = 28 in Experiment 1; n = 44 in Experiment 2), n-2 repetition costs were observed, but only for L2. Looking into L2 trials specifically, we found n-2 repetition costs when switching back to L2 from the still weaker L3 but not when returning from the stronger L1, suggesting that L2 is a particularly strong competitor (requiring inhibition) for L3. Because L1 produced the best performance overall, consistent with being the most dominant language, finding no n-2 repetition costs for L1 may be due to reactive inhibition of L1 in all trials, even when switching between the two non-dominant languages, thus abolishing the expected relative benefit of n-2 non-repetition. We discuss how the data are consistent with the theoretically assumed relation between language dominance and language inhibition.

Email: Iring Koch, koch@psych.rwth-aachen.de

9:00–9:20 AM (10)

Do 'Naturalistic' Language Cues Reduce or Even Eliminate Language Switch Costs in Production? AURELIU LAVRIC, *University of Exeter*, BRONTË GRAHAM, *University of Exeter*, STEPHEN MONSELL, *University of Exeter*, HEIKE ELCHLEPP, *University of Exeter* — In bilingual production language switches almost universally result in a substantial performance "switch cost". However, recently it has been proposed that the switch cost may be (largely) due to the widespread use of "artificial" language cues, and that more "naturalistic" (ecological) cues strongly reduce or eliminate the switch cost by eliciting language switches exogenously, hence removing the need for top-down selection. In a two-session picture-naming study we compared in French, German, and Spanish bilinguals naturalistic cues—words spoken in the target language (e.g., "English" or "hello") and faces of friends or unknown people—with non-naturalistic cues—flags and fragments of tunes, all presented at two cue-stimulus intervals. Even at a generous cue-stimulus interval, both visual and auditory naturalistic cues resulted in non-trivial and highly significant switch costs, very similar in magnitude to switch costs for non-naturalistic cues. Thus, naturalistic cues do not seem to obviate the need for top-down language selection, and bilinguals can rapidly learn to use new language cues.

Email: Aureliu Lavric, a.lavric@exeter.ac.uk

9:20–9:40 AM (11)

Do Bilingual Advantages in Domain-General Executive Functioning Occur in Everyday Life and/or When Laboratory Measures have Excellent Psychometric Properties? KENNETH PAAP, *San Francisco State University*, REGINA T. ANDERS-JEFFERSON, *San Francisco State University LACE Lab*, JOHN HOSSEIN MAJOUBINIA, *San Francisco State University LACE Lab*, CASSIA REDDIG, *San Francisco State University*, CASSANDRA GERATY, *San Francisco State University*, EMMA LÉCHENNE, *San Francisco State University*, RIN IOSILEVSKY, *San Francisco State University* — The longest, most heated, and exciting debate in cognitive science may be the hypothesis that bilingualism enhances domain-general executive-functioning. Hundreds of empirical studies have been distilled into a dozen meta-analyses that converge on the conclusion that the magnitude of the advantage is very small and not distinguishable from zero when corrected for publication bias. However, bilingual advantages may be hiding in the plain sight of self-reports of self-control in everyday life or may consistently occur when the chronic inadequacy of the validity and reliability of performance-based measures is fixed. Latent variables for self-control were derived from five self-report measures and the new squared versions of the flanker, Simon, and Stroop tasks developed by Alex Burgoyne and colleagues in Randy Engle's lab. The squared tasks, unlike the original versions of these classic tasks, have excellent test-retest reliability and form a coherent latent variable. Our test has excellent power (100 participants in each group) and bilingualism is also treated as a continuous variable based on seven factors.

Email: Kenneth Paap, kenp@sfsu.edu

9:40–10:00 AM (12)

Working Memory and Cognitive Flexibility Contribute to Novel Language Learning. ANAT PRIOR, *University of Haifa*, ASSAEL RAVEH, *University of Haifa*, LIHI CHARCON, *University of Haifa*, TAIR SIEGELMAN, *University of Haifa* — Language learning is a critical academic and social task for most global citizens, and there is great variability in outcomes and achievements. Here we examine how previous language learning experience and the executive functions of working memory (WM) and cognitive flexibility (CF) contribute to success in grammatical and semantic comprehension and production of a novel artificial language (AL). Sixty-four Hebrew-English bilingual adults studied an AL and were tested immediately and after a 3-day consolidation period. In immediate testing, previous success in language learning predicted more accurate performance across comprehension and production; CF predicted higher accuracy and fluency in grammatical and semantic comprehension; WM predicted higher accuracy and fluency in grammar comprehension. None of the examined variables were associated with consolidation outcomes. These results suggest that language learning recruits domain general cognitive mechanisms and highlight the advantages of studying artificial language learning as a research model.

Email: Anat Prior, aprior@edu.haifa.ac.il

FRIDAY

Recall I

Friday, November 17, 2023, 8:00–10:00 AM US PST, Plaza B

Chaired by Edgar Erdfelder, *University of Mannheim*

8:00–8:20 AM (13)

The Role of Central Cognitive Resources for the Survival Processing Effect. EDGAR ERDFELDER, *University of Mannheim*, MEIKE KRONEISEN, *Universität Koblenz-Landau*, MARKUS JANCZYK, *Universität Bremen* — The survival processing effect refers to the robust finding that words judged for relevance in an ancestral survival scenario are remembered better than words judged for relevance in a control scenario. According to the richness-of-encoding explanation of this effect, survival processing involves a particularly rich and distinct form of encoding that is effortful and requires limited cognitive resources. In two psychological refractory period (PRP) experiments, we therefore used the effect propagation and the locus of slack logic to assess the role of central cognitive resources for the survival processing effect in more detail. In line with previous research, our data demonstrate that the survival processing advantage indeed relies on the capacity-limited central stage of cognitive processing. Moreover, our results also shed light on the question whether survival processing is automatically prioritized whenever several cognitive tasks compete for central attentional resources. We discuss implications for theories of the survival processing effect.

Email: Edgar Erdfelder, erdfelder@psychologie.uni-mannheim.de

8:20–8:40 AM (14)

Toward a Generalized Bayesian Model of Category Effects. ZIHAO XU, *Rutgers University*, PERNILLE HEMMER, *Rutgers University*, QIONG ZHANG, *Rutgers University – New Brunswick* — An individual stimulus from a category is often judged to be closer to the center of that category than its true location. This effect has been demonstrated across different domains of perception and cognition and has been explained by the category adjustment model (CAM; Huttenlocher et al., 2000), which posits that humans optimally integrate noisy stimuli with prior knowledge to maximize their average accuracy. Subsequent extensions to CAM have been proposed to account for more complex category effects, such as when there is more than one category involved or when prior knowledge involves multiple levels of abstraction. However, the question remains whether there exists an underlying general framework for the way people perceive categories across different tasks. To fill this gap, we propose a generalized Bayesian model of category effects, called the generalized CAM model (g-CAM). We demonstrate that CAM and its previous extensions are special cases of g-CAM, and that g-CAM can additionally capture novel experimental effects involving atypical examples.

Email: Zihao Xu, zihao.xu@rutgers.edu

8:40–9:00 AM (15)

Improving Memory Search through Model-Based Cue Selection. CHARLOTTE A. CORNELL, *Rutgers University – New Brunswick*, KENNETH A. NORMAN, *Princeton University*, THOMAS L. GRIFFITHS, *Princeton University*, QIONG ZHANG, *Rutgers University – New Brunswick* — We often use cues from our environment when we get stuck searching our memories, but prior research in memory search has not observed a facilitative effect when providing cues after recall ended. What accounts for this discrepancy? We propose that the content of the cues critically determines their effectiveness and sought to select the right cues by building a computational model of how presenting cues affects memory search. Our model (with pre-registered parameters) was able to predict in real-time which cues would improve performance. Participants (N = 195 young adults) recalled significantly more items when receiving our model's best (vs. worst) cue. Our formal model provides an account of why some cues better aid recall: Effective cues are most similar to the remaining items, as they facilitate recall by reactivating an unsearched area of memory. We discuss our contributions in relation to prominent theories about the effect of external cues.

Email: Charlotte Cornell, charlotte.cornell@rutgers.edu

9:00–9:20 AM (16)

Item-Method Directed Forgetting: No Evidence for Cue-Independent Inhibition. PELIN TANBERG, *University of Waterloo*, KLAUS OBERAUER, *University of Zurich* — Researchers have proposed that intentional forgetting relies on inhibition of the to-be-forgotten items. We tested this hypothesis with the item-method directed-forgetting (DF) paradigm. We tested a critical assumption of inhibition: cue independence. If F items are inhibited in memory, they should remain less accessible not only when cued with the original cue associated to them during encoding, but also when cued with an independent probe. Participants intentionally linked cue-target pairs (History-Duck), and each pair was followed by an R or F cue. In a cued-recall test they were either cued with the original cue (History) or a semantically related probe (Bird). We found a DF with the original cue but not with an independent probe. Our findings replicated when we varied the cueing conditions between-subjects. Hence, we obtained no evidence for cue-independent inhibition in intentional forgetting. Our results support the hypothesis that F items are unbound from their original cue.

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9:20–9:40 AM (17)

Judging Other People's Recall. DAVID A. ROSENBAUM, *University of California, Riverside*, MYRA USMANI, *University of California, Riverside*, ARINEH MORADIAN, *University of California, Riverside*, SOPHIA ANGLETON, *University of California, Riverside*, THURESA VELIZ, *University of California, Riverside* — When two people, A and B, get the same information and A is asked to judge B's recall, the judgment is likely to be shaped both by A's memory and by A's assessment of B's memory ability. This makes judgments of others' recall a rich source of information about memory

and bias. We asked university students to judge the recall of others and found that features of the recallers strongly affected the accuracy and bias of judgments made about their recall. Individual person features mattered more than age, gender, or race. An old slow recaller was credited with much poorer recall than that same recaller recalling quickly or a younger version of herself recalling quickly or slowly.

Email: David Rosenbaum, rosenb13@gmail.com

9:40–10:00 AM (18)

Reducing and Reversing the Effects of Animacy on Memory. MICHAEL J. SERRA, *Texas Tech University*, CARLEE M. DEYOUNG, *Texas Tech University*, JULIA N. SHULL, *Texas Tech University*, NICOLASA C. VILLALOBOS, *Texas Tech University*, TIMOTHY D. KELLEY, *University of California, Los Angeles* — People often demonstrate an "animacy effect" in memory, remembering more animate or living things (e.g., animals, humans) than inanimate or nonliving things (e.g., objects, places). This advantage occurs regularly in free-recall tasks, but inconsistently in paired-associates tasks. To identify causes of these effects, we sought conditions that could enhance, eliminate, or reverse them. For example, the free-recall of animate items tends to benefit from naturally occurring prioritization during encoding, but we find that manipulations that encourage equivalent processing of animate and inanimate items (such as awarding points for correct recall) can equate recall. People's beliefs or expectations about animacy's effects on free-recall can also reduce and even reverse them in some situations. In contrast, semantic and featural relationships between the two words in a pair matter more for paired-associates memory than does animacy, explicating why the effects of animacy on memory for pairs have been inconsistent. Our findings suggest that processing-based accounts are key to explaining the effects of animacy on memory.

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Visual Working Memory

Friday, November 17, 2023, 8:00–10:00 AM US PST, Imperial A

Chaired by Frida A. B. Printzlau, *University of Toronto*

8:00–8:20 AM (19)

Enhancing Visuo-Spatial Working Memory Performance in Children and Young Adults by Scaffolding their Maintenance Strategies. CHRISTOPHE FITAMEN, *Université de Fribourg*, AGNÈS BLAYE, *Aix-Marseille University*, NICOLAS CHEVALIER, *University of Edinburgh*, VALERIE CAMOS, *Université de Fribourg* — Young children exhibit poor performance in working memory tasks. We examined whether the lack of maintenance strategies before 7 years of age may account for such poor performance. In four experiments, we scaffolded maintenance strategies through location cues in 300 3.5- to 7-year-olds and 119 young adults in a complex span task. Children and young adults had to memorize the location of a teddy bear that moved across houses scattered all over the screen while judging the upward/downward position of the bear in each house. During the retention interval, houses either remained on screen, hence providing location cues, or disappeared (no location cues). We also varied the amount and location of houses that remained on the screen to test which strategy the participants used. Across the four experiments, all children and low-span young adults consistently benefitted from location cues, whereas high-span young adults did not. These results suggest that maintenance strategies scaffolding can improve working memory performance in children and young adults with low working memory span.

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8:20–8:40 AM (20)

Working Memory and Fluid Intelligence: Can the Three Embedded Components Explain Their Relationship? A Latent-Variable Analysis. WILLIAM F. GARVEY, *University of Sheffield*, ALICIA FORSBERG, *University of Sheffield*, CLAUDIA VON BASTIAN, *University of Sheffield* — The three embedded components (3Cs) model of working memory (WM) propositions the focus of attention (FA), representing a single attended memorandum, the region of direct access (RDA), representing memoranda bound to active context, and the activated long-term memory (aLTM), representing activated memoranda not bound to active context. We used structural equation modelling to address how and whether the 3Cs constitute WM and relate to fluid intelligence (Gf). Participants (N = 198) completed tasks to assess WM capacity, each of the 3Cs, and Gf across verbal-numerical and visual-spatial domains. Preliminary analysis revealed latent variables for RDA and aLTM which shared significant variance with WM capacity and Gf. Further analysis of the 3Cs will be completed using drift-diffusion modelling which accounts for the speed-accuracy tradeoff. This technique may reveal all 3Cs and further elucidate WM and Gf associations.

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8:40–9:00 AM (21)

Remembering the Future Objects. CHENXIAO GUAN, *Zhejiang University*, HUI CHEN, *Zhejiang University* — It is widely acknowledged that we can recall the past state of an object, but can we also "remember" the state of an object that has not yet formed but holds the possibility to form in the future? Here, we explore how possible objects could influence our visual working memory. We designed puzzle-like stimulus pairs that either could or could not be combined into one completed object. Participants were asked to remember the distance between the two pieces, and following a delay, they were asked to reproduce this distance. The results revealed that participants reproduced the distance between the possible pairs significantly closer to each other compared to the distance between the impossible pairs. Follow-up experiments generalized these findings to different orientations, shapes, and dynamic scenarios. We suggest that we could remember not only the past state of objects, but also could "remember" the future state of them.

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FRIDAY

9:00-9:20 AM (22)

A Comprehensive Investigation into the Causal Role of the Sensory Visual Cortex in Visual Working Memory: Insights from Meta-Analysis and Experimental Evidence. NIKOS KONSTANTINOU, *Cyprus University of Technology*, PHIVOS PHYLACTOU, *Cyprus University of Technology* — The role of the sensory visual cortex in visual working memory (VWM) remain highly controversial. Our meta-analysis and experimental study suggest its critical involvement in both encoding and maintenance phases of VWM. By systematically reviewing TMS studies, we found strong evidence supporting the sensory visual cortex as a key part of the neural network for encoding and maintaining visual information. Previous studies may have underestimated its role due to binocular stimulus presentation and complex stimuli use. Addressing these methodological issues, we conducted two TMS experiments using a simple, monocularly presented VWM orientation change-detection task. Results showed that sensory visual cortex stimulation impaired VWM performance during perceptual, early, and late maintenance stages, reinforcing the sensory recruitment hypothesis. Our findings underscore the sensory visual cortex's central role in VWM, emphasizing the shared neural substrates of perception and memory.

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9:20-9:40 AM (23)

Learning-Dependent Modulation of Representations in Working Memory. FRIDA A.B PRINTZLAU, *University of Toronto*, ATHANASIOS BOURGANOS, *University of Toronto*, KEISUKE FUKUDA, *University of Toronto Mississauga*, MICHAEL MACK, *University of Toronto* — Working memory (WM) is the ability to temporarily hold information in mind for a future action. WM representations are not 1:1 copies of sensory information but vary depending on context and task demands. Categorical biases are well-established in WM, but studies to date have primarily focused on familiar feature spaces with established category structure (colour or orientation). Here, we asked whether WM is similarly biased by new category learning across three experiments. Participants learned to group novel shapes into two categories. Following learning, they performed a two-item WM task where category was irrelevant. We found that new category learning biased WM representations when the training regime emphasised category prototypes (Experiment 1) but not when training emphasised the category boundary (Experiment 2), compared to a control experiment with no category learning (Experiment 3). WM reports were biased toward the centre of the category only when memory items belonged to separate categories, and bias scaled with distance from the category boundary. Our results show that even newly learned categories may act as priors to bias WM, but such biases depend on the shape of the prior distribution.

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9:40-10:00 AM (24)

Working Memory, Cognitive Load, and Race on Perpetrator Culpability. ALESHA BOND, *Davidson College*, ALESHA BOND, *Georgia State University* — The present research investigated how a person's judgment of a victim's level of responsibility for the violence they endured (i.e., victim blame) is impacted by the person's working memory capacity (WMC) and the race of the victim. Undergraduate student participants completed a computer-based working memory task. Then, they read a police case profile of an assault—perpetrated by a man against a woman—and were asked to rate both the victim and perpetrator's level of responsibility for the violence. Preliminary findings suggest participants with low WMC viewed perpetrators more culpable than high WMC participants. Further, participants view perpetrators more culpable when the victim was Black compared to White. These findings may aid in potential interventions and training to reduce bias and improve legal processes and judgments regarding violence against women.

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Metacognition

Friday, November 17, 2023, 8:00-10:00 AM US PST, Imperial B

Chaired by Michael J. Beran, *Georgia State University*

8:00-8:20 AM (25)

Metacognitive Effort Regulation Across Cultures. RAKEFET ACKERMAN, *Technion – Israel Institute of Technology*, TIRZA LAUTERMAN, *Technion – Israel Institute of Technology*, AVITAL BINAH-POLLAK, *Technion – Israel Institute of Technology* — We employed the meta-reasoning approach to investigate metacognitive monitoring accuracy and effort regulation in problem-solving across cultures. Western, Chinese, and Israeli adults solved non-verbal problems and rated confidence. The Westerners displayed the highest overconfidence and poorest resolution. The Israeli group resembled the Western group but exhibited better monitoring accuracy. The Chinese group demonstrated the greatest determination to succeed, investing the longest time and achieving the best success rates. However, their efficiency suffered as they solved the fewest problems per minute of work. Effort regulation analysis based on the Diminishing Criterion model (Ackerman, 2014), revealed distinct patterns: the Westerners invested the least amount of time regardless of item difficulty, the Israelis invested more time only in the hardest items, and the Chinese group allocated more time throughout, but particularly middle-to-difficult items, resulting in greater success. These findings highlight cultural variations in metacognitive processes, offering guidance for future basic and educational research.

Email: Rakefet Ackerman, ackerman@technion.ac.il

FRIDAY

8:20–8:40 AM (26)

Image Rotations as a (Meta)Cognitive Offloading Strategy by Children. MICHAEL J. BERAN, *Georgia State University*, ANDREW KELLY, *Georgia State University*, BONNIE PERDUE, *Agnes Scott College*, AUDREY PARRISH, *The Citadel, The Military College of South Carolina* — Cognitive offloading occurs when an individual modifies a current decision scenario in a way that reduces the cognitive load or difficulty of a task. Children begin to engage in such offloading even before formal schooling begins. Our study adopted a previously used rotation paradigm. Preschool and elementary school children were given three tasks in which they had to compare two visual stimuli (either vertical and horizontal lines that intersected and they had to determine which was longer, or rectangular shapes or clip art animals and they had to compare to determine if the stimuli were the same or different). On some trials, rotation of one stimulus was beneficial to make the discrimination easier from the perspective of those stimuli aligning. Children in all age groups showed rotation of the various stimuli to make the task easier, although there was a developmental trend for more proficient performance, and there were substantial individual differences. These results confirm that children can manipulate stimuli in ways that make judging those stimuli easier, and this is a form of (meta) cognitive offloading.

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8:40–9:00 AM (27)

Evaluating Metareasoning in Subjective, Multi-Attribute Choice Decisions. TRENT N. CASH, *Carnegie Mellon University*, DANIEL M. OPPENHEIMER, *Carnegie Mellon University* — There has been growing interest in understanding the role of metacognition in judgment and decision making (e.g., Ackerman & Thompson, 2017). To date, research in this domain—referred to as metareasoning—has primarily assessed participants' metacognitive abilities using tasks in which their metacognitive judgments can be compared to an objective standard of performance—thus limiting our knowledge of how these findings may generalize to subjective decisions. One potential explanation for the limited exploration of metacognition in subjective decisions is the lack of proper methods for doing so. To overcome this hurdle, we will present findings demonstrating that choice-based conjoint analysis—a methodological tool from the marketing literature (Eggers et al., 2021)—can be used to evaluate metacognition in subjective, multi-attribute choice decisions. We will also share the results of multiple studies using this paradigm to identify the cognitive and contextual factors that promote or inhibit metareasoning.

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9:00–9:20 AM (28)

Metacognition as Direct Readout. MARIA ROBINSON, *University of California, San Diego*, TIMOTHY BRADY, *University of California, San Diego* — Metacognition plays a crucial role in higher-level cognition by enabling effective monitoring and control over mental states and behavior, and there is great interest in developing theories and computational models of metacognitive thought. Here, we present a novel quantitative model of metacognition by extending a recent model of memory. Our framework proposes that metacognitive judgments are a direct readout of familiarity signals, which are continuous and influenced by the latent structure of the stimulus space. We demonstrate that this first-order model accurately predicts metacognitive judgments when memory performance tracks confidence. Furthermore, we show that the model captures dissociations between memory performance and confidence that arise from manipulations in perceptual noise or similarity. Our framework provides a parsimonious account of metacognition without postulating additional noise in the metacognitive process. We discuss how our model addresses limitations of current computational models and provides new insights into how memory constrains higher-level cognition.

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9:20–9:40 AM (30)

Making Judgments of Learning Either Enhances or Impairs Memory: Evidence from 17 Experiments with Related and Unrelated Word Pairs. MONIKA UNDORF, *Technical University of Darmstadt*, FRANZISKA SCHÄFER, *Technical University of Darmstadt*, VERED HALAMISH, *Bar-Ilan University* — We report 17 experiments in which participants predicted versus did not predict their future memory during learning (judgments of learning, JOLs). In all experiments, making JOLs increased the difference in cued-recall performance between related and unrelated word pairs. Making JOLs produced numerically better memory for related pairs (positive reactivity) and numerically worse memory for unrelated pairs (negative reactivity) in almost all experiments, but either effect was reliable in just half of the experiments. Small-scale meta-analyses revealed that both positive and negative reactivity were of small-to-moderate size. Individual experiments that showed positive reactivity tended not to show negative reactivity, and vice versa. These findings indicate that negative JOL reactivity for unrelated pairs is similarly large and robust as positive reactivity for related pairs. They favor the cue-strengthening hypothesis with dual-task costs over other theories and raise the practically relevant possibility that monitoring could have detrimental effects on learning in educational settings.

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Letter/Word Processing

Friday, November 17, 2023, 8:00–10:00 AM US PST, Continental 1 & 2

Chaired by Alice F. Healy, *University of Colorado Boulder*

8:00–8:20 AM (31)

Is the Missing Letter Effect Due Primarily to the Test Word Containing the Target Letter or to the Surrounding Words? ALICE F. HEALY, *University of Colorado Boulder*, JAMES A. KOLE, *University of Northern Colorado*, VIVIAN I. SCHNEIDER, *University of Colorado Boulder* — A simple letter detection task, in which subjects mark instances of a target letter in prose passages, has thrown light on numerous cognitive processes

involved in reading by examining the "missing letter" effect, whereby readers' detection accuracy is especially low on frequent function words. Two experiments explore the fundamental but novel issue of whether the missing letter effect is due to the test word containing the target letter or to the words surrounding the test word. College students searched for a target letter (e in Experiment 1, o in Experiment 2) in a passage that included unrelated sentences, with each sentence containing a single instance of 1 of 2 test words ("the" or "one" in Experiment 1, "of" or "on" in Experiment 2). The sentences were intact (prose), or the words in each sentence were randomly rearranged (scrambled). The 2 test words in an experiment were surrounded by the exact same words. In both experiments a huge effect of test word was found but no effect of text type. These results provide clear evidence for the influence of the test word but, surprisingly, no evidence for the influence of the surrounding words on the missing letter effect in the letter detection task.

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8:20–8:40 AM (32)

A Systematic Examination of the Processes Involved in Transposed Letter Effects. STEPHEN J. LUPKER, *University of Western Ontario*, ZIAN CHI, *University of Western Ontario*, LUCIA COLOMBO, *University of Padua*, JIAHUI JIANG, *University of Western Ontario*, GIACOMO SPINELLI, *Università degli Studi di Milano-Bicocca* — There are now multiple demonstrations, involving both masked and unmasked stimuli, that transposed letter (TL) nonwords (e.g., jugde) are perceived as being more similar to their base words (e.g., judge) than nonwords created by substituting other letters for the two transposed letters (e.g., jupte). The basic implications of such effects are that letter position coding is noisy and that the reading system is designed to tolerate misordered letters (i.e., the system will allow "jugde" to readily activate the lexical representation of "judge"). However, the processes involved in reading TL nonwords are likely somewhat more complex as: a) TL effects exist in tasks that do not require activating lexical representations and b) there are reports of effects of both the nature (i.e., vowels versus consonants) and surrounding structure (e.g., whether the relevant letters are adjacent or nonadjacent) of the transposed letters. These issues were evaluated in a set of eight experiments involving both masked and unmasked presentations of TL nonwords. Results suggest that the nature of TL effects does vary as a function of whether the presentations are masked or unmasked, suggesting that different processes are involved in the two situations.

Email: Stephen Lupker, lupker@uwo.ca

8:40–9:00 AM (33)

Beyond Central Vision: Unique Peripheral Word and Face Processing Abilities in Deaf Signers. ZED SEHYR, *Chapman University*, SOFIA E ORTEGA, *San Diego State University*, KATHERINE J. MIDGLEY, *San Diego State University*, PHILLIP J. HOLCOMB, *San Diego State University* — The study investigated deaf and hearing readers' ability to process words in the periphery. We used an ERP repetition priming paradigm, where central vision primes were fixated and followed by non-fixated peripheral targets. Priming effects on N400 should be sensitive to lexico-semantic processing of eccentric targets. Nineteen deaf signers and 19 hearing speakers participated in the experiment. Deaf readers exhibited semantic priming effects on the N400 component, suggesting their enhanced ability to extract and integrate meaning between spatially and temporally distinct words. Similar effects were observed for face stimuli, with the face priming effect lasting longer in the deaf group. Both groups also showed priming effects for words and faces corresponding to the expected hemisphere dominance. Both groups displayed comparable N400 repetition effects for car stimuli. These findings contribute to our understanding of visual processing in people with atypical sensory experiences. Further research is needed to explore the underlying mechanisms.

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9:00–9:20 AM (34)

Experiential Effects on Context-Dependent Vowel Pronunciation in Elementary Readers. JAY G. RUECKL, *University of Connecticut*, LAURA M. STEACY, *Florida State University*, NOAM SIEGELMAN, *The Hebrew University of Jerusalem*, DONALD L. COMPTON, *Florida State University* — In English, consonantal context provides information about how a written vowel should be pronounced. Treiman et al. (2003, 2006) demonstrated that the influence of consonantal context on vowel disambiguation grows over the course of reading acquisition. In Steacy et al., (2018), we found that vowel pronunciation is influenced by the consistency of both grapheme-phoneme (GP) and body-rime (BR) correspondences and that individual differences in these influences are associated with several reading and language measures. In the present study, we asked whether the balance between the effects of GP and BR correspondences shifts as a consequence of concentrated experience with specific words. Students (N = 488) in grades 2-5 were presented with training sets of 30 words (presented 12 times over 3 days) that differed in the GP and BR correspondences they embodied. We found that the GP and BR structure of the training set influenced how nonwords were pronounced in a posttraining naming task, that training strengthened GP correspondences more than BR correspondences, and that different individual-difference measures are associated with sensitivity to GP and BR regularities.

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9:20–9:40 AM (35)

Understanding Individual Differences in Readers with Schizophrenia: A Neurophysiological and Computational Modeling Approach. HEATHER SHERIDAN, *University at Albany, SUNY*, ANDRIANA L. CHRISTOFALOS, *University at Albany, SUNY*, NICOLE M. ARCO, *University at Albany, SUNY*, MADISON LAKS, *University at Albany, SUNY*, ANNA BELOBORODOVA, *Columbia University*, SHAYNA HERSZAGE, *Nathan Kline Institute*, MARIA BELEN ABURTO, *Nathan Kline Institute & Columbia University*, DANIEL C. JAVITT, *Columbia University* — To explore the cognitive mechanisms underlying reading deficits in schizophrenia (Sz), we combined eye tracking and EEG (i.e., co-registration) with computational modeling. During sentence reading,

readers with Sz showed reduced fixation-P1 amplitudes compared to healthy controls, and this P1 deficit correlated with lower reading comprehension and fluency scores, suggesting that early visual processing deficits in Sz are associated with worse reading outcomes. We also conducted simulations using the E-Z Reader model of eye movement control during reading to obtain best-fitting model parameters for each reader. Relative to healthy controls, readers with Sz showed an increase in the λ parameter (which impacts the probability of a refixation) as well as the α1 parameter (which impacts the speed of lexical processing). The best-fitting λ in readers with Sz was negatively correlated with P1 deficits, suggesting an association between deficits in the mechanisms that control refixations during reading and deficits in visual processing efficiency. Together, our findings suggest that reading deficits in Sz vary in magnitude across individual readers as a function of variation in both high-level and low-level cognitive processes.

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9:40-10:00 AM (36)

Sensitivity to Derivational Morphology as Cues to Lexical Stress Among English as Second Language Learners. MIN WANG, *University of Maryland, College Park*, JINGLEI REN, *University of Maryland, College Park* — Derivational suffixes play a crucial role in assigning stress to multisyllabic words among native English speakers. However, it is unclear whether second language (L2) learners of English can effectively use derivational suffixes as stress cues in written words. To address this gap, we studied if native Chinese-speaking adults learning English as an L2 can use derivational cues to assign lexical stress, and whether the frequency of these suffixes and their L2 language proficiency moderate this sensitivity. In a written stress assignment task, participants saw a series of written stems and their derived forms and were asked to choose a syllable to assign the stress. Results showed that L2 learners are sensitive to derivational cues to lexical stress. Moreover, the strength of this sensitivity is dependent upon the suffix class, frequency, and L2 language proficiency. Specifically, there is an advantage for non-neutral in high-frequency suffixes and high language proficiency learners.

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Symposium I: Temporal Dynamics of Affect and Surprise Shape Laboratory and Real-World Memories

Friday, November 17, 2023, 10:00 AM-12:00 PM US PST, Continental 5 & 6

Chaired by James W. Anthony, *California Polytechnic State University, USA*

10:05-10:25 AM (SYM1)

Emotion as the Grammar of Human Memory. DAVID CLEWETT, *University of California, Los Angeles* — Human emotions ebb and flow across time. However, it is unclear how these fluctuations in affective states influence the organization of episodic memory. Here, we examine how emotion dynamics transform experiences into memorable events. Custom musical pieces and a dynamic emotion-tracking tool were developed to elicit and measure temporal fluctuations in emotions. We demonstrate novel evidence that memory is organized around emotional states. While listening to music, fluctuations in emotional valence regulate an underlying tension between ongoing memory integration versus separation. Whereas a large absolute or negative shift in valence helps segment memories into episodes, a positive emotional shift binds sequential representations together. Both discrete and dynamic shifts in music-evoked valence and arousal also enhance delayed item and temporal source memory for concurrent neutral items, signaling the beginning of new emotional events. Together, our findings suggest that emotions provide a strong context for linking and separating memories across time.

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10:25-10:45 AM (SYM2)

Reframing the Value of Errors Mitigates Anxiety-Related Learning Deficits. ALYSSA H. SINCLAIR, *Duke University* — Does anxiety disrupt learning from error? Can we change students' perspectives to enhance learning and resilience? Here, we showed that anxiety disrupted learning from prediction error, but a novel intervention mitigated the effects of anxiety. Participants first completed easy or difficult practice trivia, designed to induce experiences of success or failure. Next, participants read a positive (describing why errors are beneficial for learning), negative (performance-oriented warning), or neutral message (control condition). Participants then completed a trivia learning task with feedback, followed by memory tests after short (10 min) and long (1 week) delays. In Study 1 (paid online participants), state anxiety was associated with reduced sensitivity to prediction error, especially after difficult practice. In Study 2 (university students), state anxiety was associated with impaired memory updating. Crucially, the positive message protected against the negative impact of anxiety in both samples. We also found that throughout learning, affect fluctuated in response to prediction errors. Our findings demonstrate that affective states and beliefs about learning exert lingering effects, shaping how we respond to surprising feedback.

Email: Alyssa Sinclair, sinclair.allie@gmail.com

10:45-11:05 AM (SYM3)

Collective Events and Individual Affect Shape Memory. NINA ROUHANI — How do collective events shape how we remember our lives? We leveraged advances in natural language processing as well as a rich, longitudinal assessment of 1,000 Americans throughout 2020 to examine how memory is influenced by two prominent factors: surprise and emotion. Autobiographical memory for 2020 displayed a unique signature: There was a substantial bump in March, aligning with pandemic onset and lockdowns, consistent across three memory collections 1 year apart. We further investigated how emotion, using both immediate and retrieved measures, predicted the amount and content of autobiographical memory: negative affect increased recall across all measures, whereas its more clinical indices, depression and PTSD, selectively increased non-episodic recall. Finally, in a separate cohort, collective memory and surprise

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for top 2020 news events predicted the distribution of autobiographical memory in our longitudinal sample, while lockdowns compressed remembered time. Our work connects laboratory findings to the real world and delineates the effects of acute versus clinical signatures of negative emotion on memory.

Email: Nina Rouhani, nrouhani@caltech.edu

11:05-11:25 AM (SYM4)

Expectation Shapes Affective Response to and Memory for Real-Life Election Events. KIMBERLY S. CHIEW, *University of Denver* — High-stakes political elections provide an opportunity to examine the role of preference and expectation in shaping real-world affect and cognition. I will present data from two longitudinal studies examining the role of expectation in emotion and autobiographical memory for the 2016 and 2020 American presidential elections. Across both studies, preference and expectation interacted to predict affective responses to election outcomes, with higher emotion intensity in surprised individuals. In our 2016 data, memory coherence increased with positive affect, memory vividness increased with emotion intensity and rehearsal increased with surprise, suggesting that valence, intensity, and surprise can all impact aspects of real-world autobiographical memory. However, while affective responses to the 2020 election were also modulated by preference and surprise, measures of autobiographical memory for election outcome were less sensitive to reported emotion and expectation. Given delays and controversy in the 2020 election outcome, these findings might reflect differences in temporal event structure, with the 2020 election outcome serving as a less-defined episodic event, potentially less sensitive to affective influences on encoding.

Email: Kimberly S. Chiew, kimberly.chiew@du.edu

11:25-11:45 AM (SYM5)

Long-Term, Multi-Event Surprise Correlates with Enhanced Autobiographical Memory. JAMES W. ANTONY, *California Polytechnic State University* — Neurobiological and psychological models of learning emphasize the importance of prediction errors (surprises) for memory formation. These effects have focused on memory for information surrounding a momentary surprising event; however, it is less clear whether surprise that unfolds across multiple events and timescales is linked with memory. We asked basketball fans about their most positive and negative autobiographical memories of individual plays, games, and seasons, allowing surprise measurements spanning seconds, hours, and months. We used advanced analytics on National Basketball Association play-by-play data and betting odds spanning 17 seasons, >22,000 games, >5.6 million plays to compute and align the estimated surprise values of each memory. We found that surprising events were associated with positive memories on the scale of seconds and months and negative memories across all three timescales. Critically, game and season memories could not be explained by surprise at shorter timescales, suggesting that long-term, multi-event surprise correlates with memory. These results expand notions of surprise in models of learning and reinforce its relevance in real-world domains.

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Attention I

Friday, November 17, 2023, 10:00 AM-12:00 PM US PST, Continental 4

Chaired by Hong-Jin Sun, *McMaster University*

10:00-10:20 AM (37)

The Preparation-Neglect Hypothesis: How to Uncork the Central Bottleneck. MORGAN LYPHOUT-SPITZ, *Université de Franche-Comté*, STEEVEN CHALOYARD, *Université de Franche-Comté*, FRANÇOIS MAQUESTIAUX, *Université de Rouen Normandie*, ERIC RUTHRUFF, *University of New Mexico* — Can people perform two novel tasks in parallel? Almost all theories agree that the answer is no, due to stubborn capacity limitations in central stages (e.g., a central bottleneck). Here we argue otherwise: people are capable of efficient parallel processing (bypassing the central bottleneck) yet fail to do so due to preparation neglect. This preparation-neglect hypothesis was evaluated in four psychological refractory period (PRP) experiments pairing novel tasks using arbitrary stimulus-response mappings. Experiment 1 replicated dozens of previous studies: no participant bypassed the bottleneck, instead exhibiting large PRP interference (445 ms). In Experiment 2, these same dual-task trials were randomly intermixed with single-task trials on Task 2, to boost its preparation; surprisingly, nine participants (out of 24) bypassed the central bottleneck, exhibiting small PRP interference (48 ms). Experiments 3-4 confirmed that preparation boosting enabled bottleneck bypassing. When properly prepared, people are capable of far more dual-task automaticity than previously believed.

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10:20-10:40 AM (38)

Is Contingent Attentional Capture Limited to Relevant Feature Dimensions? CHARLES L. FOLK, *Villanova University*, ROGER REMINGTON, *University of Queensland*, HARINI SANKAR, *Villanova University* — A top-down set for a target defined by a feature value (e.g., a color) prevents attentional capture by salient distractors that do not share the target value (e.g., a mismatching color). However, the effect of increasing the salience of distractors on an orthogonal, non-target dimension (e.g., motion) is unknown. In a contingent-capture paradigm, color targets were paired with matching/mismatching color-singleton cues or no cue. Looming motion was added to singleton cues or to a random location on no-cue trials. Salience of motion was parametrically manipulated by varying spatial extent. Motion alone (no color cue) produced cuing effects that increased linearly with motion extent. Motion effects were not found on non-target-color cues, suggesting motion salience was suppressed when integrated with the color cue. Increasing the number of cue colors had no effect. The results have implications for underlying mechanisms of attentional control, suggesting reactive inhibition at locations containing relevant dimensions.

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10:40-11:00 AM (39)

Attentional Reset in the Flanker Task. DARRYL W. SCHNEIDER, *Purdue University* — The flanker task involves identifying a central target flanked by distractors. Models of the task assume the focus of attention initially encompasses the entire stimulus array, then narrows to the target. Why is attention not focused exclusively on the target early on, given that its location is known in advance? I hypothesize that pre-stimulus attentional focusing can occur, but attention is then captured by the abrupt onset of distractors in formerly empty locations, resetting the focus of attention. Data from four experiments support this attentional reset hypothesis. The key finding is that the flanker effect on performance is reduced when the stimulus array is preceded by cues at all stimulus locations versus only the target location. I contend that multiple cues enable pre-stimulus attentional focusing that is less likely to be reset at stimulus onset because of weaker attentional capture.

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11:00-11:20 AM (40)

Modulation of Spatial Attention by Viewer-Centered Distance Is Task Dependent. NOAH BRITT, *McMaster University*, HONG-JIN SUN, *McMaster University* — It is well established that the dorsal and ventral visual processing streams reflect vision-for-action and vision-for-perception, respectively. Further research has expanded on this distinction to provide two separate sets of evidence linking dorsal and ventral processing to (1) processing of near and far space and (2) visual localization and discrimination respectively. However, little research has examined whether behaviours (localization and discrimination) can be differently affected by target distances (near and far). We examined the effect of distance on attention through a modified spatial cueing procedure in virtual 3D space with monocular depth cues. We found that target localization was faster for near than far targets, and the inhibition of return (IOR) was attenuated when orienting attention from far toward near space. In contrast, target discrimination was faster for far than near targets, and the IOR towards near space was not attenuated. Our interaction between target distance and task type provides new insights into the functional specificity of the two visual streams and highlights the importance of understanding cognitive processes factoring in both the perspective of the viewers and the task.

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11:20-11:40 AM (41)

Effects of Learning Implicit Regularities on Attentional Orienting by Exogenous and Symbolic Cues. ANNA PECCHINENDA, *Sapienza University of Rome*, CLAUDIA SALERA, *Sapienza University of Rome*, ALLA YANKOUSKAYA, *Bournemouth University* — The probability of an event to occur is implicitly learned, and this learning improves performance for that event (i.e., statistical learning). When applied to attentional orienting tasks, spatial regularities guide attention even when participants are not informed of them. However, it is unclear whether statistical learning differs for non-social and social cues as they only share some characteristics with exogenous cues. We assessed the effects of cue-target contingencies in the Posner paradigm using exogenous cues (exp.1) and symbolic, non-social cues (exp. 2 with arrow) and social cues (exp. 3 with gaze). To assess pure effects of learning on attention, we used a three-phase design, in which cue predictive validity varied across blocks (50% during baseline, changed to 75% during learning, and returned to 50% during testing) and regularities were associated to one spatial location (i.e., rich/scarce). For all types of cues there were larger cueing effects at the "rich" location that persisted at testing, but the effects of learning implicit regularities differed for arrow and gaze cues. Findings are discussed in the context of recent theoretical accounts on orienting attention by social and non-social cues.

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11:40 AM-12:00 PM (42)

Cross-Modal Prediction in the Functionally Illiterate. RAMESH MISHRA, *University of Hyderabad*, MADHULIKA GANGADHAR PATHAK, *University of Hyderabad* — Most developing countries have a sizable population of illiterate people. Thus, they become a natural model to explore the connection between literacy and cognition. Literacy modifies links between language, vision, and attention areas. Prediction and anticipation are critical aspects of cognition. Reading influences one's ability to predict upcoming information. We asked if literate and illiterate people from India differ in their ability to predict visual events to an auditory stimulus. The eye-tracking results show that functionally illiterate people have significantly low performance in this task. This is interpreted to argue that the illiterate brain is a fundamentally different model from the literate brain. However, when provided with literacy training even in late adulthood, functionally illiterate people could experience reorganisation of neural networks and benefit cognitively. I also discuss data from an ongoing longitudinal study in which such adults are receiving literacy training and its effects on domain general cognitive components.

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Bilingualism II

Friday, November 17, 2023, 10:00 AM-12:00 PM US PST, Plaza A

Chaired by Rene Zeelenberg, *Erasmus University Rotterdam*

10:00-10:20 AM (43)

L1 but Not L2 Affects L3 Phonological Comprehension and Production. TAMAR DEGANI, *University of Haifa*, TAL NORMAN, *University of Haifa*, ANAT PRIOR, *University of Haifa* — Adult phonological processing may be affected by previous linguistic knowledge. Here, we examine how phonological comprehension and production in a third language (L3) are affected by multilinguals' first (L1) and second languages (L2). To this end, 41 Arabic-Hebrew-English trilinguals completed an oddity (comprehension) task on word pairs and a word repetition (production) task in English (the L3). Critically, word pairs targeted phonological contrasts that overlap between English and Arabic (L1), English and Hebrew (L2), or English and both Arabic and Hebrew (Both) or that exist uniquely in

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English (None). Results showed that words including phonological contrasts that exist in L1 Arabic (L1 & Both conditions) were comprehended and produced more accurately than those that do not exist in the L1 (L2 & None conditions). Using the same items, a control group of 40 Hebrew-English bilinguals responded more accurately when phonological contrasts overlapped with Hebrew (their L1). Thus, in contrast to syntactic processing, in phonology, multilinguals appear to draw on their L1 knowledge, but not on their L2 knowledge, while processing an L3.

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10:20-10:40 AM (44)

What Does Speed Buy You in Tests of Picture Naming? The MINT Sprint 2.0. TAMAR GOLLAN, *University of California, San Diego*, DALIA L. LOPEZ GARCIA, *San Diego State University & University of California, San Diego* — Picture naming is used ubiquitously in psycholinguistic research and in clinical settings. The gold-standard test uses procedures developed for aphasia assessment. Sixty pictures that get progressively harder are presented one at a time, for up to 20 seconds. If needed, semantic and phonological cues are provided, and testing is stopped after six failed items. This provides useful information about the locus of impairment in aphasia but misses subtle effects of bilingualism and aging. In the MINT Sprint, participants are told they have 3 minutes to name as many pictures as they can in a grid of 80 pictures and then are prompted to try again to name initially failed items. This provides separate measures of retrieval success, retrieval speed, and ability to resolve momentary retrieval failures. Language proficiency exerts strong effects on naming speed and success, but aging exerts some surprising findings that suggest an "older is wiser" interpretation.

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10:40-11:00 AM (45)

The Influence of Translation Ambiguity in L2 on Reading in L1. DEBRA JARED, *University of Western Ontario*, PAN XUAN, *University of Western Ontario*, GLORIA KIM, *University of Western Ontario*, ALEXANDRA SHERWIN, *University of Western Ontario*, PIERRE CORMIER, *Université de Moncton* — Translation ambiguity occurs when a word in one language has more than one translation in another language. For example, the English word "bank" means "financial institution" and "river edge", and each of these meanings translates into a different word in many languages. We investigated the influence of L2 English translation ambiguity on L1 reading in three languages: Chinese, Korean, and French. Sentences were created based on the dominant meanings of the English homographs (e.g., She got money at the bank on her way home) and then these sentences were translated into each L1. However, instead of the correct translation for the homograph, the translation of the other meaning or an unrelated control word was inserted. Participants read the sentences for meaning. Both eye tracking and word-by-word reading data were collected in separate studies. Reading times for translation ambiguity error words differed from the control words. These findings provide evidence that bilinguals' native language processing is influenced by L2 lexical ambiguity. Mapping of two L1 words onto one L2 word could strengthen the associations between the two otherwise unrelated L1 lexical representations.

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11:00-11:20 AM (46)

Evidence for Mental Simulation During Language Comprehension in Non-Native Speakers. RENE ZEELENBERG, *Erasmus University Rotterdam*, DIANE PECHER, *Erasmus University Rotterdam* — In a sentence-picture verification task, pictures of objects are verified faster when they match the orientation, shape, or color implied by the preceding sentence. This suggests that people mentally simulate these visual characteristics during language comprehension. Whereas the results of studies with native speakers have been largely consistent, studies with non-native speakers have provided inconsistent results. We will discuss several studies from our lab that successfully replicated match effects for non-native English language comprehenders, indicating native-like visual simulations. In addition, we found that participants displayed better delayed recognition memory when the shape of the depicted objects matched the shape that was implied by the sentence than when it did not, suggesting that visual simulations were generated automatically. Together, these findings suggest that simulations occur spontaneously in naturalistic non-native language comprehension.

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11:20-11:40 AM (47)

Mouse-Tracking Insights on How Phonology Influences Bilingual Children Learning to Read. SARA INCERA, *Eastern Kentucky University*, CARMEN HEVIA-TUERO, *Universidad de Oviedo*, PAZ SUÁREZ-COALLA, *Universidad de Oviedo* — Bilingual children learning to read use phonological and orthographical representations from two languages. Using the mouse-tracking paradigm to measure responses to pseudohomophones (stimuli that sound like real words but are written incorrectly: "bloo" instead of blue), it is possible to observe an early influence of phonology and a late influence of orthography in the mouse trajectory. Bilingual children from USA activate the English phonology to a much larger degree than bilingual children from Spain; later in the trajectory bilinguals from USA have a very efficient corrective movement. Young children from Spain do not activate the English phonology, and older children from Spain activate the English phonology only if they attend a bilingual school. Children with higher oral proficiency (L1 readers, older children attending a bilingual school) have stronger phonological activation as well as stronger orthographical activation (more efficient corrective movements). Using mouse tracking we can observe effects that would be obscured with overall measures of performance (e.g., accuracy, reaction times). These findings have implications for models of bilingual reading.

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11:40 AM–12:00 PM (48)

Speaking Two Languages: The Mind, the Brain, and Social Justice. JUDITH F. KROLL, *University of California, Irvine*, INGRID FINGER, *Federal University of Rio Grande do Sul* — Experimental studies of the bilingual mind and brain have demonstrated that learning and using two languages reflect a dynamic interchange between the two languages themselves and with domain general cognition. Despite the prevalence of bilingual speakers around the world, there remains a great deal of mythology that is associated with the consequences of these language dynamics. The resulting biases have led to widespread misunderstanding about what it means to code switch or to mix the two languages at will, to speak with an accent, and to be a skilled native speaker. In the upswing of research on bilingualism in the past decades, there is now a wealth of scientific evidence that shows that mixing languages is the normal state of affairs for bilingual speakers and that the model of an ideal native speaker fails to take into account the variation in language experience that shapes proficient language abilities in bilingual and monolingual speakers alike. In this talk, we review the data on bilingual speakers that show that far from being at odds with the social justice agenda, the experimental data provide strong support for the view that multilingualism is both psychologically real and socially meaningful.

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Decision Making I

Friday, November 17, 2023, 10:00 AM–12:00 PM US PST, Plaza B

Chaired by Scott Brown, *The University of Newcastle, Australia*

10:00–10:20 AM (49)

Endangered Australian Frogs, Citizen Science, and Cognitive Modelling. SCOTT BROWN, *The University of Newcastle, Australia*, ALEX THORPE, *The University of Newcastle, Australia*, OLLI KELLY, *The University of Newcastle, Australia*, ALEX CALLEN, *The University of Newcastle, Australia*, ANDREA GRIFFIN, *The University of Newcastle, Australia* — Threatened species monitoring can produce enormous quantities of recordings which need to be searched for animal detections. Coding the data is time-consuming and also resistant to machine learning approaches. Citizen scientists can help, but the results of their coding can be difficult to interpret. Competence may vary between citizen scientists, but without knowing the ground truth of the data set, it is difficult to identify which scientists are most competent. We used a quantitative cognitive model, cultural consensus theory, to analyze both empirical and simulated data from a crowdsourced analysis of audio recordings of Australian frogs. Hundreds of citizen scientists were asked whether the calls of nine frog species were present in 1,260 audio recordings. Through modeling, characteristics of both the scientist cohort and the recordings were estimated. We found agreement between the model's output and expert coding of the recordings. This finding adds to the evidence that crowdsourced analyses can be utilised to understand large-scale datasets, even when the ground truth of the dataset is unknown. The model-based analysis provides a promising tool to screen large data sets prior to investing expert time.

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10:20–10:40 AM (50)

Using a Measure of Probabilistic Coherence to Identify Superior Forecasters. DAVID BUDESCU, *Fordham University*, EMILY HO, *Northwestern University*, MARK HIMMELSTEIN, *Fordham University* — Subjective probability judgments of uncertain future events are assesses by their coherence, the degree to which the judgments are internally consistent, and correspondence, the extent to which they are accurate. An emerging literature suggests a link between them: More coherent forecasters tend to be more accurate. However, there has been no standalone and content independent individual difference measure of coherence. We report the development and validation of the Coherence Forecasting Scale (CFS) which assesses how well people understand probabilistic reasoning rules such as relations between joint and disjoint probabilities, probability complementarity, and monotonicity. The CFS correlates moderately with numeracy and cognitive reflection and is weakly associated with other personality measures. In three incentivized forecasting studies including one from an online public forecasting platform, judges who score higher on the CFS also were more accurate. In all cases, the CFS dominates all other administered individual difference and demographic measures in explanatory power predicting judgment accuracy, providing experimental evidence that coherence and accuracy are strongly linked.

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10:40–11:00 AM (51)

Do Numeracy Skills Polarize Climate Change Judgments? EDWARD COKELY, *University of Oklahoma*, JINHYO CHO, *University of Oklahoma*, MADHURI RAMASUBRAMANIAN, *University of Michigan*, JINAN ALLAN, *Max Planck Institute for Human Development*, ADAM FELTZ, *University of Oklahoma*, ROCIO GARCIA-RETAMERO, *University of Granada* — Statistical numeracy tests are among the most robust predictors of general decision making skill and risk literacy (Cokely et al., 2012, 2018). However, some research seems to suggest that when people hold extreme worldviews, numeracy may ironically promote self-serving (biased) reasoning about controversial topics like climate change. Unfortunately, the influential role of knowledge in skilled reasoning has largely been neglected in previous research. Therefore, we conducted the first tests of an integrated model linking numeracy, worldviews, knowledge, beliefs, and risk perceptions in two studies with diverse U.S. adults. Analyses revealed that, independent of people's worldviews, numeracy consistently predicted more accurate climate change knowledge, which was by far the strongest predictor of accurate beliefs and climate change risk perceptions. Findings suggest that regardless of potential conflicts of interests, numerate people may generally be more informed and therefore less biased reasoners,

consistent with the "knowledge is Power" account of Skilled Decision Theory.

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11:00-11:20 AM (52)

Accounting for Social Uncertainty in Dynamic Goal Pursuit. SIMON FARRELL, *University of Western Australia*, GRETA FASTRICH, *University of Southampton*, TIMOTHY BALLARD, *University of Queensland*, ANDREW NEAL, *University of Queensland* — People need to juggle competing goals and deadlines, deciding how to allocate time and resources in the face of competing demands. These decisions are often made in a dynamic and uncertain environment. We look at the case where uncertainty is introduced by the uncertain actions of others. We asked people to pursue goals in race situations: for example, people could choose to race for a high-value goal or to pursue a lower-value option that was not contested (i.e., a "safe" option). Across several experiments, we found that people had a tendency to pursue the contended high-value goal but adapted their strategy in a way that showed some consideration of the potential actions of other players in response to the features of the goal pursuit episode. Implications for theories of decision-making are discussed.

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11:20-11:40 AM (53)

Modelling the Influence of Perceived Situational Uncertainty on Everyday Risk Taking. AARON B. LOB, *University of Zürich*, RENATO FREY, *University of Zürich* — Research on risk taking has focused mostly on trait-like predictors of interindividual differences, such as a person's risk preference. But what drives situational variability in risk taking? In this study (N = 61) we investigated to what extent the perception of situational uncertainty as epistemic (i.e., caused by a lack of knowledge) versus aleatory (i.e., caused by inherently random processes) explains variability in everyday risk taking. Given the findings from laboratory research, we predicted that people make increasingly risk-averse choices, the stronger they perceive uncertainty to be epistemic. To test this prediction, we conducted app-based ecological momentary assessments of participants' real-life decisions, including think-aloud protocols that contain verbalizations of participants' thoughts during the decision process. Using natural language processing models, we explore how semantic information may be informative to better understand situational factors related to risky choices, and using Bayesian multilevel models, we specifically examine the relation between perceived epistemic uncertainty and risk taking.

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11:40 AM-12:00 PM (54)

A Capacity-Constrained Optimal Processing Theory of Decision Making. SCOTT BROWN, *The University of Newcastle, Australia*, GUY HAWKINS, *The University of Newcastle, Australia* — The dominant theories of perceptual decision making propose a process of sequentially sampling decision-relevant information from the environment. The theories have their origin in optimal information processing, such as the sequential probability ratio test, though many modern implementations depart from the original interpretation. Here, we propose a theory of perceptual decision making that harks back to the origins of sequential sampling models through the lens of capacity-constrained optimality. Our framework is based on the particle filter, a sequential Monte Carlo technique that smoothly transitions from optimal Bayesian inference to capacity-constrained information processing. When endowed with a dynamic mechanism to learn from previous experiences, the particle filter predicts all standard phenomena in perceptual decision making. Some predictions are entirely due to the architecture of the model and require no parameter adjustments, such as changes in decision speed and accuracy that accompany changes in stimulus discriminability (difficulty effect) and unequal stimulus base rates (response bias). The particle filter thus represents a viable alternative to the dominant theories of perceptual decision making.

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Psycholinguistics I

Friday, November 17, 2023, 10:00 AM-12:00 PM US PST, Imperial A

Chaired by Laurel Brehm, *University of California, Santa Barbara*

10:00-10:20 AM (55)

Semantic Ambiguity in Memory and Judgment. CHARLES J. BRAINERD, *Cornell University*, MINYU CHANG, *McGill University*, DANIEL M. BIALER, *Cornell University*, XINYA LIU, *Cornell University* — A classic procedure for studying meaning effects is to vary the average judged intensity of specific semantic attributes (e.g., arousal, categorization, concreteness, valence) in encoded items, which produces characteristic downstream effects on judgment and memory. However, we have found in several studies that manipulating a second dimension of attribute intensity, ambiguity, also produces such effects. Concerning judgment, ambiguity levels (a) determine levels of correlation among intensity judgments of different attributes (e.g., arousal-valence, categorization-concreteness, and familiarity-meaningfulness correlations), (b) determine the latency of intensity judgments, and (c) are quadratically related to judged intensity levels. On the memory side, Ambiguity × Intensity factorial experiments have revealed that (d) increasing ambiguity improves recall and recognition, (e) such improvements are due to enhanced reconstruction and familiarity, and (f) the effects of ambiguity and intensity do not interact. The theoretical principle that unites these effects is that ambiguity stimulates more thorough processing during encoding.

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10:20-10:40 AM (56)

Irrational Interpretations of L2 Language Errors. LAUREL BREHM, *University of California, Santa Barbara* — Earlier work shows that expectations about L2 (second-language) speakers' language errors affect the interpretation of sentences (Gibson et al.,

2017). In two experiments, we quantify what errors should be expected from L1 and L2 speakers and the interpretation of these errors. Experiment 1 compares L1 and L2 English speakers (L1 Chinese) in a speeded written production task that elicits memory and subject-verb agreement errors. More errors of both types are made by the L2 than the L1 group. Experiment 2 examines whether subject-verb agreement errors attributed to L1 and L2 English speakers are understood by L1 English speakers as errors in the noun or verb. Sentence contexts that elicit more agreement errors in Experiment 1 are associated with higher rates of verb error interpretations for both speaker groups, with no speaker-specific interpretation differences. Combined, these results show that while comprehenders form reasonable expectations about others' errors, these expectations are measurably imperfect.

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10:40-11:00 AM (57)

Evaluating the Strength of Perspective-Taking in Pronoun Resolution. TIANA V. SIMOVIC, *University of Toronto Mississauga*, CRAIG CHAMBERS, *University of Toronto Mississauga* — The interpretation of pronouns (e.g., it, she) is typically argued to be guided by fairly abstract discourse-level/lexical cues (e.g., first-mention bias, coherence relations, verb biases). However, recent work has shown pronoun resolution is influenced by pragmatic perspective-taking (comprehenders' reasoning about individuals' mental states). For example, in "Max told Amanda that she loves cooking new dishes," readers show significantly slower reading times (compared to "Max asked Amanda if…") due to the oddness of Max telling Amanda something about herself. To rule out the possibility that these patterns arise from shallow cues (e.g., lexical biases from "ask"/"tell" or generalized statistical patterns), the current study: (i) examined the interpretation of both object and subject pronouns and employed a stops-making-sense paradigm to assess the use of sentence information at each word. The results clearly indicate that the patterns arise from genuine common-sense reasoning rather than superficial cues. The outcomes highlight the importance of pragmatic inference in incremental reference resolution.

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11:00-11:20 AM (58)

Does the Self-Paced Reading Task Reliably Capture Individual Differences in Sentence Processing? It's Complicated. FELICITY F. FRINSEL, *Cornell University*, MORTEN H. CHRISTIANSEN, *Cornell University* — Experimental tasks with robust group-level effects are often assumed also to provide a reliable measure of individual differences in the relevant psychological construct. We examined whether one of the primary tasks used in psycholinguistic research on language processing, the self-paced reading task, can reliably measure individual differences in relative clause processing. First, we replicated the robust group-level contrast, with object relative clauses being more difficult to process than subject relative clauses. We then used this robust group-level contrast as an individual difference measure and found that the difference score was unreliable because the reading times for the different relative clause types were highly correlated within individuals. However, we also observed that each of the two types of relative clause sentences showed good to excellent reliability when considered separately. We therefore recommend that difference scores be avoided when assessing individual variation in self-paced reading. To reliably capture individual differences, analyses should instead concentrate on harder to process sentence variants, possibly with a focus on the region of the sentence that is most difficult to process.

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11:20-11:40 AM (59)

Are Non-literal Interpretations Driven by Syntax or Semantics? A New Analysis of Existing Data. SCOTT H. FRAUNDORF, *University of Pittsburgh*, DOUGLAS J. GETTY, *University of Pittsburgh* — How does the language comprehension system cope with noisy or potentially erroneous linguistic input? Recent work has shown that comprehenders sometimes interpret implausible sentences like "The pilot gave the mug the girl" non-literally (Buxó-Lugo & Slevc, 2023; Cai et al., 2022; Christianson et al., 2010; Getty & Fraundorf, 2022), and that these non-literal interpretations co-occur with a non-literal syntactic component—as shown, for instance, via structural priming. But, the causal link between comprehenders' interpretation and structural representation is unclear: Do non-literal structural representations themselves influence comprehenders' final interpretation, as implied by recent accounts in which non-literal priming is the consequence of a prediction mechanism? Or, are effects at the syntactic level downstream of semantic re-analysis? We will re-analyze data from four existing structural priming experiments, using multiple regression to examine whether priming effects are better predicted by the literal structure heard or the interpretation derived by the participant.

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11:40 AM-12:00 PM (60)

The Role of Attention for Alignment to Discourse Particles. RACHEL WILLIAMS, *The University of Texas at El Paso*, DIANA SALCIDO-PADILLA, *University of Texas at El Paso*, ANGELA ALMEIDA, *University of Texas at El Paso*, KYLE WOLFF, *The University of Texas at El Paso*, IVA IVANOVA, *The University of Texas at El Paso* — Conversational partners sometimes reuse—or align to—aspects of each other's utterances. We study the hitherto unstudied alignment to discourse particles, and the extent to which it is influenced by the allocation of attention during comprehension and during production. English speakers read and retold each of two short stories before and after a manipulation (baseline and target retelling phases). The manipulation consisted of listening to a recorded story (priming phase) that either contains many uses of the discourse particle '"like" (145), moderate uses (61) or no uses. To manipulate attention, participants were immersed in an unfamiliar city in Google Earth VR; half navigated with the hand-held controllers (heavy load) and half remained stationary (light load). In Experiment 1, with attentional load during comprehension, there was alignment to "like" only under light load and after exposure to many uses of "like," suggesting that divided attention during comprehension precludes alignment

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(hence, a non-automatic process). Experiment 2 (on-going) studies the effect of attentional load during production, and Experiment 3 (on-going) provides a baseline for alignment to "like" without any attentional load.

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Learning & Memory I

Friday, November 17, 2023, 10:00 AM-12:00 PM US PST, Imperial B

Chaired by Veronica X. Yan, *The University of Texas at Austin*

10:00-10:20 AM (61)

Semantic Network Centrality Captures the Key Concepts for Successful Understanding of a Lecture. YEONGJI LEE, *Dartmouth College*, DAVID KRAEMER, *Dartmouth College* — When we learn conceptual knowledge, we not only remember the pieces of information, but also understand how they are related to capture the deeper meaning of underlying concepts. Previous studies have shown that the network structure of narratives can predict the information that will be recalled, but it is currently unknown whether the same network properties relate to conceptual learning in an academic lecture. In this study, participants watched a YouTube video to learn several concepts about Newtonian physics and subsequently were prompted to recall what they remembered and learned from the lesson. By transforming the transcript of the lecture into a semantic network graph using a text embedding model (SBERT), we demonstrated that the more degree central the information is in the network, the more likely it is to be remembered. Additionally, the recall of more central information predicts how well a given student understands the concepts, as reflected in their conceptual essays. Lastly, we investigated whether there was information that predicted learning that was not as semantically central. Our findings indicate the inherent semantic relations between concepts in the lecture shape the way we construct conceptual knowledge.

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10:20-10:40 AM (62)

Using Immersive Virtual Reality to Enhance Memory for Complex Procedures. KEITH LYLE, *Transfr Inc.*, KAREN JOHNSON, *Southern Illinois University*, CORTNEY MILLER, *Transfr Inc.* — Virtual reality (VR) has been touted for its potential to increase learning and memory, but empirical studies are mixed, with some indicating benefits of VR and some not. We propose that VR's effectiveness, like that of any instructional medium, depends on the extent to which it incorporates pedagogical factors that support learning and memory. TRANSFR Inc. produces immersive VR simulations to teach complex vocational procedures (e.g., cleaning a paint gun). These simulations require users to enact and retrieve key steps in the procedures. Given well-established positive effects of enactment and retrieval practice on memory, Transfr's simulations should increase memory for procedures compared to more traditional forms of instruction (e.g., PowerPoint presentations, videos). Here we present three studies showing that, although learners initially acquire roughly the same amount of knowledge from VR as from traditional instruction, they retain more from VR. These findings should help us achieve VR's full memory-enhancing potential.

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10:40-11:00 AM (63)

History or Hogwarts? Exploring Differences in Reading and Retention for Facts versus Fiction. CHRISTOPHER R. R. MADAN, *University of Nottingham* — In educational settings, students are often tasked with reading factual, nonfiction texts that require deliberate study and memorization for subsequent tests. While this type of reading often demands effort and focus, students may struggle to maintain engagement and interest in the material. In contrast, individuals passionately engage in reading fictional works, such as the Harry Potter and Lord of the Rings books, effortlessly learning and memorizing trivial facts from these imaginary worlds without the pressure of exams or deadlines. Here I investigated the factors contributing to the differences in reading experiences and retention between factual and fictional texts. I examine the roles of motivation and interest, cognitive processes, and the context and learning environment in shaping these disparities. Furthermore, I explore the implications of these findings for education, with an emphasis on enhancing engagement in factual reading and harnessing the benefits of reading for fun in the classroom. By understanding the underlying mechanisms that drive differences in reading and retention for facts versus fiction, educators can develop strategies to bridge the gap, promote passion-driven learning, and improve educational outcomes.

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11:00-11:20 AM (64)

Pretesting Benefits in Classroom Settings. VERONICA X. YAN, *The University of Texas at Austin*, FARIA SANA, *Athabasca University* — In two studies, we found robust benefit of pre-tests, whether the pre-test was in short-answer or multiple-choice form, and whether the final retention test was within a week or up to seven weeks later. In two psychology courses, students were given a pre-test at the beginning of class each week on some of the concepts that would be covered in that week. Hence, in each experiment, the pre-tested vs. control manipulation was within-participants. In one course (N = 44), the pretest were multiple-choice and the final retention test was an end-of-week quiz. In the other course (N = 117), the pretest was short-answer and the final retention test was on a midterm exam that occurred one to seven weeks after the pretest. In both experiments, there was a robust benefit of pretesting (Cohen's d of 0.91 to 1.02). Pretesting benefit was not moderated by retention interval.

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FRIDAY

11:20-11:40 AM (65)

A Dozen Brief, Experimentally Vetted, No-Polarization Ways to Reduce Denial of Human-Caused Global Warming: 'Raising All Boats' Among Conservatives' and Liberals' Climate Change Acceptance/Concern. MICHAEL ANDREW RANNEY, *University of California, Berkeley*, LEE N. LAMPREY, *University of California, Berkeley*, LEELA VELAUTHAM, *Massachusetts Institute of Technology*, ABHIRAMI SENTHILKUMARAN, *University of California, Berkeley* — Our reasoning group's experiments show that each of 12 brief (usually under-5-minute) scientific information "hunks" increases acceptance (for both conservatives and liberals; i.e., without polarization) that human-caused global warming (GW) is occurring/worrying (e.g., Ranney & Velautham, 2021). The interventions include videos, temperature (vs. stock-market) graphs, climate statistics (even mixed with misleading statistics), and texts explaining either GW's physical-chemical mechanism or why climatologists deserve trust (e.g., Ranney & Clark, 2016; Senthilkumaran, Velautham, & Ranney, 2023). (Our public-outreach site, HowGlobalWarmingWorks.org, offers examples.) Other interventions involve sea-level rise, climate-change effects, supra-nationalistic statistics, and CO_2's cognitive harms (e.g., Kihiczak & Ranney, 2023; Ranney et al., 2019; Velautham, Ranney, & Brow, 2019). Velautham (2022) likewise boosted GW acceptance using two hope-oriented interventions (involving the effectiveness/uptake of, or dyads selecting among, GW solutions). Our convincing information (perhaps even Ranney's 13-word haiku; e.g., Ranney et al., 2016, etc.) plausibly improves decisions about policies, politics, and candidates.

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11:40 AM-12:00 PM (66)

Imagination Enhanced Learning: The Benefits of Briefly Imagining Scenes or Sentences over Retrieval Practice. ANTONIO JAEGER, *Universidade Federal de Minas Gerais*, THUAN MARTINS, *Universidade Federal de Minas Gerais*, JOÃO RODRIGUES, *Charité—Universitätsmedizin Berlin*, BRUNO MUNIZ, *Universidade Federal de Minas Gerais* — The benefits of retrieval practice have been frequently compared to the benefits of restudy, but seldom to those of more effective learning strategies. Here, studied word-pairs were reviewed through retrieval practice or through brief imagination tasks involving scenes (experiments 1 and 2) or sentences (experiments 3 and 4). After a 24-hour interval, half the pairs were shown as studied (intact) and half with the second word exchanged with another studied pair (rearranged). The studied pairs were intermixed with new pairs, and participants performed a recognition test followed by an associative memory test on each pair. The imagination tasks were at least as beneficial as retrieval practice for recognition performance, but consistently more beneficial than retrieval practice for associative memory performance. Based on these findings, we speculate that the retention benefits produced by both retrieval and imagination are supported by shared mechanisms of (re)constructive episodic simulations, similarly engaged by both tasks.

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Animal Learning and Cognition

Friday, November 17, 2023, 10:00-11:40 AM US PST, Continental 1 & 2

Chaired by Francine L. Dolins, *University of Michigan–Dearborn*

10:00-10:20 AM (67)

Assessing Equivalence, Representation, and Correspondence in a Virtual Room-Scale Model Study with Bonobos and Children. FRANCINE L. DOLINS, *University of Michigan–Dearborn*, CHARLES R. MENZEL, *Georgia State University*, KENNETH SCHWELLER, *Buena Vista University* — Paralleling the 'Room-Scale-Model' study with children by DeLoache (1989), replicated with chimpanzees by Kuhlmeier et al. (1999), we presented virtual simulations of real-life rooms to bonobos and children (3-6 years). Initially they were shown an animation of a peanut or toy being hidden. They then searched the virtual room for the hidden item followed by a search in the real-life room. Our goals were to assess equivalence between the virtual and real world, determine whether the bonobos and children develop the same representations for the real and virtual environments, and thus evaluate correspondence—whether the same representations were used to navigate in the virtual and real space. Results suggest significant individual differences in bonobo performance, that the 6-year-old children are more accurate after viewing the virtual animation and practicing in the virtual room (cf. younger children), and that bonobo performance improved more significantly over trials compared with the children.

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10:20-10:40 AM (68)

Visual Displays as Cues for Learning Sexual Behavior in Belugas. HEATHER M. HILL, *St. Mary's University*, MALIN LILLEY, *Texas A&M University–Central Texas*, JACKSON HAM, *University of Lethbridge* — Belugas, or white whales, are socially gregarious, spending summer months in large congregations in shallow waters and the remainder of the year in smaller groups throughout Arctic and sub-Arctic waters. Experimental research demonstrates that belugas can learn behaviors by imitating conspecifics, thus, observational learning is likely a primary means of learning for belugas. As part of socio-sexual (i.e., non-reproductive) and sexual behavior, belugas engage in a variety of visual displays. The topography of these displays changes as belugas develop, but it is unknown if these changes are due to practicing motor skills, imitation of experienced conspecifics, shaped by experienced social partners, or a combination of these factors. The specific visual displays used are likely cues for initiating interactions and reinforcing, discouraging, and/or possibly demonstrating behavior. Longitudinal observations of more than 40 belugas offer support for each of these ways that visual cues facilitate belugas learning behaviors of their sexual repertoire.

Email: Heather Hill, hhill1@stmarytx.edu

FRIDAY

10:40-11:00 AM (69)

A Transfer Analysis of the Rule-Based and Information Integration Switch Task. BRANDON TURNER, *The Ohio State University*, MATTHEW BROSCHARD, *Massachusetts Institute of Technology*, JOHN FREEMAN, *University of Iowa*, ELLEN O'DONOGHUE, *Cardiff University*, VLADIMIR SLOUTSKY, *The Ohio State University*, EDWARD WASSERMAN, *University of Iowa* — The rule-based and information integration tasks have been a staple across a myriad of experiments in comparative psychology as a means to test for the presence of selective attention through the relative differences in the speed of learning. Specifically, rule-based tasks are generally learned faster relative to information integration tasks for learners who possess selective attention, whereas the two tasks are learned equally quickly for learners who lack selective attention. Although Smith et al. (2012) documented RB vs. II performance across four species, less is known about species such as rats which have reportedly expressed selective attention. In addition, we present a new experiment involving a switch from one subtask to another. For example, if learners first perform an RB task in which the rule is associated with Dimension 1, then after the switch, learners perform another RB task in which the rule is now associated with Dimension 2. This unique manipulation allows us to detect the presence of selective attention by examining how knowledge is transferred from one phase of the experiment to the next. We report results from this experiment on four species: pigeons, rats, rats with prefrontal cortex lesions, and humans.

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11:00-11:20 AM (70)

Pigeon as Radiologist: Training Pigeons to Classify Abnormal 3D Structures in Multi-Slice CT Scans. MUHAMMAD A. J. QADRI, *College of the Holy Cross*, REUBEN R.R. REYES, *College of the Holy Cross*, DARIA KIFJAK, *University of Massachusetts Chan Medical School*, BILAL EL KADDOURI, *University of Massachusetts Chan Medical School*, ALEXANDER BANKIER, *University of Massachusetts Chan Medical School*, MAX ROSEN, *University of Massachusetts Chan Medical School*, GREGORY DIGIROLAMO, *College of the Holy Cross & UMass Chan Medical School* — Pigeons are able to categorize a variety of object classes, actions, and behaviors. This highly flexible and accurate visual cognition is substantially not-humanlike, as seen in studies of amodal completion and hierarchical stimuli. During CT examinations, lung nodules are surrounded by vasculature, which on a single image section is indiscriminable by human radiologists from the abnormality but becomes recognizable when viewing a stack of CT sections. Using a go/no-go paradigm, we presented pigeons with multiple CT sections, which either contained an abnormality or not, on a single trial. For some pigeons, pecking during these latter "normal" displays was associated with reinforcement and pecking during the abnormal displays contributed to a dark timeout (the opposite reinforcement schedule was used for the remaining pigeons). Pigeons learned to discriminate and generalized to novel stimuli, suggesting categorization and not simple memorization of exemplars, with greater success seen by pigeons whose pecking during abnormalities was reinforced. The utility of comparative visual cognition for informing both human training in medical image reading and machine learning also will be discussed.

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11:20-11:40 AM (71)

Behavioral Adjustment to Sequences of Periodic Schedules: Effects of the Occurrences Presentation. MARINA MENEZ, *Universidad Nacional Autonoma de Mexico*, FLORENTE LÓPEZ, *Universidad Nacional Autonoma de Mexico* — The effects of the occurrence of durations on the temporal control of behavior were analyzed. The performance of three groups of rats under fixed-interval (FI) schedules arranged in blocks of three values each, 15, 45, and 75 s, varying in occurrences number was obtained. In the first group, rats experienced five presentations of a FI 15 s intermixed with 20 presentations of a FI 45 s and FI 75 s. The second group received 15 occurrences of each FI value and the third group received 35 presentations of FI 15 s and five of a FI 45 and FI 75 s. The gradients of responding obtained suggested a combined performance resulting of control by the three durations. Temporal control was a function of the FI value, but such control was influenced by the greater FI values. These findings are discussed in relation to research on complex temporal schedules.

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Symposium II: The Bright and Dark Side of Technological Development: A Window on Its Impact on Physical, Psychological and Social Well-Being Across the Life-Span

Friday, November 17, 2023, 1:30-3:30 PM US PST, Continental 5 & 6

Chaired by Chiara Fini, *Sapienza University of Rome, Italy*; **Vanessa Era,** *IRCCS Santa Lucia Foundation & Sapienza University, Italy; and* **Dimitris Bolis,** *Center for Neuroscience and Cognitive Systems at UniTn, Istituto Italiano di Tecnologia, Italy*

1:40-2:02 PM (SYM6)

Future Bodies: How Technology Will Change the Neuroscience of Bodily Representations. GIUSEPPINA PORCIELLO, *Sapienza University of Rome* — A coherent representation of the bodily self emerges from the integration of signals coming from outside (e.g., visual, tactile) and inside the body (e.g., cardiac, respiratory, gastric). Recent research suggests that this integration is not only important for self-awareness but may act as a protective factor against psychopathology and during stressful life events turning out to be crucial also for physical and mental health. In my talk, I will provide evidence supporting the idea that technology will influence the neuroscience of the body. For example, immersive virtual reality (IVR) may be useful to change different aspects of bodily self-representation in typical populations and in clinical populations, such as anorexia nervosa. I will discuss how IVR can help to normalise

atypical pain perception, in both stressful and non-stressful conditions, that is reduced in hypertensive individuals (i.e., blood pressure-related hypoalgesia). Moreover, I will present data suggesting that ingestible sensors may open new avenues for exploring the link between deep-body physiology and higher order processes, such as emotional experience.

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2:02–2:24 PM (SYM7)

Social Robots for the Benefit of Humans. AGNIESZKA WYKOWSKA, *Italian Institute of Technology* — Social robots belong to a category of technology that aims at assisting humans in daily lives and providing support for those in need. I will argue that, although a robot cannot, and should not, be a substitute for a social relationship with another human, it can be beneficial in supporting humans. Social robots, thanks to their embodied presence in our physical environment, do not isolate the user from the physical world as other technologies do (e.g., smartphones, tablets, or virtual reality). Furthermore, the physical embodiment of social robots can support educational activities that encourage the use of our own bodies in the learning process. In the future, social robots might also serve as a tool for telepresence. Think, for example, of a remote operation of a robot visiting a museum on a different continent. Through such an embodied avatar, the user can walk around the museum, see through the robot eyes, and interact with other people. For those who cannot travel or have reduced mobility, this gives a stronger sense of telepresence than "virtual tours" provided on a standard screen. In my talk, I will focus on the work where we show benefits of using robots for training socio-cognitive abilities of children diagnosed with autism.

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2:24–2:46 PM (SYM8)

Changing Your Mind: AI and Transparency. SHAUN GALLAGHER, *University of Memphis* — The model of extended cognition introduces the idea that tools and artefacts can either enhance or disrupt our social interactions. It offers a framework that allows for an analysis of the role of technology in such interaction. If we think of the mind as extended by technologies and the practices and institutions that surround technologies, then one clear principle is that changing technology changes the mind, in some cases constricting cognition and limiting our affordances. Web-based technologies, for example, can have a direct effect on how we perceive the world, or how we conceive of our social relations (Smart, 2012). These are technologies that get incorporated; they get "inside our heads" and constrict our abilities to even recognize problems. At the same time they may be open to manipulation by others, posing a threat to autonomy and privacy (Reiner & Nagel, 2017). I'll examine the role of "transparency" in this context—i.e., the idea that a technology is fully incorporated (or the mind authentically extended) when, in using it, there is no need for conscious effort on the part of the user. In the use of deep-learning AI systems in devices that classify information, however, transparency may not be a good thing.

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2:46–3:08 PM (SYM9)

The Necessity of Physicality for Older Adults. MATTHEW COSTELLO, *University of Hartford* — Older adults are "less embodied" than younger adults, as their physical inputs are downgraded relative to visuo-cognitive processing, a compensatory readjustment evident in both sensorimotor cognition (Costello & Bloesch, 2017) and language (Costello et al., under review) domains. An interesting question is how this "less embodied" dynamic might interact with technology. After all, technologies such as internet use, digital storytelling, artificial intelligence, and robotics offer the potential to offset older adult physical and cognitive declines. Yet the evidence is frequently not promising. Older adults report lower acceptance and increased difficulties in adapting to unfamiliar technologies. Internet use and AI-based interventions have yielded mixed and often negative outcomes in providing socio-emotional support and a sense of belonging. Cognitive brain games largely fail to translate into real-world cognition. However, physical interventions such as aerobic and resistance training have yielded measurable cognitive improvement, and physical touch interventions show reliable gains in psychological health. Thus, what older adults more critically need is increased physicality, rather than increased technology.

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3:06–3:28 PM (SYM10)

Nature as Antidote to Disembodiment: Real and Technological Nature in Older Age and People with Perceptual Sensitivity. ANNALISA SETTI, *University College Cork & The Irish Longitudinal Study on Ageing* — Interacting with natural environments generates emotions and memories contributing to human connectedness with nature. It also provides benefits to cognition, well-being, and overall health (Sumner et al., 2021) and can support healthy ageing (Duedahl et al., 2022). With ageing, the action repertoire available to the individual often becomes more restricted, with more limited mobility (Freiberger et al., 2020) and increased sedentary behaviour fostered by technology use. I propose that: (1) the experiential benefits of interacting with nature constitute an "antidote" to disembodiment, whereby the individual can still experience pleasurable and meaningful bodily sensations though action in nature; (2) the meaning attributed to human relationship with nature in ageing fosters those interactions, independently from physical capabilities; (3) nature can become a companion in older age and this may include virtual nature; (4) these positives are now menaced by awareness of climate change, solastalgia, and worry about nature legacy. Finally, I will examine the role of virtual nature through technological media in producing some of nature benefits in ageing and in fostering "real" nature contact.

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FRIDAY

Scene Processing

Friday, November 17, 2023, 1:30-3:30 PM US PST, Continental 4

Chaired by Michael K. McBeath, *Arizona State University*

1:30-1:50 PM (72)

Scene Context Dynamically Influences Attention. MONICA S. CASTELHANO, *Queen's University* — Scene context improves performance in visual search affecting attentional guidance by allowing predictions about where target objects are likely to be located. Here, the reliability of scene context is manipulated using an exploration-exploitation framework. The results showed that not only is context reliability important, but also its influence dynamically modulates attentional guidance over time. Eye movement patterns reflect this dynamic application of high-level information. The exploration-exploitation framework allows us to define and detect different cognitive strategies as well as the switching between them, signaling a change in prioritization and a change in the influence of context.

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1:50-2:10 PM (73)

Object-Based Attention During Scene Perception Elicits Boundary Contraction in Memory. ELIZABETH HALL, *University of California, Davis*, JOY GENG, *University of California, Davis* — Two types of boundary transformations can occur when remembering scenes. Boundary extension occurs when viewers remember more of a scene than originally studied. Boundary contraction occurs when viewers contract the boundaries of the image, forgetting information near the edges. Across two studies, we looked at how attention influences boundary transformations in memory. In both studies, participants were asked to search for a target or memorize the image. In Experiment 1 (N = 72), participants had 10 s to view the images and were asked to draw scenes from memory afterward. In Experiment 2 (N = 450), participants had 1 s to search for the target or memorize the scene, then were shown the same scene and were asked to report if the boundaries contracted or extended. Both studies showed greater rates of contraction in the Search condition, and Experiment 2 additionally found transformations were dependent on the size of the object attended at encoding, with smaller objects eliciting greater contraction in memory. These findings demonstrate that boundary transformations in scene memory are a consequence of what information is attended to during encoding.

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2:10-2:30 PM (74)

Continuation vs. Construction: Can Extended Scenes Include New Objects? HELENE INTRAUB, *University of Delaware*, WILLA LANE, *University of Delaware*, BANJIT SINGH, *University of Delaware* — Free recall (drawings) of close-up views elicits false memory for surrounding space (boundary extension, BE). Backgrounds extend, sometimes including new instances of previously visible objects (e.g., more floorboards): but NEW objects are rare. Does BE reflect continuation processes (like Gestalt "good continuation") or scene construction (which includes expected object-relations; e.g., Mullally et al., 2012). Participants (N = 63) viewed two scene-types (15 s each): "expected-continuation" (typical object-focused views) and "expected-container" (content cropped to eliminate a surrounding container). Instructions stressed memorization of the entire view. Significant BE was elicited by all, but expected-container images elicited more constrained BE—$t(62) = 8.32$, $p < .001$, $dz = 1.05$—and included NEW objects (here, the containers) relatively often (M = 23% of drawings), compared to expected-continuation images (M = 1% of drawings)—$t(62) = 8.44$, $p < .001$, $dz = 1.06$. These results, and parallel results from a dual-test recognition memory experiment (N = 400) suggest scene construction beyond a view, rather than continuation alone: a representation of expected space and expected spatial relations between seen and inferred objects.

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2:30-2:50 PM (75)

Vertical Attention Bias for Tops of Objects and Bottoms of Scenes is Larger with Animate Objects and Indoor Scenes, Consistent with the Location of Interactive Affordances. MICHAEL K. MCBEATH, *Arizona State University*, MATTHEW D. LANGLEY, *Arizona State University*, KAITLIN VAN HOUGHTON, *Arizona State University*, KELSEY LUCCA, *Arizona State University* — Abstract: We recently proposed and confirmed a robust vertical attention bias (VAB) to attend more to tops of objects and bottoms of scenes, which mirrors the favored locations of interactive affordances in our environment. The finding is consistent with the locations of our limbs, such that people attend and interact more with tops of small objects and the bottoms of large scenes. In the current analysis, we examined if VAB is stronger in animate objects that typically have more interactive information high up, where heads are located, and stronger in indoor scenes in which human designs are expected to increase the abundance of lower interactive affordances. Our hypotheses were confirmed in a test of 53 adults, and replicated with 50 children aged 4-7 years. We found a larger top salience for animate > inanimate objects ($\Delta M_adults=27.4\%$, $t(52)=17.0$, $p< .0001$, $d=2.4$, and $\Delta M_kids=18.8\%$, $t(49)=8.6$, $p< .0001$, $d=1.2$), and a larger bottom salience for indoor > outdoor scenes ($\Delta M_adults=10.9\%$, $t(52)=6.1$, $p< .0001$, $d=0.83$, and $\Delta M_kids=11.8\%$, $t(49)=6.29$, $p< .0001$, $d=0.89$). The pattern of findings both replicated general VAB in all conditions, and confirmed VAB increases when interactive affordances are expected to be stronger.

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2:50-3:10 PM (76)

Environment, Affect, and Cognition: Developing a Normative Database of the Psychological Effects of Nature and Urban Images. JASON WATSON, *University of Colorado Denver*, BROOKE CHARBONNEAU, *Montana State University*, CHRISTIAN TOWNER, *University of Colorado Denver*, PIERCE JOHNSON, *University of Colorado Denver*, AUDREY V.B. HOOD, *Montana State University*, KEITH A. HUTCHISON,

FRIDAY

Montana State University — Interacting with nature has been shown to produce cognitive and affective benefits. Several methods have been used to investigate the impact of nature on attention and mood, including actual immersion in nature or urban environments as well as viewing images displayed with computers. The present study sought to develop a novel database of nature and urban images for use in lab experiments addressing the psychological effects of these settings. To achieve this goal, we assembled sets of 600 nature and 600 urban images with different perceptual characteristics (e.g., trees, water, buildings, cars). We then collected various subjective ratings on the images from 1,800 participants using the Amazon Mechanical Turk crowdsourcing platform. Overall, as expected, results indicated that nature images were more fascinating, liked, and mysterious than urban images. Moreover, nature images elicited more resilience, mindfulness, and awe but less anxiety than urban ones. The results also suggested an intriguing future application of the database. Researchers may select images to vary on some dimensions, with others held constant, to more strategically investigate the potential impact of nature and urban settings on affect and cognition.

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3:10–3:30 PM (77)

Learning to Find Anomalies: How Behavior and Eye Movements Change across 7 Weeks of Training. MICHAEL HOUT, *New Mexico State University*, MEGAN PAPESH, *New Mexico State University*, REBECCA PENN, *New Mexico State University*, EMILY STUTESMAN, *New Mexico State University*, JANELLE HERNANDEZ, *New Mexico State University* — Medical professionals routinely visually scan through complex images in search of various anomalies (e.g., tumors, polyps, other abnormalities) that indicate that a patient is suffering from disease or injury. But such "anomaly hunting" tasks are perceptually challenging and may require years of experience for screeners to perfect their skills. In this project, we explored four types of perceptual learning methods in a 7-week long training study. Participants were trained to recognize and search for anomalies hidden in real-world scenes—sampled from a database of stimuli that allow us to simulate medical image perception—while their eye movements were recorded. Our goal was to learn to what degree attention can be guided directly to ill-defined and subtle image deformations, and to explore how observer eye-movements change as people master these skills over time. A full reporting of behavioral and oculomotor outcomes will be presented, along with a discussion of implications for training methods in medical image perception professions.

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Working Memory I

Friday, November 17, 2023, 1:30–3:30 PM US PST, Plaza A

Chaired by Valerie Camos, *Université de Fribourg*

1:30–1:50 PM (78)

On the Role of Different Memory Systems in Working Memory Tasks. PIERRE BARROUILLET, *University of Geneva*, VALERIE CAMOS, *Université de Fribourg*, JULIE POUGEON, *Université de Fribourg*, CLEMENT BELLETIER, *Institut de Psychiatrie et Neurosciences de Paris* — Brown-Peterson (BP) and complex span (CS) tasks are routinely used to investigate working memory (WM), but are they substitutable? In a BP task, in which the processing task follows the presentation of all the memoranda, and in a CS task, in which processing episodes are interspersed between the memoranda, we compared the interplay of processing (a parity judgement task) and memory (serial recall of letters) using the so-called perfect-trial procedure. After having assessed their memory and processing spans through titration, participants were presented with a BP or a CS task and asked to perform at span in the memory or processing component, while we measured the residual performance in the other component. All tasks were performed under concurrent articulation. Both memory and processing residuals proved lower in CS than BP. For both paradigms, processing proved higher than memory residuals. However, memory residuals were three times greater in the BP than the CS paradigm whereas processing residuals were roughly comparable. This suggests that, beyond WM, the BP paradigm involves an additional mnemonic component that could be episodic long-term memory. This means that BP and CS are not substitutable in investigating WM.

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1:50–2:10 PM (79)

Recollective and Non-Recollective Processes in Working Memory Retrieval. VALERIE CAMOS, *Université de Fribourg*, FIONA ROSSELET-JORDAN, *Université de Fribourg*, MARLENE ABADIE, *Aix-Marseille University*, STÉPHANIE MARIZ-ELSIG, *Université de Fribourg*, PIERRE BARROUILLET, *University of Geneva* — The aim of this study was to investigate the nature of the processes involved in working memory retrieval by distinguishing recollective (direct access) and non-recollective (reconstruction) recall. For this purpose, the trichotomous theory of recall (Brainerd, Reyna, & Howe, 2009) was applied to young adults' recall performance in a complex span task in which lists of words were presented in three successive study-test trials. Three experiments manipulated factors known to affect WM performance, such as the cognitive load of the concurrent task and the implication of long-term memory knowledge. The two-stage model distinguishing direct access and reconstruction retrieval processes revealed a strong predominance of direct access and very few reconstructions during working memory recall.

Email: Valerie Camos, valerie.camos@unifr.ch

FRIDAY

2:10–2:30 PM (80)

Working Memory Training to Improve Language Outcomes for Children with Hearing Loss. ERIN INGVALSON, *University of Washington*, MEGAN ROBERTS, *Northwestern University*, CHRISTOPHER SCHATSCHNEIDER, *Florida State University* — Working memory training was once hypothesized to be an avenue for improving executive functioning (e.g., Klingberg et al., 2005), including for children with hearing loss, who show deficits in executive function relative to their peers with normal hearing (e.g., Pisoni et al., 2016). Though meta-analyses have demonstrated that working memory training may be unlikely to transfer to distally related tasks (Simon et al., 2016), preliminary efforts to train working memory in children with hearing loss suggest training may lead to gains in spoken language performance (Ingvalson et al., 2014; Kronenberger et al., 2011). Building on these early positive findings, 35 children between 5 and 7 years old with prelingual hearing loss were enrolled in an intervention study. Twenty-one children were randomly assigned to 8 weeks of Cogmed working memory training, and 14 children were assigned to an active control condition. Proximal training gains were assessed via pre- vs. post-test performance on measures of working memory and distal gains were assessed via standardized measures of spoken language.

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2:30–2:50 PM (81)

Subjective Difficulty Predicts Working Memory Performance while Dual Tasking Better than Objective Factors. TIMOTHY J. RICKER, *University of South Dakota*, MEGAN M. MCCRAY, *University of South Dakota* — Working memory is often impaired when performing a concurrent attention-demanding task. This is typically explained by a need to maintain memory items using attention-demanding mechanisms in the face of secondary-task induced forgetting. We asked participants to complete a Brown-Peterson working memory task and observed that neither the relative amount of free time (i.e., the cognitive load) nor the number of interfering events were good predictors of working memory performance. After each block we asked participants to complete the NASA-TLX subjective workload rating scale. This subjective measure of task difficulty explained performance across conditions much better than objective factors. We argue that working memory performance deficits in the face of dual tasking do not reflect maintenance and forgetting. Instead, they are caused by a failure to continue normal memory enrichment processing (consolidation and elaboration) during the retention interval when the cognitive task feels subjectively difficult.

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2:50–3:10 PM (82)

Uncovering the Manual Production Effect: Consistency and Reversal Across Memory Tasks. JEAN SAINT-AUBIN, *Université de Moncton*, DOMINIC GUITARD, *University of Missouri* — When list items are pronounced aloud, they are better recalled than silently read items. This production effect is also observed with a manual production in which participants typed the words. However, the advantage of manual production seems to be limited to item recognition tasks, being absent from recall tasks. In a series of eight experiments, we systematically investigated the manual production effect in immediate serial recall, order reconstruction, delayed free recall, and item recognition. For all tested memory tasks, the typing condition was compared to two control conditions: a basic control condition with no action required during encoding and a control typing condition where participants typed irrelevant letters to block rehearsal. On all tasks, memory was better for produced than for controlled typed items. However, compared to the basic control condition, produced items were better recognized, but less well recalled. Results are interpreted with the revised feature model.

Email: Jean Saint-Aubin, jean.saint-aubin@umoncton.ca

3:10–3:30 PM (83)

Short-Term Memory in Language Acquisition: Phonology or Temporal Structure? ELISABET SERVICE, *McMaster University*, FIZA AHMAD, *McMaster University*, ADRIENNE YAU, *McMaster University* — Pseudoword repetition and digit span have a long history as measures of phonological short-term memory (PSTM) that predict first and second language acquisition. We studied a new measure for PSTM: meaningless sentence repetition with familiar or unfamiliar phonology, and correlated it with a rhythm memory task (memory for sequences of short and long beeps) and a foreign word learning task. In Experiment 1, both rhythm memory and word learning were correlated with repetition of meaningless sentences irrespective of phonological familiarity. In Experiment 2, the rhythm task was manipulated to see if it behaves similarly to verbal STM. Adding grouping to the task by inserting one longer pause between beeps 3 and 4, made the task harder, but it still correlated with meaningless sentence repetition. We conclude that repetition of meaningless sentences behaves like a PSTM task and has a temporal structure component. Rhythm STM may not directly predict learning.

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Decision Making II

Friday, November 17, 2023, 1:30–3:30 PM US PST, Plaza B

Chaired by Pamela S. Tsang, *Wright State University*

1:30–1:50 PM (84)

A Computational Theory of Resource Allocation and Procrastination Under Uncertain Time Deadlines. PETER KVAM, *University of Florida*, KONSTANTINA SOKRATOUS, *University of Florida*, ANDERSON FITCH, *University of Florida*, AREND HINTZE, *Dalarna University* — Procrastination is often viewed as the product of a lack of self-control, rationality, or ability to complete a task with a known deadline. Viewed as a resource allocation problem, procrastination may consist of over-investing in a low-effort or short-term payoff (e.g., goofing off) relative to a high-effort or long-term one (e.g., writing). However, this type of effort allocation problem becomes computationally intractable when time horizons are uncertain – such as when a person is uncertain how

long a task will take or how much time they have. We show that procrastination may be an adaptive response to deadline uncertainty, providing a sub-optimal but stable satisficing solution to resource allocation between low-effort and high-effort tasks. To test this, we compared human behavior on a resource allocation task, manipulating the uncertainty of the deadlines and the degree of effort required to achieve the long-term goal, against optimal solutions as well as the results of evolutionary and learning algorithms. In general, participants over-invested in low-effort / short-term payoffs—a pattern of procrastination that could be explained by evolutionary optimization in environments with uncertain time deadlines.

Email: Peter Kvam, kvam.peter@gmail.com

1:50–2:10 PM (85)

Accountants and Individuals High in Cognitive Reflection Show Robust Gist-based Framing Biases: A Fuzzy-Trace Theory Approach. VALERIE F. REYNA, *Cornell University*, JORDAN ROUE, *Cornell University*, SARAH EDELSON, *Cornell University*, M.G. FENNEMA, *Florida State University*, AADYA SINGH, MPHIL, UNIVERSITY OF CAMBRIDGE, *Cornell University* — Theorists predict that numerate experts should be less cognitively biased for numerical decisions, especially those scoring high on the cognitive reflection test (CRT). We recruited a high-numeracy sample of accountants (N = 233) and psychology students (N = 648). We administered classic dread-disease framing problems, business framing problems, and the CRT. Each participant received gain and loss framing problems from different domains (one disease and one business), with materials and presentation order counterbalanced across participants. Within-participants (cross-domain) and between-participants (within-domain) framing effects were observed for both samples. Accountants did not show differentially smaller framing for business problems. Contrary to dual-process theory, CRT results were inversely related to framing for students (higher CRT with more framing) and inconsistently related for accountants but high scorers had robust framing effects. Results are consistent with fuzzy-trace theory's expectation that experts show framing effects because they rely primarily on gist-based intuition, not because they lack numeracy or cognitive reflection.

Email: Valerie Reyna, vr53@cornell.edu

2:10–2:30 PM (86)

Causal Learning with Interrupted Time Series Data. YIWEN ZHANG, *University of Pittsburgh*, BENJAMIN ROTTMAN, *University of Pittsburgh* — People often test changes to see if the change is producing the desired result. According to interrupted times series analysis (ITSA), doing so involves assessing whether there has been a change to the mean ("level") or slope of the outcome, after vs. before the change. In Experiments 1 and 2, we tested how well people can judge causality in nine ITSA situations across four presentation formats in which participants were presented with the data simultaneously or in quick succession. We also explored individual differences. In Experiment 3, we tested how well people can judge causality when the events were spaced out once per day, mimicking a more realistic timeframe of how people make changes in their lives. We found that participants were able to learn accurate causal relations when there is a zero pre-intervention slope in the time series but had difficulty controlling for non-zero pre-intervention slopes. We discuss these results in terms of two heuristics that people might use.

Email: Yiwen Zhang, yiwenzhang@pitt.edu

2:30–2:50 PM (87)

Attentional Dynamics Explain the Elusive Nature of Context Effects in Decision Making. JENNIFER S. TRUEBLOOD, *Indiana University*, YANJUN LIU, *Indiana University*, MATTHEW MURROW, *Vanderbilt University*, WILLIAM HAYES, *Indiana University*, WILLIAM R. HOLMES, *Indiana University* — Context effects in multi-alternative, multi-attribute choice are pervasive and yet, paradoxically, elusive at the same time. Despite the success of dynamic decision models in explaining the occurrence of context effects, a coherent theory for understanding their elusiveness is currently lacking. We introduce a novel theoretical framework that relies on attention modulated comparisons to explain the elusive nature of context effects. We show via simulation that our model produces the attraction, compromise, and similarity effects simply by assuming that more time is spent comparing alternatives that are more similar. However, when more time is spent comparing dissimilar alternatives, model simulations reveal a reversal of the attraction and compromise effects. Further, by allowing the spatial organization of information to constrain the attention process, the model can explain changes in context effects induced by display layout. In summary, the proposed framework provides a new tool for understanding not only the existence of context effects in choice, but also the attentional factors that lead to null or reversed context effects.

Email: Jennifer Trueblood, jstruebl@iu.edu

2:50–3:10 PM (88)

Expert Decision Making: Intuition Is not Enough. PAMELA S. TSANG, *Wright State University*, MICHAEL A. VIDULICH, *Air Force Research Laboratory* — Considerable research has been devoted to the issue of whether intuitive superior pattern recognition or more deliberative search accounts for expert chess performance. There is now close to a consensus that both are important components of chess skill but there continues to be debates on which is more important in distinguishing experts from less skilled chess players. Fast and effortless intuitive processes are expected to be minimally affected by time pressure whereas deliberative processes would be negatively impacted. Two studies with elite chess experts will be presented to examine the effects of time pressure on chess move quality and game outcomes. Extension of the chess expertise findings to other domains such as aeronautical decision making in a complex, dynamic, time-critical environment will be discussed.

Email: Pamela Tsang, pamela.tsang@wright.edu

3:10–3:30 PM (89)

Regret Matters More than Disappointment or Absolute Loss in Small-Stakes Repeated Decision-from-Experience. YAAKOV KAREEV, *The Hebrew University of Jerusalem*, TIM RAKOW, *King's College London*, EYAL ERT, *The Hebrew University of Jerusalem*, JUDITH AVRAHAMI, *The Hebrew University of*

FRIDAY

Jerusalem, MARIA-ANTONIA GROSU, *King's College London* — We report a multi-experiment investigation of repeated choices. In each experiment, participants completed 4 decision tasks, comprised of 60 incentivized choices between a pair of binary-outcome options, with immediate feedback for obtained and forgone outcomes. The option structure was manipulated across experiment: identical outcomes for both options; safer vs. riskier options, i.e., (4,1) vs. (3,2); possible outcomes interleaved between options, i.e., (4,2) vs. (3,1). Within experiments, we manipulated outcome probabilities, such that which option was superior and 'wins' frequency varied between tasks. Our goal was to compare the role of disappointment (receiving an option's lower outcome) and regret (obtained outcome < forgone outcome) as drivers of choice. Within these experiments, implied regret consistently predicted patterns of choice more accurately than implied disappointment. Our findings demonstrate that relative loss and regret are more important than absolute loss and disappointment for determining choice in low-stakes decision tasks involving full feedback repeated choices.

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Sensation & Perception I

Friday, November 17, 2023, 1:30–3:10 PM US PST, Imperial A

Chaired by Martin Arguin, *Université de Montréal*

1:30–1:50 PM (90)

Assessing Visual Capture of Audiovisual Distance Perception in Virtual Reality. MAGGIE K. MCCRACKEN, *University of Utah*, HUNTER C. FINNEY, *University of Utah*, SARAH H. CREEM-REGEHR, *University of Utah*, JEANINE K. STEFANUCCI, *University of Utah* — We typically rely on vision more than hearing for distance perception. This visual dominance often results in vision capturing the location of a corresponding spatial sound. This study investigates how much of a discrepancy in distance between an auditory and visual target is required before they are perceived as differing in depth. Using virtual reality, participants completed an adjustment task in which a real-world speaker was moved until they stated that it matched the distance of a visual, virtual target. Five distances (2-6 meters) were tested. Results show that a sound can be offset from a visual target by over 1 meter in depth before it is perceived as separate. Visual capture was also asymmetric given that sounds behind targets yielded even larger ranges than sounds in front of targets. These results will help to test whether deviations in distances between auditory and visual objects can recalibrate distance judgments in virtual environments.

Email: Maggie McCracken, maggie.mccracken@psych.utah.edu

1:50–2:10 PM (91)

The Bentley Eastern-Western Aesthetics Database for Experimental Aesthetics. MOUNIA ZIAT, *Bentley University*, ZHE LI, *Bentley University*, KAI-YI HUANG, *Bentley University*, JOSE ORDAZ, *Bentley University*, MICKEY YEH, *Bentley University*, CLIFTON CHOW, *Bentley University*, BHANU PRATAP SINGH JADAUN, *Bentley University*, CLAUS-CHRISTIAN CARBON, *University of Bamberg* — Art appreciation is highly subjective, but it is not solely about liking or disliking an artwork. An aesthetic experience triggers several cognitive and affective processes. The research on this topic shows two limitations: The first pertains to the scope of the existing datasets, which primarily focus on Western paintings; an Eastern paintings database is yet to be established. The second concerns the artwork's aesthetic quality evaluation tools, often limited to a very narrow spectrum of aesthetic appreciation. We address both limitations by establishing the Bentley Eastern-Western Aesthetics Database (BEWAD), which gathers over 3,500 paintings classified according to various aesthetic features using the Aesthetic Emotions Scale (AESTHEMOS). This well-established instrument encompasses different layers of emotions, including prototypical aesthetic, epistemic, amusement-inducing, and negative emotions. A searchable dashboard grants access to 21 aesthetic subscales for individual paintings that researchers can utilize. The open-access dashboard will facilitate continuous data collection to enhance statistical power.

Email: Mounia Ziat, mziat@bentley.edu

2:10–2:30 PM (92)

What Information Do People Use to Figure Out the Number of Objects Inside a Container by Touch Alone? ILJA FRISSEN, *McGill University*, ZHANAT KAPPASSOV, *Nazarbayev University & Bentley University*, KAI-YI HUANG, *Bentley University*, NURLAN KABDYSHEV, *Nazarbayev University*, MOLDIR ZABIROVA, *Nazarbayev University*, MOUNIA ZIAT, *Bentley University* — Humans use active touch to gain information about contained objects, such as when shaking a milk carton or rattling a cereal box. Although such container interaction is most common, its perceptual basis remains largely unexplored. In this study, we investigated the importance of an array of physical cues that participants could be using to tell, by touch alone, how many objects were contained in a small opaque cardboard box. Participants were only given one box at a time and told to wield it as they pleased. Initial results show the relative contributions of three cues: the rolling noise created by the objects moving along the container floor, the impacts created by objects hitting the walls of the container, and the increase in weight created by adding more objects.

Email: Ilja Frissen, ilja.frissen@mcgill.ca

2:30–2:50 PM (93)

Space-Time Dynamics of Letter Processing in Visual Word Recognition. MARTIN ARGUIN, *Université de Montréal*, SIMON FORTIER-ST-PIERRE, *Université de Montréal* — The processing of individual letters and letter combinations in visual word recognition was studied using random temporal sampling. Across the 200 ms five-letter word exposure, the visibility of letters varied randomly and independently, and response accuracy was measured. Classification images were calculated reflecting the processing efficiency of participants according to the power of the 5 to 55 Hz oscillations in the visibility of letters or conjunctions thereof through time. Fourier transforms of these classification images were passed to a

classifier (support vector machine, leave-one-out cross validation) to assess: differences in the result patterns across individual letters or letter conjunctions, the temporal features characteristic of each, and the stability of result patterns across participants. The results indicate: parallel letter processing throughout exposure duration, distinct processing mechanisms for each letter position and letter conjunction, and letter-position-specific mechanisms for letter conjunctions which are distinct from those for individual letters.

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2:50-3:10 PM (94)

Summation of Repulsive and Attractive Biases in Serial Dependency: Evidence from Mouse Trajectory Analysis. GI-YEUL BAE, *Arizona State University*, KUO-WEI CHEN, *Arizona State University* — The processing of new visual information is either biased toward or away from the information obtained in the recent past. Computational models suggest that two mechanisms (efficient encoding and Bayesian decoding) produce opposite directions of biases and the final report reflects the sum of them. Here, we sought to find empirical evidence for the summation process by analyzing the mouse trajectory of the reports in an orientation delayed estimation task. In three experiments, we found that the trajectory converged from the opposite side of the previous-trial orientation (repulsion) to the final report, rather than going directly to the final report from its starting point. This was true even when the final report was biased toward the previous-trial orientation (attraction). Together, these results provide clear evidence for the summation process and suggest that the serial dependency is initially repulsive and attractive bias is added to it during post-perceptual processing stages.

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Learning & Memory II

Friday, November 17, 2023, 1:30-3:30 PM US PST, Imperial B

Chaired by Hauke S. Meyerhoff, *University of Erfurt*

1:30-1:50 PM (95)

Reexamining Reported and Predicted Failures of Simple Recurrent Networks to Simulate Aspects of Statistical Learning. JAMES S. MAGNUSON, *University of Connecticut & Basque Center on Cognition, Brain and Language (BCBL)* — When simple recurrent networks (SRNs) are trained to activate the next sequence element, they are literal prediction machines and would seem to provide a promising mechanism for modeling human statistical learning (SL). However, SRNs reportedly fail to show human-like SL preferences for sequences with strong backwards transitional probabilities (bTPs; Perruchet & Desaulty, 2008) or for disyllabic words vs. sublexical disyllables matched in forward TP (fTP; Giroux & Rey, 2009), and they perform poorly on sequences with constant fTPs (French et al., 2011). Researchers have predicted SRNs would fail to distinguish novel words from "phantom words" matched in fTPs (Perruchet & Poulin-Charronnat, 2012). I show that SRNs readily (a) exhibit humanlike preferences for bTPs when trained to simultaneously activate current and next syllables and distinguish (b) disyllabic words from fTP-matched sublexical disyllables and (c) words vs. phantom words. I also show that feedforward networks that can only associate syllable pairs are able to simulate human performance for several classic studies (e.g., Saffran et al., 1996; Aslin et al., 1998), but not these three critical cases. I will discuss the computational implications for SL theories.

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1:50-2:10 PM (96)

An Extremely High Fidelity Quantification of the Time Course of Learning Consolidation from a Massive Behavioral Dataset. PATRICK COX, *Lehigh University*, CHLOE CALLAHAN-FLINTOFT, *US.Army Research Laboratory*, MICHELLE KRAMER, *Transportation Safety Administration*, STEPHEN MITROFF, *The George Washington University*, DWIGHT KRAVITZ, *The George Washington University* — Behavior adapts to a given environment with repeated exposures to specific stimuli and/or repeated actions; this general principle underlies cognitive phenomena such as priming, contextual cueing, serial dependence, and statistical learning. Our previous work described a general evidence accumulation function that may underlie such learned adaptations in behavior (Kramer et al., 2022), but questions remain about the time course of the consolidation of this learning. Understanding the time course of consolidation is a key question in the basic science of learning and has a broad range of practical implications. Using a massive dataset (>15.6 million users, >3.8 billion trials) of human behavioral data, this project quantified the consolidation of learning in both a visual search task and a categorization task over a range of delays from seconds to days with a high degree of temporal precision. Additionally analyses explored the potential impact of sleep during the consolidation period. This high fidelity quantification showed a complex nonlinear effect of time on consolidation and provides much needed temporal constraints on hypotheses about the myriad of neural mechanisms underlying learning and their characteristic time courses.

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2:10-2:30 PM (97)

Memory and Attention: A Double Dissociation Between Memory Encoding and Memory Retrieval. NEIL MULLIGAN, *University of North Carolina at Chapel Hill*, PIETRO SPATARO, *Universitas Mercatorum*, JOHN T. WEST, *University of North Carolina at Chapel Hill* — Research has found substantial negative effects of divided attention during encoding but modest effects when attention is divided during retrieval, an asymmetry which has been interpreted as indicating that different control processes are involved in encoding and retrieval. The extant evidence, however, is not strong support for qualitative differences and might simply indicate differential sensitivity. The present experiments document a stronger, double dissociation by focusing on the attentional boost effect (ABE)—a phenomenon in which the detection of targets in a secondary task enhances encoding. The dual-task interaction account proposes that the classical negative effects produced by dual-task interference are

offset by a transient increase in externally directed attention brought about by target detection. Since externally directed attention is less valuable for retrieval processes, the ABE should result in a net negative effect when applied in the test phase. Several experiments confirmed these predictions. We discuss these findings in light of proposals that encoding and retrieval processes are subserved by different forms of attention (external [perceptual] vs. internal [reflective]).

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2:30–2:50 PM (98)

How Do We Evaluate Others' Memories? TALYA SADEH, *Ben-Gurion University of The Negev*, AVI GAMORAN, *Ben-Gurion University of The Negev*, MICHAEL GILEAD, *Tel-Aviv University*, IAN DOBBINS, *Washington University in St. Louis* — Humans have the highly adaptive ability to learn from others' memories. However, because memories are fallible, for others' memories to be a valuable source of information, we need to assess their veracity. Surprisingly little is known on how this is done. Previous studies have shown that information conveyed in self-reported memory justifications holds information which can be used to distinguish true from false recollections by modelling linguistic features of the text. But do humans process this information in the same way a model does? Participants were presented with justifications corresponding to hits and false alarms and were asked to assess whether the witness's recognition was correct or incorrect. Our results show that human raters can discriminate hits from false alarms, above chance levels, based on the justifications provided per item. Further, results of this study show that features generated from humans' assessments can augment machine-learning language models trained to classify memories.

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2:50–3:10 PM (99)

On the Durability of Belief Change After Correcting Fake News Headlines. CHRISTOPHER N. WAHLHEIM, *University of North Carolina at Greensboro*, PAIGE L. KEMP, *University of North Carolina at Greensboro*, ROBERT WILEY, *University of North Carolina at Greensboro*, ANDREW ENGELHARDT, *Stony Brook University* — Fake news can tarnish beliefs. Corrections can mitigate misperceptions, but views disagree if corrections should repeat fake news with real news. Repeating fake news may increase its familiarity and perceived accuracy, or it may promote encoding with real news that improves memory for headline veracity. Two experiments measured perceived accuracy of fake news headlines, corrected headlines with or without repeating fake news, and measured perceived accuracy and memory for corrections. Labeling fake news with or without real news initially reduced perceived accuracy more than presenting real news alone. One week later, perceived accuracy regressed more for labeled fake news than real news corrections with or without labeled fake news. Reduced perceptions of fake news accuracy depended on memory for corrections but persisted to a lesser degree without such memory. Combining labeled fake and real news led to the most sustained belief change primarily by improving memory for veracity information.

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3:10–3:30 PM (100)

Forgetting Offloaded Intentions: Evidence from a Delayed Intentions Task. HAUKE S. MEYERHOFF, *University of Erfurt*, NORA NATON, *University of Trier*, FRANK PAPENMEIER, *University of Tübingen*, SAM GILBERT, *University College London* — Setting reminders is beneficial for fulfilling delayed intentions. For instance, placing the garbage next to the front door might help us to bring the garbage outside the next time we leave the house. The present experiment (N = 384) addresses the question how offloading intentions affects memory performance for offloaded intentions. The participants performed an ongoing drag-and-drop task with images. For some of the images, the participants were required to fulfill a delayed intention. We manipulated whether the participants had to set reminders for the delayed intentions or whether they were not allowed to do so. In a subsequent memory test, we probed recognition accuracy for the handled images. In line with previous research, setting reminders improved the accuracy in fulfilling delayed intentions. However, memory accuracy was reduced for images for which associated intentions had been offloaded previously. Therefore, this experiment shows that offloading intentions might interfere with the formation of memory.

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Statistics and Methodology

Friday, November 17, 2023, 1:30–3:10 PM US PST, Continental 1 & 2

Chaired by Thomas J. Faulkenberry, *Tarleton State University*

1:30–1:50 PM (101)

Better Accuracy for Better Science...Through Random Conclusions. CLINTIN DAVIS-STOBER, *University of Missouri*, JASON DANA, *Yale School of Management*, DAVID KELLEN, *Syracuse University*, SARA MCMULLIN, *Webster University*, WES BONIFAY, *University of Missouri* — The difficulty of conducting research with human subjects often entails limited sample sizes and small empirical effects. We demonstrate that this problem can yield patterns of results that are practically indistinguishable from flipping a coin to determine the direction of treatment effects. We use this idea of random conclusions to establish a baseline for interpreting effect size estimates, in turn producing more stringent thresholds for hypothesis testing and statistical power calculations. An examination of recent meta-analyses in psychology, neuroscience, and medicine confirms that, even if all considered effects are real, results involving small effects are indeed indistinguishable from random conclusions.

Email: Clintin Davis-Stober, stoberc@missouri.edu

1:50–2:10 PM (103)

A Hierarchical Bayesian Extension of the Censored Shifted Wald Model for Response Times. THOMAS J. FAULKENBERRY, *Tarleton State University* — Modeling performance on cognitive tasks with high accuracy presents modelers with a difficult choice. One option is to use the full diffusion model, but high

accuracy makes it difficult to obtain enough error trials for accurate parameter estimation. Another option is to use a single-boundary accumulator (e.g., a shifted Wald model), but shifted Wald parameters do not correspond uniquely to those of the diffusion model, thus compromising the ability to interpret the parameters in the context of a cognitive model. A way to reconcile this conflict is to add a censoring mechanism to the shifted Wald distribution, where error trials are modeled as correct trials which have undergone censoring. Miller et al. (2018) showed that this censored shifted Wald model can successfully recover diffusion parameters in high-accuracy contexts. In this talk, I will describe a hierarchical Bayesian extension of the censored shifted Wald model. In addition, I will share some preliminary data from a parameter recovery study that shows its superior ability to accurately recover diffusion model parameters compared to classical maximum likelihood approaches. Finally, I will describe an application of the model to an open question in numerical cognition.

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2:10-2:30 PM (104)

Easy and Accessible Implementations of Cognitive Measurement Models: Introducing the Bayesian Measurement Model (bmm) R Package. GIDON T. FRISCHKORN, *University of Zurich*, VENCISLAV POPOV, *University of Zurich* — Usually, cognitive experimental and individual differences researchers are interested in investigating the cognitive processes underlying observed behavior. Yet, most of our statistical analyses are done with behavioral indicators that supposedly reflect the cognitive process of interest. Cognitive measurement models—formal models describing how latent cognitive processes relate to observed behavior—provide a promising way to analyze experimental manipulations and individual differences on the level of cognitive processes. However, estimating cognitive measurement models flexibly and efficiently is challenging and often requires advanced knowledge in cognitive modeling and statistical estimation methods. In this talk, I introduce the Bayesian Measurement Models package for R that implements commonly used cognitive measurement models in a hierarchical Bayesian framework. I provide examples how common measurement models for memory processes can be easily estimated and adapted to various experimental design and outline benefits of using such models in experimental and individual differences research of cognition.

Email: Gidon Frischkorn, gidon.frischkorn@psychologie.uzh.ch

2:30-2:50 PM (105)

A Simple Formula for Bayesian Shrinkage to Correct Measurement Error. SIMONE MALEJKA, *University of Cologne*, MIGUEL A. VADILLO, *Universidad Autónoma de Madrid*, DAVID SHANKS, *University College London*, ZOLTAN DIENES, *University of Sussex* — As a method to investigate the scope of unconscious mental processes, researchers frequently collect a behavioral measure (e.g., some assessment of learning) and a measure of awareness (e.g., recognition judgments) of the critical cue or contingency. Evidence that behavioral change was indeed unconscious may require unawareness of the critical regularity or independence of behavior and awareness, which are both commonly demonstrated using standard statistical tests (e.g., t-tests, correlation/regression analysis). We highlight a critical limitation in these approaches: Systematic bias caused by ignored measurement error (e.g., regression to the mean, slope attenuation) can lead to 100% false inferences that mental processes are unconscious. As a solution, we propose a correction formula for observed data based on shrinking estimates towards a grand mean in Bayesian modeling. Our formula provides corrected estimates as a weighted combination of each individual's score and the sample mean. The corrected data offer a more representative sample to test research hypotheses and consequently better inferences in scientific decision-making. We conclude by offering best practices for correcting measurement error in psychological research.

Email: Simone Malejka, simone.malejka@gmail.com

2:50-3:10 PM (106)

The EPIC Psychology Project: Measuring Participant Interest and Engagement in Cognitive Tasks. JONATHAN WILBIKS, *University of New Brunswick Saint John*, KATHRYN NASON, *University of New Brunswick Saint John*, MICHAELA RITCHIE, *University of New Brunswick Saint John*, REBECCA HIRST, *Open Science Tools & University of Nottingham* — Cognitive psychology experiments require many trials, which means presentation of repetitive stimuli. The EPIC Psychology Project aims to evaluate whether low participant engagement leads to attrition and limited data quality. In Phase 1, 121 researchers offered strong agreement that participant engagement was an issue, that it was important to data quality, and that tasks evaluating attention and perception were particularly problematic for engagement. In Phase 2, 57 naïve adult participants completed up to five common cognitive tasks followed by a brief survey. They were told each task would take a maximum of 15 minutes and that they were free to take breaks and quit the task at any time, thus providing objective measures of engagement. Participants took few breaks (range: 1-2), but typically quit quite early in the task (M = 7 min). Perception-based tasks had the lowest engagement levels, and "receiving feedback" and "story framing" were popular ideas for improving experience. These results show agreement between researcher and participant perspectives on tasks that are problematic for engagement. We also provide useful meta-data to aid experimental design such as guidelines for study duration and appropriate number of trials.

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FRIDAY

Symposium III: Diversity in Disability: Evidence from Disability Identity and Research (Diversity & Inclusion Symposium)

Friday, November 17, 2023, 3:45–5:45 PM US PST, Continental 5 & 6

Chaired by Morton Ann Gernsbacher, *University of Wisconsin–Madison, USA*

3:50–4:05 PM (SYM11)

Perceptions of the Disability Community and Initiatives to Promote Inclusivity. JILL SHELTON, *University of Tennessee at Chattanooga*, MORGAN J. ROBINSON, *University of Tennessee at Chattanooga*, JOSEPH CARPENTER, *University of Tennessee at Chattanooga*, AMANDA LESSWING, *University of Tennessee at Chattanooga* — Many factors influence the views that people possess about the disability community. According to a recent review, others' perceptions about people with disabilities reflect a dynamic interaction between socio-cultural, psychological, and developmental factors (Babik & Gardiner, 2021). Disability-related stigma creates barriers to the personal and professional development of individuals with disabilities. Additionally, identity formation in people with disabilities can be compromised when they are marginalized by others' negative perceptions. Promoting knowledge and positive perceptions of the disability community is, therefore, critical to ensuring their health and well-being. Empirical work reveals that positive perceptions of the disability community can be fostered through inclusive educational and parenting practices. In this presentation, I will review factors that influence one's perception of people with disabilities and discuss initiatives to promote knowledge and empowerment.

Email: Jill Shelton, Jill-shelton@utc.edu

4:05–4:20 PM (SYM12)

Discovering More About Yourself Through Research and Professional Development. KAREN ARCOS, *University of California, Santa Cruz* — I offer cognitive research (Arcos, Jaeggi, & Grossman, 2022) and desire to diversify academic spaces. I also argue for including underrepresented minority scientists' perspectives in that effort. Blind individuals commonly use verbal encoding and memory-based strategies for situations in which sighted individuals use vision. We investigated whether early visual deprivation is linked to improved verbal short term memory (STM) abilities. Our data show that blind adults recalled more items on a verbal STM digit span task than did sighted participants. However, recall benefits did not extend to the tactile domain (i.e., a braille version of the STM digit span task in blind individuals). We conclude that memory benefits associated with blindness might be restricted to auditory-verbal STM and likely reflect strategy use and practice. In this presentation, I will describe my interest in learning and contributing to creating diverse, equitable, just, and inclusive spaces using a set of evidence-based strategies from the American Association for the Advancement of Science's STEMM Equity Achievement (SEA) Change initiative. I am committed to implementing strategies for all to flourish as individuals while discovering themselves.

Email: Karen Arcos, karcos1@uci.edu

4:20–4:35 PM (SYM13)

Are We WEIRDA? Ableist Sampling in Psychology Research. RAIN G. BOSWORTH, *Rochester Institute of Technology* — Disability is common; 27% of Americans have a form of hearing, vision, cognitive, physical, or mental disability (Center for Disease Control, 2023). Yet, this group falls under exclusion criteria for most cognitive or psychological research studies. Restricting almost all our research to abled WEIRD (Western/White, Educated, Industrialized, Rich, and Democratic) populations not just limits the generality and validity of our findings, but can dangerously perpetuate educational practices that harm disabled children. For example, practitioners' language modality choice for Deaf and Hard-of-Hearing children is an area of intense debate, often leading to withholding language access. This talk will focus on valuable lessons we have learned about the brain and cognition from studying bilingual, deaf, and blind populations and the value of linguistic diversity to cognitive science. I will review empirical findings from my lab as well as others demonstrating adaptability and flexibility of the human brain to thrive when allowed to deviate from hegemonic norms based on biased samples.

Email: Rain G. Bosworth, Rain.Bosworth@rit.edu

4:35–4:50 PM (SYM14)

Strategic Advocacy: Individuals and Institutions. TERESA BLANKMEYER BURKE, *Gallaudet University* — The American Philosophical Association's journey in supporting philosophers with disabilities has significantly expanded from a disability representative to a standing committee on the Status of Disabled Persons in the Profession. My presentation will begin with sharing data from the recent American Philosophical Association member survey on how experiences of disability impact the work and lives of philosophers. Following this, I will describe accessibility and advocacy from the perspective of my roles in two institutions, from the perspective as a signing Deaf academic, the Deaf Academics group, an informal association of mostly signing Deaf academics that has operated a listserv for Deaf academics for over twenty years (I am a founding member and list owner), and Gallaudet University, a bilingual American Sign Language and English university serving deaf, hard of hearing, and hearing students, where I served a term as Faculty Administrator for Faculty Development providing onboarding and professional development training (including strategic advocacy over the academic lifespan, disability disclosure, the potential impact of legal advocacy on an academic career, and adapting to disability midcareer).

Email: Teresa Blankmeyer Burke, teresa.burke@gallaudet.edu

4:50–5:05 PM (SYM15)

Autistic Identity Across Development: A Critique of "Regression" Into and "Outgrowing" Autism. STEVEN KAPP, *University of Portsmouth* — Clinicians cannot diagnose autism in the current diagnostic model, which is behaviorally, medically, and deficit-based, until toddlerhood (American Psychiatric Association, 2022). Yet autistic people, regardless of other

sociopolitical views, tend to think of autism as a natural part of themselves caused (Kapp et al., 2013) and based (Gillespie-Lynch et al., 2017) in neurocognition. Autistic youth's identity benefits from parents informing them of their autism proactively and nuancedly (rather than pathologically; Riccio et al., 2021), and from becoming aware at younger ages (Oredipe et al., 2023). This talk will present evidence for autism as a lifelong difference and disability that causes innate differences in perception, cognition, emotions, and movement, in contrast to rhetoric and a line of research that children "regress" into autism. It will also challenge the notion that autistic people "lose" their diagnosis from "outgrowing" autism, through the DSM-5's diagnostic criteria as well as evidence of ongoing challenges and camouflaging.

Email: Steven Kapp, steven.kapp@port.ac.uk

5:05-5:20 PM (SYM16)

Discussion of Diversity in Disability: Evidence from Disability Identity and Research. MORTON ANN GERNSBACHER, *University of Wisconsin–Madison* — In this presentation, I will begin by briefly reviewing the five excellent presentations; then I will identify common themes, key arguments, and contrasting methodologies that nonetheless offer a common perspective on disability identity and scholarship. I will recommend suggestions for future research and community action. I will conclude by raising pertinent questions, encouraging audience participation, and promoting thoughtful engagement with the research. I will also moderate the question-and-answer period, ensuring that multiple viewpoints are considered, that the discussion remains focused and productive, and that the exchange is accessible to all the presenters and audience members. At the end of the question-and-answer period, I will summarize the key points discussed, reiterate important insights, and provide a coherent conclusion to the session.

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Attention II

Saturday, November 18, 2023, 8:00-10:00 AM US PST, Continental 4

Chaired by Catherine Arrington, *Lehigh University*

8:00-8:20 AM (107)

Reactive and Proactive Control Processes in Voluntary Task Choice. CATHERINE ARRINGTON, *Lehigh University*, VICTOR MITTELSTÄDT, *University of Tübingen*, IAN GRANT MACKENZIE, *University of Tübingen*, DAVID BRAUN, *Lehigh University* — Deciding which task to perform when multiple tasks are available can be influenced by external factors. We show that external biases reflect reactive control adjustments instead of a failure in control to internally select a task goal. In two experiments we delayed the onset of one task stimulus by a short (50 ms), medium (300 ms), or long (1000 ms) stimulus onset asynchrony (SOA) within blocks while also varying the relative frequencies of short vs. long SOAs across blocks (i.e., short SOA frequent vs. long SOA frequent). Participants' task choices were increasingly biased towards the task associated with the first stimulus as SOA increased. Critically, both experiments revealed larger short-to-medium SOA bias in long SOA frequent blocks, but only when participants had limited time to prepare for an upcoming trial. When time to select an upcoming task was extended, this interaction was not significant, suggesting that the extent to which people rely on reactive control adjustments is additionally modulated by proactive control processes. The findings suggest that voluntary task choices are jointly guided by proactive and reactive processes, which likely adjust the relative activation of different task goals in working memory.

Email: Catherine Arrington, kate.arrington@lehigh.edu

8:20-8:40 AM (108)

Efficient, Reliable, and Valid Measurement of Cognitive Control. ANDREW HEATHCOTE, *University of Tasmania*, TALIRA KUCINA, *University of Tasmania*, NIEK STEVENSON, *University of Amsterdam*, LINDAY WELLS, *University of Tasmania*, MICHELLE DONZALLAZ, *University of Amsterdam*, DORA MATZKE, *University of Amsterdam* — Conflict (Stroop, Simon, and flanker), stop-signal, n-back tasks, and task switching have been validated as measures of cognitive control in many experimental paradigms. However, recently they have been criticised as unsuitable for measuring individual differences in cognitive control due to a lack of reliability unless prohibitively many trials are performed. We examine a new battery based on previous work developing conflict tasks (flanker and combined Stroop and Simon) requiring only ~100 trials for high within-session reliability (Kucina et al., in press) that also uses repeats vs. alternations of these two tasks to produce a highly reliable task-switch cost. Additionally, participants perform stop-signal and working memory tasks, with all tasks integrated in a game narrative and preceded by an interactive tutorial making the battery suitable for efficient online administration. We report Bayesian hierarchical analyses of the reliability of this battery, both within-sessions and between two sessions separated by a week.

Email: Andrew Heathcote, ajheathcote@gmail.com

8:40-9:00 AM (109)

The Individual Differences Structure of Hierarchical Control. ULRICH MAYR, *University of Oregon*, MELISSA E. MOSS, *University of Oregon* — It is almost a truism that cognitive control is hierarchical in nature, yet to what degree each hierarchical level translates into unique individual differences variance is not known. Participants (N = 200) used control structures varying in complexity (levels 1-4) within three different task domains and two different formats (serial-order vs. cue-based). Structural equation modeling of drift-diffusion parameters revealed across tasks and formats, both a common factor (levels 1-4) and a single, higher-level factor (unique to levels 2-4). For diffusion drift rate (i.e., processing efficiency), each factor had unique, positive relationships to other cognitive constructs (WM, LTM, Gf). For threshold setting, robust opposing relationships suggested greater strategic flexibility with higher cognitive ability. Generally, results indicate a modest degree of "hierarchical modularity," but also that the distinction between processing efficiency and

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threshold setting is critical for evaluating performance across levels of control.

Email: Ulrich Mayr, mayr@uoregon.edu

9:00–9:20 AM (110)

Effects of Dual-Task Practice on Task-Order Coordination and its Adaptation. TILO STROBACH, *Medical School Hamburg*, MIKE WENDT, *Medical School Hamburg* — Performing two tasks in overlapping time (i.e., dual-tasking) involves processes of task coordination, particularly when task order varies between trials. Switching the task order between subsequent trials incurs a switch cost which is assumed to result from processes of task coordination. Recent studies found that this order switch cost is reduced after experiencing an order switch in the preceding trial (i.e., sequential modulation of the switch cost), demonstrating an adaptive characteristic of task order coordination. It is an open question, however, whether the same or different mechanisms underlie task coordination and its adaptation. To investigate this issue, we assessed the impact of dual-task practice on the order switch cost and on the sequential modulation thereof. Preliminary findings demonstrate a reduction of the order switch cost, indicating improved task coordination, while the sequential modulation was hardly affected by practice, suggesting different underlying mechanisms.

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9:20–9:40 AM (111)

Mind-Wandering Regulation in Response to Situational Demands Relies on Attentional and Metacognitive Control. JAN RUMMEL, *Heidelberg University*, LENA STEINDORF, *Heidelberg University*, DANIEL HOLT, *Heidelberg University*, ANNA-LENA SCHUBERT, *University of Mainz* — The cognitive flexibility view (Boywitt & Rummel, 2014) argues that people reduce their mind wandering (MW) when task demands increase. Previous research has shown that people with higher working memory capacity (WMC) are better able than people with lower WMC to regulate their MW. To investigate this regulation process, a sample of 233 young adults was exposed to easy and difficult blocks of three different cognitive tasks. Performance predictions were collected for and MW was assessed via thought probes during all blocks. WMC was measured with three complex span tasks and attention control with three tasks from the Draheim et al. (2021) battery. We modeled the latent change in MW from easy to difficult blocks and found change scores to be negatively related to WMC. This MW–WMC-relationship was fully mediated by attentional control and performance predictions. A subset of (N = 109) participants also performed a sustained-attention-to-response task while their brain activity was recorded using EEG. EEG-assessed error-awareness was related to WMC but did not mediate the MW–WMC-relationship. We conclude that both cognitive and meta-cognitive control play important roles for MW regulation.

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9:40–10:00 AM (112)

Organization search in Hybrid Foraging: Evidence from Typical Developing and Individuals with ADHD. BEATRIZ GIL-GOMEZ DE LIANO, *Universidad Autónoma de Madrid*, MARCOS BELLA-FERNÁNDEZ, *Universidad Autónoma de Madrid* — Visual foraging can be a helpful task in understanding the organization of search. We can study target scan paths when searching for an undetermined number of targets among distractors using measures like best-r, inter-target distances, PAO, or path intersections. We applied these measures to study search organization in dynamic non-exhaustive foraging. We run classic feature/conjunction foraging (n = 279; 4-25 years old) and "real-world stuffed-animals" foraging in individuals with ADHD compared to controls (n = 42; 7-14 years old). The results replicated previous findings showing younger observers and conjunction searches being less organized. Interestingly, the organization decreases when search termination comes, suggesting that organization measures could be critical in understanding quitting rules in search. Although some differences arise for individuals with ADHD in the real-world foraging, they are surprisingly good at organizing the search, suggesting that our foraging task could also represent a novel way to investigate attentional regulation in typical and atypical (ADHD) development.

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Learning & Memory III

Saturday, November 18, 2023, 8:00–10:00 AM US PST, Plaza A

Chaired by Curt Carlson, *Texas A&M University–Commerce*

8:00–8:20 AM (113)

Who Said What to Whom? Memory for Sources and Destinations in Monolinguals and Bilinguals. WENDY S. FRANCIS, *The University of Texas at El Paso*, NAOKO TSUBOI, *The University of Texas at El Paso* — Keeping track of information about sources and destinations (where information came from and to whom it has been relayed) is a challenge to human memory. Spanish-English bilinguals (48 English-dominant and 48 Spanish-dominant) and 48 English monolingual speakers viewed 120 recorded interactions in which one of four confederates told a fact about themselves to another confederate. Participants were instructed to keep track of who said what to whom. The accuracy of item memory did not differ across groups, but bilinguals remembered sources and destinations more accurately than monolinguals. Participants with higher item accuracy had higher source accuracy (but not higher destination accuracy). Memory for sources was more accurate than memory for destinations, and the accuracy of source and destination memory traded off at the item level. These results suggest that attentional resources are divided between the source and destination of information transfer at encoding, with sources being prioritized over destinations.

Email: Wendy Francis, wfrancis@utep.edu

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8:20–8:40 AM (114)

Cognitive Offloading Confers an Age-Related Advantage for Recall of Health Information. LAUREN L. RICHMOND, *Stony Brook University*, LOIS K. BURNETT, *Stony Brook University* — Previous cognitive offloading work has found that both young and older adults can create and use external memory aids to boost performance on simple tasks. To date, little work has investigated whether older adults use and benefit from cognitive offloading when information is more complex and naturalistic. In this study, 64 participants (32 young and 32 older adults) studied health-related information then completed free recall and old-new recognition tests under two conditions. In the cognitive offloading choice condition, participants could choose to create notes during study to use on upcoming memory tests. In the internal memory condition, participants had to rely on internal memory alone. Both age groups were found to offload similarly often, and benefits of cognitive offloading were observed in both age groups for free recall and recognition tests. Notably, older adults outperformed young adults on the free recall test when given the opportunity to offload, while the reverse pattern was observed in the internal memory condition. These results suggest that older adult populations can sometimes outperform young adults and supports the use of cognitive offloading in real world settings to bolster everyday memory performance.

Email: Lauren Richmond, lauren.richmond@stonybrook.edu

8:40–9:00 AM (115)

Was He the Perpetrator or the Bystander? Testing Theories of Unconscious Transference for Eyewitness Identification. CURT CARLSON, *Texas A&M University–Commerce*, ALEX WOOTEN, *Hollins University*, MARIA CARLSON, *Texas A&M University–Commerce* — Unconscious transference (UT) is a potential explanation for an eyewitness identifying a familiar but innocent suspect from a lineup. We conducted a large experiment (N = 31,612) to test three UT theories (automatic processing/familiarity, poor source retrieval, and memory blending) by manipulating memory strength for the perpetrator versus the bystander, as well as their physical similarity. Participants were randomly assigned to view a fair simultaneous lineup containing the perpetrator, the bystander, an innocent suspect never seen before, or both the perpetrator and bystander. We found several forms of evidence of UT, but it was much weaker when: (a) the bystander was dissimilar from the perpetrator, and (b) the perpetrator was viewed for longer than the bystander. Both automatic processing/familiarity and poor source retrieval received the most support, with memory blending a distant third. Lastly, UT harmed the confidence-accuracy relationship. We recommend additional eyewitness research involving familiar innocent suspects.

Email: Curt Carlson, curt.carlson@tamuc.edu

9:00–9:20 AM (116)

Individual Differences in Interaction Between Memory Systems. PRIYA KALRA, *University of Western Ontario*, JOHN PAUL MINDA, *University of Western Ontario* — In a previous study, we found evidence of interaction between implicit and explicit systems for category learning. However, the extent of this interaction varied across participants. In the present study, we attempted to identify individual-level factors associated with the extent of interaction. We used a battery of attention and working memory tasks from Cambridge Brain Sciences, as well as the Inventory of Learning Styles (ILS; Felder & Solomon, 1993). We found that working memory (digit span) was negatively correlated with the interaction measure such that greater digit spans were associated with greater interaction scores ($r = -.34$, $p<.05$). We also found that the Act-Reflect subscale of the ILS was significantly correlated with the interaction measure such that a greater tendency toward action (than reflection) was associated with greater interaction scores ($r = -.38$, $p<.05$). These two predictors were uncorrelated with each other, and a hierarchical regression analysis revealed that they represent unique sources of variance in interaction score (AR only vs AR+DS: $\Delta R2$ (adj) = .122). These findings suggest that cognitive ability as well as cognitive preferences may influence interaction between systems for learning.

Email: Priya Kalra, pkalra7@uwo.ca

9:20–9:40 AM (117)

Unveiling the Boosting Effects of Mind Wandering on Predictive Processes. TEODORA VEKONY, *INSERM*, BENCE C. FARKAS, *Université Paris-Saclay*, BIANKA BREZOCZKI, *Eötvös Loránd University (ELTE)*, MATTHIAS MITTNER, *UiT The Arctic University of Norway Institute for Psychology*, GABOR CSIFCSAK, *UiT The Arctic University of Norway*, PETER SIMOR, *Eötvös Loránd University (ELTE)*, DEZSO NEMETH, *Université Claude Bernard Lyon 1, Eötvös Loránd University (ELTE), & Hungarian Academy of Sciences* — This research aimed to explore the potential positive aspects of mind wandering (MW), a common occurrence where individuals shift their attention from external tasks to internal thoughts. While there is ample evidence highlighting the detrimental effects of MW on cognitive performance and its association with psychiatric conditions, there is a lack of direct evidence regarding its potential benefits. In our preregistered study, we simultaneously examined participants' performance on a visuomotor task and their ability to extract probabilistic information from the environment while assessing their level of task focus (on-task vs. MW). Our findings revealed that MW facilitated the extraction of hidden but predictable patterns from a series of visual inputs. Additionally, MW influenced the tradeoff between speed and accuracy, leading participants to adopt a faster yet less accurate response style. These results indicate that MW may play a functional role in human cognition and everyday functioning by shaping behavior and predictive processes. Overall, our study emphasizes the significance of considering the adaptive aspects of MW and its potential to enhance cognitive abilities.

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9:40–10:00 AM (118)

Sleep, Relative to Wake, Increases Both Veridical and False Memory in the DRM Paradigm: A Registered Report. MATTHEW MAK, *University of York*, ALICE O'HAGAN, *University of York*, AIDAN HORNER, *University of York & York Biomedical Research Institute*, GARETH GASKELL, *University of York* — In the Deese-Roediger-McDermott (DRM) paradigm, participants are

presented with semantically related words such as "nurse", "hospital", and "sick". Subsequently, participants are likely to falsely remember that a lure word like "doctor" was presented. Multiple studies have examined whether DRM false memories are influenced by sleep, with contradictory results. A recent meta-analysis suggests that sleep may increase DRM false memory when short lists are used. We tested this in a registered report (N = 488), using short DRM lists (8 words/list) and free recall. We found that the Sleep (vs. Wake) participants (i) produced more intrusions (i.e., neither the studied nor lure words) but a comparable number of total responses, and importantly (ii) more non-presented critical lures and studied items (i.e., greater false and veridical recall after sleep). Our findings provide support for the view that sleep may facilitate gist abstraction and/or spreading activation, alongside strengthening/protecting encoded memories.

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Judgment

Saturday, November 18, 2023, 8:00–10:00 AM US PST, Plaza B

Chaired by Lisa Fazio, *Vanderbilt University*

8:00–8:20 AM (119)

Semantic Coherence Is Necessary to Explain Repetition-Based Illusory Truth Effects. JESSICA UDRY, *Georgia State University*, SARAH BARBER, *Georgia State University* — Repeated exposure to information increases its perceived truth, a phenomenon known as the illusory truth effect. We designed a series of experiments investigating how perceptions of truth are affected by previous activation of a single semantic network node and by previous activation of a coherent network of nodes. There was no increase in the perceived truth of critical facts when participants were previously exposed to the critical fact's topic (Experiment 1), to non-critical facts describing the same topic(s) as the critical fact (Experiment 2), or to non-critical facts that described and linked together the two primary references of the critical fact in novel ways (Experiment 3). However, there were significant increases in perceived truth of critical facts when participants were previously exposed to non-critical facts which linked the two primary references of the coherent fact in way semantically coherent with the critical fact (Experiment 4). These results suggest that semantic coherence is necessary for increases in perceived truth.

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8:20–8:40 AM (120)

Global Public Concerns about Climate Change and Severe Weather: The Role of Education, Direct Experience, and Indirect Experience. WANDI BRUINE DE BRUIN, *University of Southern California*, PATRYCJA SLEBODA, *Baruch College CUNY*, TSEGAYE GINBO GATISO, *World Bank* — Public perception researchers have debated whether people conflate climate and weather. Our analyses of the 2021 Lloyd's Register Foundation World Risk Poll suggest that climate change concerns and severe weather concerns do not always co-occur. For example, people in Africa show the least concern about climate change but are among the most likely to be concerned about severe weather. Moreover, climate change concerns were more strongly predicted by education, and severe weather concerns by direct experience with harm from severe weather—suggesting different underlying processes (risk as analysis vs. risk as feelings). We also examined the role of indirect experience, or knowing others harmed by severe weather, which predicted climate change concerns and severe weather concerns over and above having direct experience. Yet, indirect experience was also less associated with climate change concerns than with severe weather concerns. Findings generally held across continents and countries varying in disaster-risk level. Climate change communications should address climate and weather concerns, be understandable independent of recipients' education, and refer to direct and indirect experiences.

Email: Wandi Bruine de Bruin, wandibdb@usc.edu

8:40–9:00 AM (121)

Bias and Debiasing in Alternative Hypotheses Evaluation. MANDEEP K. DHAMI, *Middlesex University, London*, PETER DE WERD, *Netherlands Defence Academy*, IAN BELTON — People are often portrayed as suffering from confirmation bias, and in professional contexts such as intelligence analysis, organisations have developed policies to debias them. However, these debiasing techniques are rarely evidence-based or empirically tested. We present two studies on bias and debiasing in alternative hypotheses evaluation tasks. Study 1 measured the debiasing effect of how task information is structured by a commonly used debiasing technique called the analysis of competing hypotheses (ACH). Study 2 examined the portrayal of analysts as suffering from confirmation bias. In both studies, we also explored the association between judgmental coherence, cognitive reflection, and bias. We found that ACH's task information structure was not the most effective debiasing intervention. In addition, the majority of analysts did not demonstrate confirmation bias. The inclination to view people as biased may lead to debiasing efforts that are either unwarranted or ineffective.

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9:00–9:20 AM (122)

Does Repetition Increase Belief Even When You Hear it from Pinocchio?: Examining the Effects of Source Trustworthiness on the Illusory Truth Effect. RAUNAK PILLAI, *Vanderbilt University*, RUSSELL FAZIO, *Ohio State University*, LISA FAZIO, *Vanderbilt University* — Repeated statements feel truer than new ones. Current theories suggest this illusory truth effect occurs due to processing fluency: Repeated statements are easier to process, and people infer that this fluent processing experience means the statement is likely true. However, fluency does not always reliably indicate truth, like when hearing statements from someone prone to lying. Here, we examine whether people can avoid the effects of fluency on perceived truth when statements are repeated by someone who often presents false information. In three experiments (total N = 973 US Mechanical Turk/Connect workers), we trained participants to learn that one source tends to convey true information and another source tends to convey false information. In experiment 1, repetition

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increased belief, regardless of whether statements were attributed to the trustworthy or untrustworthy source while rating the truth of the statement. In experiments 2 and 3, repetition increased belief slightly less when the repeated statements originally came from the untrustworthy source. Repetition increases belief, even when it comes from an untrustworthy source, but social evaluations like trust in the original source of the information can moderate this relationship.

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9:20–9:40 AM (123)

Temporal Discounting and Context Effects. MARY KAY STEVENSON, *California State University, East Bay* — Context effects (Parducci, 1965; Birnbaum & Rouvere, 2023) describe the impact of the stimulus range on the judged interpretation of stimuli. The temporal proximity of gains and losses consistently reduces the impact of their judged values. The current studies assess temporal discounting for different delay ranges on the judged values of positive and negative consequences evaluated in isolation and in combination. The temporal discounting rates differ for gains and losses whether they are presented alone or together. The common delays were discounted differently as the shortest delay in a range as compared to the longest delays in a range. The discounting rates are not influenced by combining gains and losses, but the subjective values of gains are influenced by combining them with losses. Environmental outcomes spanning long time ranges show similar effects. These results have implications for the problem of dealing with short-term gains leading to long-term losses.

Email: Mary Kay Stevenson, marykayste@gmail.com

9:40–10:00 AM (124)

Frequency Formats Are Not Superior in Conditional Probability Estimation. CHRISTOPHER R. WOLFE, *Miami University*, KATHERINE B. BOTTEMA, *Miami University*, KATHRYN A. MIERZEJEWSKI, *Miami University*, ELISE C. HOKR, *Miami University*, VALERIE F. REYNA, *Cornell University* — Although some claim an innate superiority for frequency formats over percentages for estimating conditional probabilities, in previous research the frequency advantage appears to be a function of class-inclusion confusion and confounds involving problem wording and specific numbers. We randomly assigned participants to receive two conditional probability estimation problems in frequency formats or percentages, manipulating the wording, specific numbers, and a brief video on the logic of 2x2 tables. We also assess individual differences inf numeracy and the propensity for base rate neglect using the fuzzy processing preference Index. The superiority of frequencies over percentages was reversed when different numbers were used. These results were predicted by fuzzy-trace theory, which suggests that class-inclusion processing and mental representation, rather than "natural" frequency formats, determine estimation accuracy. Individual differences also affected performance. In addition to theoretical relevance, we discuss the practical ramifications of these findings in areas such as medical decision making.

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Psycholinguistics II

Saturday, November 18, 2023, 8:00–10:00 AM US PST, Imperial A

Chaired by Laura M. Morett, *The University of Alabama*

8:00–8:20 AM (125)

German in Childhood and Latin in Adolescence: On the Bidialectal Nature of Lexical Access in English. ARTURO E. HERNANDEZ, *University of Houston*, YINAN XU, *University of Houston*, MY V. H. NGUYEN, *University of Houston*, KEVIN BROWN, *Oregon State University* — To date, few studies have looked at the role of word etymology in lexical access. To fill this gap, we created a database of more than 20,000 English words that included reaction times and other variables that are important for word recognition. Three different results will be presented. First, analysis of age of acquisition shows that early learned words have mostly Germanic origins whereas later learned words have mostly Latin origin. Second, results from behavioral data reveal that etymology accounts for reaction times and accuracy during a word reading task in native and nonnative English speakers. Third, phonological network analyses revealed that the giant component (largest connected subgraph) had an overrepresentation of Germanic words. Furthermore, there was additional segregation into Germanic majority and Latin majority communities. Finally, Latin-based words, on the other hand, were in several smaller clusters. Taken together these findings support a bidialectal view of English in that Germanic words serve as the base of lexical processing starting in childhood and persist until adulthood. Implications for models of word recognition in English will be discussed.

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8:20–8:40 AM (126)

What Do Semantic Predictions Look Like? STEVEN G. LUKE, *Brigham Young University* — Much research has focused on the role of prediction in language processing. Evidence indicates that semantic representations can be pre-activated, but it is unclear how focused such pre-activation is; is the prediction highly specific, perhaps only involving a single word or concept, or is it more broad, encompassing a range of semantic representations? Further, how does this representation change as contextual constrain increases? Analyses of existing cloze task corpora show that generated responses are semantically diverse, even for high constraint contexts. As constraint increases, produced words tend to be more semantically related to the most expected completion, but the diversity of responses remains. Behavioral data from a semantic acceptability judgment task confirms that words that strongly diverge semantically from the expected sentence completion are still acceptable to many participants. These findings suggest that semantic predictions are tuned broadly, rather than being highly specific.

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8:40–9:00 AM (127)

The Impact of Language and Reading Development on Real-Time Spoken- and Written-Word Recognition in School-Age Children. BOB MCMURRAY, *University of Iowa*, JAMIE KLEIN-PACKARD, *University of Iowa*, CHARLOTTE JEPPSEN, *University of Iowa*, ETHAN KUTLU, *University of Iowa*, J. BRUCE TOMBLIN, *University of Iowa* — Until recently, it was thought that word recognition develops largely during the first years of life. However, recent work using the visual world paradigm (VWP) suggests real-time word recognition continues to develop through adolescence (McMurray, Apfelbaum, & Tomblin, 2022). However, it is unclear if the changes in real-time word recognition derive from changes in overall language/reading ability or reflect age-related maturation. As a part of the Growing Words project, this cross-sectional study examined 245 school-age children (Grades 1-3) using the VWP and standardized measures. A structural equation model found three factors representing language, reading and phonology. We then used regression to understand how these factors relate to real-time spoken and written word recognition. Spoken word recognition reflected largely language development (but not age), while written word recognition reflected both reading and language development (but not age). Neither is fully described by changes in non-linguistic skills assessed with purely visual VWP. This ties the development of real-time word recognition directly to changes in underlying ability, with implications for the mechanisms of this later window of language development.

Email: Bob McMurray, bob-mcmurray@uiowa.edu

9:00–9:20 AM (128)

Learning L2 Mandarin Words by Observing Gestures Conveying Lexical Tone Pitch Contours and Word Meanings Affects Their Subsequent Semantic and Phonological Processing. LAURA M. MORETT, *The University of Alabama* — In this work, it was investigated how observing pitch gestures conveying lexical tones and representational gestures conveying word meanings when learning L2 Mandarin words differing minimally in lexical tone affects their subsequent semantic and phonological processing by L1 English speakers using the N400 event-related potential (ERP). Larger N400s for English target words mismatching vs. matching Mandarin prime words in meaning were observed for Mandarin words learned with observed pitch and representational gesture, but not no gesture. Additionally, larger N400s for Mandarin target words mismatching vs. matching Mandarin prime words in lexical tone were observed for words learned with observed pitch gesture, but not representational or no gesture. These findings provide the first neural evidence that observing gestures conveying phonological and semantic information during L2 word learning enhances subsequent phonological and semantic processing of learned L2 words.

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9:20–9:40 AM (129)

Predictability Effects on Auditory Word Recognition in a Novel Priming Paradigm. ANNE MARIE CRINNION, *University of Connecticut*, JAMES S. MAGNUSON, *University of Connecticut & Basque Center on Cognition, Brain and Language (BCBL)*, EMILY MYERS, *University of Connecticut*, PHOEBE GASTON, *University of Connecticut* — Predictability effects in spoken word recognition could arise due to higher relative lexical activation for predicted words (per Interactive Activation frameworks) or less prediction error for predicted words (i.e., little or no activation update, per Predictive Coding frameworks). To investigate this, we designed a novel two-step paradigm modulating predictability of semantic and identity primes. Within each three-word trial, we manipulated the predictability of an auditory item (e.g., DUCK) by preceding it with a matching visual word (e.g., duck) or an unrelated visual word (e.g., table). That auditory item (or a control, e.g., TABLE) served as the prime preceding a visual probe (e.g., duck or goose), on which participants made a lexical decision. We measured semantic or identity priming at the visual probe and assessed how predictability of the auditory item impacted those priming effects. Priming effects from the auditory items were smaller when the auditory items matched the initial visual word (i.e., were predictable). This is more consistent with Predictive Coding which predicts a smaller change in activation for the auditory prime when it is expected, although the results do not rule out Interactive Activation.

Email: Anne Crinnion, anne.crinnion@uconn.edu

9:40–10:00 AM (130)

Cognitive Control in Language Processing: The Influence of Cue Reliability. TAL NESS, *University of Maryland, College Park*, VALERIE J. LANGLOIS, *University of Colorado Boulder*, MADELEINE WADE, *University of Colorado Boulder*, ALBERT E. KIM, *University of Colorado Boulder*, JARED M. NOVICK, *University of Maryland, College Park* — During language processing, syntactic and semantic cues sometimes conflict (e.g., The hearty meal was devouring…). How is such conflict resolved? We tested the hypothesis that cognitive control biases processing toward the more reliable cue. We recorded 64 participants' EEG while they read sentences involving syntax-semantic conflict. To vary cue reliability, half the participants were told to "repair" the sentences to accommodate the semantics (devour→devoured); half were told to "integrate" to accommodate the syntax (imagine a juicy burger eating something). To vary participants' level of cognitive-control engagement, they completed Stroop trials between sentences. The "repair" group showed a smaller P600 following Incongruent vs. Congruent Stroop items, suggesting reduced syntactic editing difficulty under an increased state of cognitive control (when they were instructed to rely on semantics). Conversely, the "integrate" group showed a smaller frontal negativity following Incongruent vs. Congruent Stroop, suggesting less difficulty coercing an anomalous meaning (when they were instructed to rely on syntax). These effects show that upregulated cognitive control may boost people's use of reliable cues to guide parsing decisions.

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Emotion and Cognition

Saturday, November 18, 2023, 8:00–9:40 AM US

SATURDAY

PST, Imperial B

Chaired by Aycan Kapucu, *Ege University*

8:00–8:20 AM (131)

How Do Speed/Accuracy Instructions Influence Retrieval Dynamics of Disgust-Related Memory Advantage? AYCAN KAPUCU, *Ege University*, ELIF YÜVRÜK, *Ege University* — Disgust-related memory advantage, characterized by increased memory accuracy and liberal response bias for disgust—compared to fear-related stimuli—has been well documented in previous research. How speed/accuracy instructions influence different retrieval dynamics of this disgust-related memory advantage has yet to be investigated. In this study, participants first studied three blocks of disgust-related, fear-related, or neutral pictures and then completed an old/new recognition test under one of three instruction conditions emphasizing either speed, accuracy, or both. Preliminary results replicated previous findings that disgust-related stimuli increased memory accuracy along with a liberal response bias, and extended those findings by showing that this advantage was independent of speed/accuracy instructions. Ongoing diffusing modeling analyses are testing different retrieval dynamics such as response bias (relative starting point), response cautiousness (boundary separation), and memory bias (drift rate) to explain the underlying mechanisms of this memory advantage. Speed/accuracy instructions are expected to selectively influence response cautiousness.

Email: Aycan Kapucu, aycankapucu@gmail.com

8:20–8:40 AM (132)

The Case Against Tough Love: Even Task-Irrelevant Positive Affect Facilitates Cognitive Control. REBEKA C. ALMASI, *The George Washington University*, JINI TAE, *Gwangju Institute of Science and Technology*, YOONHYOUNG LEE, *Yeungnam University*, MYEONG-HO SOHN, *The George Washington University* — Emotional valence of task-relevant stimuli affects cognitive control. Our research determines whether this is true for task-irrelevant emotion. In Experiment 1, participants responded to the apparent gender of a face, ignoring a congruent or incongruent gender word. Always frowning actors, as opposed to always smiling actors, prompted a larger congruency effect, a hindrance to distractor inhibition. In Experiments 2 and 3, participants switched between identifying age and gender. The smaller task switch cost for smiling faces shows further facilitation of cognitive control when there is concurrent positive emotion. This research suggests that even task-irrelevant emotion promotes online formation of positive associations that increase cognitive control performance in both task switching and distractor inhibition.

Email: Rebeka Almasi, almasi@gwu.edu

8:40–9:00 AM (133)

Including Emotion Regulation Instructions on Sensitive-Content Screens Reduces Image-Related Distress. MELANIE TAKARANGI, *Flinders University*, ERIN SIMISTER, *Flinders University*, ELLA MOECK, *University of Melbourne*, VICTORIA BRIDGLAND, *Flinders University* — Social media sensitive-content screens in their current form do not affect how people prepare to view or react after viewing, potentially distressing social media content. Therefore, we examined whether encouraging people to use emotion regulation strategies would reduce distress related to sensitive content. We first trained participants (n = 192) to use distraction (think of something unrelated to the content) and reappraisal (change the meaning of the content). Then, during a simulated Instagram task, participants saw 30 sensitive-content screen + image pairs. Screens and images appeaed for 5 s each; screens appeared with reappraisal, distraction, or no instructions. We told participants to respond naturally to no-instruction screens. After each image, participants rated how distressed they felt in that moment (0 = not at all, 100 = extremely). Participants reported reduced distress after images where we provided emotion regulation instructions, compared to images with no instruction (Est. = -3.07, $p < .001$); reappraisal was most effective. Our data suggest that adding emotion regulation instructions to sensitive-content screens may be a useful harm-mitigation intervention that has more impact than providing a warning alone.

Email: Melanie Takarangi, melanie.takarangi@flinders.edu.au

9:00–9:20 AM (134)

An Experimental Comparison of Processing Mode, Self-Distancing, and Construal Matching Hypotheses in Explaining the Reduction of Negative Emotions. TUGBA UZER, *TED University*, SINEM YAPICI, *TED University* — This study investigates three proposed processes for reducing negative emotions. Processing mode theory argues that concrete processing reduces negative affectivity. Self-distancing theory proposes that psychological distance diminishes negative affectivity. The construal-matching hypothesis posits that aligning the processing level of emotions with both the processing mode and psychological distance reduces negative emotions. This study manipulates processing mode, self-distancing perspective, and construal level of emotions simultaneously, which has not been done before. One-hundred ninety participants were randomly assigned to eight experimental conditions. Participants recalled an emotional memory based on their assigned condition, their emotions were measured, and they reflected on the memory from a self-distance or self-immersed perspective. Depending on their condition, participants focused on how or why aspects of the event. Results show that negative emotions decrease the most when participants adopt a self-distance perspective and focus on the why aspects of the event, regardless of whether it is anger or guilt. These findings emphasize the importance of processing mode and self-distancing in reducing negative emotions.

Email: Tugba Uzer, tugba.uzer@tedu.edu.tr

9:20–9:40 AM (135)

Better Memory for Actions upon Negatively Valenced Objects but Not for the Objects Themselves. LINDSEY R. PUGH, *Florida Atlantic University*, ALAN W. KERSTEN, *Florida Atlantic University*, JULIE L. EARLES, *Florida Atlantic University*, ELIZABETH ESCUAGE, *Florida Atlantic University* — Negatively

SATURDAY

valenced objects (e.g., weapons) have been found to draw attention away from other event features, such as the identities of people manipulating those objects. Surprisingly few studies into the weapon focus effect, however, have examined whether negative valence leads to better memory for the objects themselves. In the present study, we tested the theory that negatively valenced objects yield greater attention to actions upon those objects (e.g., in which direction a gun is pointed), whereas the objects themselves are processed more categorically. Participants viewed videos of two different actors manipulating neutral and negatively valenced objects and were then tested for recognition of the objects and actions and which actor was associated with them. Negative valence led to more correct rejections of events involving differences in the way an object was manipulated, but did not affect the ability to detect differences in the objects themselves. Negative valence also had no effect on memory for which actor manipulated each object, perhaps because two actors recurred throughout encoding and thus became familiar to participants, unlike typical eyewitness scenarios. Implications for eyewitness memory will be discussed.

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Cognition: Development, Embodiment, and Culture

Saturday, November 18, 2023, 8:00–10:00 AM US PST, Continental 1 & 2

Chaired by Jonathan Schooler, *University of California, Santa Barbara*

8:00–8:20 AM (136)

Strategic Encoding of Spatial Information in Preschool Children. HAGIT MAGEN, *The Hebrew University of Jerusalem*, NETA GOROHOVSKY, *The Hebrew University of Jerusalem* — As children become more independent, they begin to shape the content of their memory representations. For example, children place objects that they later retrieve in locations of their choice. Here we tested this aspect of memory, we termed self-initiated (SI) spatial working memory (SWM) in preschool children. Forty-eight children aged 4-6 years performed a modified spatial-span task, in which they memorized sequences of 3-5 locations they selected themselves (SI condition) or locations that were randomly selected by the computer (non-SI condition). Following a short delay, the children retrieved the sequences of locations they memorized. The results showed that children as young as 4 years of age created in the SI condition spatially structured sequences that enhanced their memory performance, compared to their performance in the non-SI condition. Moreover, when asked to construct spatial sequences for a competitor in a memory contest, the children disrupted the spatial structure in the sequences they created. Taken together, this study shows that preschool children have access to the metacognitive knowledge on the role of spatial structure in SWM, knowledge that they use to enhance or disrupt memory.

Email: Hagit Magen, msmagen@mail.huji.ac.il

8:20–8:40 AM (137)

Investigating Shared Mechanisms of Motor Imagery and Sensorimotor Simulation in Language Processing. EMIKO MURAKI, *University of Calgary*, STEPHAN F. DAHM, *Universität Innsbruck*, PENNY M. PEXMAN, *University of Western Ontario* — To investigate the mechanisms of simulation in grounded theories of semantic representation, we used an individual differences approach that tests whether motor imagery shares some mechanisms with sensorimotor simulations during semantic processing. We observed interactions between hand imagery ability and body object interaction (BOI; the degree to which one can interact with a word's referent) effects in semantic processing, replicating previous exploratory findings. Better imagery ability was associated with larger BOI effects, whereas poorer imagery ability was associated with null BOI effects. We also observed effector-specific sensorimotor effects with faster processing for verbs more strongly related to hand/arm and, separately, foot/leg actions. However, these sensorimotor effects did not interact with motor imagery ability. The results suggest that motor imagery is related to some, but not all, sensorimotor effects in language processing. In particular, hand and object-directed motor imagery may share some mechanisms (e.g., internal models) with object-directed sensorimotor simulation during semantic processing.

Email: Emiko Muraki, ejmuraki@ucalgary.ca

8:40–9:00 AM (138)

Using Drawings to Investigate Grounding of Abstract Concepts Related to Power. MARTINA RIEGER, *UMIT Tirol–Private University for Health Sciences and Health Technology*, VICTORIA BART, *UMIT Tirol–Private University for Health Sciences and Health Technology* — Grounded cognition assumes that language and concepts are understood using simulations in different modalities. Evidence for this assumption mainly stems from studies on concrete concepts, less evidence exists for abstract concepts. Concrete concepts are assumed to be grounded via experiences with them in specific situations or via metaphors associated with them. We investigated grounding of abstract concepts related to power. As stimulus material, we chose pairs of concepts (e.g., democracy and dictatorship). Participants were presented each concept separately and were asked to create a visual image in their mind, to rate the image on several aspects, and to draw a sketch of the image. Results showed that drawings of high-power concepts had a larger vertical extension than drawings of low power concepts. Results of the ratings (e.g., colorfulness) depended on the specific concepts, which could partly be explained by the valence of the concepts. Drawings often contained persons, objects, situations, and sometimes metaphors but were rarely abstract. In conclusion, abstract concepts related to power can be depicted visually via grounding in different ways, such as using metaphors, experiences, and actions.

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9:00–9:20 AM (139)

When Truth Begets Truth: The Role of Linguistic Leadership by Politicians in Conversations with the Public. STEPHAN LEWANDOWSKY, *University of Bristol*, FABIO CARRELLA, *University of Bristol*, ALMOG SIMCHON,

SATURDAY

University of Bristol, SEGUN TAOFEEK AROYEHUN, *University of Konstanz*, JANA LASSER, *Graz University of Technology*, DAVID GARCIA, *University of Konstanz* — Some political leaders appear able to make false statements without facing political or electoral consequences. We have previously proposed that liars may be considered honest because segments of the public have come to value authenticity and "belief-speaking" over evidence-based "truth-seeking". Here we examined conversations between U.S. politicians and the public on Twitter. We examined the prevalence of truth-seeking or belief-speaking language in politicians' tweets and explored the linguistic alignment of the public's responses to those tweets. Our primary finding is that responses tend to be aligned with the language of the original tweets, suggesting a "contagion" effect. The tenor of a conversation is determined by the politician's choice of belief-speaking or truth-seeking language. We additionally find that belief-speaking tweets elicited more polarized language in replies compared to truth-seeking tweets. The findings confirm the influential role of political leaders in shaping social media discourse.

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9:20–9:40 AM (140)

Gazing with purpose: Perceived intentionality in Gaze Shifts Facilitates Gaze Following. FLORENCE MAYRAND, *McGill University*, SARAH D. MCCRACKIN, *McGill University*, JELENA RISTIC, *McGill University* — Although gaze following is fundamental, its underlying mechanisms remain poorly understood. An important outstanding question is whether gaze following is influenced by gazers' mental states. We addressed this question in three preregistered experiments. Participants viewed videos of a human actor looking left or right. Actor's gaze shifts were either self-generated or computer-instructed, with observers unaware of this distinction. In Experiment 1, participants indicated perceived direction of the actor's upcoming gaze. Faster responses for self-generated vs. computer-instructed shifts emerged. Experiments 2 and 3 tested whether the perceived actor's gaze intention modulated target-related gaze cuing. Faster responses for gazed-at targets were found for self-generated vs. computer-instructed gaze shifts across a range of SOA times. Analyses of the eye gaze motion indicated that self-generated gaze shifts exhibited significantly greater peak motion magnitudes than the computer-instructed ones. Thus, eye gaze appears to communicate gazer's mental states via subtle motion cues within the eyes.

Email: Florence Mayrand, florence.mayrand@mail.mcgill.ca

9:40–10:00 AM (141)

Expanding Minds: The Power of Art to Drive Creative Thinking, Curiosity, and Intellectual Humility. MADELEINE GROSS, *University of California, Santa Barbara*, JONATHAN SCHOOLER, *University of California, Santa Barbara* — The importance of art is rarely disputed, but is there an empirically demonstrable value of art with respect to its impact on human cognition? In a series of studies, we examined the downstream effects of art on creativity, curiosity, and humility. Across all studies, participants were randomly assigned to either watch one of five artistic film shorts or control videos (featuring funny animals). Effects on conceptually expanded thinking (overinclusive thinking) and creativity (study 1), state interest and deprivation curiosity, as well as information seeking (study 2) and self-reported and behavioral intellectual humility (study 3) were examined. Several traits previously related to artistic appreciation were also included (e.g., openness). Across studies 1-3, we find evidence that exposure to artistic film (vs. control) promotes 1) more divergent styles of semantic processing as evidenced by greater overinclusive thinking and creativity, 2) greater curiosity across all three included measures, and 3) greater self-reported, but not behavioral, intellectual humility. Several of these effects were found to show significant interactions with personality measures. Implications and future directions are discussed.

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Symposium Session IV: Attentional Control as a Psychometric Construct: Challenges and Responses

Saturday, November 18, 2023, 10:00 AM–12:00 PM US PST, Continental 5 & 6

Chaired by Julia Haaf, *University of Amsterdam* (UVA), *Netherlands; and* **Alodie Rey-Mermet,** *UniDistance Suisse, Switzerland*

10:00–10:15 AM (SYM17)

What Are the Challenges We Are Facing When We Aim to Establish Attentional Control as a Psychometric Construct? ALODIE REY-MERMET, *UniDistance Suisse*, GIDON T. FRISCHKORN, *University of Zurich* — Attentional control refers to our ability to maintain and implement a goal and goal-relevant information when facing distraction. Previous research has failed to provide consistent evidence for a psychometric construct of attentional control. So far, this has been argued to result from four methodological challenges: (a) the use of difference scores to measure attentional control, (b) the low reliability of the attentional-control measures, (c) the neglect of individual differences in speed-accuracy trade-offs when only speed or accuracy is used as dependent variable, and (d) the difficulty of isolating attentional control from measurement error. Besides these methodological challenges, there are also conceptual challenges. There is, for example, disagreement in the definition and conceptualization of attentional control, making unclear what should be assessed with the attentional-control measures and what should be reflected in the factor(s) of attentional control. This talk aims to set the stage by presenting all these challenges. Thus, the following talks can focus on how we can respond to these challenges and resolve inconsistencies when establishing attentional control as a psychometric construct.

Email: Alodie Rey-Mermet, alodie.rey-mermet@fernuni.ch

SATURDAY

10:15–10:30 AM (SYM18)

Examining the Psychometrics of Attention Control. MATTHEW K. ROBISON, *The University of Texas at Arlington* — I will examine the psychometrics properties of several new and several previously used measures of attention control. All measures were delivered twice across different days, typically separated by 2 weeks in a large battery including measures of processing speed, working memory capacity, primary memory, secondary memory, and fluid intelligence. Special consideration is given to intrasession reliability, test-retest reliability, intersession practice effects, and the degree to which the measures load onto common or distinct latent factors. A secondary consideration will be attention control's associations with and discriminability from processing speed, working memory capacity, primary memory, secondary memory, and fluid intelligence.

Email: Matthew Robison, matthew.robison@uta.edu

10:45–11:00 AM (SYM19)

The Toolbox Approach to Assessing Individual Differences in Attention Control. CHRISTOPHER DRAHEIM, *Lawrence University* — In this talk, I will summarize the Engle lab's efforts to develop and validate measures of attention control specifically designed for individual differences pursuits. Across multiple independent and large-N datasets we have found that several new and modified accuracy-based tasks (including ones which take just 3 minutes to administer) have vastly improved construct and predictive validity compared to traditional attention tasks. Importantly, we have found that these measures are not overly contaminated with processing speed and that attention control accounts for virtually all the shared variance between many other cognitive abilities, such as working memory capacity and fluid intelligence. This line of work demonstrates that attention control can be reliably and validly measured as a psychometric construct and also provides strong support for our position that attention control is an important general ability that underlies individual differences in executive functioning more broadly.

Email: Christopher Draheim, christopher.d.draheim@lawrence.edu

11:00–11:15 AM (SYM20)

Linking Issues of Validity and Reliability with the Signal-to-Noise Ratio in Attentional Control Tasks. JULIA HAAF, *University of Amsterdam (UVA)* — Why do individual differences in attentional control tasks appear to be so unreliable? Motivated by hierarchical modeling, we can consider different sources of variability that contribute to measures of reliability. Typically, individual variability in the attentional control effect constitutes the signal, and trial-to-trial variability constitutes the noise. Using the ratio of these signal and noise variabilities as a measure of reliability, we may be able to evaluate and compare attentional control tasks independently of the number of trials and participants, and decide whether they can produce stable individual differences. However, the signal-to-noise ratio also raises questions about construct and convergent validity. Does the variability of the signal adequately reflect our understanding of how attentional control works, or should we focus on a different signal in attentional control tasks (e.g., the variability of sequential effects rather than condition effects)? Is it plausible that the effects from different tasks that give rise to signal variability have a similar source across tasks? Can we reduce noise variability by using more complex models of the data or different sources of data?

Email: Julia Haaf, j.m.haaf@uva.nl

11:15–11:30 AM (SYM21)

Formally Linking Computational Models of Attentional Control Tasks Can Help Validate Measures and Constrain Theory. MARIA ROBINSON, *University of California, San Diego* — Attentional control, the ability to (de)prioritize task-(ir)relevant information, is core to goal-driven thought and action. Contemporary research has identified several challenges for developing theories and measures of attentional control; collectively, this work highlights the need to incorporate fundamental insights from mathematical psychology in this research domain. First, it is critical to move beyond the subtraction method and examine a broader scope of mapping functions between latent variables and behavior. One fruitful approach is to use theory-driven computational models to isolate attentional control from nuisance variables. Second, it is important to move beyond solely assessing models based on their post-hoc fits, toward their capacity to make a priori predictions in novel experimental conditions, or across minor variations in task structures. This analytic approach can serve the joint purpose of helping validate and revise models, as well as identify boundary conditions on theories that postulate attentional control as a domain-general construct.

Email: Maria Robinson, mrobinson@ucsd.edu

11:30–11:45 AM (SYM22)

Exploring the Potential and Limitations of Electrophysiological Measures of Attentional Control for Individual Differences Research. ANNA-LENA SCHUBERT, *University of Mainz* — Behavioral performance measures are limited in that they cannot provide insight into the many intermediary cognitive processes contributing to task performance. Electrophysiological recordings, however, allow us to assess neural activity in real-time with high temporal resolution. In my talk, I will give an overview of how different parameters derived from recorded brain activity (e.g., components of the event-related potential, oscillatory power, functional connectivity) are modulated by experimental manipulations of attentional control demands. Moreover, I will discuss which of these electrophysiological parameters may be suitable for individual differences research based on their psychometric properties and which implications for study design can be derived from these psychometric properties. Finally, I will present recent work from our lab in which we validated electrophysiological measures with mathematical model parameters of attentional control and related them to individual differences in cognitive abilities. Our findings support the validity of electrophysiological measures of attentional control but also identify some limitations such as low-to-moderate reliabilities and limited generalizability across tasks.

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SATURDAY

Attention: Visual Search

Saturday, November 18, 2023, 10:00 AM-12:00 PM US PST, Continental 4

Chaired by Nancy Carlisle, *Lehigh University*

10:00-10:20 AM (142)

The Important Impact of Relevance on Attention to Salient Objects. NANCY CARLISLE, *Lehigh University*, GRETA MANINI, *Universidad de Granada*, MATT TONG, *Lehigh University*, ELISA MARTÍN-ARÉVALO, *Universidad de Granada*, FABIANO BOTTA, *Universidad de Granada*, JUAN LUPIÁÑEZ, *Universidad de Granada* — Three drivers of attention are often discussed: top-down, bottom-up, and selection history. Paradigms focus on isolating one of these drivers to examine the impact on attention. However, in the real world these drivers are not independent. In this work, we manipulated the relevance of bottom-up factors in visual search by altering the probability that a salient item will be a target vs. a distractor. Importantly, we did not give explicit instructions about the relevance of the salient items, so any impact of relevance was driven by selection history. We measured the impact of relevance when participants were in singleton detection mode (where attention should already be directed towards salient items) and feature-search mode (where salient items should not to capture attention if they do not match the target template). In behavioral reaction time (Exp. 1) and ERP measures of attentional processing (Exp. 2), we find that increasing relevance enhances the processing of salient items for both singleton detection mode and feature-search mode. The impact of relevance on attention was larger in feature-search mode. On the whole, this work highlights the interaction of bottom-up and selection history on attentional guidance.

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10:20-10:40 AM (143)

Modeling the Temporal Dynamics of Attentional Priority. HAN ZHANG, *University of Michigan*, JOHN JONIDES, *University of Michigan*, JACOB SELLERS, *University of Michigan*, TARAZ LEE, *University of Michigan*, TYLER ADKINS, *University of Michigan* — We recently introduced the forced-response method as a novel technique to study the temporal dynamics of attentional priority during visual search. This presentation furthers our exploration of the forced-response method through the use of a computational model to elucidate the dynamics of attentional priority within this paradigm. This model quantifies both distractor and target processing, enabling us to determine how a particular manipulation alters target up-weighting, distractor down-weighting, or both. We demonstrate the model's fit with existing data and its capability to sensibly decipher the regulation of attentional priority in three different manipulations. Overall, the combination of the forced-response method and the computational model offers a deeper insight into the computation of attentional priority during visual search.

Email: Han Zhang, hanzh@umich.edu

10:40-11:00 AM (144)

Conscientiousness Protects Visual Search Performance from the Impact of Fatigue. STEPHEN MITROFF, *The George Washington University*, JUSTIN GRADY, *The George Washington University*, PATRICK COX, *Lehigh University*, SAMONI NAG, *The George Washington University* — Visual search—looking for targets among distractors—underlies many critical professions (e.g., radiology, aviation security), so it is important to understand factors that reduce search performance, such as fatigue. The current study explored individual differences in susceptibility to fatigue; specifically, if conscientiousness, the ability to control impulses and plan ahead, moderates fatigue's impact on search. Participants (N = 374) self-reported their energy (i.e., inverse of fatigue) and conscientiousness levels as part of a large, diverse set of surveys prior to completing a search task. A preregistered linear mixed-effect analysis on search accuracy revealed main effects of energy (lower energy related to lower accuracy) and conscientiousness (more trait conscientiousness related to higher accuracy), and, critically, a significant energy by conscientiousness interaction. A follow-up analysis divided participants into above- vs. below-median conscientiousness groups and revealed a positive relationship between energy and accuracy for the below-median, but not above-median, group. These results raise possibilities for visual search professions, such as incorporating conscientiousness measures into personnel selection.

Email: Stephen Mitroff, mitroff@gwu.edu

11:00-11:20 AM (145)

You Think You Looked There, But You May Be Wrong: Idiosyncratic Biases in Visual Search. JEREMY M. WOLFE, *Brigham & Women's Hospital & Harvard Medical School*, AOQI LI, *The University of Manchester*, AVA MITRA, *Brigham & Women's Hospital*, NATHAN TRINKL, *Brigham & Women's Hospital*, JOHAN HULLEMAN, *The University of Manchester* — When fixating at one location, we can attend to items inside a roughly oval shaped region around that point of fixation; a "useful field of view" (UFOV). It is generally assumed that items within the UFOV have been attended, but is attention uniformly deployed to items within that UFOV? To address this question, we asked Os to follow a succession of dots at random locations, simulating eye movements during search. At 300 msec after a dot's onset, a ring of 7 L's and 1 T flashed for 150 msec around that dot, followed by a mask. Os then tried to identify the orientation of the only T (4AFC) in the display. Each of 16 Os made more errors at certain radii around the circle than at others. The pattern of errors was idiosyncratic. One O might consistently miss items down and to the left while another might miss items to the right. Error rates could be large (>50%) at some locations and small at others (< 5%). These biases may help explain how people can look at (or near) an item and still fail to "see" it. People might attend at a location and fail to process a target in an "unpreferred" location in the UFOV while believing that they had searched adequately in that neighborhood.

Email: Jeremy Wolfe, jwolfe@bwh.harvard.edu

SATURDAY

11:20–11:40 AM (146)

Electrophysiological Evidence that Multiple Long-Term Memories Guide Attention Simultaneously. GEOFFREY WOODMAN, *Vanderbilt University*, SISI WANG, *Vanderbilt University* — Past experience guides our behavior, but we are still determining how this experience is used to control attention. For example, if we know that a target can have multiple possible visual features, then is our visual system simultaneously sensitized to process any of these target features or do we look for one at a time? Here we had subjects perform a visual search task in which they were told the graded correlational structure in which targets would appear in the environment. Observers rapidly learned the correlational structure and showed response speeding across targets appearing in multiple high-percentage colors. Most critically, the electrophysiological data showed that this speeding was made possible by biasing early mechanisms of perceptual attention to multiple likely targets at the same time. Our findings suggest that there is simultaneous attentional guidance from multiple long-term memories when target features are probabilistic in our environment.

Email: Geoffrey Woodman, geoff.woodman@vanderbilt.edu

11:40 AM–12:00 PM (147)

Attention During Visual Search Is Dynamically Guided Through a Combination of Conceptual Knowledge and Current Task Experience: a Computational Model. RYAN E. O'DONNELL, *Drexel University*, BRAD WYBLE, *The Pennsylvania State University* — When we perform any task, we refine routines to optimize our performance based on a combination of knowledge and task experience. Categorical visual search is one such routine that undergoes such operationalization. We propose a new model, the Operationalized ATTentional Set (OATTS), that simulates this process, starting with an assumption that instructions (e.g., "look for animals") inform the initial priorities for attention according to categorical typicality. After each search a Bayesian-inspired updating process fine tunes those priorities by reinforcing the detected exemplar and also its semantic associates according to typicality via spreading activation. OATTS predicts search behavior according to direct exemplar as well as categorical repetitions that vary in terms of subsampling the instructed category, thereby reproducing priming and prevalence effects. Our results suggest that a hierarchical attentional set guides selection during categorical search towards previously shown items and their semantic associates according to typicality.

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Speech Perception I

Saturday, November 18, 2023, 10:00 AM–12:00 PM US PST, Plaza A

Chaired by Melissa Baese-Berk, *University of Chicago*

10:00–10:20 AM (148)

The Roles of Active and Passive Exposure in Learning New Speech Sounds. MELISSA BAESE-BERK, *University of Chicago*, SANTIAGO JARAMILLO, *University of Oregon*, KURTIS FOSTER, *University of Oregon* — Learning to distinguish novel speech sounds as an adult is a challenging task. Typical laboratory- and classroom-based protocols require extensive active practice; however, when immersed in natural language learning, listeners are typically exposed to substantial passive input. A prior study suggests that combinations of active practice and passive exposure can result in as much learning as active practice alone (Wright et al., 2013); however, which combinations of active and passive learning result in optimal learning remain unknown. In a set of studies we explore whether blocked or interleaved exposure to active and passive trials results in better learning and whether listeners are able to take advantage of passive trials that occur before they complete an active practice session. Preliminary results suggest that blocking and interleaving result in different patterns of learning and that the effectiveness of passive exposures is limited when occurring before active practice.

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10:20–10:40 AM (149)

Lexical Effects on Audiovisual Speech Intelligibility for Healthcare Communication. TESSA BENT, *Indiana University*, KAYLIE MAUCIERI, *Indiana University*, MELISSA BAESE-BERK, *University of Chicago*, ERICA RYHERD, *University of Nebraska at Lincoln* — Speech communication in healthcare settings between care providers and patients can be challenged by soundscape characteristics and unfamiliar medical terminology. Here, we investigate how visual information impacts intelligibility in these situations. In audio-only and audiovisual conditions, medically related sentences with varied lexical frequency and familiarity were presented to participants in hospital noise. Intelligibility was higher in audiovisual than audio-only conditions regardless of lexical characteristics. However, the audiovisual benefit was greatest with low-frequency/high-familiarity words. Thus, visual speech cues support word recognition even when listeners have weak lexical representations, but listeners receive the greatest benefit for words they know well but infrequently encounter. Models of multimodal word recognition should therefore consider lexical encoding strength. Further, face-to-face communication between patients and healthcare providers is particularly important when conveying information about diagnoses and treatment involving less frequent or familiar terminology. Supported by James S. McDonnell Foundation https://doi.org/10.37717/2021-3028

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SATURDAY

10:40–11:00 AM (150)

A Brief Intervention to Help Listeners Process an Unfamiliar Non-Native Accent. JAMES MAY, *Stony Brook University*, JEANNE CHAROY, *Sonos, Inc.*, EMILY NAPOLI, *The Ohio State University*, CHIKAKO TAKAHASHI, *Columbia University*, JEAN HENDRICKSON, *Stony Brook University*, MARIE HUFFMAN, *Stony Brook University*, SUSAN E. BRENNAN, *Stony Brook University* — A second-language speaker's unfamiliar accent can make understanding a lecture difficult, causing listeners to miss or misidentify words that depend on contrasts missing from the speaker's first language. We tested a brief intervention intended to familiarize native-English-speaking undergraduates with a teaching assistant's Mandarin-accented English. Listeners heard a series of meaningful stories read by an international teaching assistant; each story included instances of features problematic for Mandarin-accented English (e.g., /th/, /v/-/w/ ambiguity, consonant clusters; diphthongs). Listeners heard each story 3 times: first, shadowing it as they listened, then listening silently while viewing the story's text, and then listening to the story while shadowing once again. Initial shadowing accuracy for new stories improved by nearly 40% over the course of a 1-hour session, an improvement that persisted for (at least) 2 days. We explore what drives this improvement, and whether this intervention could be a viable way to help listeners adapt to foreign-accented speech.

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11:00–11:20 AM (151)

Do Subphonemic Mismatch Effects Only Tell Us About Words, How They Are Learnt, and Whether They Need to Sleep? NICOLAS DUMAY, *University of Exeter*, SARAH KENWAY, *University of Exeter*, DONGHYUN KIM, *Kumoh National Institute of Technology*, EFTHYMIA KAPNOULA, *Basque Center on Cognition, Brain and Language (BCBL) & Ikerbasque*, ARTHUR SAMUEL, *Stony Brook University, Basque Center on Cognition, Brain and Language (BCBL), & Ikerbasque* — At odds with a host of results (see Palma & Titone, 2021), subphonemic mismatch effects suggest that newly learnt words do not need overnight consolidation to compete in spoken word recognition; after learning a new competitor (e.g., jod for job), a mismatching splice favoring the new word (JOdB) immediately impedes target identification to the same extent as a splice favoring another word (JOgB) (Kapnoula et al., 2015). Using more complex items (flad), our Experiment 1 found interference from novel words (FLAdG) on participants tested immediately after learning, but this effect was analysis-dependent and smaller than the interference produced by existing competitors (FLAbG). In contrast, participants tested after 24 hr showed same-strength interference for novel words and existing words. To promote learning about the VC transitions while preventing cohort competitor acquisition, Experiment 2 combined a 0-hr-test/24-hr-retest design with "diluted" training, where participants hear the same rhyme in an ever-changing initial context (crad, fwad, snad, etc.). Compared to repeated exposure (flad), dilution tells us whether subphonemic mismatch is sensitive to both sublexical and lexical levels of learning.

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11:20–11:40 AM (152)

Listening to the Present in Relation to the Past to Predict the Future. LORI L. HOLT, *The University of Texas at Austin*, AUSTIN LUOR, *Carnegie Mellon University*, SAHIL LUTHRA, *Carnegie Mellon University*, FREDERIC DICK, *University College London* — Listeners quickly, sensitively, and passively accumulate expectations of what they will hear in speech, music, and other sounds. But we lack consensus about how these influences emerge. Examining statistical learning across ostensibly task-irrelevant dimensions may dissociate competing accounts because it allows for active behavior across learning. We describe work demonstrating that even the most basic ability to detect a sound—seemingly hearing rather than listening—is affected by interactions of statistical learning and selective attention. These interactions play out across both stable and volatile statistical listening contexts to suppress low-probability or statistically inconsistent dimensions of sound. These effects are automatic and obligatory, thereby helping listeners to focus on sound features that reliably convey information in a particular statistical context. The unique demands of listening inform us, more generally, about the interplay of statistical learning and selective attention in cognition.

Email: Lori Holt, lori.holt@austin.utexas.edu

11:40 AM–12:00 PM (153)

Non-Native Phonetic Learning in Listeners with High Versus Low Sensitivity to L1 Subphonemic Differences. EFTHYMIA KAPNOULA, *Basque Center on Cognition, Brain and Language (BCBL) & Ikerbasque*, ARTHUR SAMUEL, *Stony Brook University, Basque Center on Cognition, Brain and Language (BCBL), & Ikerbasque* — Some listeners are less sensitive to subphonemic differences in their L1 (e.g., between a /p/ with short aspiration vs. a /p/ with long aspiration). Low sensitivity to subphonemic differences (i.e., less gradient speech perception) is likely the result of stronger perceptual warping of acoustic cues around a category boundary. This study examines whether gradiency affects the way listeners learn novel phonetic contrasts. Difficulty in learning non-native speech contrasts is thought to stem from the perceptual assimilation of non-native speech sounds to similar L1 categories. We thus predicted that listeners with stronger perceptual warping (i.e., lower gradiency) would have a harder time learning novel contrasts. We assessed the speech gradiency of Spanish native speakers in their L1 and then trained them on a non-native phonetic contrast (English /b/-/p/) on two consecutive days. Training performance was used as an index of learning and the mismatch negativity (MMN) EEG component was used as a measure of perceptual encoding of the new contrast. The results suggest that speech gradiency affects the way listeners approach the task of learning new contrasts, but it does not seem to affect learning success.

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SATURDAY

Eyewitness Identification

Saturday, November 18, 2023, 10:00 AM-12:00 PM US PST, Plaza B

Chaired by Melissa F. Colloff, *University of Birmingham*

10:00-10:20 AM (154)

The Role of Race in Lineup Construction: A Multidimensional Scaling Approach. MELISA AKAN, *University of Massachusetts Amherst*, JEFFREY J. STARNS, *University of Massachusetts Amherst*, ANDREW COHEN, *University of Massachusetts Amherst*, ALLECIA REID, *University of Massachusetts Amherst* — Research on the influence of race on eyewitness memory has predominantly focused on identification accuracy, with relatively limited attention to its role in lineup construction. In this study, self-identified Black and White Americans created lineups for Black and White suspects by selecting five photos (fillers) from a pool of description-matched faces. Lineup constructors were told that the goal was to facilitate both the protection of innocent suspects and the identification of guilty suspects. The constructed lineups were analyzed using psychological face spaces derived by applying multidimensional scaling (MDS) analysis to similarity ratings from independent groups of participants from both races. Our analysis provides insight into filler-selection strategies and reveals that lineup properties vary depending on the perceptual space used for examination. For example, a suspect might "stand out" from a set of fillers on the perceptual space for Black participants but not White participants. These findings underscore the importance of considering the race of not only the eyewitness but also of the lineup constructor. Additionally, we introduce MDS-based measures to quantitatively assess the characteristics of a lineup.

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10:20-10:40 AM (155)

The Critical Distinction Between Mnemonic vs. Perceptual Unfairness in the Evaluation of Police Lineups. MELISSA F. COLLOFF, *University of Birmingham*, JOHN WIXTED, *University of California, San Diego*, KIMBERLEY A. WADE, *University of Warwick*, TIA C. BENNETT, *University of Birmingham*, CODY VARNISH, *University of Birmingham* — Legal systems worldwide are concerned with preventing perceptual unfairness in lineups. Using a signal-detection interpretation of lineups, we propose that lineups are mnemonically unfair when an innocent suspect looks more like the witness's memory of the culprit than the fillers and that lineups are only perceptually unfair when the suspect is distinct from the fillers, but the innocent suspect does not look more like the witness's memory of the culprit than the fillers. Across two experiments (manipulating distinctive features N = 1,463 and lineup background N = 2,132), leaving the suspect to stand out in a way that was consistent with the witness's memory of the culprit (i.e., mnemonic unfairness) impaired witness ability to discriminate innocent from guilty suspects and yielded high-confidence misidentifications. Perceptual unfairness did not impair witness discrimination accuracy and high-confidence identifications were highly accurate. This has important implications for how researchers and practitioners conceptualise fairness and interpret the reliability of identifications.

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10:40-11:00 AM (156)

Exploring the Relationship Between Mindfulness Instructions, Trait Mindfulness and Composite Identification. KAREN LANDER, *The University of Manchester*, CHARLIE FROWD, *University of Central Lancashire*, JASON TAYLOR, *The University of Manchester*, KYRIAKI GIANNOU — Mindfulness instructions have been found to aid composite construction (Giannou et al., 2020). A face composite is typically constructed of the perpetrator by a witness of serious crime (Davies & Valentine, 2007). In Study 1, participants completed a famous face composite recognition task with "mindfulness", "context consideration", or "task" instructions. Participants were asked to name 10 composites depicting British celebrities. Using the Five Facet Mindfulness Questionnaire-Short Form (FFMQ-SF; Bohlmeijer et al., 2011) scores, participants were classified into higher and lower trait mindfulness groups (75 per group). Results showed that for low trait mindfulness participants, there was a significant advantage of mindfulness instructions on composite identification. Study 2 found no benefit of mindfulness instructions given prior to the identification task. Results are discussed within the context of individual differences and possible impacts for forensic practice and face recognition.

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11:00-11:20 AM (157)

The Cognitive Interview Enhances Performance of Older Adult Witnesses. CHARLES VIAU-QUESNEL, *Université du Québec à Trois-Rivières*, JULIE BEAUREGARD, *Université du Québec à Trois-Rivières* — Our objective was to determine if the cognitive interview (CI) improves the recall performance of older adult witnesses. A 2 × 2 between-group experimental design was used (factors: age: young adult, old adult; interview type: cognitive, standard). Participants took part in two sessions set on two consecutive days. In the first session, cognitive functioning was assessed, followed by a video presentation of an attempted robbery. In the second session, participants were asked to recall the scene following either the CI protocol or a standard police interview. Participants reported more correct details in the CI condition, compared to the standard condition. Regardless of interview condition, young participants performed better than old ones. No interaction between interview condition and age was found. For the older adults, cognitive functioning was found to influence recall performance, but there was no interaction with the effect of the cognitive interview. Overall, effect sizes were large and consistent with previous research. The CI appears to be an effective tool to enhance the recall of events witnessed by older adults. This effect holds even with older adults who present mild cognitive decline.

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SATURDAY

11:20-11:40 AM (158)

The Principles of Memory Versus the Federal Rules of Evidence. JOHN WIXTED, *University of California, San Diego*, ANNE S. YILMAZ, *University of California, San Diego*, KYROS SHEN, *University of California, San Diego* — Eyewitnesses who confidently misidentify a defendant at trial (based on a false memory) often failed to identify the same individual on the first memory test conducted early in a police investigation. Unfortunately, when this inconsistency comes up at trial, the Federal Rules of Evidence require that the witness be given an opportunity to explain it. The combination of a sincerely held (false) memory and a believable but erroneous explanation for a prior inconsistent statement (e.g., "I was nervous on the first test") is often persuasive to jurors. This is a recipe for wrongful convictions, one that has been followed many times. Critically, witnesses lack expertise in—and have no awareness of—the underlying mechanisms of memory contamination that have been extensively investigated in the basic science literature. Thus, the witness's explanation amounts to expert testimony, which is prohibited by another Federal Rule of Evidence. Yet this rule is never enforced because the court's understanding of how memory works is wildly at odds with established principles of memory. Surprisingly, the basic science of memory has had almost no influence on the rules that govern how criminal trials are conducted.

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11:40 AM-12:00 PM (159)

Illusory Transfer Effects for Faces and Associations: Feature Subsets and False Recognition. TODD C. JONES, *Victoria University of Wellington*, ASHLEIGH LOO, *Victoria University of Wellington*, CAITLIN TOTTLE, *Victoria University of Wellington*, SAMANTHA MCLACHLAN, *Victoria University of Wellington*, KELLIANNE HAMILTON, *Victoria University of Wellington*, MATTHEW T. CRAWFORD, *Victoria University of Wellington* — Prior research has shown that information learned for unfamiliar faces (e.g., good guy and bad guy or friend and enemy) can transfer to novel test faces bearing a perceptual resemblance to the learned faces. In the present experiments, participants learned faces as friends or enemies and then rated test faces on an enemy-friend or a dishonest-honest scale (from 1-9). Transfer of the learned associations occurred for test faces containing only internal or external features from the learned faces. However, this transfer for feature subsets was small compared to transfer for faces containing internal and external feature sets from two learned faces (conjunction faces). The final experiment showed that transfer effects for conjunction faces occurred primarily when participants falsely recognized the faces as "old." Overall, the effects are consistent with theories of memory, including global matching models, where retrieval evidence is summed across the contents of memory.

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Cognition I

Saturday, November 18, 2023, 10:00 AM-12:00 PM US PST, Imperial A

Chaired by Karolina Janacsek, *University of Greenwich*

10:00-10:20 AM (160)

How Subcortical Structures Contribute to Cognition: The MaMa (Many-To-Many) Dynamic Network Model of Brain and Cognition. KAROLINA JANACSEK, *University of Greenwich*, MICHAEL ULLMAN, *Georgetown University* — Accumulating evidence reveals that subcortical structures are involved in cognition much more extensively than previously thought. However, the nature of their contributions is not fully understood yet. Here, we present the MaMa (many-to-many) dynamic network model of brain and cognition that may help interpret existing (sub)cortical contributions and predict new ones. This theoretical framework is premised on three principles. It posits that subcortical structures underlie cognition via a system of many-to-many mappings between structures and functions: 1) a given structure can support many functions via core computations, 2) many structures can support a given function in a complementary or a redundant manner, and 3) the contributions of structures to a given function can vary dynamically across conditions. We illustrate these principles by drawing examples from previous research, and outline several testable predictions that comes from MaMa. Overall, we believe that MaMa can advance our understanding of subcortical contributions to cognition.

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10:20-10:40 AM (161)

Determining the Number of Human Visual Salience Maps. GEORGE SPERLING, *University of California, Irvine*, LINGYU GAN, *University of California, Irvine* — A salience map is a 2D topographic representation of the salience (importance) of points in visual space. Like a measuring cup, a salience map records the quantity of features, not their identity. Originally used to predict action priority, we demonstrate that the same or a similar map is used to compute centroid judgments, the center of a cloud of diverse items. Each different concurrent centroid computation requires its own salience map. In 8 experiments, subjects viewed 300 ms exposures of 28-32 dots of M (M=3...8) colors followed by a post-exposure masking field. All centroids have to be computed prior to the mask. A subsequent postcue informed subjects which color centroid to report. An ideal detector model shows that subjects utilized at least 12-17 stimulus items. By determining whether a subject's performance in (M-1)-feature experiments could/could-not predict performance in M-feature experiments, we conclude that one subject has at least 7 and the other two have at least 5 salience maps.

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SATURDAY

10:40–11:00 AM (162)

Adaptation Suggests that Perceived Number Is Computed from Density and Display Size. FRANK DURGIN, *Swarthmore College*, ZAHARA MARTINEZ, *Swarthmore College* — Perceived number for large numbers can be affected by adaptation to texture density (Durgin, 1995; 2008) and by adaptation to display size (Zimmermann & Fink, 2016). In a pre-registered study, we adapted 48 naive participants to four different adaptation conditions in which the display size (large vs. small) and density (dense vs. sparse) of the adapters was crossed. The small adapters were flashed at multiple locations in order to "paint" the to-be-adapted regions with their density. Relative perceived number and relative perceived size were each measured psychophysically using intermediate densities and display sizes. Although there was evidence of bidirectional effects on perceived number, they were asymmetrical, with large negative effects from dense textures. However, modeling the number aftereffects as resulting from measured aftereffects of perceived size and inferred aftereffects of density, revealed underlying bi-directional density aftereffects that were symmetrical in magnitude.

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11:00–11:20 AM (163)

Human-Bot Collaboration and Measurement of Trust. AMI EIDELS, *The University of Newcastle, Australia*, JONATHON LOVE, *The University of Newcastle, Australia*, QUENTIN GRONAU, *The University of Newcastle, Australia*, SCOTT BROWN, *The University of Newcastle, Australia* — Complex tasks may require collaboration and division of labour across multiple team members, in either all-human or human-bot teams. Last year we presented a platform for measuring performance and behaviour patterns of both human-human and human-bot teams in collaborative and competitive tasks. For a human and a bot to work together effectively, the human should trust the AI (artificial intelligence) bot to the right degree, so that trust is calibrated. Common methods for assessing the degree of trust collect binary responses, whereby participants report either trusting, or not trusting a bot recommendation. Here, we present a novel paradigm that allows continuous measurement of trust in a bot-recommendation. We report results from three experiments that require a human observer to make perceptual judgments with and without AI recommendation. We show how these data provide good traction with behaviour and support the development of refined models of human-bot trust.

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11:20–11:40 AM (164)

All Costs and No Benefit: Exogenous Melatonin Does Not Affect Sleep But Impairs Cognition in Young Adults. KIMBERLY FENN, *Michigan State University*, ELLE M. WERNETTE, *Michigan State University*, ERIK M. ALTMANN, *Michigan State University* — Sleep loss is prevalent, and the consumption of melatonin supplements has increased two-fold over the past decade. Exogenous melatonin can improve sleep when circadian timing is misaligned, but it is unclear if it affects nocturnal sleep or subsequent cognition in young adults. We investigated the effect of two common doses of melatonin on sleep and morning cognition in undergraduates. In the evening, participants completed measures of attention and procedural placekeeping. Participants then took a pill containing 2 mg melatonin, 5 mg melatonin, or placebo, under double-blind conditions, received an 8-hour sleep opportunity with polysomnography, and completed the tasks again in the morning. There were no differences in sleep measures, based on melatonin dose but placekeeping error rates and attentional lapse rates, increased in a dose-dependent fashion. Morning salivary melatonin concentrations were also elevated in the treatment groups. Thus, the costs of taking melatonin before sleep can outweigh the benefits for young adults.

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11:40 AM–12:00 PM (165)

Curious About Curiosity: The Relationship Among One's Own Beliefs, Beliefs About Other's Beliefs, and Knowledge and Curiosity. MITCHELL RABINOWITZ, *Fordham University*, JANET METCALFE, *Columbia University*, SAMANTHA AUBE, *Fordham University* — What determines a person's level of curiosity? In the current study, we investigated the role of 1) people's beliefs about a topic, 2) their beliefs about what others think about the topic, and 3) their perception of how much they know. Participants were presented with 146 statements about diverse topics such as sexual assault, vaccinations, and addiction, to name a few, and were asked whether they agreed with the statement, what proportion of the general population they thought would be in agreement with the statement, how familiar they were with the knowledge backing up the statement, and how curious they were to know more about it. Each rating was made on a 100-point scale. The relative contributions of the three factors, and their interactions, on predicting level of curiosity will be discussed.

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Reasoning/Problem Solving II

Saturday, November 18, 2023, 10:00 AM–12:00 PM US PST, Imperial B

Chaired by Sudeep Bhatia, *University of Pennsylvania*

10:00–10:20 AM (166)

Inductive Reasoning in Minds and Machines. SUDEEP BHATIA, *University of Pennsylvania* — Induction—the ability to generalize from existing knowledge—is the cornerstone of intelligence. Cognitive models of human induction are limited to toy problems and cannot make quantitative predictions for the thousands of different induction arguments that have been studied by researchers or to the countless induction arguments that could be encountered in everyday life. Leading large language models (LLMs) can go beyond toy problems but fail to mimic observed patterns of human induction. In this talk, we combine rich knowledge representations obtained from LLMs with theories of human inductive reasoning developed by cognitive psychologists. We show that this integrative approach can capture several benchmark empirical findings on human induction

SATURDAY

and generate human-like responses to natural language arguments with thousands of common categories and properties. These findings shed light on the cognitive mechanisms at play in human induction and show how existing theories in psychology and cognitive science can be integrated with new methods in artificial intelligence to successfully model high-level human cognition.

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10:20–10:40 AM (167)

Examining the Efficiency of a De-Biasing Training on Intuitive Responses: Insights from Four Reasoning Tasks. ESTHER BOISSIN, *LaPsyDÉ (UMR CNRS 8240) & Université Paris Cité*, SERGE CAPAROS, *Université Paris 8*, WIM DE NEYS, *Université Paris Cité, LaPsyDÉ, & Centre National de Recherche Scientifique (CNRS)* — Reasoners are often biased when they try to solve reasoning problems. Recent studies indicated that providing participants with brief explanations can boost their performance. However, the nature of this training effect is unclear. Does training help participants to revise erroneous intuitions using deliberation or to develop more correct intuitions? To address this issue, we conducted four studies employing four reasoning tasks (bat-and-ball, base-rate, conjunction fallacy, and syllogistic items) each involving distinct biases. A two-response paradigm in which participants were required to give an initial response under time-pressure and cognitive load allowed us to identify the alleged intuitive response that preceded the final response given after deliberation. Our findings, based on the majority of tasks, revealed that following a short training intervention, initially biased participants were more likely to solve problems correctly from the outset rather than revising their initial incorrect responses. This indicates that the training boosts correct intuitive responses. However, this effect was less marked for syllogisms. We discuss the implications of these findings for ongoing debates in the dual process field.

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10:40–11:00 AM (168)

A Wandering Mind is Not Always a Creative Mind: How Thought Dynamics Explain the Relationship Between Mind Wandering and Creativity. MYRTHE FABER, *Tilburg University*, ALI ATEF, *Tilburg University*, ALWIN DE ROOIJ, *Tilburg University* — A wandering mind is not always a creative mind. Anecdotes about ideas spontaneously entering awareness during walks, showers, and other off-task activities are plenty. The science behind it, however, is still inconclusive. Creativity might result from how thought context—whether thoughts are on-task or off-task—relates to thought dynamics—how thoughts unfold. To explore this, study 1 (n = 85) surveyed creative professionals about a single idea they had earlier in the day. The spontaneity of thoughts positively correlated with self-reported creativity, whereas off-task thoughts or doing something else did not. Study 2 (n = 180) replicated these findings in a student sample during an idea generation task and added that free movement of thoughts also correlates with self-reported originality during idea generation. No relationship of thought dynamics and thought context was found with population-level creativity as indicated by expert ratings. Herewith, this study suggests that thought dynamics, rather than thought context, explain the often suggested relationship between mind wandering and creativity.

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11:00–11:20 AM (169)

The Role of Memory in Creative Ideation. YOED KENETT, *Technion – Israel Institute of Technology* — Recent work suggests that creative ideas do not just emerge randomly out of nowhere but typically result from goal-directed memory processes based on semantic, conceptual, and episodic, contextual, memory. Specifically, cognitive and neuroscientific research demonstrated that creativity is supported by controlled retrieval, involves semantic and episodic memory, builds on processes used in memory construction, and recruits different memory systems at different stages in the creative process. Here, I will present a new framework describing the role of memory (focusing on semantic and episodic) in creative ideation. Specifically, this framework describes how creative ideas arise across four (potentially sequential) stages involving memory search, construction of candidate ideas, and evaluation of their novelty and effectiveness. I will discuss evidence supporting the contribution of semantic and episodic memory to each of these stages of creative ideation. The resulting framework overcomes shortcomings of previous theories by showing how creative ideation can be conceived as a multi-stage process relying on the controlled, dynamic involvement of different memory systems.

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11:20–11:40 AM (170)

It's Me, But It's Also You: Breaking the Illusion of Explanatory Depth Impacts the Community of Knowledge. JESSECAE K. MARSH, *Lehigh University*, MADISON I. SCHULTE, *William & Mary* — People show an illusion of explanatory depth (IOED), believing they understand the causal workings of the world better than they do. The IOED has been explained by people confusing their own knowledge with others' knowledge. This explanation posits one direction of a relationship, that the IOED is fueled by perceptions of the greater community of knowledge. We examined the reverse direction of influence: how breaking a person's IOED feeds into their perceptions of the community's knowledge. Participants estimated their own, their peers', and experts' causal understanding of either devices or mental disorders. Participants made these ratings before and after generating causal explanations for previously rated items. As traditionally shown, participants' self-understanding ratings dropped after generating causal explanations. Perceived understanding of others also dropped, with a larger drop found for peers than experts. We discuss implications for how correcting self-perceptions can influence beliefs about the community of knowledge and experts.

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SATURDAY

11:40 AM-12:00 PM (171)

Which Answers Are Unique? A Database and Comparison of Measures of Uniqueness Using the Creativity Instances Task. BEVERLY ROSKOS, *The University of Alabama*, QICHEN ZHAO, *The University of Alabama*, DEVONTE DADE, *The University of Alabama* — Divergent thinking tasks are frequently used to measure creativity. Indices such as fluency, flexibility, and originality/uniqueness have been presented as different aspects of creativity. Yet, little discussion has been given on how to obtain flexibility and uniqueness scores. We present a database of categories for each of five items that are commonly used with the instances task (i.e., think of as many things as you can that are round, dark, hot, can fly, can get bigger). These categories are used for calculating the flexibility score. We also present and compare two methods for determining uniqueness, one based on categories that are rare, and another based on responses within each category that are rare. Further, we present two ways of calculating a uniqueness score, one based on the number of unique answers, and another based on the percentage of one's responses that are unique. These are compared with fluency and flexibility scores. The scoring of divergent thinking tasks in general is discussed.

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Reading I

Saturday, November 18, 2023, 10:00 AM-12:00 PM US PST, Continental 1 & 2

Chaired by Bernhard Angele, PhD, *Nebrija University*

10:00-10:20 AM (172)

How Low Is Too Low? The Impact of Eye-Tracker Sampling Rate on Reading Research. BERNHARD ANGELE, *Nebrija University*, ZEYNEP GÜNEŞ ÖZKAN, *University of Valencia*, JON ANDONI DUÑABEITIA, *Nebrija University* — Modern eye trackers used in language and reading research offer remarkable temporal resolution with sampling rates of 1000 Hz and more. However, such eye tracking equipment is expensive, limiting its use outside of the laboratory. Inexpensive eye tracking solutions are available, but their sampling rate is generally much lower than the one offered by research-grade eye trackers. So far, it has not been tested so far whether and how data collection at lower sampling rates affects common eye movement phenomena observed in reading, such as the frequency effect (e.g., Inhoff & Rayner, 1986; Rayner, 1998), the word length effect (e.g., Rayner, 1998), and landing positions of saccades (e.g., Vitu et al., 1990). We present findings from a study that recorded readers' eye movements during reading at different sampling rates. In the study, we aimed to replicate these classic effects with data collected at different sampling rates. The results of this study have important implications for the design of eye-tracking studies, particularly those using cheaper equipment, and may shed light on the underlying cognitive processes involved in reading.

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10:20-10:40 AM (173)

Individual Differences in Skilled Reading and the Word Frequency Effect. DENIS DRIEGHE, *University of Southampton*, CHARLOTTE LEE, *University of Southampton*, HAZEL I. BLYTHE, *Northumbria University*, HAYWARD GODWIN, *University of Southampton* — Individual differences and eye movements of 100 average-to-very-skilled readers were assessed to examine the reliability of previous observations of a reduced word frequency effect associated with skilled reading. Shorter fixation durations and higher skipping rates were observed for high-frequency compared to low-frequency words. High reading ability and vocabulary knowledge predicted reduced frequency effects in gaze duration, demonstrated by faster reading of low frequency words compared to low scorers. A PCA grouped individual differences tests based on shared variance. High "lexical proficiency" predicted shorter gaze durations, reading times, and increased word skipping. Lexical proficiency and the WIAT-II comprehension test predicted a reduced frequency effect in go past times. Data revealed surprising discrepancies in findings based on two subtests supposedly measuring comprehension (NDRT and WIAT-II), constituting an example of the jingle fallacy: the false assumption that two measures that share a name actually measure the same construct.

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10:40-11:00 AM (174)

Blurry Words, Rainy Days: Navigating the Challenges of Reading in Virtual Reality. JON ANDONI DUNABEITIA, *Nebrija University* — We investigated the effects of single word reading and sentence reading in both normal and degraded visibility conditions by using virtual reality technology to emulate naturalistic reading scenarios and comparing word processing in various situations that may induce disfluency. Two key manipulations were explored: stimulus degradation through contrast manipulation and visibility constraints imposed by weather conditions, specifically heavy rain. The results revealed a similar word reading pattern across different weather conditions, while still showing an impact in reading accuracy and speed as a consequence of impaired visibility conditions associated to heavy rain. As expected, the manipulation of font contrast impeded word processing, but the two effects did not interact with each other, highlighting distinct effects between stimulus-dependent and context-dependent visual degradation. This study advances the field by providing insights into the replication of laboratory effects in real-world settings through the utilization of virtual reality.

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11:00-11:20 AM (175)

Online Comprehension of Anaphoric Pronouns During Reading in Down Syndrome and Typically Developing Readers. CHERYL A. FRENCK-MESTRE, *Aix-Marseille University & Centre National de Recherche Scientifique (CNRS)*, ALIX SEIGNEURIC, *Université Sorbonne Paris Nord*, STEVE BUENO, *Université Sorbonne Paris Nord*, HAKIMA MEGHERBI, *Université Sorbonne Paris Nord* — The present study examined reading ability in populations typified by intellectual disability, specifically

adults with non-mosaic Down syndrome (DS), in comparison to reading-level matched typically developing children (TD). We focused on the capacity to comprehend pronominal reference in short texts via the recording of eye movements. We manipulated both a pragmatic (first mention) and a syntactic factor (grammatical gender) in French (ex: "La(fem) souris(fem) marche avec le(masc) cochon(masc). Il/Elle(masc/fem) porte un sac." vs. "La(fem) girafe(fem) marche avec la(fem) souris(fem). Elle(fem) porte un sac."). Both DS and TD readers showed immediate use of grammatical gender to resolve anaphoric pronouns. Neither group showed a first-mention preference, in contrast to previous results for TD children at first-grade reading level. This pattern reveals strikingly similar comprehension for reading-level matched DS and TD readers as concerns anaphoric pronoun resolution and points to greater online reading capacities in DS than previously reported.

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11:20–11:40 AM (176)

Nonuniversal Foraging Behavior in Semantic Networks. KEVIN BROWN, *Oregon State University*, JAY G. RUECKL, *University of Connecticut*, ELLIOT SALTZMAN, *Boston University*, JAMES S. MAGNUSON, *University of Connecticut & Basque Center on Cognition, Brain and Language (BCBL)*, KEN MCRAE, *University of Western Ontario*, EILING YEE, *University of Connecticut* — To what degree does semantic foraging probe semantic network structure? We use a combination of foraging experiments (animals, concrete nouns) and simulations on networks based on nine approaches to semantic similarity to address this question. In data and simulations we find significant bias towards naming semantically similar items, and significant correlations between internaming time and semantic distance. In previous foraging experiments, a roughly power law distribution with a Lévy range exponent was found in the distribution of internaming intervals. We find the value of this exponent is not universal but is sensitive to the search space size; the exponent becomes more Lévy as the number of nameable items is exhausted. Moreover, these exponents are not unique to semantic networks but appear in censored random walks on other graphs. Our combined experimental results and simulations give us some insights into the topology of semantic memory.

Email: Kevin Brown, kevin.brown@oregonstate.edu

11:40 AM–12:00 PM (177)

Immersion During Reading Literary Text: Evidence from Eye Movements. DIANE C. MEZIERE, *University of Turku*, JOHANNA KAAKINEN, *University of Turku*, EMILIA RANTA, *University of Turku*, KARIN KUKKONEN, *University of Oslo*, JONATHAN SMALLWOOD, *Queen's University*, JAANA SIMOLA, *University of Helsinki* — We investigated the types of thoughts readers have while processing literary texts, and how these thoughts are reflected on eye-movement behavior during reading. Fifty-six participants read extracts from Siri Hustvedt's "Memories of the Future" while their eye movements were monitored. Participants' thoughts were probed at 30 locations using multidimensional experience sampling. Four thought components were identified using principal component analysis on the responses to the prompts: immersion, mind wandering, verbalization, and remembering. General additive mixed models (GAMMs) were used to investigate the effect of thought type on eye movements, as visualization of the data suggested this relationship was likely non-linear. Results show that the word frequency effect on eye movements is influenced by the type of thoughts readers have while processing literary texts. These results have implications for the way mind wandering is typically investigated, particularly in reading research. The results also provide information about the nature of immersion and how it relates to the cognitive processes underlying reading comprehension.

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Symposium Session V: Finding the Way: Advances in Spatial Navigation Research

Saturday, November 18, 2023, 1:30–3:30 PM US PST, Continental 5 & 6

Chaired by Steven M. Weisberg, *University of Florida, USA; and* **Nora Newcombe,** *Temple University, USA*

1:38–1:55 PM (SYM23)

Virtual Copetown: Integrating Spatial Relationships Across Separately Learned Routes. NORA S. NEWCOMBE, *Temple University*, MERVE TANSAN, *Temple University* — The proposal that successful navigation depends on cognitive maps is controversial. The map view suggests that ability to generate shortcuts demonstrates retention of metric information integrated in a common reference frame. An alternative view suggests spatial representations are not Euclidean given biases and distortions. One way to reconcile these two positions is an individual-differences perspective suggesting that some people may integrate across routes but not everyone. However, so far there has been no examination of whether some people can make inferences across routes not ever connected directly. In this talk, we will introduce a novel paradigm, Virtual Copetown, created to capture the individual variability in map and graph-based configurations. This environment allows us to examine integration between routes joined by connections and integration requiring inference. Participants explore each of the three routes and learn locations of target buildings. They learn how two main routes connect but never directly experience one of the connections between two of the routes. We also examine cognitive correlates to understand how people differ in their ability to infer spatial relations in the absence of connecting routes.

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1:55–2:12 PM (SYM24)

Individual Differences in Human Navigation Ability: Interactions with Brain Structure and Function. ELIZABETH R. CHRASTIL, *University of California, Irvine* — Despite the importance of navigation, humans vary widely in their abilities. Given that the best navigators likely rely on multiple brain systems and cognitive strategies, a comprehensive examination of individual variability is

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called for. In the present study, 106 participants completed a challenging maze learning task in desktop virtual reality (VR) while undergoing fMRI imaging. After exploring, their knowledge of the maze was tested by going from one object to another. Accuracy ranged from near 0% to 100% correct, enabling us to quantify brain structure and function that distinguish between poor, average, and exceptional performers. We conducted a comprehensive analysis of behavior as well as of brain structure and function, including white matter structural integrity, hippocampal subfield volumes, head direction signal tuning, and dynamic changes in brain networks. We found that proportion correct was associated with even exploration patterns, anterior hippocampal volume, increased white matter integrity in the fornix, brain network flexibility, and strong egocentric signals of travel direction when planning their next move. Together, these findings shed light on the complex array of skills needed for successful navigation.

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2:12-2:29 PM (SYM25)

The Influence of Augmented Reality (AR) Cues on Wayfinding and Spatial Learning. SARAH H. CREEM-REGEHR, *University of Utah*, YU ZHAO, *Vanderbilt University*, JEANINE K. STEFANUCCI, *University of Utah*, BOBBY BODENHEIMER, *Vanderbilt University* — Advancements in augmented reality (AR) have the potential to assist in the challenges of navigation, particularly in finding safe and efficient paths to target goals. AR can provide cues in multiple forms that may have different effects on wayfinding and spatial learning during navigation. For example, cues may be fixed to the environment (e.g., highlighting a path or a building) or to the screen display (e.g., an arrow to follow or a landmark to look for), and they also may provide additional information, such as a distance to a goal or the safety of a path. Further, as seen in prior GPS studies, navigational aids could improve efficiency in finding a target but at a potential cost to more global spatial learning. We will present an approach using immersive virtual reality (VR) to simulate different AR cues during navigation to test both efficiency and accuracy in wayfinding and effects on spatial learning. We use both behavioral measures and eye tracking to assess how attending to different types of cues influences navigation task performance in VR urban environments. The results have implications for the design of AR-based navigation assistance systems as well as for theories of navigational processes.

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2:29-2:46 PM (SYM26)

Learning the Layout of Different Environments: Common or Dissociated Abilities? MARY HEGARTY, *University of California, Santa Barbara*, CHUANXIUYUE (CAROL) HE, *University of California, Santa Barbara*, ALEXIS TOPETE, *University of California, Santa Barbara* — People navigate in various types of environments, including indoor and outdoor environments. These differ in availability of navigational cues, such as distal landmarks, clear boundaries, and regular grid structures. Experience navigating different types of environments has profound effects on our navigation abilities, raising questions of whether learning different environments draws on the same or diverse perceptual and cognitive processes. Individual differences studies can shed light on this issue, but most studies to date have focused on navigation of a single environment, and different measures of spatial knowledge acquisition have been used across studies and environments. Here, people learned the layout of two environments from first-person experience: a grid-like maze and a campus-like open environment. After learning each environment, their knowledge was measured by three tasks: a pointing task, a map-reconstruction task, and a wayfinding task. Correlations and structural equation models are used to assess whether these measures reflect a common ability to learn spatial layout, separate abilities associated with different environments, or separate abilities associated with different measures of spatial learning.

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2:46-3:03 PM (SYM27)

Age Differences in Spatial Navigation: Determinants and Consequences. DENISE HEAD, HANNAH MAYBRIER, *Washington University in St. Louis*, MARTA STOJANOVIC, *Washington University in St. Louis*, TAYLOR F. LEVINE, *Cleveland Clinic Lou Ruvo Center for Brain Health*, JENNIFER SHEARON, *Washington University in St. Louis* — Older age is associated with difficulties in route learning, with particular deficits in the return journey, which could be linked to avoiding or getting lost in unfamiliar places. However, there is limited understanding of factors contributing to differential age effects on reversing a route. Furthermore, there is limited knowledge of actual navigation-related behaviors of older adults in daily life. Three experiments tested whether the following encoding manipulations would remediate differential age effects on route reversal: a) enhancing acquisition of an allocentric representation through manipulation of spatial learning goals; b) minimizing demands on spatial perspective taking by increasing exposure to multiple perspectives of the environment; and c) enhancing temporal sequence processing through provision of critical landmark order information. Results suggest that all three factors may contribute to differential age effects on route reversal. In addition, experience sampling of daily navigational behaviors demonstrated the feasibility and utility of the approach for assessing navigation planning, strategies, concerns, and errors as well as rates of travel to new destinations, getting lost, and avoidance of new destinations.

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3:03-3:20 PM (SYM28)

How Does the Brain Encode New Complex Cognitive Skills? STEVEN M. WEISBERG, *University of Florida,* ARNE EKSTROM, *University of Arizona* — A cornerstone of cognitive neuroscience involves the idea that expertise can be tracked through focal changes in gray matter. In support of this, a series of studies suggested that skilled navigators (taxi drivers) have larger posterior hippocampi than others. Here, we evaluate the neural basis of acquiring complex cognitive skills by enrolling healthy young participants in a 2-week intensive training. This involved navigating a large virtual city, learning new strategies for improving verbal free recall, or a placebo video-watching condition. Before and after training, participants underwent hippocampal, whole brain, resting-state, and task-related

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imaging during memory retrieval. Participants also performed behavioral tasks involving navigating a novel virtual city unrelated to training, verbal free recall, and an attention task. Training data showed dramatic improvements in path accuracy and the number of words participants could freely recall. Preliminary analysis of brain volume data, however, suggested no significant changes in hippocampal subfield volume. These findings suggest that acquiring complex cognitive skills may involve neural mechanisms other than focal changes in hippocampal gray matter.

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Discourse Process

Saturday, November 18, 2023, 1:30–3:10 PM US PST, Continental 4

Chaired by Amit Almor, *University of South Carolina*

1:30–1:50 PM (178)

Miscommunication Is a Collaborative Failure: Evidence from the Referential Communication Task. DELPHINE DAHAN, *University of Pennsylvania* — Using language requires coordinating what speakers mean with what their addressees take them to mean. In conversations, Clark (1996) argued, partners take actions to establish that they have succeeded: Speakers present a signal for addressee to accept by offering positive evidence of understanding. Using a corpus of naturally occurring miscommunication, the present study evaluates the claim that partners are jointly responsible for mitigating the risk of misunderstanding while minimizing joint effort. Pairs of participants received an identical set of cards displaying geometric configurations (tangrams); one participant, the director, verbally instructed their partner, the matcher, to reproduce pre-determined tangram sequences using their own cards. For some pairs, the matcher almost always selected the tangram under discussion; for other pairs, the matcher was more error-prone. Matcher's accuracy predicted 1) their propensity to offer evidence of their understanding, which resulted in greater joint effort, rather than to assert understanding, and 2) the director's propensity to signal risk of misunderstanding and prompt matchers to offer such evidence. Successful communication is the product of a collaborative process.

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1:50–2:10 PM (179)

The Effect of Information Asymmetry on Gaze and Language Alignment During Collaboration. ALEXIA GALATI, *University of North Carolina at Charlotte*, RICK DALE, *University of California, Los Angeles*, SNEHA DHANAVANTHRI MURALIDHARA, *University of North Carolina at Charlotte*, MORENO COCO, *Sapienza University of Rome & IRCCS Santa Lucia Foundation* — The benefits of interpersonal alignment on performance depend on the task partners' roles: for pairs in symmetric (vs. asymmetric) roles, high levels of alignment were detrimental to performance in motor tasks. Extending this inquiry to a different domain, dyads (N = 14, with a planned N = 40) viewed subway maps and planned routes together. In five trials they had symmetric roles (with access to the same information) and in five trials asymmetric roles (with one partner having privileged information about route blockages and the other lacking visual access to a portion of the map). To evaluate alignment, we will subject time series of gaze fixations and word sequences to cross-recurrence quantification analysis. We reason that tasks with fewer degrees of freedom for organizing behavior (e.g., asymmetric roles) require more alignment for the team to achieve success. We expect that dyads in asymmetric roles will show more alignment in their joint attention and language use, and benefit more from alignment (in terms of accuracy and trial duration). Our findings will shed light on the task constraints that influence the emergence of multimodal alignment.

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2:10–2:30 PM (180)

Epistemic Emotions when Reading Topic Opposing and Supporting Statements in Twitter: Evidence from Mouse-Tracking and Eye Movements. JOHANNA KAAKINEN, *University of Turku*, JOSÉ DAVID MORENO, *Universidad Autónoma de Madrid*, JUKKA HYÖNÄ, *University of Turku* — In two experiments, participants read statements on six topics (immigration, vaccinations, hunting, vegan diet, human rights, and nuclear energy) presented as Twitter discussions containing four supporting (pro) and four opposing (contra) statements on a topic. The pro and contra statements were presented either in a blocked or interleaved format. In Experiment 1, participants (N = 121) read the discussions in an online experiment platform using a mouse-tracking paradigm. In Experiment 2, readers' (N = 63) eye movements were recorded in a laboratory setting. In both experiments, participants reported their personal stance toward the topics, rated epistemic emotions after each discussion, and completed a recognition memory task in the end of the experiment. The results show that prior stance toward a topic and presentation format (blocked or interleaved) of statements influences reading patterns, experienced epistemic emotions, and memory for the presented information. The findings shed light on the role of epistemic emotions in text comprehension.

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2:30–2:50 PM (181)

Individual Differences in Perspective-Taking During Language Comprehension. AMIT ALMOR, *University of South Carolina*, KANAN LUCE, *University of South Carolina* — The successful interpretation of referring expressions often requires that comprehenders consider speakers' perspective, which may differ from their own. However, comprehenders sometimes fail to take into account the speakers' perspective, perhaps because doing so requires too much effort. Previous research disagrees about whether executive function predicts how quickly and often perspective information is considered and whether there are consistent individual differences in perspective-taking during comprehension. These problems are further complicated by potential differences between spatial and non-spatial perspective-taking tasks. The current study examines whether there are consistent individual differences in perspective-taking during

comprehension. For this study, 222 participants completed four perspective-taking tasks, as well as three measures of executive function and two measures of spatial memory. We find (1) low reliability for some of the most commonly used perspective-taking tasks despite strong experimental effects, (2) sparse correlations between the tasks and little evidence for a spatial/non-spatial distinction, and (3) no indication that executive function predicts perspective-taking ability.

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2:50–3:10 PM (182)

Removing Inter-Word Spaces Disrupts Post-Lexical Processing During Reading: Evidence from Eye Movements. ANDRIANA L. CHRISTOFALOS, *University at Albany, SUNY*, MADISON LAKS, *University at Albany, SUNY*, NICOLE M. ARCO, *University at Albany, SUNY*, HEATHER SHERIDAN, *University at Albany, SUNY* — Although removing inter-word spacing during reading in alphabetic languages has been shown to disrupt word identification, it is unknown how spacing impacts post-lexical processing. To examine how spacing impacts inferential processing, we monitored eye movements while participants read passages that were strongly or weakly constrained towards an inference. These passages were either segmented (with spaces; e.g., the cat wants more treats) or unsegmented (with numbers instead of spaces; e.g., the4cat3wants9more5treats). Consistent with prior work, removing spaces disrupted reading, as shown by longer first-fixation durations, earlier first-fixation landing locations within words, and shorter saccade amplitudes for unsegmented passages. The total time spent fixating on words in a passage was longer for weakly than strongly constrained passages, and this constraint effect was smaller for the unsegmented than segmented passages. Our results suggest that removing inter-word spacing disrupts post-lexical processing, which helps to inform how lower-level visual aspects of text interact with higher-level language processing.

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Speech Perception II

Saturday, November 18, 2023, 1:30–3:30 PM US PST, Plaza A

Chaired by Kristin Van Engen, *Washington University in St. Louis*

1:30–1:50 PM (183)

'Split Listening': Insights into the Interaction Between Acoustic and Attentional Factors During Divided-Attention Listening. SVEN MATTYS, *University of York*, SARAH KNIGHT, *University of York* — An understanding of how listeners divide their attention between two simultaneous talkers requires modelling the interaction between acoustic factors (energetic masking) and cognitive processes (control of auditory attention). We manipulated the degree of energetic masking between two talkers—high (voices unfiltered) vs. low (voices in non-overlapping frequency bands)—and the spatial separation between the talkers—from colocated (diotic) to maximally separated (dichotic). When the voices were unfiltered, transcription performance improved monotonically from diotic to dichotic. When the voices were energetically non-overlapping, the benefit of spatial separation disappeared, with transcription performance actually dropping in the dichotic condition. Moreover, individual differences in working memory best predicted transcription performance when energetic masking was low. The results indicate that acoustic factors are dominant during divided-attention listening, but that the contribution of cognitive control and working memory can be observed when energetic masking is reduced. The findings are discussed in light of Norman and Bobrow's (1975) contrast between data-limited and resource-limited tasks.

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1:50–2:10 PM (184)

The Role of Attention in Listening-in-Noise in Both Adults and Toddlers. ROCHELLE S. NEWMAN, *University of Maryland, College Park*, MONITA CHATTERJEE, *Boys Town National Research Hospital*, LUCY ERICKSON, *University of Maryland*, KAREN MULAK, *University of Maryland*, EMILY SHROADS, *University of Toronto*, KATIE VON HOLZEN — Understanding speech in the presence of noise is likely related to selective attention. We compared adults' and toddlers' listening in situations where noise either overlapped a speech signal (same location, same frequency range) or was already separated from the speech signal (either coming from a different location in space or consisting of a different frequency range). Adults repeated sentences that had occurred in noise; toddlers looked to a named object in a preferential listening task. Adults showed poorer performance when noise overlapped the speech signal either spectrally or spatially than when it did not (both $p<.001$); however, toddlers appeared to be equivalently distracted by non-overlapping as by overlapping noise, suggesting they fail to use these acoustic cues for selective attention. (As one example, 25-month-olds looked to the correct object both with spatially overlapping (62%, $p<.0001$) and nonoverlapping noise (60%, $p<.0001$), a non-significant difference ($t(23)=-1.45$, $p>.8$). For adults, performance in noise also correlated with performance on a visual sustained attention task ($F(1,20)=7.65$, $p=.012$). The relationship between listening-in-noise and broader attentional skills appears to develop over childhood.

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2:10–2:30 PM (185)

Lexical Knowledge Is Sufficient to Segment Spoken Words. MARK PITT, *The Ohio State University*, YUZHE GU, *The Ohio State University* — Spoken word segmentation is influenced by acoustic cues near word boundaries and knowledge of the language. We tested a prediction of the TRACE model that lexical knowledge alone is sufficient to segment words. Participants heard word pairs in which /s/ ended the first word and started the second ("less salt"). The homogeneous frication contains few acoustic cues to signal the presence of a word boundary. Comparison with nonword counterparts across three tasks yielded evidence of lexically driven segmentation. Further, word-pair frequency correlated positively with

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segmentation rate, which was due to most participants segmenting higher-frequency pairs and many fewer segmenting lower frequency pairs. Results demonstrate the sufficiency of lexical memory in word segmentation while also suggesting that lexical influences are modulated by other variables.

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2:30-2:50 PM (186)

When Jack Isn't Jacques: Opposite Recalibration Shifts of Phonetic Categories in a Bilingual's Two Languages. ARTHUR SAMUEL, *Stony Brook University, Basque Center on Cognition, Brain and Language (BCBL), & Ikerbasque*, TIPHAINE CAUDRELIER, *Grenoble Alpes University*, CLARA D. MARTIN, *Basque Center on Cognition, Brain and Language (BCBL) & Ikerbasque*, MARIE-MICHELE BEAUSOLEIL, *Université du Québec à Montréal (UQÀM)*, LUCIE MENARD, *L'Université du Québec à Montréal* — Lexically driven recalibration is a shift in phonetic categorization after people hear ambiguous sounds with lexical disambiguation. For example, an ambiguous mixture of /f/ and /s/ is heard as /f/ more often after contexts like "hal[f/s]" and more often as /s/ after contexts like "hor[f/s]e". If listeners hear one talker whose speech "pushes" in one direction, together with a second whose speech pushes in the opposite direction, categories can shift in opposite directions for the two. Prior work also shows that recalibration transfers across languages in bilingual listeners if there is a comparable contrast across languages. Here, we exposed French-English bilinguals to recalibration stimuli. Initially, listeners heard exposure stimuli in one language and were then tested on both (e.g., testing in English on a fine-sign continuum; testing in French on feuille-seuil). Then, exposure was interleaved between English and French, with opposite "pushes", again with testing in both languages. We find cross-language transfer on the first test and demonstrate opposite-direction learning on the second: Listeners' categories simultaneously shift in one direction for French, and the opposite for English, for the same bilingual talker.

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2:50-3:10 PM (187)

Assessing the Effects of 'Native Speaker' Status on Classic Findings in Speech Research. JULIA STRAND, *Carleton College*, BROWN VIOLET, *Washington University in St. Louis*, KATRINA SEWELL, *Carleton College*, YUXIN LIN, *Carleton College*, EMMETT LEFKOWITZ, *Carleton College*, CAROLINE SAKSENA, *Carleton College* — It is common practice in speech research to only sample participants who self-report being "native English speakers." Although there is research on differences in language processing between native and nonnative listeners, the majority of work that aims to establish general findings (e.g., testing models of word recognition) only includes native speakers. Not only is the "native English speaker" criterion poorly defined, but it excludes historically underrepresented groups, often without attention to whether this exclusion is likely to affect study outcomes. The purpose of this study was to test whether and how different inclusion criteria ("native English speakers" vs. "non-native English speakers") affects several well-known phenomena in speech research. Five hundred participants completed word (N = 200) and sentence identification (N = 300) tasks in quiet and background noise. We found that multiple classic findings—including the effects of noise level, semantic context, and lexical density on speech intelligibility—persist regardless of whether participants meet the criteria commonly-used used to define "native English speaker" status. The magnitude of some effects and the interactions among them differed across groups.

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3:10-3:30 PM (188)

Listening Effort in Bilinguals and Monolinguals. SITA CARRATURO, *Washington University in St. Louis*, KRISTIN VAN ENGEN, *Washington University in St. Louis* — Speech-perception-in-noise tasks are typically more challenging for bilinguals than for monolinguals, as evidenced by lower speech recognition accuracy scores. However, there is little data comparing mono- and bilingual listeners in other difficult conditions or with online measures as opposed to offline accuracy scores. The current study employs pupillometry to index cognitive processing load during audio-only English sentence recognition in four conditions: American-accented in quiet, Turkish-accented in quiet, American-accented in noise, and face-mask-attenuated American-accented in quiet. Participants include monolingual English listeners and English-dominant simultaneous bilingual listeners. Preliminary results (N = 52) show greater pupil dilation in bilinguals versus monolinguals in all but the Turkish-accented condition, supporting the notion that bilingualism places unique demands on cognitive resources during speech recognition relative to monolingualism. We discuss the implications of these data for research on listening effort and bilingualism, possible interpretations for differences across conditions, as well as the utility and limitations of pupillometry.

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Psycholinguistics III

Saturday, November 18, 2023, 1:30-3:30 PM US PST, Plaza B

Chaired by Davide Crepaldi, *International School for Advanced Studies (SISSA)*

1:30-1:50 PM (189)

How Young Children's Lexical Predictions Help them 'Fast-Map' New Word-Referent Pairs. KIRSTEN READ, *Santa Clara University* — Young learners can make lexical predictions and readily map new words to referents, particularly within highly structured (i.e., rhyming or repetitive) or constrained speech—making guesses about upcoming words. In this study, we tested whether the accuracy of such lexical predictions impact 3- to 5-yearr-old children's word mapping ability. Children (n = 60) were randomly assigned to either a prediction-inviting rhyme condition or control condition where 12 new animal names were presented in a digital story-like context. By manipulating the likelihood of each target animal

within subjects, children's accuracy of predictions was encouraged or discouraged. Video recordings of participants were coded to measure whether children looked to the target animals before they were named, and children's subsequent retention of the 12 name-animal pairs was tested. Results suggest that children better retained the animal names for the likely animal targets that they predicted (as evidenced by their anticipatory looking). This demonstrates an advantage of predictable regularity over surprise or error-driven learning in this type of early childhood language learning task and has implications for supporting language.

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1:50–2:10 PM (190)

Diachronic Verb Usage Statistics and Sentence Processing Across the Lifespan. ELLIS CAIN, *University of California, Merced*, SARAH BROWN-SCHMIDT, *Vanderbilt University*, RACHEL RYSKIN, *University of California, Merced* — Verbs can appear in multiple syntactic structures, causing ambiguity. In "Pet the dog [with the napkin]," the wh- prepositional phrase could attach to the verb (instrument) or the noun (modifier structure). Individual verbs are biased to appear with one of the two structures, which listeners rely on to disambiguate meanings (Snedeker & Trueswell, 2004). But usage statistics of syntactic structures may change over time (e.g., Wolk et al., 2013). If listeners' knowledge of verb biases continues to adapt to the co-occurrence statistics they experience (Ryskin et al., 2017; R17) across the lifespan, older adults (OA) may differ in their sentence interpretations from younger adults (YA). Using a diachronic corpus (Goldberg & Orwant, 2013), we analyzed the co-occurrence statistics of 27 verbs from R17 across decades (1940s-2000s). The bias toward instrument structures was more similar for temporally close decades, suggesting subtle diachronic changes in verb biases. Verb bias norms (collected from YA on Mechanical Turk) were a stronger predictor of the probability of an instrument interpretation for YA than OA, but there was no evidence that diachronic corpus-based verb biases differentially predicted responses of OA vs. YA.

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2:10–2:30 PM (191)

Network Distance and Levenshtein Distance Influence Sound Similarity of Word Pairs in the Phonological Mental Lexicon. CYNTHIA S. Q SIEW, *National University of Singapore* — Network representations of the phonological mental lexicon are typically constructed by connecting words that are phonological neighbors based on a 1-edit Levenshtein distance metric. In contrast, other measures of phonological similarity such as the phonological Levenshtein distance metric (PLD20) rely on computing a word's mean edit distances to its closest neighbors. This study explored the impact that Network Distance, defined as the number of steps needed to travel from one word to another word in the network, and Levenshtein Distance, defined as the number of single character transformations needed to convert one word's phonological transcription to another, had on the sound similarity judgments of auditorily presented English word pairs. Participants were sensitive to both Network and Levenshtein distances, rating word pairs with shorter distances as more similar sounding. Word pairs whose Levenshtein Distances were smaller than their Network Distances were rated as more similar sounding than word pairs with equivalent Network and Levenshtein Distances; this effect was stronger at lower distances. Results highlight the complexities of phonological word-form representations in the lexicon.

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2:30–2:50 PM (192)

Word Perception Across Regional Dialects: Processing the Pin-Pen Merger. DUANE WATSON, *Vanderbilt University*, EBONY PEARSON, *Vanderbilt University*, VAN LICERALDE, *Vanderbilt University*, WEI LAI, *Vanderbilt University* — Language perception requires integrating incoming acoustic input into the stored phonological representations in our mental lexicon. In bilinguals, these phonological representations activate both lexicons even in a monolingual setting, resulting in lexical competition. In this study, we explored whether similar competition arises from dialectal differences, focusing specifically on the pin-pen merger observed in Southern US and African American English, where the sounds /ɪ/ and /ɛ/ merge before nasal consonants but are pronounced differently elsewhere. Using a visual eye-tracking paradigm, we compared looks to targets (e.g., pin) and competitors (e.g., pen) in speakers with merged and non-merged pronunciations. In critical trials, the competitor was temporarily a potential target for merged speakers. Merged speakers exhibited greater competition than nonmerged speakers as shown by longer reaction times and increased looks to competitors. Similar to bilinguals, we see activation of contextually non-relevant lexical items, suggesting parallel activation across a speaker's dialects.

Email: Duane Watson, duane.g.watson@vanderbilt.edu

2:50–3:10 PM (193)

What Can We Learn about Two Million Priming Values? An Update to the Semantic Priming Across Many Languages Project. ERIN M. BUCHANAN, *Harrisburg University of Science and Technology*, PSYCHOLOGICAL SCIENCE ACCELERATOR, *Psychological Science Accelerator* — Semantic priming research has been a cornerstone of cognitive studies to examine the nature of knowledge representation and word meaning. The Semantic Priming Across Many Languages project provides a diverse linguistic dataset of priming across more than 25 languages matched on target word. With over 16,600 participants, the study represents the largest study on lexical decision task semantic priming to date in both number of participants and included languages. We will present an update to the project exploring the effect size and cross-cultural boundaries of semantic priming, portraying that not only is priming consistent across languages, but surprisingly similar even across writing systems. We will explore the differences in priming that were significant for native and non-native speakers. Additionally, we will present data examining individuals who appear to use one language (i.e., browser and survey language are the same) versus those who use multiple languages (i.e., browser language and study language are different). Our results provide evidence on the cross-linguistic similarities and

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differences between languages, as well as potential processing differences in individuals based on their daily language use.

Email: Erin Buchanan, ebuchanan@harrisburgu.edu

3:10-3:30 PM (194)

Words with Wider Meanings Are More Difficult to Identify. DAVIDE CREPALDI, *International School for Advanced Studies (SISSA)*, ALEXANDRA KENJEEVA, *International School for Advanced Studies (SISSA)*, ROBERTO BOTTINI, *University of Trento* — Chairs differ to a great extent from each other, but the core meaning of the word "chair" is quite consistent—an object to sit on. On the contrary, "bravery" might refer to a firefighter saving lives or a child giving a presentation to the class for the first time. Yet again, the word "bank" can refer to a financial institution or a river. In this work, we propose that one construct, breadth of meaning, might be able to account for these phenomena; words that cover larger areas of the semantic space are more difficult to identify. We quantified this construct via semantic diversity—the dissimilarity of the contexts in which a word appears (semD; Hoffman et al., 2013). We refined the computation of semD using more advanced computational models and, for the first time, separated it from several other predictors (e.g., contextual diversity, valence) using principal component analysis. We then assessed the role of semD in both an English, large-scale dataset and an Italian dataset with words selected based on concreteness. We found an unclear relationship between concreteness and semD, but showed that the latter has an independent, statistically solid and inhibitory effect on word processing times.

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Cognition II

Saturday, November 18, 2023, 1:30-3:30 PM US PST, Imperial A

Chaired by Steven M. Smith, *Texas A&M University*

1:30-1:50 PM (195)

Where Creative Ideas Come From: Aha! Moments in Divergent Thinking and Category Generation. STEVEN M. SMITH, *Texas A&M University*, VISHEETA CHANDOLIA, *Texas A&M University* — When do creative ideas occur—during aha! moments in creative problem solving, or when novel ideas come to mind during divergent thinking? Are aha! moments experienced during generative tasks, such as divergent thinking and category generation? Participants listed responses to 12 prompts, with 3 min for each prompt. Four prompts were names of taxonomic categories (e.g., metals), four were ad hoc category prompts (e.g., things that make noise), and four were divergent thinking prompts (e.g., uses of bricks). Participants clicked a large red button labeled "aha!" whenever they had a surprising, unexpected idea. Ideas listed during divergent thinking were most likely (22%) to be labeled aha! experiences, with aha! rates of 17% for ad hoc category generation and 14% for taxonomic category responses. The same aha! moments reported in insight problem solving are also seen in generative tasks, including divergent thinking, linking research on creative insight with that on divergent generation.

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1:50-2:10 PM (196)

What Makes Us Give Up? VALERIE THOMPSON, *University of Saskatchewan*, MARVIN LAW, *University of Sydney*, SABINA KLEITMAN, *University of Sydney*, LAZAR STANKOV, *University of Sydney* — The decision to give up reflects a metacognitive strategy that can mitigate errors and resource costs when solving problems. In two studies (N = 176 and N = 370) we examined this behaviour from individual differences and cognitive perspectives. Time spent until giving up, frequency and other cognitive and metacognitive scores embedded within cognitive tests were captured, as well as decision-making styles and performance metrics. Participants varied systematically in their giving-up behaviour: frequencies converged onto a Giving Up factor. People gave up more frequently when feelings of confidence were low and faster when a problem was perceived as unsolvable. Participants also clustered into profiles based on time until giving up and frequency. Maladaptive profiles prefer fast giving-up decisions, and adaptive profiles prefer to give up slowly. Our results validate the processes proposed by the meta-reasoning framework and provide a foundation for further investigation into monitoring processes and the role of giving up in decision-making.

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2:10-2:30 PM (197)

Individual Differences Underlying Reward-Guided Cognitive Flexibility. JOSEPH M. ORR, *Texas A&M University*, BEATRICE LOMEO, *Texas A&M University*, DANIELA PORRO, *Texas A&M University*, JUAN BALCAZAR, *Texas A&M University* — Past work has demonstrated that cognitive flexibility is influenced by trial-to-trial transitions in reward. Increased reward favors stability while static reward favors flexibility. Given the large variability in the magnitude of these effects, it is important to understand the factors underlying this variability. Using multilevel mixed models, we examined the effects of gender and behavioral inhibition/approach motivation (BIS-BAS) during voluntary task selection under different reward transitions. Compared to males, female subjects showed greater flexibility (i.e., more task switches), and were less influenced by reward transitions. Opposing effects of BIS and BAS were found, with low (high) levels of BAS (BIS) showing a greater influence of reward transitions on flexibility. In addition, we found that previous effects of reward transition only replicate when rewards are predictable (deterministic), and not when rewards have uncertainty. These findings have implications for how hypothesizing about how reward-guided flexibility is impacted in psychopathologies that affect motivational processes.

Email: Joseph Orr, joseph.orr@tamu.edu

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2:30–2:50 PM (198)

Perceived Control: How Much Choice Is Too Much Choice? KATHARINA A. SCHWARZ, *University of Trier Institute of Psychology* — Voluntary actions are accompanied by a sense of control over that action and its effects. This perceived control, or sense of agency, serves as a precursor for the agent's perceived responsibility over the action outcome as well as an action motivator, affecting the agent's future action decisions. Previous literature seems to suggest that more available choices are reflected in a higher sense of agency in agents but also that too much choice seems to reduce it. But how much choice is too much choice? In this series of experiments, we focus on the agents' perceived control, as well the actions' pleasantness to the participants and the effort it takes to complete them, depending on the number of available choices. Moreover, we have a look at how the number of available choices might affect impactful, real-world activities such as voting behavior.

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2:50–3:10 PM (199)

Does a Concurrent Motor Process Influence Representational Momentum? TIMOTHY L. HUBBARD, *Arizona State University & Grand Canyon University*, SIMON MERZ, *University of Trier*, JANA WEITEN, *University of Trier* — Whether a hand motion that is congruent or incongruent with a concurrent target motion can influence representational momentum for that target was examined. Participants viewed a leftward or rightward moving target while moving their hand leftward, moving their hand rightward, or not moving their hand. Prior studies of mental rotation reported that congruency or incongruency of the direction of mental rotation and the direction of a concurrent physical rotation of a stimulus influenced mental rotation. As mental rotation and representational momentum each involve extrapolation of target motion, it could be predicted that congruency of direction of hand motion and direction of target motion might influence representational momentum of the target. Robust representational momentum occurred in all conditions, but there was no effect of congruency of hand motion and target motion, nor of the presence or absence of hand motion, on representational momentum. The results are consistent with a hypothesis that generation of representational momentum involves sensory processes rather than motor processes.

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3:10–3:30 PM (200)

Quantifying the Influence of Visual Saliency in Interface Displays. JEREMIAH D. STILL, *Old Dominion University* — Although it can be easy to recognize a salient object within a visually homogeneous display determining relative salience becomes much more difficult within real-world displays. Visual saliency models provide a means to capture those stimulus-driven properties that are not available through introspection. Along these lines, computational models have been successfully employed to predict the deployment of attention within interfaces. By quantifying visual salience, designers gain insight into user actions like design patterns or affordances. This talk explores some initial discoveries that help us understand the unique influence salience has on search efficiency across a variety of interfaces. Our initial findings represent an effort to help designers create easier-to-search displays. Translating historically cognitive laboratory findings into useful design theory is challenging. Future needs and gaps in this endeavor will be highlighted.

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Language Production/Writing

Saturday, November 18, 2023, 1:30–3:30 PM US PST, Imperial B

Chaired by Ariel M. Cohen-Goldberg, *Tufts University*

1:30–1:50 PM (201)

Serial Order Mechanisms in Spoken and Typed Language Production. ANN KOCHUPURACKAL, *Tufts University*, CASSANDRA JACOBS, *University at Buffalo, SUNY*, ARIEL M. COHEN-GOLDBERG, *Tufts University* — Theories of language production differ as to how serial order information is used for production. One-step theories posit that information about order stored in long-term memory (LTM) is directly used to drive production (e.g., Rumelhart & Norman, 1982; Dell & Govindjee, 1993) while two-step theories hold that order information in LTM must first be converted to a different format for production (e.g., Pos 1 → Onset; Dell, 1986). Jacobs & Dell (2014) used the implicit priming paradigm to demonstrate that spoken production utilizes a two-step serial order system. We conducted a close replication to explore whether serial order for typing is one- or two-step. We find a different pattern of priming than Jacobs and Dell that is consistent with a one-step system. This suggests that speaking and typing may rely on different serial order mechanisms.

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1:50–2:10 PM (202)

Contributions of Phonological and Semantic Working Memory to Narrative Language Production: Evidence from Individuals with Left Hemisphere Stroke. RACHEL ZAHN, *Rice University*, RANDI C. MARTIN, *Rice University* — Martin (2021) argued that semantic WM supports the elaboration of phrasal content during the grammatical encoding stage of language production. Consistent with these claims, Zahn et al. (2023) reported that, for acute stroke cases (N = 62), semantic, but not phonological, WM capacity had an independent contribution in predicting phrasal elaboration in narrative production. An earlier study (Martin and Schnur, 2019) implied that phonological WM supports a different aspect of production—specifically, fluency in terms of speech rate. However, Zahn et al.'s (2023) results suggested that this relation derived from single word production ability. Here, we tested whether Zahn et al.'s findings replicated for individuals at the chronic stage of stroke (N = 38). In a combined analysis for the acute and chronic groups, strong independent contributions of semantic, but not phonological, WM were obtained for measures of phrasal elaboration. For speech rate, accuracy in single word production was the only significant predictor.

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No interactions with group were obtained. Implications for language production models will be discussed.

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2:10–2:30 PM (203)

Testing the Domain-Generality of Conflict and Control in Language Production by Applying Machine Learning Techniques to EEG Data. NAZBANOU NOZARI, *Carnegie Mellon University*, TARA PIRNIA, *Carnegie Mellon University*, SVETLANA PINET, *Basque Center on Cognition, Brain and Language (BCBL)*, LEILA WEHBE, *Carnegie Mellon University* — In language production, like other goal-driven tasks, co-activation of multiple representations creates conflict, which must be resolved for selection. A popular view is that such conflict is represented by a common neural state across tasks and triggers a domain-general control process. To test this, we applied advanced classification and temporal generalization techniques from machine learning to EEG data of 29 participants naming pictures. Conflict was generated through contextual similarity (task A) and a Stroop-like manipulation (task B). We show (1) successful classification of high vs. low conflict states within each task, (2) successful classification of new participants, showing a common neural signature of conflict across people for each task, and (3) successful cross-classification of conflict states induced by semantic vs. phonological similarity. (4) Despite the three positive results above, we found no evidence of cross-classification between the two tasks. These results speak against the domain-general view of conflict and control.

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2:30–2:50 PM (204)

Should I Speak or Should I Drive? A VR Study on the Influence of Dual-Tasking on Sentence Production and Driving Behavior. DANBI AHN, *The Max Planck Institute for Psycholinguistics*, PETER HAGOORT, *The Max Planck Institute for Psycholinguistics* — Though people often talk while driving, this dual-task can be challenging because similar cognitive demands exist in talking and driving. To investigate the influence of dual-tasking, we asked Dutch speakers to produce sentences while driving in a VR (CAVE) environment. The driving conditions varied in difficulty (sunny vs. foggy). For the sentence production task, participants sometimes created sentences that allowed for flexible word order in Dutch, using agents with varying naming difficulties (difficult, easy, or no talk). We analyzed the word order patterns and naming latency of produced sentences, as well as driving measures (braking, distance from a car in front, and lane keeping). The preliminary data suggests that certain driving measurements may be influenced by different production and driving conditions. Furthermore, we might suspect that the effect of dual-tasking on Dutch sentence production (specifically, naming latency) is modulated by individual differences of everyday driving behavior.

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2:50–3:10 PM (205)

Quantifying the Semantic Heterogeneity of Cloze Responses. CASSANDRA JACOBS, *University at Buffalo, SUNY*, RYAN HUBBARD, *University of Illinois Urbana-Champaign*, KARA FEDERMEIER, *University of Illinois Urbana-Champaign* — Predictability is often quantified in terms of cloze probabilities and the outputs of statistical language models. In contrast to this work, however, we quantify the density of the semantic spaces of productions from a word-by-word cloze norming experiment to approximate "semantic uncertainty." Participants guessed each of the next words in strongly and weakly constraining sentence stimuli from Federmeier et al. (2007). We analyzed the final words of each sentence using a Bayesian gaussian mixture model (BGMM) in conjunction with a statistical language model (RoBERTa) to identify the number of clusters produced in strongly and weakly constraining sentences. The BGMM is capable of capturing meaningful subvariation in cloze responses for both strongly constraining and weakly constraining sentences, such as grouping together morphologically and taxonomically related words. This work provides new insights into the mechanisms of prediction and may provide a new method for understanding diversity in individual predictions.

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3:10–3:30 PM (206)

Studying Interactive Adaptation to Mandarin Tone Sandhi. ERIC PELZL, *The Pennsylvania State University*, YUKA TATSUMI, *The Pennsylvania State University Center for Language Science*, ANNIE OLMSTEAD, *The Pennsylvania State University*, NAVIN VISWANATHAN, *The Pennsylvania State University* — We investigated how Mandarin speakers adapt interactively when confronted by tonal ambiguity. The Mandarin low-dipping tone (T3) undergoes an alteration, tone sandhi, when followed by another T3, resulting in a tone that sounds like the rising tone (T2). Ten pairs of Chinese participants completed an interactive phrase matching task. They saw displays with two Chinese phrases consisting of a surname (e.g., 鲁 vs 卢 Lu3/Lu2) and a title (e.g., 主任 tʃu3ɻən4 "Director") that became homophonous in some conditions as a function of sandhi. To complete the task, one participant read the phrase while the other selected it from their display. Pairs deployed different strategies to overcome sandhi-induced ambiguity, including exaggerating F0 rise or duration. Not all strategies were successful. Speakers can flexibly adapt to sandhi-induced ambiguity, but their strategies may not align with listener expectations. This work provides a new (interactive) perspective for theoretical consideration of tonal production and perception.

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Learning & Memory IV

Saturday, November 18, 2023, 1:30–3:30 PM US PST, Continental 1 & 2

Chaired by Julia Spaniol, *Toronto Metropolitan University*

1:30–1:50 PM (207)

General Cognition, Executive Function, and Training Adherence Predict Learning Capacity of a Closed-Loop Working Memory Game in Older Adults. CHANDRAMALLIKA BASAK, *University of Texas at Dallas*, FRANSISCO SIERRA, *University of Texas at Dallas*, MICAELA ANDREO, *University of Texas at Dallas*, PAULINA SKOLASINSKA, *University of Texas at Dallas* — In this study, we evaluated whether cognition and adherence to training predicted learning on a closed-loop working memory game. Fifty-two healthy older adults (>65 years) played the game for about 15.77 hours, averaging 508 games, each with 80 trials. Adherence was measured by training frequency (average lag between training days) and training duration. Game learning metrics included highest level played, individualized learning rate and diffusion parameters calculated for early learning. Cognition (MoCA, executive functions, processing speed, episodic memory) was assessed at baseline. Memory updating, task switching and MoCA predicted highest level reached and drift rate. Training frequency predicted autocorrelated daily accuracy, but not daily latency. These results suggest that older adults with higher general cognition, and updating and switching abilities, were able to quickly learn the complex game. Importantly, irrespective of cognition, shorter distance between training days contributed to daily game accuracy, suggesting the importance of training frequency in learning.

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1:50–2:10 PM (208)

The Basic Cognitive Abilities Most Beneficial for Learning and Performance in Dynamic Environments. DAVID J. FRANK, *Youngstown State University*, ALEXANDER P. BURGOYNE, *Georgia Institute of Technology*, BROOKE N. MACNAMRA, *Case Western Reserve University*, DAVID Z. HAMBRICK, *Michigan State University* — Why are some tasks harder to learn and master than others? According to the theory of dimensions of difficulty (Hoffman et al., 2014), learning and performance on dynamic tasks—where information is constantly changing—is hindered, compared with learning and performance on a relatively static task. Past research has confirmed that performance on a dynamic task is impaired by cognitive load compared with an otherwise identical tasks where one can pause and manipulate the progression of the task (Macnamara & Frank, 2018). However, it remains unknown which specific cognitive abilities are required to deal with the dynamic nature of the task, and if this changes throughout learning. In the current study, we examine the roles of individual differences in working memory capacity, updating efficiency, processing speed, and fluid reasoning on early and late performance in a complex computerized task. In a sample of more than 600 participants from multiple institutions and from the community, we use multigroup structural equation modeling to determine which specific cognitive abilities predict learning and success on a dynamic, compared to, a static complex task.

Email: David Frank, djfrank02@ysu.edu

2:10–2:30 PM (209)

Mechanisms of Processing Speed Training Across the Adult Lifespan: First Findings. CLAUDIA VON BASTIAN, *University of Sheffield*, ALICE REINHARTZ, *Medical School Hamburg*, ELEANOR R. A HYDE, *University of Sheffield*, SHUANGKE JIANG, *University of Sheffield*, JEFF FERRERI, *Institut Universitaire de Gériatrie de Montréal*, FANNI TOUSIGNANT, *Institut Universitaire de Gériatrie de Montréal*, SYLVIE BELLEVILLE, *University of Montreal & Institut Universitaire de Gériatrie de Montréal*, TILO STROBACH, *Medical School Hamburg* — Evidence for cognitive training-induced far transfer is mixed at best. One notable exception appears to be training interventions targeting speed of processing. In this pre-registered, multi-site training study, we test the hypotheses that (a) training tasks with stronger attentional control demands will induce larger transfer effects and that (b) gains in the rate of information accumulation (i.e., drift rate) will be positively associated with these effects. For this purpose, we are collecting data from 408 adults (18-85 years) who are randomly allocated to one of four groups practising tasks that varied in their attentional control demands. Transfer to working memory, executive functions, reasoning, and everyday cognitive functioning is assessed before, immediately after, and 3 months after 10 training sessions. In this talk, we will present first results from this study.

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2:30–2:50 PM (210)

Reward Motivated Remembering and Forgetting in Younger and Older Adults. HOLLY J. BOWEN, PH.D., *Southern Methodist University*, DIANE H. MOON, B.A., *Southern Methodist University* — Directed forgetting is an important aspect of adaptive memory, thought to depend on cognitive control processes. Evidence suggests that older adults decline in intentional forgetting, potentially because of age-related deficits in control over memory encoding. Reward motivation has been shown to enhance both control and memory encoding; however, incentive effects on directed forgetting are unclear. In this talk, I will present two lines of research investigating reward effects on directed forgetting in younger and older adults and their interaction with penalties. First, I will show evidence that reward enhances directed remembering, but not directed forgetting, in older adults, suggesting that reward might enhance automatic memory encoding but not control-dependent forgetting. Second, I will present follow-up data examining how manipulations of penalty for memory errors at retrieval interacts with these reward effects. In sum, these data inform whether reward motivated remembering and forgetting effects are being driven by rewards at encoding, losses at retrieval, or both.

Email: Holly Bowen, hbowen@smu.edu

SATURDAY

2:50–3:10 PM (211)

Effects of Curiosity and Information Truth on Item and Source Memory in Younger and Older Adults. MARY C. WHATLEY, *University of California, Los Angeles*, ALAN D. CASTEL, *University of California, Los Angeles* — Younger and older adults better remember target and peripheral information in states of heightened curiosity. In two experiments, we tested if curiosity predicts item and source memory for true and false information in younger and older adults. Participants rated their curiosity to learn answers to trivia questions and were shown either a true or false answer. Participants learned whether the answer was true or false when they learned the answer (Exp. 1) or immediately after learning the answer (Exp. 2). After one week, memory for the answer and the true/false label (i.e., source) were tested. In Exp. 1, curiosity predicted item memory only for younger adults, and the effect of curiosity on memory did not depend on truth of the answer. However, in Exp. 2, curiosity predicted item memory for both age groups but only for true items. In both experiments, older adults showed better item and source memory for true than false information, and curiosity did not predict source accuracy. The results suggest curiosity may not improve non-target memory in the presence of truth information. In addition, information about truth, when presented during encoding, may override effects of curiosity on item memory in aging.

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3:10–3:30 PM (212)

Determinants of Curiosity and Information Search in Younger and Older Adults. JULIA SPANIOL, *Toronto Metropolitan University*, LIYANA SWIRSKY, *Toronto Metropolitan University* — Curiosity drives exploration, learning, and memory across the lifespan, but little is known about age differences in specific determinants of curiosity. According to the rational model of curiosity (Dubey & Griffiths, 2020), curiosity reflects the expected utility of information. Guided by this model, two experiments using different methods of curiosity elicitation examined the impact of social value (i.e., popularity) and practical value (i.e., usefulness) on curiosity and information seeking in healthy younger and older adults (total N = 514). Whereas curiosity was sensitive to negative social value and perceived personal usefulness in younger adults, it was sensitive to positive social value and perceived collective usefulness in older adults. Curiosity predicted information seeking in both age groups, but the relationship was stronger in older than in younger adults. These findings may guide interventions to boost information seeking and reduce the impact of (digital) misinformation in both age groups.

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Learning & Memory V

Saturday, November 18, 2023, 3:30–5:30 PM US PST, Continental 4

Chaired by Edward Awh, *University of Chicago*

3:30–3:50 PM (213)

Spatial Attention and Working Memory Gating Are Distinct Forms of Voluntary Attentional Control. EDWARD AWH, *University of Chicago*, WILLIAM THYER, *University of Chicago*, HENRY M. JONES, *University of Chicago*, DARIUS SUPLICA, *University of Chicago* — Spatial attention and working memory (WM) are closely intertwined. For example, spatial attention is deployed towards the position of items stored in WM, even when location is irrelevant to the memory task. Moreover, preventing those covert glances impairs WM performance. But is focusing spatial attention on an item tantamount to encoding it into working memory? We examined this question by using EEG activity to track spatial attention and WM storage while observers saw displays that contained either one target and one irrelevant distractor or two targets. Alpha oscillations tracked the locus of covert spatial attention and revealed equally precise orienting towards targets and distractors. Nevertheless, at the same moment in time, EEG signatures of WM encoding showed that targets were far more likely to be stored in WM than distractors. Thus, although spatial selective attention is a persistent partner for storage in visual working memory, it can be dissociated from the operations that gate encoding into this online memory system.

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3:50–4:10 PM (214)

Working Memory Capacity for Multiple Unrelated Materials. LUÍSA SUPERBIA-GUIMARÃES, *University of Missouri*, NELSON COWAN, *University of Missouri* — Working memory, the information temporarily held in mind in a highly activated state, is limited in the number of items that can be maintained. It is still unclear, however, to what extent the capacity limit applies across multiple, very different sets to be recalled. We examined this question with sequences of colors, shapes, special characters, and locations. Unlike previous work, participants could receive one, two, or four different item types on a trial, with one or three items of each type, grouped by type. Each item was to be recalled out of eight response choices of that type. We hypothesized that memory for a particular item might depend only on the number of similar items (those of the same type) and the number of sets presented in a trial, under the assumption that the participant must keep track of the sets to be retained. In contrast to that hypothesis, performance simply depended on the total number of items to be recalled, with little effect of the similarity of those items. The results seem discrepant with some previous research suggesting no importance of the number of items very dissimilar from a set currently being recalled, suggesting a need for further research on capacity and set similarity.

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SATURDAY

4:10–4:30 PM (215)

The Role of Negative Feedback in Instrumental Learning. ANNE GE COLLINS, *University of California, Berkeley* — Learning stimulus-action associations from feedback relies on multiple processes, including working memory (WM) and reinforcement learning (RL). Integrating negative feedback is crucial to both processes: it enables us to actively avoid reselecting a bad action in WM, and to accurately estimate the expected value in RL. However, past results show that participants underweigh negative feedback. We use computational modeling in 6 datasets, totaling over 500 participants, to systematically investigate the impact of negative outcomes on both processes. Our results show that WM uses negative feedback more efficiently than previously thought, while RL surprisingly misuses it. Simulations suggest that RL's failure to integrate negative outcomes is mitigated by WM guiding policy towards appropriate actions, such that RL's long term policy approximates an optimal one despite suboptimal updates. Our results provide empirical support for value-less RL theories and have important implications for unraveling the mechanisms that support goal-directed decision making.

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4:30–4:50 PM (216)

Perceived Agency of A Learning Partner Affects Interaction Behaviours and Task Performance in Aging: Learning with a Computerised Versus Human Partner. SARAH E. MACPHERSON, *University of Edinburgh*, MARIA K. WOLTERS, *University of Edinburgh & OFFIS*, CATHERINE J. CROMPTON, *University of Edinburgh* — Computer-based systems may support aging in place. Using a Wizard of Oz paradigm, this study investigated whether perceived agency of a learning partner has a direct impact on how older adults interact and learn with that partner. Twenty-four older adults completed a collaborative learning task with both human and computer systems. The tasks involved the systems describing a map route and participants drawing the route onto their own map. Learning was observed in both conditions. However, older adults took longer to complete the task and interacted less when they believed they were interacting with a computer. Both delayed recall 1 hour and 1 week later positively correlated with the amount of interaction during computer learning trials: the longer participants took during the interaction was related with higher accuracy when recalling the details of the route. These findings suggest that beliefs about agency affect how efficiently and how accurately older adults learn with technology.

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4:50–5:10 PM (217)

Mind Wandering during Interleaved or Blocked Inductive Learning, an ERP study. JANET METCALFE, *Columbia University*, JUDY XU, *Salesforce* — As is increasingly appreciated in educational practice, many studies have shown substantial learning benefits that are attributable to spaced (interleaved) as compared to massed (blocked) practice. Furthermore, interleaving has also been shown to facilitate inductive learning, that is, category or classification learning induced via the presentation of different examples of the category. Following, Kornell and Bjork (2008) we, here, replicate the finding that if participants are given study examples of paintings from many artists in an interleaved manner, their later knowledge of the artists' names associated with each style of painting is better than had they been presented with all of the works of each artist in a single, massed block. We also show that people mind wandered more with blocked than with interleaved practice. We here, for the first time, tracked people's event related potentials (ERPs) during blocked and interleaved induction. Our behavioral findings showed that although induction was enhanced by interleaving, old/new recognition was not. The ERPs revealed distinctive differences between on-task as compared to mind-wandering trials, but the ERPs also revealed some differences that favored blocked practice.

Email: Janet Metcalfe, jm348@columbia.edu

5:10–5:30 PM (218)

The Contribution of Offloading the Prospective and Retrospective Components of Prospective Memory to Younger and Older Adults' Performance. CHIARA SCARAMPI, *University of Geneva*, SAM GILBERT, *University College London*, MATTHIAS KLIEGEL, *University of Geneva* — In our everyday life, we often use external props and tools such as calendars and diaries to help us remember delayed intentions. This is known as intention offloading. Little research has been conducted so far to understand this process and its development across the lifespan. The aim of this study was to determine the most effective strategies to support the fulfilment of delayed intentions in younger and older adults. We administered a computerized task requiring participants to remember delayed intentions for a brief period and manipulated the possibility of setting different reminders. For both age groups, the most effective reminders referred both to the intended action and the target event when it was appropriate to perform the intended action. Reminders that referred only to the target event did not improve performance over reliance on internal memory. The findings shed light on the conditions under which reminders benefit younger and older adults' prospective memory.

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Recognition I

Saturday, November 18, 2023, 3:30–5:30 PM US PST, Plaza A

Chaired by Nurit Gronau, *The Open University of Israel*

3:30–3:50 PM (219)

Familiarity Deficits in Amnestic Mild Cognitive Impairment. NICOLE D. ANDERSON, *Rotman Research Institute, Baycrest* — Neuroimaging and patient lesion research have identified the role of the perirhinal cortex in feelings of familiarity. Tau accumulation begins in the perirhinal cortex in preclinical Alzheimer's disease, and this region shows cortical thinning in amnestic mild cognitive impairment (aMCI). Thus, one would expect familiarity deficits in aMCI, but the existing evidence from dual process paradigms

is mixed. I have argued that in order to properly assess familiarity, we need paradigms that minimize the influence of recollection. I will describe my recent and ongoing research that has done this and has shown that although familiarity is intact in healthy older adults, compared to young adults, it is impaired in people with aMCI. Ongoing research is also examining how familiarity is coupled with various signals from the autonomic nervous system and individual differences in interoception. Overall, this research contributes to our understanding of the phenomenology of aMCI, and could result in biomarkers for early detection of preclinical Alzheimer's disease so that interventions can be provided early.

Email: Nicole Anderson, nanderson@research.baycrest.org

3:50–4:10 PM (220)

The Dependence (or Independence) of Object Features in Visual LTM Is a Continuous, Not a Binary Problem: The Role of Conceptual vs. Perceptual Features. NURIT GRONAU, *The Open University of Israel*, ROTEM AVITAL-COHEN, *The Open University of Israel* — Does the color of an object remain stored in long-term memory (LTM) independently of its location or orientation, or are multiple object features remembered and forgotten as a cohesive unit? While recent studies presented conflicting evidence for both views, we propose that the level of inter-dependency between features may be influenced by their connection to the object's conceptual meaning. For instance, if the color of an object is meaningful, or diagnostic in some way, it could act as a "hook" for other features, enhancing inter-dependency in LTM. To test our hypothesis, 40 participants rated whether an item's color was meaningful (e.g., red vs. white wine) or meaningless (red vs. white balloon). Subsequently, an independent group of 35 participants encoded single-colored objects on an arbitrary screen location and underwent a 4-AFC memory recognition test, measuring both color and location dimensions. Results showed a strong linkage between the dimensions in immediate and delayed (2-hour) memory-recognition tests. Importantly, however, this dependency was greater for color-meaningful items, suggesting that conceptual information may indeed act as a "glue" for perceptual, arbitrary information in memory.

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4:10–4:30 PM (221)

Acoustic Signals of Recognition Accuracy. JUSTIN KANTNER, *California State University, Northridge*, GIZEM FILIZ, *Washington University in St. Louis*, IAN DOBBINS, *Washington University in St. Louis* — Recent research in perceptual discrimination (Goupil & Acouturier, 2021) suggests that the acoustical features (i.e., prosody) of verbally rendered cognitive judgments may provide cues to the confidence and accuracy of those judgments. The current study tested whether prosody would predict the accuracy of spoken long-term episodic memory judgments. Subjects studied and were tested on memory for faces in a forced-choice recognition procedure. Test responses were given by saying "Number One/Two/Three/Four" to indicate the selected face. The pitch, loudness, and speech rate of these responses were used as predictors of accuracy. Correct recognition judgments were higher pitched, louder, and faster than incorrect judgments, with loudness and speech rate acting as particularly robust predictors. Modeling analyses demonstrated that these two features make unique contributions to accuracy prediction. These prosodic features thus appear to carry information about the accuracy of memory reports, and may indeed help humans make metamnemonic inferences of others.

Email: Justin Kantner, justin.kantner@csun.edu

4:30–4:50 PM (222)

Cognitive Modeling of Individual-Item Memorability in Real-World Category Domains. ROBERT NOSOFSKY, *Indiana University*, ADAM OSTH, *University of Melbourne* — Modern work in cognitive science suggests that some real-world images are more memorable than others. Here we pursue cognitive-modeling of the context-dependence of memorability in real-world category domains. We conduct recognition-memory experiments that manipulate the size of categories that compose study lists, degrees of within-category similarity, and presence of distinctive features in objects. We conduct similarity-scaling work to embed the objects in high-dimensional feature spaces and collect ratings of individual-object distinctiveness. Using the high-dimensional feature space and the distinctiveness ratings as inputs, we show that an exemplar-based global-familiarity model that makes allowance for different degrees of "self-match" among objects accounts quantitatively for numerous aspects of the old-new recognition data. The model does a reasonably good job of predicting false alarm rates associated with individual items across different contexts. Although we believe we are on the right track for predicting individual differences in old-item memorability, providing detailed quantitative accounts of individual-item hit rates remains a challenge.

Email: Robert Nosofsky, nosofsky@indiana.edu

4:50–5:10 PM (223)

2AFC and 4AFC Recognition Memory Testing. RICHARD M. SHIFFRIN, *Indiana University*, ZAINAB R. MOHAMMED, *Indiana University* — Brady, Robinson, Williams, & Wixted (2023) suggested use of 2AFC for recognition memory. We used both 2AFC and 4AFC for pure lists of words and pictures, and mixed lists of both, with list-length varied. All tests were of two items. 2AFC required choice of the more likely studied. 4AFC required a response that both were old, both new, or one of each. Accuracy and response time were measured. The accuracy and response time results were well predicted by the REM model (Shiffrin & Steyvers, 1997) using the 1997 parameter values, except with a higher storage probability for features of pictures than words. For 2AFC that model chose the test item with the higher "odds." For 4AFC, an old decision for each item if odds > 1.0. To predict response times, a simple approximation was used by which faster response times occurred for odds farther from 1.0. The very good predictions could be further improved by fitting parameter values.

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SATURDAY

5:10–5:30 PM (224)

Examining the Time Course of Encoding Specific and Gist Associative Episodic Memory Representations Among Young and Older Adults. NATHANIEL R. GREENE, *University of Missouri*, MOSHE NAVEH-BENJAMIN, *University of Missouri* — We tested whether fuzzy-trace theory's assumption of rapid formation of gist/general and slow formation of specific/detailed representations held for young and older adults for a core feature of episodic memory, the associative binding of components of an episode. Participants studied face-scene pairs under fast, intermediate, or slow presentation rates and completed long-term memory conjoint recognition tests. Among both young and older adults, gist representations formed under fast presentation rates were commensurate with those formed under slower presentation rates, while specific representations continued to be fleshed out with longer encoding time. Moreover, when older adults had more time than younger adults to encode face-scene pairs, age-related differences in access to specific representations disappeared. These findings reinforce fuzzy-trace theory's position of differential rates of formation of specific and gist representations and suggest that age differences in speed of processing are one major contributor to age-related declines in memory specificity.

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Psycholinguistics IV

Saturday, November 18, 2023, 3:30–5:10 PM US PST, Plaza B

Chaired by Chigusa Kurumada, *University of Rochester*

3:30–3:50 PM (225)

Effects of Sleep on Learning a Morphological Alternation. SHILOH DRAKE, *University of Oregon*, ISABEL PRELIGERA, *University of Oregon*, MELISSA BAESE-BERK, *University of Chicago* — Sleep aids in the process of memory consolidation, including during language learning. Measurable differences in accuracy and reaction time have been found between participants who do and do not sleep between training and test. We focus on two novel manipulations: (1) learning a morphological rule and (2) investigating the types of errors that participants make. Based on our previous research, we expect participants in the "sleep" condition to make different errors compared on items due to the consolidation process aiding in rule generalization when compared to the participants in the "no-sleep" condition. Errors change throughout the course of language learning, even in beginners and during very short exposure sessions as in laboratory studies. If they also change when comparing across sleep and no-sleep groups, this provides further evidence for the role of sleep in language learning, specifically when learning an abstract linguistic construct like a morphological rule.

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3:50–4:10 PM (227)

The Role of Domain-General Inhibitory Control in Language Processing. KRISTI HENDRICKSON, *University of Iowa*, JINA KIM, *University of Iowa*, HECTOR O S. MELENDEZ, *University of Iowa alumnus*, JAN WESSEL, *University of Iowa* — Language comprehension is a dynamic process during which the incoming auditory signal activates semantic representations in real-time. We tested the hypothesis that domain-general inhibitory control aids language processing by suppressing once-activated, but subsequently ruled out words. We developed two new experimental tasks in which subjects were primed to activate specific words through highly-constrained sentential contexts, which were sometimes subsequently violated by mismatching words. To test the hypothesis that the originally primed word was inhibited by a domain-general inhibitory control mechanism, we present data from five experiments. In Experiments 1-3, semantic violations led to elongated reaction times on a subsequent lexical decision probe. In Experiment 4, we paired this task with a motoric stop-signal instruction and found that semantic violations elongated stop-signal reaction time, suggesting an overlap in underlying processing between motoric and semantic inhibition. In Experiment 5 (EEG), we show how semantic violations influence neural markers of inhibitory motor control.

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4:10–4:30 PM (228)

Information Entropy Facilitates (Not Impedes) Lexical Processing During Language Comprehension. HOSSEIN KARIMI, *Mississippi State University*, PETE WEBER, *Mississippi State University*, JADEN ZINN, *Mississippi State University*, KATHRYN WALTERS, *Mississippi State University* — Contextual predictability has been shown to facilitate word identification, but the potential effect of lexical entropy is under-investigated. High entropy contexts may lead to interference due to lexical competition, or, alternatively, to processing facilitation due to pre-activation of shared semantic features. We examined if entropy measured at the trial level (i.e., for each participant, for each item) corresponds to facilitatory or inhibitory effects of entropy. Participants (N = 112) took part in two experimental sessions. In one session, they provided up to 10 completions for sentence fragments (N = 648). In another session, they read the same sentences including a target word. We observed a facilitatory (not inhibitory) effect of trial entropy on lexical processing over and above the effects of cloze probability, surprisal, and semantic constraint. The results lend support to theories of lexical prediction maintaining that prediction involves broad activation of semantic features rather than activation of full lexical forms.

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4:30–4:50 PM (229)

How Variable Are the Classic ERP Effects During Sentence Processing? A Systematic Resampling Analysis of the N400 and P600 Effects. ALBERT E. KIM, *University of Colorado Boulder*, AKIRA MIYAKE, *University of Colorado Boulder*, SHANNON MCKNIGHT, *Fort Lewis College* — Although event-related potential (ERP) research on language processing has

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capitalized on key, theoretically influential ERP components, such as the N400 and P600 ERPs elicited during sentence comprehension, their measurement properties have rarely been examined. We examined the measurement properties of the N400 and P600 ERPs by using a bootstrap resampling procedure to randomly draw thousands of resamples varying in sample size and trial count from a larger sample of 163 participants and 40 stimulus sentences of each type per condition. Our resampling investigation focused on three major issues: (a) statistical power; (b) variability in the magnitudes of the effects; and (c) variability in the temporal and spatial morphologies of the effects. At the level of grand averages, the N400 and P600 effects were both robust and substantial. However, across resamples, there was a high degree of variability in effect magnitudes, onset times, and scalp distributions, which may be greater than is currently appreciated in the literature. The results provide important guidance for strengthening the reproducibility of ERP research, including findings about appropriate sample sizes and about optimal approaches to data analysis.

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4:50–5:10 PM (230)

Perception and Adaptation of Receptive Prosody in Autistic Adolescents. CHIGUSA KURUMADA, *University of Rochester*, RACHEL RIVERA, *University of Rochester*, PAUL ALLEN, *University of Rochester Medical Center*, LOISA BENNETTO, *University of Rochester* — Autistic children and adolescents often have difficulty recognizing the linguistic and affective meaning of speech prosody. One possible, yet underexplored, reason for these challenges may be the phonetic variability present in everyday speech. Even seemingly straightforward distinctions (e.g., question vs. statement) exhibit substantial variability due to physiological and socio-indexical characteristics, such as the talker's height, gender, age, and accent/dialect. This study investigates the new hypothesis that autistic adolescents may be slower in adapting to the differences as compared to neurotypical, age-matched controls. Forty-eight subjects (aged 12-17, 50% autistic) participated in (a) discrimination and (b) adaptation experiments consisting of three blocks (pre-test, exposure, and post-test). The results suggest that autistic adolescents are as accurate as NT controls in discriminating between subtle prosodic variations. However, they were significantly less likely to adapt to the characteristics of the current speaker's speech prosody (Group * Test block interaction $p<.001$). This finding provides novel insight into perceptual and neural causes of difficulties in everyday linguistic communication in autistic individuals.

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Reasoning/Problem Solving I

Saturday, November 18, 2023, 3:30–5:30 PM US PST, Imperial A

Chaired by Daniel Bernstein, *Kwantlen Polytechnic University*

3:30–3:50 PM (231)

Metacognitive Control and Belief Suppression in Reasoning: De-Biasing Impedes Logical Accuracy on a Syllogistic Reasoning Task. SIMON J. HANDLEY, *Macquarie University*, VALERIE THOMPSON, *University of Saskatchewan*, STEPHANIE HOWARTH, *Macquarie University* — In this paper we report the results of two studies that examined the impact of two metacognitive belief suppression manipulations on reasoners' performance on a syllogistic reasoning task. In Experiment 1, a group of highly hypnotisable participants were instructed to suppress knowledge related to the belief content of syllogistic conclusions. In Experiment 2, participants received explicit instructions to ignore their beliefs when evaluating the validity of syllogistic arguments. In both experiments these metacognitive manipulations were successful; there was a significant reduction in the influence of beliefs on responding. However, the suppression effect was accompanied by a reduction in logical accuracy. This effect arose from poorer performance on congruent problems in which beliefs provide an accurate cue to the solution. The findings suggest that belief bias arises because of the facilitative effect of beliefs on congruent problems, rather than the difficulty of suppressing beliefs on incongruent problems. The findings are discussed in the context of dual process accounts of reasoning.

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3:50–4:10 PM (232)

Lifespan Metacognition. DANIEL BERNSTEIN, *Kwantlen Polytechnic University*, CAROLYN BAER, *Kwantlen Polytechnic University*, MONIKA UNDORF, *Technical University of Darmstadt*, RAKEFET ACKERMAN, *Technion – Israel Institute of Technology* — We explore how children and adults monitor their performance. In Project 1, children (ages 7-13 years) and adults identified increasingly clear images of common objects. Participants rated their confidence at each clarity level. Next, participants tried to remember their prior identification and confidence ratings as the objects clarified again. We observed metacognitive hindsight bias: Participants overestimated their prior confidence in hindsight once they knew the objects' identity. In Project 2, children (ages 5-12 years) and adults chose the larger between two different-sized blobs and rate their confidence. Half the trials involved easy size discrimination; half hard. Participants received accurate feedback half the time. After completing each block of trials, participants rated their global confidence. We observed reciprocal relationships between local and global confidence in children and adults. Project 3 (underway) explores prospective and retrospective metacognition from childhood to older adulthood. Our projects track metacognitive development across the child-to-adult lifespan.

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4:10–4:30 PM (233)

Modelling multi-level relational integration costs as a process account of cognitive flexibility. DAMIAN P. BIRNEY, *The University of Sydney* — The mechanisms underlying individual differences in typical operationalisations of cognitive flexibility remain mostly vague, metaphorically described, and methodologically challenged by an over-reliance on correlational data. Relational complexity (RC) theory formalises relational binding and integration costs as determinants of working-memory capacity. We hypothesise these are precursor mechanisms which underly the capacity for cognitive flexibility. To test this, binding sensitivity, RC, and memory-integration demands are manipulated in the Latin square task (LST) to operationalise integration costs that are theoretically conceptualised as flexibility parameters. Linear-mixed effects regression is proposed to formalise flexibility costs as random-slopes, allowing different binding demands to be isolated as latent variables. As proof-of-concept, 214 participants completed the LST variants in a complete within-subjects design, and three measures of fluid intelligence (Gf). Results indicate the latent flexibility costs are substantive, psychometrically distinct components of Gf. The research contributes to attempts to develop explicit cognitive accounts of flexibility that are amenable to a decomposition of individual differences.

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4:30–4:50 PM (234)

Are Conspiracy Theorists Inaccurate, Unmotivated to be Accurate, or Both? SHAUNA M. BOWES, *Vanderbilt University*, LISA FAZIO, *Vanderbilt University* — Research indicates that conspiratorial ideation is related to less accuracy, more overconfidence, and more reliance on intuition. Yet, it remains unclear (a) how consistent these relations are across measures and (b) whether there are types of conspiracy theorists based on these measures. We conducted a preregistered secondary data analysis (Ns ranged from 477 to 3,056) of the variable-level and person-centered relations among conspiratorial ideation, accuracy, confidence, and motivations. At the variable level, conspiratorial ideation was related to less accuracy (|rs| ranged from .02 to .32), more overestimation (|rs| ranged from .07 to .22), more reliance on intuition and closemindedness (|rs| ranged from .06 to .39), and less rational thinking (|rs| ranged from .05 to .24). In person-centered analyses, there were two classes of individuals based on these measures, one of which scored higher on conspiratorial ideation and one of which scored lower. In the conspiracy theorist class, individuals were not unknowledgeable and irrational across the board. Research is needed to examine how different motives arise in conspiracy theorists and how to reduce susceptibility to misinformation in different classes of conspiracy theorists.

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4:50–5:10 PM (235)

Retrieval Dynamics in Resolving Relational Inconsistency During Verbal Analogical Reasoning. TIM GEORGE, *Union College*, CHRISTINE CHESEBROUGH — Reasoning about verbal analogies requires selective retrieval of relevant relational information. Consequently, inhibitory processes in memory may cause reduced access to information associated with irrelevant relations. Two experiments applied the retrieval-induced forgetting framework to investigate this possibility. Participants studied verbal analogies in A:B::C:D form (bird-nest::camper-tent). Then, half of the items from the study phase appeared in new verbal analogy problems with a changed C term, and half did not. In one condition the new C term conveyed a new relation that was inconsistent with the studied relation (bird-nest::carpenter-?). In another condition the new C term conveyed a relation that remained consistent with the studied relation (bird-nest::bear-?). A final recall test was then administered for all the original analogies. Reduced recall for items appearing in analogies was observed, but only following the inconsistent relation change (Experiment 1). This forgetting effect occurred even when a hint of the original relation was provided at final recall (Experiment 2). These results indicate that reasoning about analogies may involve inhibitory processes that help resolve competition among relations.

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5:10–5:30 PM (236)

The Domain Generality (or Specificity) of Memory Integration. HILARY MILLER-GOLDWATER, *Emory University*, FRANCYS SUBIAUL — Memory integration is a fundamental process involved in generating and accumulating new knowledge. It entails combining information acquired across separate episodes to generate new information. Despite much research in distinct domains (e.g., Bauer et al. 2010; Subiaul et al., 2015), it remains unknown whether memory integration is a domain-general or specific process. The current research tested memory integration across linguistic and non-linguistic domains. In the linguistic domain, adult participants were taught separate novel facts that could be combined to self-generate new information. In the non-linguistic domain, participants viewed separate 2D puzzle-building elements (AB and BC) that could be combined to form one figure (ABC). We conducted regression analyses controlling for domain-specific skills (vocabulary and spatial cognition) and found negative relations between performance on the two memory integration tasks. This suggests that memory integration may operate distinctly across domains. Ongoing research is delving into the processes facilitating performance in each domain.

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Decision Making III

Saturday, November 18, 2023, 3:30–5:30 PM US PST, Imperial B

Chaired by Mario Fific, *Grand Valley State University*

3:30–3:50 PM (237)

Modular Serial-Parallel Network (MSPN): A Unified Model for Hierarchical Cognitive and Perceptual Processes. MARIO FIFIC, *Grand Valley State University*, DANIEL LITTLE, *University of Melbourne*, CHENG-TA YANG, *Taipei Medical University Graduate Institute of Mind, Brain and Consciousness & National Cheng Kung University* — The Modular Serial-Parallel

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Network (MSPN) model is a comprehensive and unified theoretical framework for cognitive and perceptual processes across various behavioral domains, which offers a detailed mechanistic analysis of mental processes involved. In the back end, MSPN synthesizes several perceptual and cognitive approaches, including memory representations, signal detection theory, rule-based decision-making, mental architectures, random walks, and process interactivity. The MSPN model has been applied to two domains to explore the hierarchical nature of mental representations, firstly, in face perception exploring the two dominant approaches: holistic and analytic facial encoding, and secondly, in decision-making involving preferential gamble choices, exploring the so-called heuristic- and utility-based approaches to decision making. The MSPN has shown impressive abilities in fitting choice response time distributions over other models in tested tasks. This implies that MSPN can be used as a tool for further development and refinement of theoretical constructs, with the analysis of the model's parameter values providing insights into distinct properties of perceptual and cognitive processes.

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3:50–4:10 PM (238)

Weather or Not: Climate Risk Awareness and its Influence on Real Estate Decision-Making. OMID GHASEMI, *University of New South Wales, Sydney*, BEN NEWELL, *University of New South Wales* — This study investigates the role of behavioral and cognitive characteristics in predicting individuals' attention to climate risk information for real estate properties and explores the effectiveness of various behavioral techniques in improving their consideration of risk when making purchasing decisions. Through a series of experiments, participants were presented with tasks involving rating the desirability of a range of properties based on different attributes including price, size, year built, and climate risk score. Following these tasks, participants completed surveys measuring their beliefs and perceptions regarding climate risk. Participants were assigned to intervention groups that received behavioral techniques, such as social norm cues and risk literacy tips, to examine whether these techniques could enhance individuals' reliance on risk information. We identify the behavioral and cognitive characteristics that predict individuals' attention to climate risk information and explore how these characteristics can improve the consideration of climate risk through the implementation of nudges and boosts.

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4:10–4:30 PM (239)

Attribute Comparability and Context Effects in Preferential Choice. WILLIAM HAYES, *Indiana University*, WILLIAM R. HOLMES, *Indiana University*, JENNIFER S. TRUEBLOOD, *Indiana University* — Context effects in choice demonstrate that our preferences can change dramatically depending on contextual factors such as the introduction of new alternatives. However, the effects are fragile and sensitive to changes in choice presentation format. This has led some researchers to question the importance and robustness of context effects. In this study, we use a model-based framework to predict how changing the format of attribute values influences the attraction and compromise effects. We find that the effects are more likely to occur with non-comparable attributes (e.g., CPU speed and RAM memory for laptops) than with comparable attributes (e.g., quality ratings). Using mouse tracking, we show that different types of attributes result in different patterns of information acquisition. The comparability of attribute values influences how attention shifts over the course of a decision, which impacts the emergence of context effects.

Email: William Hayes, wmhayes.psyc@gmail.com

4:30–4:50 PM (240)

Differences of Opinions: How Visualizations of Uncertainty in Ratings Data Affect Choice. BENJAMIN MOTZ, *Indiana University*, RICHARD HULLINGER, *Indiana University*, BRADLEY CELESTIN, *Bethel College*, HUNTER BUTZ, *Indiana University*, JOHN KRUSCHKE, *Indiana University* — Online customer ratings of hotels and restaurants are frequently used when making decisions between options. In these situations, people tend to disregard the variability of ratings, instead placing disproportionate emphasis on the central tendency of ratings. Here we examined how different visualizations would change participants' sensitivity to variability in a standard decision-making task. Participants marked their preference between two realistic options (e.g., two different restaurants), when being shown visualizations (or a numbers-only control) of simulated customer ratings for the two options, which differed in their variability. Visualizations included a histogram of the raw ratings, modeled distributions of each option's mean ratings, and a violin plot showing the estimated difference between two options and the corresponding range of uncertainty. Even while this latter condition provided the most direct visualization of uncertainty (i.e., the length of the violin), only the histogram and mean conditions caused increased sensitivity to variability above control. We explore the implications of these findings for how people represent uncertainty during decision making tasks.

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4:50–5:10 PM (241)

Households' Decision on Capital Market Participation: What Are the Drivers? A Multi-Factor Contribution to the Participation Puzzle. ANDREAS OEHLER, *Bamberg University*, MATTHIAS HORN, *Bamberg University* — Investing in stock markets may not always be the most important financial decision households make in their life-cycle. Decisions related to, for example, housing may be also important and investments in other risky assets than stocks (e.g., mutual funds) have to be considered. We provide a multi-factor structural analysis with data from a broad and representative survey of the German Central Bank. Our data allow both a differentiated analysis of capital market participation (CMP) and a consideration of financial and non-financial factors for households' decision on the CMP. Our structural equation analysis (SEA) allows us to quantitatively estimate complex relationship structures between manifest and/or latent variables. Our model explains about 60% of the variation in the CMP decision. The results show that although households' financial literacy and risk aversion are the dominant drivers

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of investments in risky assets, wealth, voluntary pension plans and whole life insurance contracts, financial advice, and investment experience play a remarkable role. Financial literacy reduces risk aversion, and age and gender play a role, directly, and indirectly via financial literacy and risk attitude.

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5:10–5:30 PM (242)

The Impacts of Stress on Gender Differences in Neural Activity During Risky Decision Making. ELIZABETH PETTIT, *Exponent, Inc.* — To predict individual differences in decision making it is important to understand the cognitive processes involved, the underlying neural substrates, and how conditions of stress can alter those processes. The Iowa Gambling Task (IGT) is commonly used to study cognitive constructs necessary for risky decision making such as sensitivity to loss and the ability to learn optimization strategies over time. Neural data provided by electroencephalography (EEG) studies have shown frequency-band-specific event related oscillations associated with similar processes. Thus, there seems to be great potential to link the neural data to individual differences in cognitive processes. The goal of this project was to determine how gender differences in neural patterns capture the change in decision making processes under stress. In this between subjects' design, participant completed the standard IGT during a no stress or no stress condition, both while wearing an EEG. There were several main effects found in power and coherence within and between neural regions. This project provides a powerful assessment of the neurophysiological and mechanisms underlying individual differences in how stress impacts risky decision making.

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Reading II

Saturday, November 18, 2023, 3:30–5:30 PM US PST, Continental 1 & 2

Chaired by Lin Chen, *University of Pittsburgh*

3:30–3:50 PM (243)

Incremental Processes of Reading Authentic Texts for L1 and L2 Readers: A Hybrid Approach. LIN CHEN, *University of Pittsburgh*, GAISHA ORALOVA, *University of Pittsburgh*, CHARLES A. PERFETTI, *University of Pittsburgh* — We report a multi-methods approach to incremental comprehension, comparing L1 English and L2 (Spanish, Korean, Chinese) adult readers. Our hybrid approach combines authentic texts (The New York Times) and two research methods (ERPs and self-paced reading) with computational language models applied to corpus language data (producing multiple measures of surprisal), assessing the contribution of continuous variables with statistical modeling. This approach exposes the influence of multi-level factors on each word of the text. Key conclusions: (1) L1 and L2 processes are influenced by similar lexical, syntactic and text factors, with some differences. Importantly, all readers were affected by surprisal. (2) L2 readers (especially Chinese L1 readers) show a high start-up cost, suggesting effort in building a mental model of the text. (3) Both L2 language proficiency and L1 background affect L2 reading. Our results suggest that conclusions from controlled experimental designs are likely to generalize to authentic texts and free-ranging lexical and syntactic variables. They also provide a more detailed tracking of how these variables function and interact over the course of reading.

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3:50–4:10 PM (244)

Rethinking Deafness, Reading, and Bilingualism: Evidence from Eye-Tracking. FRANCES G. COOLEY, *University of South Florida*, EMILY SAUNDERS, *San Diego State University*, CASEY STRINGER, *University of South Florida*, GRACE C. SINCLAIR, *University of South Florida*, ELIZABETH R. SCHOTTER, *University of South Florida*, KAREN EMMOREY, *San Diego State University* — Eye-tracking studies have revealed differences between L1 and L2 readers, including smaller length effects and larger frequency effects in L2 reading. Deaf signers pose an interesting challenge to reading models because they only read in one language (English) like monolinguals but use two languages daily (ASL, English) like bilinguals. We compare length and frequency effects in skilled deaf readers (L1 ASL signers) and matched hearing monolinguals reading 200 sentences with embedded target words. Deaf and hearing readers did not differ in frequency effects (skip rate: $p = 0.13$, gaze duration: $p = 0.14$), but deaf readers showed larger length effects (skip rate: $p < 0.001$, gaze duration: $p < 0.001$). Deaf readers' lexical processing patterns like monolinguals because they did not show larger frequency effects as expected for bilinguals. Deaf readers may exhibit larger length effects than hearing readers due to differences in their visual and linguistic experiences.

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4:10–4:30 PM (245)

Semantic Diversity Interacts with Orthographic Regularity in Children's Word Processing. YALING HSIAO, *University of Birmingham*, JESSIE RICKETTS, *Royal Holloway, University of London*, KATE NATION, *University of Oxford* — Semantic diversity (SemD) captures the degree of variability of the contexts a word appears in a large language corpus. Prior studies demonstrate an advantage of high SemD words in adults' word recognition and naming, but an opposite effect in semantic judgment tasks (see Jones, Dye, & Johns, 2017), suggesting a dynamic role of contextual and semantic influences in lexical processing. The current study investigates how SemD interacts with orthographic properties such as regularity in children's lexical processing. 443 children aged 5-12 (mean: 8.81 years) performed three tasks on 46 words (23 regular and 23 exception): naming, spelling and defining. Linear mixed effects models showed higher accuracy for high SemD words and for the naming task and the lowest for spelling. No significant effect was found for regularity. However, interaction terms revealed that children were more accurate in defining exception words than regular words but did the opposite when reading. SemD advantage was higher in exception words than in regular words, and higher in spelling than the other two tasks. The findings shed light on the intricate

relationships between word meaning and form in developing readers' lexical processing.

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4:30–4:50 PM (246)

Comparing Basic Facts of Eye-Movement Control Across Written Languages of the World. VICTOR KUPERMAN, *McMaster University* — Recent cross-linguistic resources have made possible a systematic and wide-ranging comparison of reading behavior in highly diverse written languages and writing systems. This talk introduces analyses that makes use of eye-tracking data on 15 languages (including Chinese, Hebrew, and Korean) from the Multilingual Eye-Movement Corpus (MECO; Siegelman et al., 2022). We consider and interpret several basic facts of eye-movement control in text reading (Rayner, 1998, 2009) through the cross-linguistic lens. The goals are to determine (i) whether these basic facts hold across a wide variety of written languages, (ii) how strong the cross-linguistic variability is, and (iii) whether it is grounded in the structural differences of those written languages. The analyses address diverse oculomotor phenomena as regressive saccades, refixations, and landing positions, as well as effects of word length and frequency. Statistical evidence reveals some eye-movement patterns being uniform across the widely dissimilar languages, while other patterns varied as a function of their structural properties. The results strengthen the current understanding of the boundaries between universality and specificity in the reading behavior.

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4:50–5:10 PM (247)

Understanding Incremental Reading Processes Under Natural Reading Conditions: A Co-Registered EEG and Eye-Tracking Study. GAISHA ORALOVA, *University of Pittsburgh*, LIN CHEN, *University of Pittsburgh*, CHARLES A. PERFETTI, *University of Pittsburgh* — Natural reading involves complex and co-occurring processes at visual, attentional, lexico-semantic, and oculomotor levels. Both eye-tracking and ERPs have been applied to explore these processes; however, their different display conditions and timing (longer between-word times in ERPs) can lead to different assessments of processing components. An alternative is the co-registration of EEG and eye-tracking, which provides fixation-related potentials (FRP) along with eye tracking measures. This exposes the time-course of reading processes when text is displayed normally. In a co-registration study using authentic texts from an ERP study (Chen et al., this conference) and continuous variables: lexical (e.g., word length/frequency) and contextual (e.g., word position, surprisal, syntactic complexity), we compare the FRP results with both the co-registered eye-tracking and the ERP results of Chen et al. The results across methods largely converge (e.g., word position, syntactic complexity). Surprisingly, word frequency effects were absent in FRPs. We provide strong evidence that co-registration reveals reading processes observed in separate experiments, increasing confidence in the functioning of theoretically based cognitive components.

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5:10–5:30 PM (248)

The Influence of Sentence Context on Chinese Word Segmentation. XINGSHAN LI, *Chinese Academy of Sciences Institute of Psychology*, LINJIEQIONG HUANG, *Chinese Academy of Sciences Institute of Psychology*, RUQI CHEN, *Chinese Academy of Sciences Institute of Psychology* — Unlike most alphabetic scripts, Chinese text does not include inter-word spaces to demarcate words. Therefore, Chinese readers must rely on high-level information to segment words. This talk presents a series of eye-tracking studies investigating whether and how sentence context influences word segmentation during Chinese reading. Participants' eye movements were recorded as they read sentences containing a three-character overlapping ambiguous string (ABC) whose middle character can form a distinct word with both the character on its left (word AB) and on its right (word BC). The findings indicate that Chinese readers use sentence context information very early when segmenting words if context information is available, and words supported by context are more likely to be segmented as words than words not supported. When context information is unavailable at the time of word segmentation, readers use other available information to segment words. Later, they use context information to check whether the initial word segmentation is correct, and they will make a correction if an error is detected. These results are discussed within the framework of a Chinese reading model (CRM).

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Attention III

Sunday, November 19, 2023, 8:00–10:00 AM US PST, Continental 4

Chaired by Kim M. Curby, *Macquarie University*

8:00–8:20 AM (249)

Task-Induced Biases of Spatial Attention Have Little Impact on Holistic Processing of Face and Non-Face Stimuli. KIM M. CURBY, *Macquarie University*, SARAH LAU, *Macquarie University*, CHLOE PARK, *Macquarie University* — Holistic processing has been framed as learned attention to the whole, rendering it difficult to attend to only part of a stimulus. Here, we tested whether inducing attentional biases for the top or bottom part of a stimulus can override holistic processing. We induced biases in spatial attention by manipulating the probability that either the top or bottom part of stimuli would be task-relevant in a modified composite-part-judgment task. Each trial presented a composite image that aligned the top and bottom halves of different stimuli, which was then replaced by a second composite stimulus; a cue between the two indicated whether participants needed to make a same/different judgment about the top or bottom half. When the top and bottom halves were equally likely to be cued, patterns reflective of holistic processing were similar for (a) faces and (b) non-face stimuli that were bound by strong Gestalt cues. While manipulating the proportion of top vs. bottom cues (75% or 25%) impacted spatial attention to the two halves, as demonstrated

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by increased accuracy for the part more likely to be cued, there was little evidence of an impact on markers of holistic processing.

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8:20-8:40 AM (250)

Search Speed Scales with Audiovisual Semantic Relatedness. KIRA WEGNER-CLEMENS, *The George Washington University*, GEORGE MALCOLM, *University of East Anglia*, SARAH SHOMSTEIN, *The George Washington University* — Knowledge about a visual scene and the objects in it guides attentional prioritization. However, the role of semantic information in guiding attention in multisensory, rather than unisensory, contexts remains unexplored. Previous studies show that a task-irrelevant sound improves search performance for a matched visual target (hearing a bark speeds up search for a dog image compared to an unmatched sound). Whether audiovisual search benefit extends to more distant semantic relationships is unclear. To elucidate the role of semantic information in guiding audiovisual attention, we created a database of crossmodal semantic relatedness values and directly examined whether semantic relatedness modulates search speeds. Participants (N = 123) searched for images accompanied by a sound. Search efficiency scaled with semantic relatedness, such that target images were found more quickly when the sound was more closely related to the image. This result suggests a semantic information guides attention in a continuous manner and there may be an underlying mechanism supporting semantic guidance of attention within and across modalities.

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8:40-9:00 AM (251)

Quality over Quantity: Focusing on High-Conflict Trials to Improve the Reliability and Validity of Attentional Control Measures. LUCA MORETTI, *Rheinisch-Westfälische Technische Hochschule Aachen University*, IRING KOCH, *Rheinisch-Westfälische Technische Hochschule Aachen University*, CLAUDIA VON BASTIAN, *University of Sheffield* — Conflict tasks such as the Stroop and the Simon are commonly employed to measure attentional control. Recent studies however, have consistently failed to find meaningful correlations between performance in these paradigms. While such findings may question the construct validity of attentional control measures, some authors have argued that the observed low correlations may also result from measurement error, as congruency effects typically display poor reliability in conflict tasks. In the present study we thus sought to improve the psychometric properties of the congruency effect in a spatial Stroop and a Simon task (N = 195), with the idea that more reliable attentional control measures should correlate across paradigms. Basing on well-replicated findings from experimental research, we argue that response conflict, and thus the need for attentional control, is weak in slow responses and following incongruent trials. We thus predicted that excluding these trials from analyses should improve the psychometric properties of the congruency effect. After controlling for these factors, not only we found excellent split-half reliability for the congruency effect in both paradigms, but we could also show robust between-task correlations.

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9:00-9:20 AM (252)

Why Studying Individual Differences In Cognition Is Hard And How To Make It Easier. JEFFREY ROUDER, *University of California, Irvine* — The promise of studying individual differences is that correlations may reveal lawfulness in cognition, yet this approach has been difficult in practice. My analysis yields the following: 1. No statistical wizardry can save the day—there are limitations in the type of data we collect that are difficult to mitigate in small samples. 2. To aid in planning, I derive a formula for needed trial sizes in tasks. 3. For some tasks, the needed trial sizes are relatively small; for others, they are impossibly big. I review the type of tasks that are useful and, alternatively, nearly impossible for studying individual differences. My hope is that by understanding these limits and working humbly within them, we can use individual differences to uncover the latent structure of cognition in several important domains.

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9:20-9:40 AM (253)

Confidence and Accuracy Across a Range of 2-Alternative Forced-Choice Memory Tests. KATARZYNA ZAWADZKA, *SWPS University*, EWA BUTOWSKA, *SWPS University*, MACIEJ HANCZAKOWSKI, *Adam Mickiewicz University* — In recognition 2AFC tests, response accuracy and confidence in those responses can be dissociated: While accuracy depends on the difference in strength between the test alternatives, confidence in correct responses is determined solely by target strength. In our study, we have attempted to generalize this counterintuitive pattern to other types of memory 2AFC tasks. We varied lure strength at study by manipulating the number of presentations (for a frequency task), the part of the study list in which they were presented (a recency task), and the similarity of orienting questions accompanying the targets and lures at study (a source memory task). Test trials then varied lure strength while keeping target strength constant, and each test response was followed by a confidence rating. In all experiments, both confidence and accuracy depended on the difference in strength between the alternatives. Thus, the confidence-accuracy dissociation documented before seems not to be generalizable.

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9:40-10:00 AM (254)

Perceptual Organization and the Distortion of Perceived Spatial Relationships. TIMOTHY J. VICKERY, ANTON LEBED, *University of Delaware*, CATHERINE SCANLON, *University of Delaware* — Space is perceptually distorted within and around objects: within object boundaries, space is expanded, while just beyond, space is compressed. We propose that this is dependent upon the degree of organization of a region of the visual field. We presented subjects with a grid of Gabor gratings, along with two pairs of dots whose distances were compared. Within a rectangular region, we manipulated the proportion of patches that were aligned to the same direction ("coherence") and indexed the degree of distortion within this region and near it. At 100% coherence, dots within the critical region were perceived as further apart, and dots just beyond were perceived as compressed. The degree of coherence titrated the illusion. We propose that compression and expansion can index the degree of organization

within a region of the visual world. These illusions of space are thus useful for objectively quantifying degrees of perceptual organization.

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Autobiographical Memory

Sunday, November 19, 2023, 8:00-10:00 AM US PST, Plaza A

Chaired by Ira E. Hyman, Jr., *Western Washington University*

8:00-8:20 AM (255)

A Pandemic Autobiographical Memory Diary Study. IRA E. HYMAN, JR., *Western Washington University* — When the pandemic started, I began keeping an autobiographical memory diary. I have recorded two events each day for the past 3 years. In most diary studies of autobiographical memories, researchers record distinctive events and find a slow rate of forgetting (Linton, 1982; Wagenaar, 1986). I have recorded both distinctive events and repeated events. I have tried to describe repeated events so that they may be distinguished from other similar events. In the first round of recognition memory, I compare events based on emotion and whether the events were repeated or not. One primary focus will be whether repeated events are forgotten at a faster rate than distinctive events, potentially illustrating the schematization of episodic memories.

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8:20-8:40 AM (256)

The Reminiscence Bump Does Not Relate to Perceptions of When Life Peaked. JOHN PROTZKO, *Central Connecticut State University*, JONATHAN SCHOOLER, *University of California, Santa Barbara* — When asked to recall events from their life, older people tend to generate memories from their late teens to late 20s. This clustering of memories is known as the reminiscence bump. One explanation for the reminiscence bump is that it co-occurs with time that people think they peaked in life. Here, we replicate the reminiscence bump in a large, preregistered study, but show that it corresponds to an earlier age range (early 20s) than when people explicitly say they peaked (early 30s). Further we experimentally manipulate when people think they peaked and find that this has no effect on the age location of the reminiscence bump. Thus, the reminiscence bump must be accounted by other factors besides when people perceive themselves to have peaked.

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8:40-9:00 AM (257)

Autobiographical and Collective Narratives of a Lifetime Period Integrate over Time. DONNA ROSE ADDIS, *Baycrest Health Sciences & University of Toronto*, ZIMING CHENG, *Baycrest Health Sciences & University of Toronto*, BUDDHIKA BELLANA, *York University*, SAMUEL FYNES-CLINTON, *Rotman Research Institute, Baycrest*, WILLIAM FISHER, *Rotman Research Institute, Baycrest* — Although both autobiographical and collective experiences contribute to our memories for lifetime periods, the nature of this integration remains unclear. The COVID-19 pandemic ushered in a new collective lifetime period, allowing an opportunity to examine whether such integration occurs from the outset or emerges gradually over time. Participants wrote brief "chapters" about the pandemic for their autobiography and for a history book repeatedly in at least five of nine surveys conducted during 2020 and 2021 and were analyzed using two text analysis tools. Universal Sentence Encoder was used to quantify the level of integration between autobiographical and collective narratives, revealing that the similarity of meaning of participants' narratives increased gradually over time. Structural topic modeling was used to extract personal and public topics evident in the corpus; we found that public topics became more prevalent in autobiographical narratives over time, but not vice versa. Our results provide evidence of the gradual incorporation of collective experiences into autobiographical narratives of a shared lifetime period.

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9:00-9:20 AM (258)

Understanding the Structure of Autobiographical Memories: A Study of Trauma Memories from the 1994 Rwandan Genocide. ANNA BLUMENTHAL, *Laval University*, SERGE CAPAROS, *Université Paris 8*, ISABELLE BLANCHETTE, *Laval University* — Autobiographical memories of traumatic events have mostly been studied in the Western world, and rarely for collective events. Here, we examine memories in individuals who lived through the 1994 genocide in Rwanda. Participants recalled events from the genocide, negative events unrelated to the genocide, neutral events, and positive events. We used the autobiographical interview method to label memory details as episodic or semantic. We found that memories from the genocide showed robust mnemonic enhancement, with more episodic than semantic details. This was not unique to genocide memories, memories of other negative events also showed episodic enhancement relative to neutral and positive memories. However, genocide memories were unique in that they were more highly detailed overall, in line with findings in Western populations showing that traumatic events create vivid episodic memories, in this case even more than 20 years later. Interestingly, genocide memories also included rich semantic detail. To our knowledge, the pattern of rich semantic detail has not been previously reported, and we hypothesize that it may relate to the way in which the genocide is remembered both personally and collectively in Rwandan society.

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9:20-9:40 AM (259)

Wearable Camera Videos Stimulate Non-Visual Memory. JASON R. FINLEY, *Southern Illinois University Edwardsville* — Wearable cameras capture a first-person visual record of experience. Such videos can evoke a powerful sense of reliving. But do they truly remind people of information not itself in the video? Participants wore a head-mounted GoPro camera across campus to two distinct locations where they completed multi-sensory tasks including touching hidden objects and textures in sensory boxes, tasting juices from disguised containers, smelling unlabeled spices and scratch-n-sniff

stickers, and hearing ambient sounds or music. Two days later, they recalled their experiences both before and after watching their video (without sound). The video reminded a majority of participants about smell, thoughts and feelings, and/or conversations with the experimenters. Results are consistent with spreading activation and the multi-sensory nature of autobiographical memory.

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9:40-10:00 AM (260)

The Absence of Observer-Like Perspectives Preserves Autobiographical Memories. PEGGY L. ST. JACQUES, *University of Alberta* — Autobiographical memories can be recalled from novel visual perspectives from how we experience events, which has been linked to the reconstructive nature of memories. For example, as memories become more remote and are vulnerable to reconstruction, there is a shift from adopting an own eyes perspective to an observer-like perspective. However, not all individuals report spontaneously adopting novel perspectives when recalling autobiographical memories, bringing into question the reconstructive nature of autobiographical memories in such individuals. In a series of studies, I show that individuals who self-report the absence of observer-like perspectives lack the typical shift in perspective with memory remoteness associated with memory reconstruction. Moreover, such individuals also have qualitatively better memory for the setting in which these events occurred and had superior performance on a standardized test of spatial visualization ability. These findings suggest that the absence of observer-like perspectives helps to preserve memories over time, and the role of scene-related construction processes in supporting these effects will be discussed.

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Event Cognition

Sunday, November 19, 2023, 8:00-9:40 AM US PST, Plaza B

Chaired by Gabriel Radvansky, *University of Notre Dame*

8:00-8:20 AM (261)

Network Science Measures Predict Human Centrality and Standardness Rankings and Ratings for Events. KEN MCRAE, *University of Western Ontario*, MARTHA VALMANA CROCKER, *University of Western Ontario*, BEATRICE VALMANA CROCKER, *University of Western Ontario*, KARA E. HANNAH, *University of Western Ontario*, KEVIN BROWN, *Oregon State University* — People's knowledge of common events influences many aspects of cognition and perception. In event cognition, researchers have used centrality and standardness to investigate the importance of activities within events ("peel apples" for "baking an apple pie"). We used network science to construct temporally structured graphs for 80 events based on people producing and ordering event activities. Separate participants ranked or rated the centrality or standardness of activities within each event. For each event-activity pair, we computed six network centrality measures. CheiRank, a measure of the influence of an activity on ensuing activities within an event, was highly correlated with, and the strongest predictor of, human rankings and ratings of centrality and standardness. Results were strongest for the rankings. Thus, network science measures of centrality capture human estimates of centrality and standardness. In particular, psychological centrality is related to the degree to which an activity temporally leads to other influential activities.

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8:20-8:40 AM (262)

Remembering Events Holistically. GABRIEL RADVANSKY, *University of Notre Dame*, DANI PARRA, *University of Notre Dame* — Event models are created by integrating various elements together into a common mental representation. These elements include things such as spatial location, entities, their properties, structural relations among event elements, and linking relations from one event to another. While some previous studies have had people learn otherwise unrelated sets of concepts (e.g., person-object-location), in our work we used sentences sharing similar concepts (Experiment 1) and real-word novels (Experiment 2). This was done by testing all possible cue-target pairings among previously-presented triplets of concepts and using a six-alternative recognition test. The results revealed that event memories were remembered as wholes substantially above chance, and that this was moderated by the degree of integration of a given event with other events. This is consistent with the idea that event models are unitized memory structures that are more likely to be remembered or forgotten as wholes.

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8:40-9:00 AM (263)

Attention to Event Segmentation Improves Memory in Young, But Not Older Adults. MAVERICK E. SMITH, *Washington University in St. Louis*, CHRISTOPHER HALL, *University of Virginia*, RACHEL MEMBRENO, *San Diego State University*, DANIEL QUINTERO, *Duke University School of Medicine*, JEFFREY M. ZACKS, *Washington University in St. Louis* — Viewers naturally segment activity into discrete events, and those who segment like others have better memory than those who segment more idiosyncratically. This relationship is causal in young adults: Young adults who attend to segmentation have better memory 1- and 4-weeks later (Flores et al., 2017). Does attention to segmentation improve memory across the lifespan? According to the representational substate hypothesis, older adults benefit less from attending to segmentation because aging reduces the distinctiveness of event representations stored in memory. Alternatively, according to the attentional control hypothesis, older adults benefit the same or more from attention to segmentation because aging reduces the efficiency of attentional control processes that result in adaptive memories. Participants, ranging in age from 20 to 79 years, watched movies of actors performing everyday activities. Half the participants segmented the movies and half intentionally encoded them for memory tests after a 1- or a 4-week delay. Young, but not older, adults who

segmented recalled more. These results suggest that age-related deficits in memory arise from deficits in the representational substrate of memory systems.

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9:00–9:20 AM (264)

Specific or Nonspecific: Investigating the Relation Between Preparation and Stimulus-Response Event Sequence. TIANFANG HAN, *University of Idaho*, ROBERT W. PROCTOR, *Purdue University* — Anticipating future events' occurrence helps us prepare for daily activities. When initiated by a warning signal without specific response-related information, this preparation process is regarded as non-specific. Previous research reported that the intertrial repetition of a stimulus-response event in choice-reaction tasks shortened reaction time more at the short foreperiod. Four experiments were conducted to investigate the relation between preparation and event sequence. Experiments 1 and 2 showed that manipulating the preparation effect did not affect its interaction with event sequence. In Experiment 3, this interaction was diminished by a long intertrial interval. The fourth experiment compared alerting and no-alerting conditions and demonstrated the existence of sequential modulations (including event sequence) in phasic alertness paradigms. Despite the existence of their interaction, the findings do not support a direct connection between preparation and event sequence. Moreover, sequential effects like that of event sequence could potentially cause misinterpretation and miscalculation of preparation effects.

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9:20–9:40 AM (265)

There's Something Happening Here: Event Perception and the Processing of Spatial Relations. ZOE OVANS, *University of Pennsylvania*, ISABELLE WEISS, *University of Pennsylvania*, JOHN TRUESWELL, *University of Pennsylvania*, BARBARA LANDAU, *Johns Hopkins University* — Are there universal principles that govern how humans perceive and describe spatial relations? One potential principle is a distinction between universal "core" relations (e.g., support-from-below) and "non-core" relations that additionally involve complex force dynamics (e.g., hanging; Landau, 2020, Topics in Cognitive Science). Cross-linguistically, speakers describe core relations using basic locative constructions (e.g., "the cup is on the plate") and non-core ones with additional lexical verbs (e.g., "the cup is hanging on the hook", Johannes et al., 2015, Cognitive Science). We hypothesize that this distinction arises because non-core relations require additional encoding of events to "explain" the state of affairs. Participants (N = 57) viewed still images depicting core or non-core relations, and were asked, "Is something happening here?". Participants affirmed this more for non-core images ($p < .05$), indicating non-core relations are indeed more closely tied to event perception, and build off of more primitive, universal relations by incorporating the force dynamics of events.

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Sensation & Perception II

Sunday, November 19, 2023, 8:00–10:00 AM US PST, Imperial A

Chaired by Leah Fostick, *Ariel University*

8:00–8:20 AM (266)

Different Perceptual Strategies Underlie Individual Differences in Auditory Perception of Temporal Order. LEAH FOSTICK, *Ariel University*, HARVEY BABKOFF, *Bar-Ilan University* — Studies of spectral temporal order (TOJ) reported on large variance in its performance. The current study aimed to (1) replicate the individual differences reported in previous studies and (2) explore whether direct vs. global perception can explain it. Four hundred fifty individuals aged 20-35 participated in five studies. Participants reported the order of two tones presented in each trial (high-low or low-high). The inter-stimulus interval ranged from 2 to 240 ms and was randomized by trial. The results pointed to three patterns of response: high-level performers (HLP), mid-level performers (MLP), and low-level performers (LLP). Subsequent analyses showed that HLP and LLP judge the order of the tones by perceiving the global pattern of the tones (pitch going up versus going down), while MLP listen to each tone and judge the order directly. This suggests that different people employ different perceptual strategies while performing the same TOJ task and raises the possibility that different perceptual strategies underlie individual differences in other perceptual tasks.

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8:20–8:40 AM (267)

Revisiting a Classic Auditory Illusion: Efficient Generation of Shepard–Risset Glissandi With Unique Embellishments. ANDREW V. FRANE, *Occidental College* — The Shepard–Risset glissando is an auditory illusion in which the pitch of a tone seems to inexhaustibly ascend or descend—essentially an auditory version of the "Penrose staircase" (used in famous images by M.C. Escher). The illusion is produced by a "Shepard tone" (ten superimposed sine waves separated by octaves) that sweeps across all octaves of the audible spectrum simultaneously, over and over. Typically, the illusion is constructed through iterative generation of filtered sine-wave sweeps. Here, a more computationally efficient method is described, which utilizes vector operations and vector replication. Using that method, several variations of the illusion are demonstrated, some of which do not appear to have been previously discussed in the literature. For instance, it is shown that the perceived direction of motion between two Shepard tones that are 6 semitones apart can be reliably disambiguated by inserting a continuous glide between them—thus overriding what has been called the "tritone paradox." In additional demonstrations, monaural and binaural beats are embedded into a glissando to create "Risset rhythms" (illusions of perpetual acceleration/deceleration). These and other variations will be played and discussed.

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SUNDAY

8:40–9:00 AM (268)

A Predictive Model of Cross-Modal Haptic-Color Associations for 'Translation' of Visual Stimuli into Touch. NICHOLAS ROOT, *University of Amsterdam*, LAURA BECERRA, *University of California, San Diego*, DARREN LIPOMI, *University of California, San Diego*, ROMKE ROUW, *University of Amsterdam* — When forced to choose the color that "goes best with" a particular touch experience, we tend to associate certain haptic sensations with certain colors. These cross-modal associations are not random: for example, rougher surfaces are associated with darker colors. Higher-level properties also play a role: for example, sticky surfaces are associated with disgust, disgust is associated with green, and thus sticky surfaces are associated with green. A model incorporating this knowledge can create haptic "translations" of visual stimuli—a potentially useful tool for design of vision-to-touch sensory substitution devices. However, no comprehensive account of these influences exists: specific effects are typically studied in isolation, and sometimes make conflicting predictions about which color will be associated with a particular surface. We use the tools of materials science to create surfaces that vary precisely (e.g., in terms of J/m^2 of adhesion) and orthogonally (e.g., altering adhesion while keeping roughness constant), and use a multinomial mixture framework to integrate all known influences into a single model that predicts the colors that tend to be associated with a particular surface, and vice versa.

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9:00–9:20 AM (269)

Contextual Expectations in the Real-World Modulate Low-Frequency Neural Oscillations. ALEX CLARKE, *University of Cambridge*, SHIRLEY PANDYA, *University of Cambridge*, BENJAMIN ALSBURY-NEALY, *University of Toronto*, ALEXANDRA KRUGLIAK, *University of Cambridge*, KLAUS GRAMANN, *Berlin Institute of Technology*, VICTORIA NICHOLLS, *University of Cambridge* — Naturalistic experiments in cognitive neuroscience aim to study cognition in an ecologically valid manner and embrace life's complexities. Controlled experiments have generated detailed cognitive accounts of object recognition, yet this is largely from removing objects from a continuously unfolding spatiotemporal experience. Here, we study the neural processing of objects embedded in real-world contexts using mobile EEG and head-mounted augmented reality. Thirty-four participants freely navigated through an indoor/outdoor environment. On each trial, they saw a virtual object embedded in the real world (e.g., virtual pen on a real desk), and provided a congruency rating. Our ERP analysis revealed frontal N400 effects with increasing negativities for objects more incongruent with the environment, replicating lab-based effects. In the time-frequency domain, we found linear relationships between low-alpha activity and congruency near 200 ms, and with theta activity near 400 ms, showing that low frequency oscillations linked to perception and memory are modulated by contextual expectations. Importantly, we show mixed reality paradigms and mobile EEG provide a technically feasible way to study human cognition in real-world situations.

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9:20–9:40 AM (270)

On Motor Prediction in Autism Spectrum Disorder. VERONICA DUDAREV, *The University of British Columbia*, GRACE IAROCCI, *Simon Fraser University*, JAMES T. ENNS, *University of British Columbia* — Can people with autism use their motor system to understand other people's behavior? Studies on imitation and action prediction suggest that basic motor mimicry is spared in autism. The emerging consensus is that higher-level processes, such as top-down control, must be disrupted. Yet testing this hypothesis is not straightforward. Here we test automatic and controlled imitation with a simple action following task. Participants view videos of actors pointing to the right or to the left; their task is to predict where the actor is going to point. The actors are either choosing the side freely or are directed externally. Neurotypical adults and children responded more rapidly and accurately on choice vs. directed trials. Children with ASD showed the same advantage on choice trials as their neurotypical peers. In an ongoing study we are testing top-down control of imitation by asking participants to point in the opposite direction from the actor.

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9:40–10:00 AM (271)

The Psychophysics of Affordance Perception and Memory. BRANDON J. THOMAS, *University of Wisconsin-Whitewater* — We used a psychophysical method to evaluate whether the perception and memory of forward reach-with-ability scales differently for the self, another person, and for the perception of length of the same set of objects. We employed both a standing, forward-reach task and a seated, forward-reach task. Participants estimated the reach-with-ability for themselves, a confederate, and the geometric length of a set of 10 rods in both perceived and remembered tasks. We used Stevens' power law (1957) to evaluate the scaling between perceived and actual dimensions. In all, affordance perception and memory was less sensitive than the relevant metric property length. However, affordance reports were robust to changes in task context while length reports were highly variable.

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Cognitive Aging

Sunday, November 19, 2023, 8:00–10:00 AM US PST, Imperial B

Chaired by Rebecca Cutler, PhD, *The University of Texas at Austin*

8:00–8:20 AM (272)

Semantic Memory Space Becomes Denser with Age: An ERP Analysis of Semantic Similarity in Feature Verification. REBECCA CUTLER, PHD, *The University of Texas at Austin*, SOROUSH MIRJALILI, MS, *The University of Texas at Austin*, AUDREY DUARTE, PHD, *The University of Texas at Austin* — Semantic memory is an organizational store of concepts and facts acquired over a lifetime. Retrieval of semantic features can be modeled as a search through the conceptual landscape, where

congruence and similarity between a cue and target increase the likelihood of recall. In a semantic feature task, younger adults and older adults make yes/no responses to indicate whether a target-feature pair are congruent or not. Age differences in reaction time (RT) suggest that as older adults acquire more conceptual knowledge, memory search relies less on semantic similarity and more on task demands typically associated with executive control. ERP analyses capture the dynamics of memory search beyond RT; we find that congruent decisions are predicted by early positive signal (P300), and incongruent features are predicted by later negative signal (N400). An age-dependent reduction in N400 reflects an overall increase in shared features, suggesting that semantic memory space becomes denser with age. We propose a model of semantic search that incorporates decision-making to characterize changes in the representational structure of semantic memory across the lifespan.

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8:20–8:40 AM (273)

Aging But Not Partial Sleep Deprivation Enhances Low-Frequency Fluctuations of Attention. XIAOPING FANG, *Beijing Language and Culture University*, YIFAN CAO, *Beijing Language and Culture University*, LIN CHEN, *University of Pittsburgh* — Sleep deprivation has been found to impair sustained attention. Given aging-related changes in both sleep profiles and attentional competence, age may modulate the effect of sleep deprivation on sustained attention. Using data from the Stockholm Sleepy Brain Study, we examined how sleep deprivation and aging affect sustained attention. We found that older adults showed a larger variance in response times in a psychomotor vigilance task but responded as fast as younger adults. Furthermore, a spectral analysis of response times revealed that aging is associated with enhanced low-frequency fluctuations of response times (~0.01-0.06 Hz). In contrast, sleep deprivation had no impact on the measures of sustained attention. Combining with polysomnography data, we found no correlations between sleep architecture and attentional fluctuations. Taken together, we found that aging, but not partial sleep deprivation, enhances attentional fluctuations.

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8:40–9:00 AM (274)

Without Recall, Neural Plasticity Extends Well into Old Age. STEVEN R. HOLLOWAY, *Arizona State University*, LAUREN R. KELLY, *Arizona State University*, SOPHIA RABAYDA, *Arizona State University* — The present study employed a rotating sinusoidal grating detection paradigm consisting of a six-degree-per-cycle grating positioned either clockwise or counter-clockwise in relation to an invisible reference point. This paradigm has been shown to progressively increase perceptual sensitivity to assessing the position of the grating until a perceptual threshold is achieved. The study included 10 blocks of 60 trials each in two sessions for a total of 1,200 trials. Perceptual sensitivity changes were evaluated by comparing the first session performance to the second session performance, which was conducted the following day. Participants, ranging in age from 76 to 83 years, were asked to use arrow keys to report whether the grating was clockwise or counter-clockwise relevant to the invisible reference point. Here we show that elderly participants had significant improvement in grating task performance. These findings indicate that neural plasticity extends well into advanced age provided that there is no need of recall. Future research should explore the extent to which deficits in learning in the elderly are related to encoding vs. recall memory.

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9:00–9:20 AM (275)

Lifestyle and Brain-Based Determinants of Tip-of-the-Tongue States in Healthy Ageing. FOYZUL RAHMAN, *University of Birmingham*, KAMEN TSVETANOV, *University of Cambridge*, JACK FERON, *University of Birmingham*, KELSEY E. JOYCE, *University of Birmingham*, AHMED GILANI, *University Hospitals Birmingham*, EUNICE G. FERNANDES, *University of Agder*, ALLISON WETTERLIN, *University of Agder*, LINDA WHEELDON, *University of Agder*, SAMUEL J E LUCAS, *University of Birmingham*, KATRIEN SEGAERT, *University of Birmingham* — Tip-of-the-tongues (TOTs)—a temporary inability to access a known word—increase with age. We examined how the age-related effects of functional activation on performance during a TOT task were explained by atrophy, cerebral perfusion, and cardiovascular fitness in healthy older adults (N = 78; Mage = 65.53, range 60-81; 39 Female). Functionally, TOTs recruited a large network of language areas including the bilateral inferior frontal, superior frontal, and angular gyri, left planum temporale, temporal pole, and right posterior middle temporal gyrus. Using commonality analysis, we found that TOT occurrences were best explained by a shared effect of age, fitness, and the functional recruitment of language-related regions. We also found that age-related atrophy in the hippocampus explained TOT differences but did not find an association with perfusion. Altogether, the regional contributions of brain function and structure to age-related TOTs differ, where function is modified by age and cardiorespiratory fitness.

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9:20–9:40 AM (276)

Personal Knowledge Shapes the Judgments of Others' Knowledge: Insights from Aging Bilinguals. DORIT SEGAL, *The Open University of Israel*, GITIT KAVÉ, *The Open University of Israel* — The study examined whether our own knowledge biases our judgment of other's knowledge and whether aging and language dominance affect this bias. The sample included 72 younger (ages 19-39), 82 middle-aged (ages 40-59), and 83 older (ages 60-80) Russian-Hebrew bilinguals. Participants read ambiguous message correspondence between two people and judged whether the recipient would interpret the message as sincere or sarcastic. Half the texts contained information that suggested that the message was sincere, and half contained information that implied that the message was sarcastic. The information that implied sincerity or sarcasm was available to the reader but not to the recipient. Half the texts were in Hebrew and half were in Russian. In both languages, older adults judged the recipient's

interpretation as more sincere or as more sarcastic than did younger adults, based on their privileged knowledge. We suggest that younger adults are better than older adults at inhibiting their own knowledge.

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9:40–10:00 AM (277)

Collaborative Learning in Older Age: The Role of Familiarity. KELLY WOLFE, *University of Edinburgh*, CATHERINE J. CROMPTON, *University of Edinburgh*, ALASDAIR D. F. CLARKE, *University of Essex*, PAUL HOFFMAN, *University of Edinburgh*, SARAH E. MACPHERSON, *University of Edinburgh* — Ageing is accompanied by changes in cognitive abilities that affect learning. However, learning collaboratively may benefit older adults by negating some age-related changes. The current study explored whether collaborative learning is more beneficial than learning individually and whether there are differences in learning performance with a familiar or unfamiliar partner. Older adults aged 60 or older (N = 100) completed the barrier task with a familiar and unfamiliar partner and individually. They also completed a battery of cognitive tests. We measured delayed recognition 7 days after each session. A Bayesian asymptotic regression on learning performance, with familiarity as a fixed factor, suggests that participants' learning rate improved when learning collaboratively, independent of familiarity, compared to learning alone. In addition, participants' delayed recognition of the unfamiliar session was significantly better than the individual session. As such, collaborative learning appears more beneficial for older adults, regardless of familiarity.

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Decision Making IV

Sunday, November 19, 2023, 8:00–10:00 AM US PST, Continental 1 & 2

Chaired by Angelo Fasce, *University of Coimbra*

8:00–8:20 AM (278)

A psychological Taxonomy of Anti-Vaccination Arguments. ANGELO FASCE, *University of Coimbra*, DAWN HOLFORD, *University of Bristol*, PHILIPP SCHMID, *University of Erfurt*, LUKE BATES, *Technical University of Darmstadt*, LINDA KARLSSON, *University of Turku*, EZEQUIEL LOPEZ-LOPEZ, *Max Planck Institute for Human Development*, IRYNA GUREVYCH, *Technical University of Darmstadt*, THOMAS COSTELLO, *Massachusetts Institute of Technology*, STEPHAN LEWANDOWSKY, *University of Bristol* — We present a psychological classification of arguments that accounts for the "attitude roots" of vaccine hesitancy, developed through a systematic review of 152 scientific articles and thematic analysis of 2,414 contrarian arguments. The taxonomy was further validated using natural language processing to derive eleven attitude roots on a dataset of 582 journalistic fact checks. In a follow-up study, we recruited 1,250 British participants to measure how much they endorsed anti-vaccination arguments expressing the 62 themes in the taxonomy. These beliefs were predicted by 11 psychological measures associated with the attitude roots, which tended to cluster in distinct personality profiles. We also will present a second follow-up study combining linguistic analyses and psychological scales using a sample of 570 American participants with negative vaccination attitudes. In this study, we investigate whether the psychological markers of individuals' attitude roots map onto their own linguistic expression of vaccine opposition. We expect that participants who score higher on an attitude root's psychometric scale will be more likely to produce reasons against vaccination that contain linguistic expressions of that attitude root.

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8:20–8:40 AM (279)

The Empathetic Refutational Interview to Tackle Vaccine Misconceptions and Improve Vaccine Acceptance. PHILIPP SCHMID, *University of Erfurt*, DAWN HOLFORD, *University of Bristol*, ANGELO FASCE, *University of Coimbra*, STEPHAN LEWANDOWSKY, *University of Bristol* — We test the effectiveness of a novel intervention that can be used by healthcare professionals (HCPs) to refute anti-vaccination arguments while maintaining empathy for people's motivations to believe in misinformation: the Empathetic Refutational Interview (ERI). The ERI follows four steps to tailor one's response to a vaccine-hesitant individual: (1) elicit their concerns, (2) affirm their values and beliefs, (3) refute their misinformed beliefs in a way that is tailored to their psychological motivations, and (4) provide factual information. In four experiments with participants from general public who were predominantly negative about vaccination (n = 2,545), we found that including at least one ERI step in a combined package was more effective at increasing vaccine acceptance relative to a control. Critically, participants perceived steps 2 and 3 of the ERI to reflect significantly better communicative proficiency by the HCP than control conditions. The ERI can potentially be leveraged as a tailored communication tool for healthcare professionals to refute anti-vaccination misconceptions while maintaining trust of patients.

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8:40–9:00 AM (280)

Trait Reactance as Psychological Motivation to Reject Science about Vaccines. ANNA SOVERI, *University of Turku*, LINDA KARLSSON, *University of Turku*, OTTO MÄKI, *University of Turku*, DAWN HOLFORD, *University of Bristol*, ANGELO FASCE, *University of Coimbra*, PHILIPP SCHMID, *University of Erfurt*, JAN ANTFOLK, *Åbo Akademi University*, LINNEA KARLSSON, *University of Turku*, HASSE KARLSSON, *University of Turku*, SAARA NOLVI, *University of Turku*, MAX KARUKIVI, *University of Turku & Turku University Hospital*, MIKAEL LINDFELT, *University of Turku*, STEPHAN LEWANDOWSKY, *University of Bristol* — Trait reactance (i.e., the tendency to react with opposition when one's freedom of choice is threatened) has been identified as a psychological motivation for science rejection. In two longitudinal and one experimental study, we examined the relationship between trait reactance and resistance to scientific

information in the context of vaccination. In the longitudinal studies, we investigated if trait reactance measured before the pandemic was related to people's willingness to get a COVID-19 vaccine. In the experimental study, we tested if reactant individuals had already made their vaccination decision before they had information about the vaccine. More specifically, we provided vaccine-related information on a made-up vaccine in two steps and measured if people's willingness to get vaccinated changed with more information, and whether the size of the change was related to their level of trait reactance. Taken together, the studies showed that trait reactance has a strong and durable impact on people's vaccination willingness. It maintains anti-vaccination intentions and makes them resilient to information. These findings highlight the importance of considering trait reactance in people's vaccination-related decision-making.

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9:00–9:20 AM (281)

Using Gist and Epistemic Valence Judgments To Reduce Misinformation Sharing Online. DAVID BRONIATOWSKI, *The George Washington University*, PEDRAM HOSSEINI, *The George Washington University*, ETHAN PORTER, *The George Washington University*, THOMAS WOOD, *Ohio State University* — According to fuzzy-trace theory, people will share misinformation that promotes gist mental representations cuing motivationally-relevant valences. We posit that epistemic valence (i.e., judgments of truth, plausibility, accuracy, etc.) cue such valences. We conducted three experiments and two correlational studies providing evidence for fuzzy-trace theory's predictions. Three experimental studies probe two mechanisms that are theorized to drive sharing: gist-based mental representation and epistemic valence endorsement. Additionally, we develop a gist-based intervention based on these mechanisms, show that it can reduce intentions to share misinformation, and demonstrate that these findings replicate. Using the largest public dataset of Facebook behavior available to researchers, we also tested the hypothesis that proxies for gist representations in text are associated with decisions to share, and that articles fact-checked as true were more likely to be shared. Results provide empirical support for fuzzy-trace theory's predictions regarding how to reduce sharing of misinformation on social media.

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9:20–9:40 AM (282)

Age-Related Differences in Fairness-Related Decision-Making in Social Contexts. ISU CHO, *Brandeis University*, ANGELA GUTCHESS, *Brandeis University* — People consider various factors during decision-making; in particular, the role of social contexts may differ across age groups. When making fairness-related decisions, older Korean adults consider allocentric outcomes more (i.e., greater other-regarding preference, a preference for considering others' benefits) but consider others' intentions less than younger counterparts (Cho et al., 2020). Given the dramatic changes in social values across generations in Korea, however, it is uncertain whether the previous finding reflect aging processes or cohort effects. The current study explored this question with 38 younger and 42 older American adults using an ultimatum game. The preliminary results showed that compared to younger adults, older adults considered allocentric outcomes more, similar to the previous finding. Unlike the previous finding, however, both young and older adults considered others' intentions when making decisions. The results suggest that larger other-regarding preferences with age seems to be a general (i.e., culturally invariant) pattern of aging but that cultures may differ in which factors are considered by different age groups.

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9:40–10:00 AM (283)

Social Influence on Risky Choice. MICHAEL T. BIXTER, *Montclair State University*, KESHA PATEL, *Montclair State University*, SAMANTHA SALERNITANO, *Montclair State University*, JACOB BREAUX, *Montclair State University* — Much of the risky choice literature has focused on studying the choice preferences of individual decision makers, even though a variety of consequential risky decisions are made by dyads and small groups. We present a series of experiments that explored the extent risky choice preferences are impacted during and following social interaction. This includes a study that experimentally manipulated the choice preferences of a social other (e.g., a high risk-seeker vs. a low risk-seeker) that a participant was exposed to (Study 1), a study that involved two participants directly interacting together while completing a risky choice task (Study 2), and an incentivized study that involved dyads making risky choices about real monetary rewards (Study 3). Across all three studies, social influence effects were observed such that participants adjusted their risky choice preferences to align with the preferences of a social other following social interaction. This line of research helps us gain a better understanding of how risk preferences form and change in real-world settings, which often involve a social component.

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Cognition III

Sunday, November 19, 2023, 10:00 AM–12:00 PM US PST, Continental 4

Chaired by Yiyang Chen, *University of Kansas*

10:00–10:20 AM (284)

Paul M. Fitts Jr. (1912–1965): Complete Psychologist. ROBERT W. PROCTOR, *Purdue University* — Paul M. Fitts Jr. is known in experimental psychology for Fitts's law of movement time, stimulus-response compatibility effects in response selection, and phases of skill acquisition. Yet, when one looks at his development and contributions throughout his career, which spans the formative period of contemporary cognitive psychology and human factors, it reveals a deep engagement across the field of psychology. This engagement included, at times, clinical and counseling psychology, educational psychology, tests and measurements, qualitative investigations of military pilots' performance, controlled quantitative studies

SUNDAY

of aviation psychology, foundational work in many areas of attention and performance, and advocacy of interdisciplinary work. In this talk, I will step through Fitts's career emphasizing his broad-based commitment to psychology and its lesson for research psychologists.

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10:20-10:40 AM (285)

Predicting Parameters of Strategy Choice in Rational Number Arithmetic. DAVID W. BRAITHWAITE, *Florida State University*, ANNA RAFFERTY, *Carleton College* — This study aimed to characterize individual differences in children's strategy choices in rational number arithmetic and to identify predictors of such individual differences. To do so, we formulated a mathematical model in which strategy choices depend stochastically on three parameters, which are assumed to vary among individuals: global bias, relevant feature effects, and irrelevant feature effects. We used hierarchical Bayesian logistic regression to estimate these parameters for both fraction and decimal arithmetic for each child in a sample of 120 fifth- to ninth graders. Then, we analyzed relations between the parameters and two other competencies: magnitude understanding and inhibition. Large individual differences emerged for all parameters. Individual differences in magnitude understanding predicted relevant feature effects for both fraction and decimal arithmetic. Inhibition predicted global bias for fraction arithmetic but not decimal arithmetic. Neither variable predicted irrelevant feature effects. The findings indicate that individual differences in rational number arithmetic strategy choices are multidimensional and different competencies relate to different dimensions of strategy choice.

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10:40-11:00 AM (286)

Role of Inhibitory Control in Adults' Mathematical Equivalence Knowledge. AMANDA GRENELL, *Indiana University*, EMILY R. FYFE, *Indiana University* — Research has shown that naïve views of math and science concepts coexist with more formal views. The current study extended this finding to the domain of math equivalence and tested whether inhibitory control relates to using more formal views over naïve ones. Undergraduate students (N = 125) completed a priming task involving inhibitory control and math items, an inhibitory control flanker measure, and a comprehensive math equivalence assessment. We found quantitative and qualitative evidence that adults hold both child-like, operational views and adult-like, relational views of equivalence across multiple measures and under timed and untimed conditions. Additionally, we found preliminary evidence for a relation between individual differences in inhibitory control and math equivalence knowledge. Activating inhibitory control influenced subsequent performance on target math equivalence problems differently than non-target arithmetic problems, $F(1,85)=5.37$, $p=.02$, $\eta p2=.06$. This study is the first to provide empirical evidence for this relation in adults and adds to the theoretical change-resistance account by suggesting that inhibitory control may be a cognitive mechanism that can explain difficulties with math equivalence.

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11:00-11:20 AM (287)

A Novel Effect of Visual Eccentricity on Number Estimation. EMILY M. SANFORD, *University of California, Berkeley*, STEVE PIANTADOSI, *University of California, Berkeley* — Number estimation for ensembles presented in peripheral vision is underestimated relative to foveally located ensembles. This result has primarily been attributed to crowding: nearby dots blur together, leading to the perceptual experience of fewer dots. In two pre-registered online experiments (N = 400), we present a novel effect of eccentricity that cannot be attributed to perceptual crowding. Dots appeared in rings centered on fixation, and critically, only one ring was presented at a time, thus eliminating radial crowding. Despite the absence of radial crowding, ensembles presented further into the periphery (in the outermost rings) were systematically underestimated relative to ensembles presented closer to the fovea (in the innermost rings). The effect was robust to changes in dot size and tangential crowding. We hypothesize that dots further from fixation "count less" toward one's number estimate, even if they are not crowded with one another.

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11:20-11:40 AM (288)

A Selective-Sampling Account for Forming Numerosity Representations. YONATAN VANUNU, *University of Chicago*, ROGER RATCLIFF, *The Ohio State University* — We present a new model for forming non-symbolic numerosity representations—The Selective-Sampling and Diffusion model (SSDM)—which assumes that people often do not use all given information when making numerical judgments, but instead sample it selectively with respect to task demands. This stochastic process, in which some properties of the display are prioritized in sampling over others, accounts for traditional effects in numerosity judgments, such as increasing variability with set-size and perceptual biases evoked by visual-size, as well as for new effects elicited by the proximity of items to the center of the display or by the distribution of items' sizes. Evidence from eye-tracking confirmed the SSDM's predictions for sampling policies with a direct measure of overt and covert attention. Finally, we found a biological marker—pupil-size—from which we can draw predictions about variability and representation scale (i.e., linear/log) as a function of sample-size and visual acuity.

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11:40 AM-12:00 PM (289)

A Simulation Approach to Assessing the Amount by Which a D' Correction Can Distort your Data. YIYANG CHEN, *University of Kansas*, HEATHER DALY, *The Ohio State University*, MARK PITT, *The Ohio State University*, TRISHA VAN ZANDT, *The Ohio State University* — The discriminability measure d' is widely used in psychology to estimate sensitivity independently of response bias. When performance is perfect, correction methods must be applied to calculate d', but they can also distort the estimate. In three simulation studies, we show that distortion in d' estimation can arise from other properties of the experimental design (number of trials, sample size, sample variance, task difficulty) that, when combined with application of the correction method, make d' distortion in any specific experiment

design complex, and can mislead statistical inference in the worst cases (Type I and Type II errors). To address this problem, we propose that researchers simulate d' estimation to explore the impact of data analysis or experimental design choices, given anticipated or observed data. A Shiny app is introduced that estimates d' distortion on a case-by-case basis, providing researchers the means to confront distortion and take steps to minimize its impact when using the measure.

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Associative Learning

Sunday, November 19, 2023, 10:00-11:40 AM US PST, Plaza A

Chaired by Daniel H. Weissman, *University of Michigan*

10:00-10:20 AM (290)

Surprise and Prediction Error Under Uncertainty: Another Look at Learning in the Perruchet Effect. EVAN J. LIVESEY, *The University of Sydney*, DOMINIC M. D. TRAN, *The University of Sydney* — Surprise is synonymous with prediction error arising from an unexpected event and is a strong determinant of learning. However, probabilistic events experienced in a state of aleatory (expected) uncertainty are not necessarily surprising even if they cannot be fully predicted. Here we used a go/no-go variant of the Perruchet effect—a dissociation between explicit expectancy and behavioral anticipation—to investigate the relationship between explicit surprise and learning about a probabilistic event. We found evidence that under specific circumstances, explicit surprise follows a pattern of negative recency (e.g., a go trial is more surprising after several go trials) which runs counter to the patterns implied by performance (e.g., participants appear to anticipate a go trial after several go trials). We also found an effect of removing aleatory uncertainty by signalling the go/no-go outcome, suggesting prediction error plays a critical role in learning, even when uncertainty is expected.

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10:20-10:40 AM (291)

Before Stimulus Onset or Only Afterward? Anticipatory Force Distinguishes Between Competing Accounts of Contingency Learning. DANIEL H. WEISSMAN, *University of Michigan*, JAMES SCHMIDT, *Université de Bourgogne* — Contingency learning can involve learning that the identity of one stimulus in a sequence predicts the identity of the next stimulus. It is unclear, however, whether such learning speeds responses to the next stimulus only by reducing the threshold for triggering the expected response after stimulus onset or also by preparing the expected response before stimulus onset. To distinguish these accounts, we manipulated the probabilities with which each of two prime arrows (Left and Right) were followed by each of two probe arrows (Up and Down) in a prime-probe task while using force-sensitive keyboards to monitor sub-threshold finger force. Two experiments revealed greater force just before probe onset on the response key corresponding to the direction in which the probe was more (versus less) likely to point (e.g., Up vs Down). This effect vanished, however, after a single low-probability trial whether or not the previous-trial prime repeated in the current trial. These findings favor the response preparation account over the threshold only account. They also suggest that contingency learning in our tasks may index trial-by-trial expectations regarding the utility of the prime for predicting the upcoming probe.

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10:40-11:00 AM (292)

Is Awareness Necessary for Prediction-Based Motor Attenuation? DOMINIC M. D. TRAN, *The University of Sydney*, LEXIN LIANG, *The University of Sydney*, CHRISTY K. W. TAM, *The University of Sydney*, EVAN J. LIVESEY, *The University of Sydney* — Predictable neural signals are attenuated compared to signals that are surprising. We have recently demonstrated that this form of prediction-based neural attenuation is also observed when stimulating the motor system with transcranial magnetic stimulation (TMS). Akin to other forms of neural attenuation, predictable TMS excites the motor system less effectively than unpredicted TMS. The current experiment tested whether motor attenuation relies on awareness of the predictive relationship between a warning signal and motor stimulation. Critically, the relationship was masked using a dual task design where the warning signal was embedded in a one-back task and TMS was embedded in a counting task. Additionally, participants were either given explicit instructions about this relationship, unspecific instructions that there was a relationship between the two tasks, or no instructions. The data were analysed to examine the effects of instruction manipulation as well as awareness classification based on a post-experimental questionnaire.

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11:00-11:20 AM (293)

Repeated Conceptual Reactivation Enhances Target Recognition But Impairs Memory for Perceptual Details. MENGTING ZHANG, *Lehigh University*, ALMUT HUPBACH, *Lehigh University* — Memory consolidation theories assume that memories transform over time. However, they do not specify the precise conditions that support gist extraction and/or retention of perceptual details. Theories of the testing effect propose that repeated retrieval enhances the memories by integrating conceptual information into pre-existing knowledge (Carpenter, 2009). Few studies have examined how repeated retrieval affects memory for perceptual details. This study explored how conceptual reactivation affects recognition memory. Participants viewed images of objects during encoding. Following 24 hours, the corresponding object labels were presented either once or three times, and participants were asked to recall whether they had seen the referenced image. After another 24 hours, recognition was assessed using targets, similar lures, and novel foils. Reactivation improved target recognition, regardless of reactivation repetition. However, repeated reactivation impaired lure discrimination compared to single reactivation. Our results suggest that memory transformation during consolidation is modulated by the method of reactivation.

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SUNDAY

11:20-11:40 AM (294)

Contextual Learning Facilitates Search But Leads to Suboptimal Search Strategies. ANDREW CLEMENT, *Millsaps College*, BRIAN A. ANDERSON, *Texas A&M University* — A large body of evidence suggests that contextual learning can facilitate search in repeated displays. Here, we examined whether contextual learning can also lead to more efficient search strategies. Participants searched through an array of colored squares and identified a digit located within a red or blue target square. Each trial contained both a red and a blue target, and participants were free to choose which color to search for. On each trial, more squares were presented in one color than the other color. Thus, the optimal strategy was to search for the color with the fewest squares. Critically, some displays repeated throughout the experiment, with the locations and identities of items remaining consistent in these displays. Participants were faster to locate the target in repeated displays but made a smaller proportion of optimal choices in these displays. Participants were also more likely to switch which target they searched for in repeated displays, suggesting that they efficiently searched for both targets rather than repeatedly searching for the same target. Together, these findings suggest that contextual learning can facilitate search in repeated displays, paradoxically leading to suboptimal search strategies.

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Learning & Memory VI

Sunday, November 19, 2023, 10:00-11:40 AM US PST, Plaza B

Chaired by Karl Healey, *Michigan State University*

10:00-10:20 AM (295)

Effects of Statement Type and Study Context on Memory for True/False Feedback. LENA NADAREVIC, *Hochschule Fresenius University of Applied Sciences* — Are people better able to remember the truth or the falsity of information? Given discrepant results in the literature, the current research aimed to investigate potential moderator variables. Two experiments tested memory for true/false feedback for comparative statements and definitions that were manipulated either within or between participants. Another experiment tested the effect of different study goals by instructing participants to study statements with true/false feedback either to prepare for a quiz show or to acquire a foreign language. Results confirmed effects of both, statement type and study context. Specifically, memory for true- and false feedback was symmetric for comparative statements. For definitions, in contrast, there was a memory advantage for true feedback, but only when statement type was manipulated between participants. Moreover, the latter effect was further moderated by study instructions. These results challenge existing theories about the mental representation of truth and falsity.

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10:20-10:40 AM (296)

Limits to the Spacing Effect: Very Long Gaps Between Practice Sessions Impair Learning Even with Multiple Sessions. GRETA FASTRICH, *University of Southampton*, ROSALIND POTTS, *University College London*, JULIE HADWIN, *University of Birmingham*, KOU MURAYAMA, *University of Tübingen*, PHILIP HIGHAM, *University of Southampton* — Previous literature has shown that spaced retrieval practice is a technique that helps long-term memory. However, if the spacing gaps between learning practice sessions (LPSs) are too long, between-LPS forgetting can occur, limiting the effectiveness of this technique. Here, we explored whether multiple LPSs mitigate between-LPS forgetting if there are long spacing gaps, improving long-term memory as a result. In a pre-registered study lasting up to a year, more than 400 participants restudied or relearned Swahili-English word pairs over several LPSs before taking a final test. Across 33 different groups, we manipulated (a) the spacing gaps between LPSs (0, 1, 3-12, or 50 days), (b) the number of practice sessions (1, 3, or 5), and (c) the retention interval (7, 35, or 50 days) between the final LPS and the final test. Results showed that final-test accuracy improved with increased spacing to a point. However, between-LPS forgetting with 50-day spacing gaps impaired final-test performance, an effect not mitigated with even five LPSs.

Email: Greta Fastrich, gretafastrich@gmail.com

10:40-11:00 AM (297)

Effective Peer Instruction: Evidence for the Benefits of Peer-to-Peer Interaction and Guided Self-Explanations in F2F and Remote Courses. EMMA H. GELLER, *University of California, San Diego*, DANIA IBRAHIM, *University of California, San Diego* — Peer Instruction is a well-studied instructional routine in which instructors pose challenging conceptual questions in class and students discuss their answers and reasoning with peers before the instructor reveals the correct answer (Crouch & Mazur, 2001). Evidence for the effectiveness of peer instruction for improving classroom learning has mostly come from courses in hard sciences (physics, chemistry, biology) and in-person courses (e.g., Smith et al., 2011). In this presentation, we will share experimental data collected in both the lab and the classroom (including both F2F and remote courses) that highlights how peer instruction can be an effective instructional tool in psychology. We investigate how peer instruction participation is related to final test performance using item-level analyses to compare topics that received peer instruction to those that did not. We specifically explore the effects of peer discussion on learning (both in person and online), as well as the effectiveness of using of self-explanation prompts to enhance or replace peer discussion. The results of this work can be translated into concrete recommendations for incorporating peer discussion into a variety of topics and formats.

Email: Emma Geller, egeller@ucsd.edu

SUNDAY

11:00–11:20 AM (298)

Retrieval Practice Effects in Free Recall. KARL HEALEY, *Michigan State University*, ABIGAIL MUNDORF, *Michigan State University* — Retrieval practice typically leads to better retention than restudying, especially at longer retention intervals and with multiple practice tests. A robust retrieval practice advantage has been found with both cued recall and recognition practice. However, evidence for a retrieval practice effect with free recall practice is mixed. We set out to replicate the retrieval practice effect in free recall and compare the effects of both retention interval and number of tests in a free recall task. At the end of Session 1, half of subjects were tested; 24-48 hours later, all subjects returned for a final test. Surprisingly, we found no net retrieval practice effect, even after a 24-28 hour delay. However, retrieval practice did protect against forgetting, and additional testing opportunities improved memory performance in Session 2. Retrieval practice primarily facilitated recall of successfully practiced items. As with other paradigms, the retrieval practice effect in free recall likely depends on initial practice success.

Email: Karl Healey, khealey@msu.edu

11:20–11:40 AM (299)

Increased Rate of Mind Wandering Following Lapse in Lesson Coherence. CELESTE PILEGARD, *University of California, San Diego* — Students may reasonably disengage from a lesson when it stops making sense to them. In this study, a lapse in the understandability of a lesson was introduced by manipulating text coherence. College students watched a three-part lesson on a science topic. In part one, text coherence was high in both conditions. In part two, the text lapsed to low coherence in the experimental condition, but remained high in the control condition. In part three, text coherence was high in both conditions. The content of parts two and three was counterbalanced across participants. In two experiments—an online study and an in-person replication—mind wandering was significantly higher in the second portion of the lesson for the experimental condition than the control condition. No differences in mind wandering were observed for the third portion of the lesson. Test scores were also lower for the second portion of the lesson than the third. This study contributes to a framework for understanding the causes of disengagement during academic learning.

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Sensation & Perception III

Sunday, November 19, 2023, 10:00 AM–12:00 PM US PST, Imperial A

Chaired by Vasili Marshev, *Michigan State University*

10:00–10:20 AM (300)

Abnormal Dynamics of Sustained Binocular Rivalry in Amblyopic Patients. ADRIEN CHOPIN, *Université Sorbonne & Smith-Kettlewell Eye Research Institute*, AUBREY ROSSI, *University of Oregon*, MICHAEL A. SILVER, *University of California, Berkeley, Helen Wills Neuroscience Institute*, DENNIS M. LEVI, *University of California, Berkeley* — Binocular rivalry is a phenomenon where perception alternates between disparate images presented continuously to each eye. Previous studies have predominantly focused on non-amblyopic strabismus, utilized brief presentations, or solely reported dominance. In this study, we investigated the dynamics of sustained rivalry in amblyopia by presenting dichoptic orthogonally-oriented gratings to 11 amblyopic (6 anisometropic, 1 strabismic, 4 mixed) and 7 control participants, measuring their perception during 1-minute presentations. Interocular contrast and alignment were adjusted, promoting fusion. Amblyopic patients experienced fewer alternations ($p=0.0002$) and a higher proportion of incomplete alternations (e.g., left-mixed-left percepts) compared to control observers ($p = 0.02$). Patients spent less time perceiving the weaker eye stimulus than control subjects ($p = 0.005$) but similar time perceiving mixed percepts ($p = 0.35$) or the dominant eye stimulus ($p = 0.9678$). We conclude that amblyopes experience binocular rivalry with severely abnormal dynamics and that their dynamics can be used to completely separate amblyopic and control observers, making it a good candidate for a diagnostic tool.

Email: Adrien Chopin, adrien.chopin@gmail.com

10:20–10:40 AM (301)

What Causes Trypophobia? GEOFF COLE, *University of Essex Centre for Brain Science*, MARIE JUANCHICH, *University of Essex*, ABBIE MILLETT, *University of Suffolk* — The simple act of viewing particular types of visual stimuli can have negative effects for many people (e.g., photosensitive epilepsy, pattern-induced migraine). Cole and Wilkins (2013) described a further example in which approximately 10%-15% of the population are averse to images of hole clusters. A common example of "trypophobia" is the head of the lotus seed flower, a stimulus possessing statistics different to natural scenes (i.e., high contrast at mid-range spatial frequencies). As well as reviewing the three main accounts as to why the phenomenon occurs, we examine the degree to which trypophobia is due to its ubiquitous social media presence. In Experiment 1 ($N = 2,559$), we examined whether greater social media users are more sensitive to trypophobic stimuli, as predicted by the social media hypothesis. In Experiment 2 ($N = 289$), we assessed whether prevalence of trypophobia is greater in people who are aware of the condition. Results revealed that although greater social media users are indeed more susceptible to trypophobia, 24% of trypophobic individuals have never heard of the condition. These data suggest that both social learning and non-social learning mechanisms (e.g., image statistics) contribute to the phenomenon.

Email: Geoff Cole, ggcole@essex.ac.uk

10:40–11:00 AM (302)

An Anatomically Inspired Model of Visual Cortex Suggests that the Face Inversion Effect Happens at the Level of V1. GARRISON W. COTTRELL, *University of California, San Diego*, MARTHA GAHL, *University of California, San Diego*, SHUBHAM KULKARNI, *University of California, San Diego* — Subjects perform worst at recognizing upside-down faces, then inverted mono-oriented objects, such as cars, and finally, other objects.

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We built an anatomically inspired neurocomputational model that includes a foveated retina and the log-polar mapping from the visual field to V1. This transformation causes changes in scale to appear as horizontal translations, and rotations in the image plane become vertical translations. When fed into a standard convolutional network, this provides rotation and scale invariance. Despite being rotation "invariant," the network follows the correct error pattern, performing worst for faces and other objects of expertise. This is because rotation is discontinuous (V1 is not a torus), with V1 ranging from 90 degrees (vertically up) to 270 degrees (vertically down). Hence, when a face is inverted, the configural information in the face is disrupted, while featural information is relatively unaffected. Contrary to conventional wisdom, the model suggests that the face inversion effect begins at the level of V1, rather than at higher-level visual areas.

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11:00–11:20 AM (303)

Motion Pareidolia: Perception of Coherent Motion in Random Noise. NICOLAS DAVIDENKO, *University of California, Santa Cruz*, ALLISON ALLEN, *University of California, Santa Cruz*, NATHAN HELLER, *Dartmouth College* — Pareidolia is the tendency to perceive meaningful patterns in noisy or random stimuli, such as seeing a face in the clouds. In this talk, I will introduce the phenomenon of "motion pareidolia," in which sequences of random pixel arrays presented at around 1.5 Hz give rise to percepts of coherent apparent motion. In a series of behavioral studies, we show that (1) most naïve observers are readily primed to see simple motion patterns in these stimuli, including up-down motion, right-left motion, rotation, expansion, contraction, and shear, (2) observers show a consistent bias to perceive rebounding motion patterns (e.g., up-down-up-down) compared to drifting motion patterns (e.g., up-up-up-up), and (3) observers can exert control over which motion patterns they see. Our results provide novel insights about multistable perception and inform current models of high-level motion processing.

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11:20–11:40 AM (304)

Toward Identifying the Neural Origin of Pupil Responses to Isoluminant Visual Events. VASILI MARSHEV, *Michigan State University*, HALEY FREY, *Michigan State University*, JAN BRASCAMP, *Michigan State University* — The pupil constricts following visual events even if average brightness remains unchanged. Whether these constrictions have a retinal or cortical origin is debated. One could examine this using contrast adaptation. Before a test grating (average brightness same as background), subjects could view an adapter grating either parallel or orthogonal to the test. As orientation-specific contrast adaptation arises post-retinally, a difference in constriction between those conditions would signal a post-retinal origin of that response. However, such an experimental procedure would require a stimulus with contrast high enough to elicit a measurable constriction, but also low enough to exhibit robust perceptual adaptation. We evaluated possible designs and successfully obtained: 1) pupil constriction to an orthogonal (relatively non-adapted) test grating, and 2) reduced visibility of a parallel (adapted) test grating. These results pave the way to next compare pupil responses between parallel and orthogonal test stimuli and shed light on their neural origin.

Email: Vasili Marshev, vasilimarshev@gmail.com

11:40 AM–12:00 PM (305)

When More Is Less: An Unmasking Interference Effect in Face Recognition. AARON MITCHEL, *Bucknell University*, CATARINA BARROS, *Bucknell University*, BELLA ROACHE, *Bucknell University* — As masking requirements have lifted, many have reported difficulty recognizing individuals they knew previously in a masked context, though less difficulty recognizing a familiar person wearing a mask. If this is the case, why does removing the mask interfere with recognition more than adding a mask? Here, we simulate this experience to investigate an unmasking interference effect. Participants studied novel faces that were masked or unmasked and then were asked to recognize those faces at test with or without a mask. In Experiment 1, accuracy was significantly lower when faces were studied masked and tested unmasked than in any other study/test combination, confirming anecdotal reports. In Experiment 2, inverting the faces eliminated this interference effect, suggesting that the effect may arise from holistic processing. This study provides the first demonstration, to our knowledge, of the unmasking interference effect, and ongoing work will elucidate the mechanisms that give rise to this effect.

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Bilingualism III

Sunday, November 19, 2023, 10:00 AM–12:00 PM US PST, Imperial B

Chaired by Katy Borodkin, *Tel Aviv University*

10:00–10:20 AM (306)

Assessing How Bilingual Experience Impacts Performance in Non-Linguistic Conflict Tasks. CHRISTIAN RUIZ, *The University of Texas at El Paso*, ASHLEY S. BANGERT, *The University of Texas at El Paso* — This study investigated how bilingual experience (i.e., degree of balance in proficiency across languages, contextual use of language) impacts performance stability and ability to manage conflict in auditory and visual nonlinguistic tasks. We predicted that higher balance and experience in high language control contexts would lead to better performance stability and less interference from distracting information. One hundred twenty English-Spanish college-aged bilinguals completed visual and auditory Simon-type (stimulus-response conflict) and Stroop-type (stimulus-stimulus conflict) tasks. Participants showed less stability and more interefence in the auditory Stroop; contrary to predictions, higher balance was linked to higher interference effects in this condition. Across all task conditions, higher balance was associated with lower performance stability, while experience in high language control contexts was associated with higher interference. This highlights the complexity of language experience on cognitive control abilities

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and the need to carefully consider task constraints when exploring these effects in college-aged individuals.

Email: Christian Ruiz, cruiz8@miners.utep.edu

10:20-10:40 AM (307)

Language Distance and Bilingual Advantage in Executive Functions. KATY BORODKIN, *Tel Aviv University*, MAISAM MASSALHA, *Tel Aviv University*, LIAV HAYAT, *Tel Aviv University*, ILAN ROZINER, *Tel Aviv University* — Bilingual speakers tend to perform better on executive functions tasks compared to monolinguals; however, this advantage has been debated due to its inconsistency. We hypothesized that the bilingual advantage is moderated by the typological distance between language pairs. This hypothesis was tested in a sample of 182 participants—61 monolingual speakers of Hebrew, 57 Russian-Hebrew speakers (typologically distant languages), and 64 Arabic-Hebrew speakers (typologically close languages)—who completed a spatial Stroop task and a task switching paradigm. Analysis of bin scores (which combine response accuracy and latency into a single score) indicated no group difference in Stroop effect, a smaller switching effect in Russian-Hebrew speakers and a smaller mixing effect in Arabic-Hebrew speakers compared to the other two groups. Our findings suggest that (1) bilingualism may affect cognitive flexibility but not inhibition, and that (2) typologically distant languages may improve local control while typologically close languages may facilitate global control.

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10:40-11:00 AM (308)

Modulatory Role of Cognitive Control on the Moral Foreign Language Effect. ADAM JOHN PRIVITERA, *Nanyang Technological University Centre for Research and Development in Learning* — The moral foreign language rffect (MFLE) is characterized by increased utilitarian responding when dilemmas are presented in a foreign language. Renewed interest in this phenomenon has led to investigation of the modulatory influence of foreign language experience. However, even when accounting for these differences, considerable variability in the MFLE is observed. Recently, cognitive control has been identified as a potential modulator of the MFLE. To date, no studies have investigated whether differences in cognitive control influence the emergence of the MFLE. The present study aimed to directly explore this topic in a sample of Mandarin-English bilingual Chinese university students. Participants responded to a series of moral dilemmas in either their native or foreign language and completed a Simon task to assess cognitive control. We report a dilemma and language context specific modulatory role for cognitive control on the MFLE. Specifically, when presented in a foreign language, higher levels of cognitive control were associated with higher rates of utilitarian decisions on the Trolley dilemma. Considerations for future studies in light of our findings will be discussed.

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11:00-11:20 AM (309)

Biligual Sequence Learning: Costly or Beneficial? DENISE NADINE STEPHAN, *Rheinisch-Westfälische Technische Hochschule Aachen University*, MATHIEU DECLERCK, *VUB Brussels, Brussels Centre for Language Studies*, IRING KOCH, *Rheinisch-Westfälische Technische Hochschule Aachen University* — Bilingualism refers to the ability to communicate in multiple languages in everyday life. Studies have demonstrated that language processing in a bilingual context decreases overall performance relative to a monolingual context. In the current study we were interested in whether using two languages also impairs learning. To this end, we developed a bilingual version of the classic serial reaction time task which measures learning by contrasting performance in a predictable sequence of tasks with performance in a random task sequence. In addition, performance was compared between this bilingual version and monolingual versions of this paradigm. Overall, no additional bilingual cost was observed for sequence learning, pointing towards similar learning in bilingual and monolingual contexts. We discuss whether the overall comparable performance with bilingual and monolingual sequence learning might be due to the fixed language sequence providing additional structural information (i.e., chunks) in the bilingual group.

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11:20-11:40 AM (310)

Bilingual Speech Categorization Is Not Noisy; It Is Gradient. ETHAN KUTLU, *University of Iowa*, SAMANTHA CHIU, *University of Iowa*, ELDON SORENSEN, *University of Iowa*, JACOB OLESON, *University of Iowa*, BOB MCMURRAY, *University of Iowa* — The majority of people worldwide are multilingual, but there is large variance in when a second language is acquired. Traditional views argue the sound system of a language must be acquired early in development, premised on data showing that late learners of a language often had a less categorical response function. However, recent work suggests even monolingual listeners' speech categorization is gradient (Kapnoula et al., 2017) and that this may be helpful. This raises the possibility that a gradient categorization function in multilinguals is not a mark of an impaired system but an adaptation. This online study (n = 138) tested Spanish/English bilingual and English monolingual adults using a visual analogue scale (VAS) task (Kong & Edwards, 2011), in which subjects heard tokens from English speech continua and rated them along a continuous scale. A Bayesian hierarchical model calculated subjects' true slopes and the noise in their response functions. Results show that bilinguals were more gradient than monolinguals and that this pattern was distinct from noisy encoders. This challenges claims of critical periods and suggests multilinguals may adapt their L2 speech categories to their unique needs.

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SUNDAY

11:40 AM–12:00 PM (311)

Cognitive Aptitude and Cognate Status: A Psychotypological Approach to ab Initio L3. NICK B. PANDŽA, *University of Maryland*, JARED LINCK, *University of Maryland*, EWA GOLONKA, *University of Maryland* — The term "cognate" is often taken for granted in pedagogical and psycholinguistic studies of language learning. Deciding on cognate status classification (cognate, false cognate, non-cognate) for particular words is essential for research in these fields and has theoretical implications in studies of third language (L3) acquisition. Participants included 133 native English learners of L2 Spanish naïve to L3 Portuguese to investigate the role of cognitive aptitude and L2 proficiency in perceptions of cognate status, and the impact of L2-to-L3 cognate identification and L2 proficiency on L3 reading comprehension and L2-to-L3 morphological and orthographic correspondence identification. Results of mixed-effects modeling showed independent influences of inhibitory control, processing speed, number of cognates identified, and L2 proficiency on perceptions of cognate status. A variable definition of a "cognate" is discussed as the results suggest that the psychotypological awareness a learner brings to bear is independent of their L2 proficiency when learning a related L3.

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Recognition II

Sunday, November 19, 2023, 10:00–11:40 AM US PST, Continental 1 & 2

Chaired by Igor Utochkin, *University of Chicago*

10:00–10:20 AM (312)

Predictable Learning Demands Enable Down-Regulation of Visual Long-term Memory Encoding. JOSEPH M. SAITO, *University of Toronto*, KEISUKE FUKUDA, *University of Toronto Mississauga* — Each day, humans encounter visual stimuli that they desire to remember or not remember. However, voluntary control of memory encoding is uneven across these goals. While humans can readily up-regulate their encoding of desired stimuli, down-regulating encoding of undesired stimuli is shown to be difficult, if not impossible. Here, we tested whether down-regulation is enabled by making learning goals predictable in time. Participants were cued prior to the onset of real-world objects to remember (neutral), not remember (down-regulate), or try "extra hard" to remember (up-regulate) a given object. These pre-cues were made predictable by holding them constant for multiple consecutive objects (E1) or varying them in a fixed order across objects (E2). In doing so, we found that down-regulated objects were less likely to be remembered than neutral objects. EEG recorded during encoding revealed that both up- and down-regulation were accomplished via complex interactions between dissociable ERP (P100, frontal positivity) and time-frequency mechanisms (frontal theta power, occipital alpha power). Thus, predictable learning goals enable down-regulation by allowing for the coordinated deployment of multiple neural mechanisms across time.

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10:20–10:40 AM (313)

An Even Better Remedy to the 'Measurement Crisis' in Recognition Memory: Further Explorations of da and d' in Empirical Data. YONATAN GOSHEN-GOTTSTEIN, *Tel Aviv University*, ADVA LEVI, *Tel Aviv University*, CAREN ROTELLO, *University of Massachusetts Amherst* — Measuring accuracy in recognition memory might not be "harder than you think" (Brady et al., 2023). Previous simulations that compared iso-sensitive conditions differing only in bias revealed high Type-I error rates (T1ER) for d', H-F, A' (henceforth, 'common measures'). The rates increased with an increase of either sample size and/or number of trials. In Psychonomics 2022, we explored empirical data using an implied base-rate manipulation, creating iso-sensitive conditions differing in bias. High T1ERs were associated with common measures and increased with both sample size and the number of trials. Importantly, we found low T1ERs for da, a measure premised on unequal-variance Gaussian distributions. Still, even for da, large-sample experiments (N = 96/192) were associated with T1ERs higher than 5%—9% and 14%, respectively. We hypothesized that a decrease in T1ER should be observed with an increase in the number of trials because the data would more closely resemble the true model. Therefore, for da, the number of trials would decrease and the sample size would increase T1ERs. We found this pattern in both simulations and in empirical data. We promote using da and running many-trials.

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10:40–11:00 AM (314)

Performance in the Response-Time Based Concealed Information Test as Evidence Accumulation Towards Collapsing Bounds. BARTOSZ GULA, *University of Klagenfurt*, LARS M. REICH, *University of Klagenfurt* — In the response time-based concealed information test (RT-CIT), guilty participants deny knowledge of critical probe items more slowly than of irrelevant items; however, little is known about the involvement of specific memory processes. Based on data from 17 published studies, we found that the probe-irrelevant difference is reliable (Cohens's d = .34) and that it exhibits delta functions with positive slopes. Next, we tested several sequential sampling models, including Drift Diffusion Model versions with constant and linearly collapsing bounds and the Racing Diffusion Model. For guilty participants, models with separate drift rates for each item type fitted better than models assuming equal drift rates for probe and irrelevant items. The collapsing bounds DM fitted best, suggesting that guilty participants initially set higher response thresholds which collapse more quickly compared to innocents. In two new studies, we tested the malleability of the component processes from extensive behavioral faking training. Training generally decreased nondecision times and increased drift rates. The results will be interpreted based on dynamic recognition models and matching processes of content and episodic stimulus features.

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SUNDAY

11:00–11:20 AM (316)

Memory Set Size Effects on Neural Measures of Visual Recognition Memory. IGOR UTOCHKIN, *University of Chicago*, CHONG ZHAO, *University of Chicago*, EDWARD VOGEL, *University of Chicago* — Previous behavioral research has established very high accuracy of visual recognition memory for large sets of images. Moreover, even dramatic growth in memory set size (MSS) causes just a logarithmically increasing time cost to recognition (Wolfe, 2012) suggesting highly efficient memory search. Here, we tested MSS effects on visual recognition using event-related potentials (ERP). In each block of our experiment, participants first studied a set of 8, 32, or 64 serially presented images and then were tested for "old-new" recognition. We found substantial MSS effects on ERP components known to correlate with various aspects of "old-new" recognition, namely, mid-frontal negativity, FN400, and late posterior component, LPC. Specifically, the smaller MSS caused earlier and larger differences between the ERPs to old and new test items. These findings are discussed in relation to the mechanisms of highly efficient visual recognition (e.g., roles of familiarity and recollection, decision rules, etc.).

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11:20–11:40 AM (317)

True and False Recognition in MINERVA2: A Computational Implementation of Fuzzy-Trace Theory. MINYU CHANG, *McGill University*, BRENDAN T. JOHNS, *McGill University*, CHARLES J. BRAINERD, *Cornell University* — Previous research suggests that the MINERVA2 model can capture basic Deese-Roediger-McDermott (DRM) false recognition findings. In the current study, we extended this line of research by simulating multiple empirical effects in the DRM illusion with a combination of BEAGLE representations and MINERVA2. Importantly, we incorporated two of fuzzy-trace theory's assumptions into MINERVA2. First is the verbatim-gist distinction: We incorporated both gist representation (distributed semantic vectors) and verbatim representation (holographic word-form vectors) into MINERVA2 and successfully simulated several phenomenological findings (e.g., remember/know). Second is the local-global gist distinction: To capture global gist, we added a model assumption that an item's storage quality depends on its similarity to the preceding item, which helped accommodate the list blocking effect. Our findings supported MINERVA2 as a viable candidate for scalable modeling of the DRM illusion and strengthened the connection between computational modeling and substantive theories of false memory.

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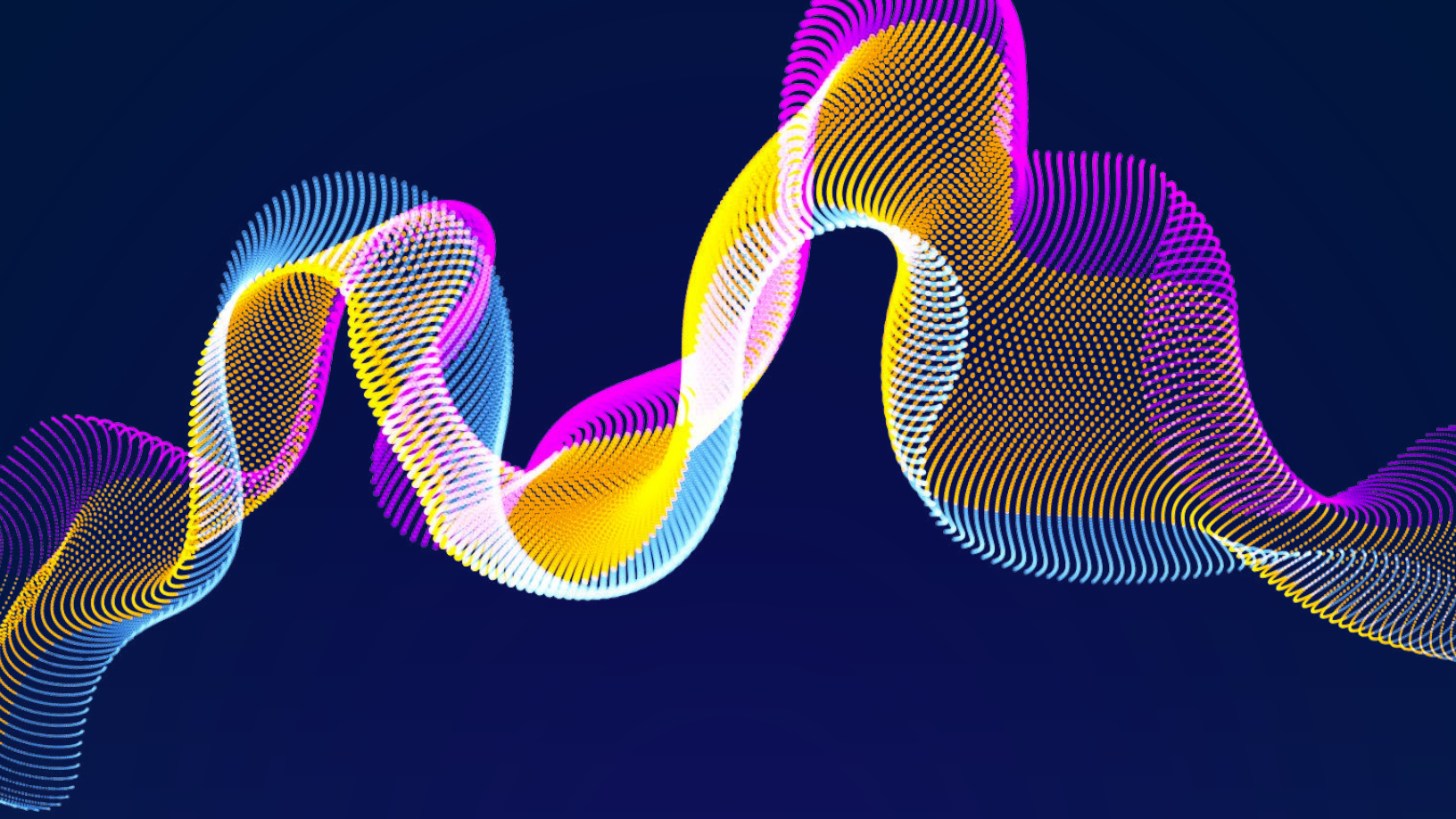
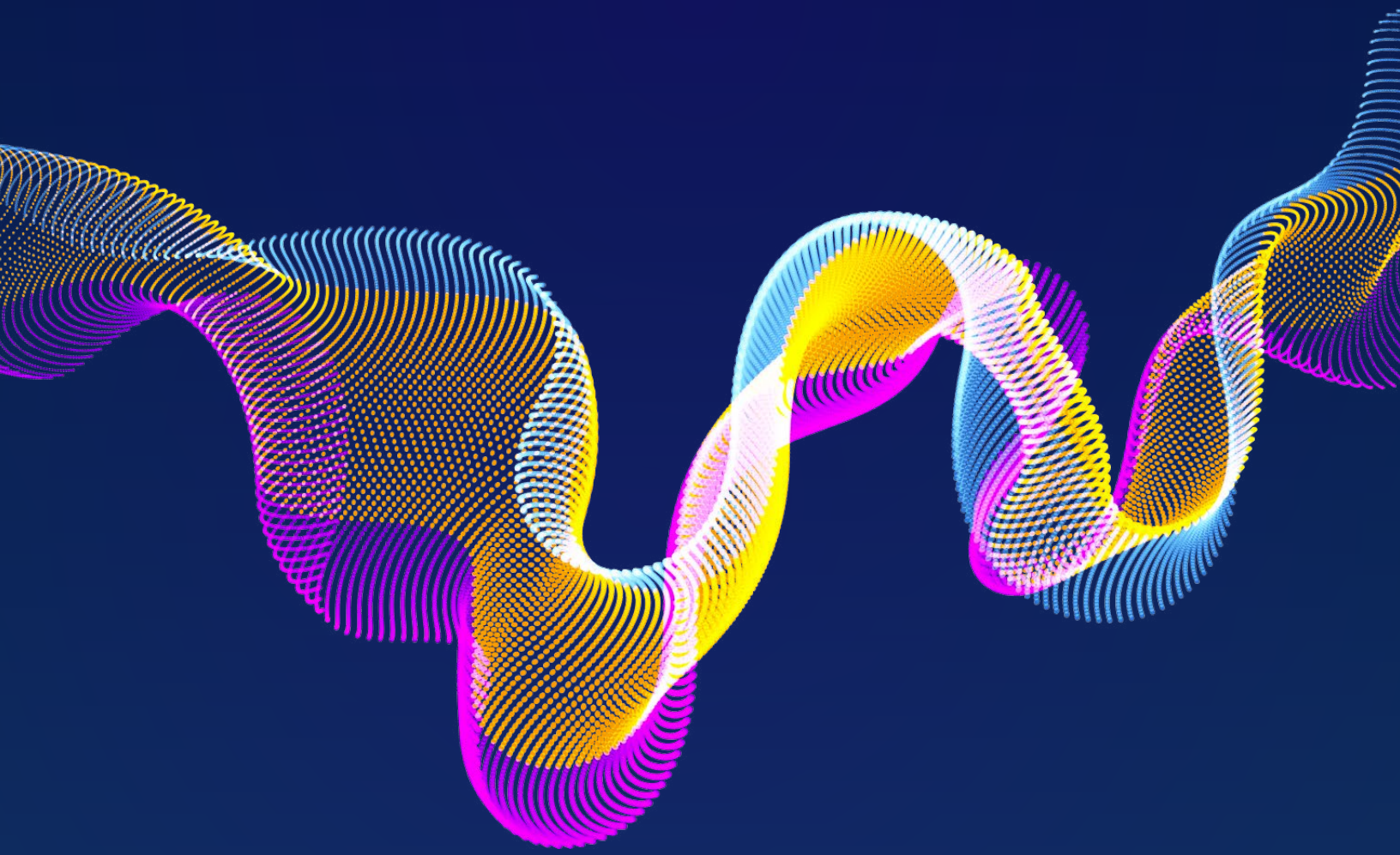


Poster Abstracts



THURSDAY

Poster Session I

Thursday, November 16, 2023, 6:00–7:30 PM US PST, Grand Ballroom

6:00–7:30 PM (1001)

Context-Dependent Modulation of Attention: A Simulated Driving Task. NOAH BRITT, *McMaster University*, JACKIE CHAU, *McMaster University*, HONG-JIN SUN, *McMaster University* — Spatial cueing has shown to elicit more sensitive changes in attention across the visual field. To better observe realistic modulations in spatial attention, it is critical to integrate real-life behaviours into experimental manipulations. In the current study, participants underwent a simulated driving task where they functionally operated a gas pedal and responded using a steering wheel device. Participants were required to follow a lead car stimulus through a virtual 3D environment composed of pictorial depth information. While driving, a modified spatial cueing paradigm produced an abstract spatial cue that could appear on either side of the roadway, followed by a roadside pedestrian oriented either towards or away from the road. Compared to non-driving conditions, pedestrian stimuli oriented toward the road revealed significantly increased spatial cueing effects (facilitation) compared to when pedestrians were oriented away from the road. This suggests increased vigilance while driving, specifically resulting in heightened attention to upcoming dangers such as crossing pedestrians. In addition, this study provides further insight for an altercentric account attention.

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6:00–7:30 PM (1002)

Temporal Offset Eye-Voice Span in Different Variants of the Stroop Task: When Is Parallel Processing Challenged?. LAOURA ZIAKA, *University of Oslo*, ATHANASSIOS PROTOPAPAS, *University of Oslo* — When reading or naming multiple items aloud, the eye is usually ahead of the voice (eye-voice span, EVS), suggesting parallel processing. An under-investigated measure in the study of EVS is the temporal offset EVS (EVS-T-Off): the time difference between the offset of word fixation on item N and the onset of articulation of this item. Previous studies examining EVS-T-Off and its relationship to automaticity implemented indirect measures for the latter (i.e., familiarity and length). To fill this gap, we go a step further by using the Stroop task, taking into account naming direction. We used two tasks requiring different naming directions: the left-to-right (language default) and the top-to-bottom task. A preliminary analysis of 42 Greek adults showed that for the EVS-T-Off condition and task interacted. As expected, a larger EVS-T-Off was observed for the neutral condition and shorter for the incongruent. Interestingly, EVS-T-Off was shorter for the left-to-right (default) naming direction in the incongruent condition than the top-to-bottom direction. The results indicate an interplay between the extent of parafoveal processing and immunity to nearby-items interference.

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6:00–7:30 PM (1003)

Automated Symbolic Orienting Revisited: Do Nonpredictive Words Elicit the Same Effect?. SAMUEL W. BENNETT, *Towson University*, BLAIRE J. WEIDLER, *Towson University*, JARED J. MCGINLEY, *Towson University* — Traditionally, spatial attention was thought to be allocated through endogenous (voluntary) orienting and exogenous (reflexive) orienting processes. However, Ristic and Kingstone (2012) suggested that a third form of orienting (automated symbolic orienting) that operates independently and in parallel with the other two forms of orienting could be elicited using nonpredictive arrow cues. Other prior research in different paradigms have found that words produce a similar effect as that of arrow cues. However, it is yet unknown if directional word cues can elicit automated symbolic orienting. We tested this by replicating Ristic and Kingstone (2012) but replacing the nonpredictive arrows with nonpredictive words. Participants completed a double-cueing task in which a traditional endogenous or exogenous cue was presented simultaneously with a nonpredictive word cue. The results indicated that the words did not elicit any response time cueing effect, suggesting that the effect of nonpredictive words found in previous studies was not due to automated symbolic orienting.

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6:00–7:30 PM (1004)

Everyone Is a Supertasker. STEEVEN-LEE CHALOYARD, *Université de Franche-Comté*, MORGAN LYPHOUT-SPITZ, *Université de Franche-Comté*, ERIC RUTHRUFF, *University of New Mexico*, FRANÇOIS MAQUESTIAUX, *Université de Rouen Normandie* — Is efficient dual-task performance limited to rare "supertaskers"? Or can anyone do it? Lyphout-Spitz et al. (in revision) demonstrated that, in dual-task psychological refractory period (PRP) experiments modified to boost Task-2 preparation, 18 of 47 participants bypassed the central bottleneck and showed little dual-task cost. Here we evaluated whether, under even more favorable conditions, it is possible for all participants to bypass the bottleneck. Unlike the PRP approach with multiple SOAs (Task 1 before Task 2), we presented tasks simultaneously, and with equal task emphasis. To boost task preparation, single-task trials were randomly intermixed with the dual-task trials. The results showed that almost all participants routinely bypassed the central bottleneck, as evidenced by small dual-task costs (78 ms on one task, 143 ms on the other) and distributions of inter-response intervals closely matching that predicted by bottleneck bypassing. Everyone can supertask, given proper preparation.

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6:00–7:30 PM (1005)

Are We Good at Detecting and Enumerating Potentially Threatening Coalitions? Evidence from Dot-Probe, Surprise-Recall, and Enumeration Experiments. SAMIRA AMINIHAJIBASHI, *Peace Research Institute Oslo (PRIO)*, STEFAN GOETZ, *Peace Research Institute Oslo (PRIO)*, THOMAS HAGEN, *Peace Research Institute Oslo (PRIO)*, HENRIKAS BARTUSEVICIUS, *Peace Research Institute Oslo (PRIO)* — Previous research has revealed that humans automatically extract formidability

information about potential individual opponents using basic visual cues, such as static images of faces or over-body masculinity. Here, we propose analogous computational mechanisms for coalitional formidability assessments and hypothesize that people automatically (i.e., unintentionally and efficiently) attend outgroup male coalitions (H1) and determine their size (H2). To test the hypotheses, we adapted dot-probe, surprise-recall, and dot-enumeration paradigms along with rating surveys for online administration. Studies ($N \approx 1000$, $f = 40\%$) revealed supporting evidence for H1 and H2. We found an attentional bias toward coordinated male coalitions vs. non-coordinated males, elicited only at 100 ms exposures indicating the involvement of an initial attentional shift. Also, under time limitations, the group size of coordinated male coalitions was more accurately estimated than other categories. These findings provide preliminary evidence for potential cognitive adaptations to coalitional aggression.

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6:00-7:30 PM (1006)

High-Frequency Stimulus: Enhanced Cognitive Control or Mere Habitual Facilitation?. NAHYUN LEE, *Korea University*, MYEONG-HO SOHN, *The George Washington University*, YANG SEOK CHO, *Korea University* — In Simon tasks, the spatial correspondence between the task-relevant (e.g., color) and the task-irrelevant (e.g., location) stimulus information evokes cognitive conflict called the Simon effect. The current study aims to investigate the effects of stimulus frequencies on cognitive control in Simon tasks. The frequency of stimulus color (task-relevant feature; Experiment 1) and the frequency of stimulus location (task-irrelevant feature; Experiment 2) was manipulated. In both experiments, faster responses were made to high-frequency trials than low-frequency trials, indicating response facilitation effects for the frequently presented stimulus features. However, the Simon effect sizes were significantly larger in high-frequency trials compared to low-frequency trials, implying that participants experience larger conflict in frequently presented features. The present study suggests that while increasing the frequency of a task feature can facilitate the speed of a response, it does not contribute to the conflict resolution of the same feature. Instead, the quality of cognitive control was impaired in high-frequency features, suggesting the conflicting nature between habitual facilitation and cognitive control.

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6:00-7:30 PM (1007)

Revisiting the Validity of Executive Function Tasks: Methodological Considerations and Findings from a Drift-Diffusion Modeling Approach. CHRISTOPH LOEFFLER, *Johannes Gutenberg-Universität Mainz*, GIDON T. FRISCHKORN, *University of Zurich*, DIRK HAGEMANN, *Heidelberg University*, KATHRIN SADUS, *Heidelberg University*, ANNA-LENA SCHUBERT, *University of Mainz* — This study contributes to the ongoing debate regarding the validity of executive function tasks and their association with higher order cognitive abilities. We addressed two methodological limitations in previous research, which may account for inconsistencies in results: (a) the inconsistent use of accuracy-based versus reaction time-based indicators and (b) the use of average performances versus difference scores to measure executive functions. A sample of 148 participants completed a battery of executive functions tasks to replicate the three-factor model of executive functions with the latent factors shifting, updating, and inhibition. By applying drift-diffusion models and using the drift parameter to address the identified methodological limitations, our findings revealed one common factor of executive functions, which could be fully explained by individual differences in the speed of information uptake. No variance specific to executive functions remained. These results suggested that typical executive function tasks may not be valid measures of executive functions.

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6:00-7:30 PM (1008)

Mindfulness-Associated Enhancement of Stimulus Driven Attention Relative to Voluntary Attention Towards Task Relevant Stimuli. ZSOFIA LOGEMANN-MOLNAR, *Eötvös Loránd University (ELTE)*, ANNA VERES-SZÉKELY, *Eötvös Loránd University (ELTE)*, ZSOLT DEMETROVICS, *University of Gibraltar Centre of Excellence in Responsible Gaming & Eötvös Loránd University (ELTE)*, ALEXANDER LOGEMANN, *Eötvös Loránd University (ELTE)* — Previous studies regarding the relationship between mindfulness and attentional bias are contradictory, with some studies suggesting a positive correlation, whereas other suggest a negative correlation. We argue that this contradiction may be explained by paradigm differences that determine whether predominantly voluntary or stimulus driven attention is triggered. This notion was addressed in the current study. Participants (in total 95, of which 30 were males), with a mean age of 26 (SD=7) performed a neutral and reward associated Posner paradigm, while their electrophysiological activity was recorded continuously. Results showed that mindfulness was associated with a reduction of the benefit of cueing in terms of response time to targets, together with overall speeded responses. These effects were not moderated by reward context, or mediated by lateralization of frontal brain activity. Taken together, results indicate that mindfulness shifts the balance from top down voluntary attention to enhanced stimulus driven attention.

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6:00-7:30 PM (1009)

The Bidirectional Relationship between Emotional Valence and Cognitive Control Using the Immediate Priming Paradigm. SARAH B. MALYKKE, *The George Washington University*, REBEKA C. ALMASI, *The George Washington University*, JINI TAE, *Gwangju Institute of Science and Technology*, YOONHYOUNG LEE, *Yeungnam University*, MYEONG-HO SOHN, *The George Washington University* — Recent studies utilizing immediate priming paradigms have revealed task-specific effects of cognitive conflict on emotion, where the perception of conflict is associated with a negative valence that diminishes upon conflict resolution. Building upon this foundation, our research seeks to explore the bidirectional relationship between emotional valence and cognitive control and how control processes can be influenced by the positive or

negative affective quality of a social stimulus. In four experiments, participants were primed by identifying the emotional expression of a face as either positive or negative with a manipulation of incidental (Experiments 1 and 2) and integral (Experiments 3 and 4) emotion before they performed the typical color Stroop task (Experiments 1 and 3) or explicitly identified the congruency of a color Stroop stimulus (Experiments 2 and 4). Stroop effect magnitude (i.e., the difference between congruent and incongruent conditions) was modulated by integral emotion for conflict detection. We argue that these results support the broaden-and-build model of positive emotions suggesting that positive emotions temporarily broaden an individual's thought-action ability, promoting the expansion of attention.

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6:00-7:30 PM (1010)

Explaining Individual Differences in the Rate of Focusing Attention. CODY A. MASHBURN, *Georgia Institute of Technology*, RANDALL W. ENGLE, *Georgia Institute of Technology* — The Eriksen flanker task measures the constraint of visual attention from a diffuse to a more limited area to aid target identification (Eriksen & St. James, 1986). Attentional constraint in the flanker task has been linked to individual differences in working memory capacity, but other individual difference variables may be pertinent (Heitz & Engle, 2007). To explore this further, our participants completed a letter flanker task and an arrow flanker task with an increasingly stringent response deadline, allowing us to assess participants' target identification accuracy across a range of reaction times. We also administered assessments of other cognitive abilities, including attention control and processing speed. Accuracy tended to be higher at longer reaction times, especially on incongruent flanker trials (i.e., trials where the central target symbol differed from the flanking distractors, where constraining attention to the target is critical (e.g., SSHSS). Attention control predicted individual differences in attentional constraint better than processing speed. This suggests that individuals' rates of attentional constraint are linked to the ability to control attention, not a more general speed advantage.

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6:00-7:30 PM (1011)

Network Model of Inhibitory Control and Impulsivity Assessments in Healthy Adults. KAMRYN MATTINGLY, *University of California, Riverside*, RADHIKA AMIN, *University of California, Riverside*, KEVIN ROSALES, ., AUDREY CARRILLO, *University of California, Riverside*, ANJA PAHOR, *University of Maribor*, SUSANNE M. JAEGGI, *University of California, Irvine*, JASON F. REIMER, *California State University, San Bernardino*, AARON SEITZ, *Northeastern University* — Inhibitory control (IC) is the capacity to interrupt an action in order to reach a specific goal. Impulsivity is the tendency to act rashly despite future outcomes. Conceptually, they imply an inverse relationship, but this has not been consistently found in previous research. IC is measured using tasks, while impulsivity is generally measured using questionnaires, and it's unclear how they relate in a network model. We conducted a network analysis of 19 IC and impulsivity measures to characterize network architecture with data from 287 healthy adults. To quantify how well-connected the network was, we calculated network density of 0.57, indicating moderate density. The network had four "communities" with little overlap across IC and impulsivity metrics. Bridge centrality estimates identify links, or "bridges," across communities, and the largest estimates (> 1.0) were among communities dominated by impulsivity measures. These results suggest that existing measures of IC and impulsivity are not highly linked with each other, however future research using less common formats for each construct (e.g., impulsivity tasks and IC questionnaires) could help identify if this observation is driven by format or construct differences.

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6:00-7:30 PM (1012)

Determinants of Strategically Balancing Different Temporal Costs in Self-Organized Task Switching. IRINA MONNO, *Albert-Ludwigs-Universität Freiburg*, ANDREA KIESEL, *Albert-Ludwigs-Universität Freiburg* — In the self-organized task switching paradigm individuals choose tasks to optimize multitasking performance by strategically balancing cognitive (switch costs, i.e., higher response times in switch compared to repetition trials) and environmental (stimulus availability) timing costs. Specifically, the stimulus needed for a task repetition was delayed by a stimulus-onset asynchrony (SOA) that increased with each consecutive repetition until a task switch reset the SOA and participants switched tasks when the SOA in task switches approximately matched their individual switch costs. Here, we aim to identify the determinants of the strategically costs balancing. In Experiment 1, we measured the individual's ability to estimate switch costs and SOA. We found empirical evidence for switching a task at an SOA that approximated switch costs and for a more accurate estimation of the SOA compared to the estimation of switch costs. However, individual ability to balance costs was not significantly related to individual ability to estimate time. In Experiment 2, we examine whether the additional cognitive load affects strategic balancing of temporal costs.

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6:00-7:30 PM (1013)

Comparison of Competing Hypotheses of Gaze Reversed Congruency Effect. TAKATO OYAMA, *Senshu University*, YOSHIHIKO TANAKA, *Senshu University*, KENTA ISHIKAWA, *Senshu University*, MATIA OKUBO, *Senshu University* — In the spatial Stroop task, arrow stimuli produce spatial congruency effects, whereas eye gaze stimuli produce reversed congruency effects. Several hypotheses (e.g., eye contact, joint attention, joint distraction hypothesis) have been proposed to explain the mechanism of the reversed congruency effect of gaze stimuli. However, the lack of a baseline condition makes the comparison of the competing hypotheses difficult. The purpose of this study is to examine the facilitatory and inhibitory effects of gaze in the spatial Stroop task using upward gaze as the baseline. We measured verbal responses to establish a baseline. Gaze stimuli produced the reversed congruency effect. The baseline condition had the fastest reaction time, among three

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congruency conditions (i.e., congruent, baseline, incongruent), irrespective of targets. These results at least negate the facilitation-based hypothesis (e.g., eye contact, joint attention).

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6:00–7:30 PM (1014)

Assessing the Impact of Proactive Interference on Older Adults' Cognitive Control Use in an Event Segmented Task. CASSANDRA SKROTZKI, *Toronto Metropolitan University*, KESAAN KANDASAMY, *Toronto Metropolitan University*, LIXIA YANG, *Toronto Metropolitan University* — The Dual Mechanisms of Control framework posits two distinct cognitive control modes: proactive (actively maintaining goal-relevant information) and reactive control (reactivating goal-relevant information after a probe), with a shift from predominantly proactive control in young adulthood towards more reactive control in older age. According to the Event Horizon Model, semantic and/or perceptual information can be used to build event boundaries that help chunk information in memory. Prior research has shown that shifting locations exclusively between cues and probes in the AX-Continuous Performance Test (AX-CPT) can enhance older adults' reactive control biases. It is unclear if this is due to proactive interference (i.e., the cue from the prior trial is used to inform responses to the current probe because they are in the same location) or the added cognitive load facilitated by a cue-probe spatial event boundary (i.e., chunking cues and probes separately in memory). Using an AX-CPT with an exclusive cue-probe spatial shift, this study compared performance across trials where the preceding trial had either a target or non-target cue to examine whether proactive interference or a cue-probe event boundary can explain this effect.

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6:00–7:30 PM (1015)

Effects of Goal-Setting on Attentional Effort and Attention Lapses. DEANNA L. STRAYER, *University of Oregon*, NASH UNSWORTH, *University of Oregon* — Attention lapses occur when focus shifts away from the task at hand towards internal or external distractions and can lead to failures in completing intended actions. Goal-setting theory proposes that setting specific, difficult goals leads to better task performance over vague goals. The present study (N = 80) examined whether goal-setting increased attentional effort and reduced attention lapses during a four-choice reaction time task. The control condition received the vague goal: "respond as quickly and accurately as possible." The goal condition received specific goals that became progressively harder over time (425 ms, 400 ms, & 375 ms). Pupillary responses were recorded throughout and subjects answered randomly presented thought-probes to determine whether they were experiencing task-unrelated thoughts (TUTs). The goal condition displayed larger preparatory and phasic pupil responses, suggesting more attentional effort was exerted during the task. In addition, the goal condition displayed fewer attention lapses both behaviorally and with TUTs. The results reinforce prior findings that goal-setting can reduce attention lapses and indicate attentional effort is a mechanism behind the efficacy of goal-setting.

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6:00–7:30 PM (1016)

The Structured Clinical Interview for ADHD Research: Automation and Validation. MADELYN QUIRK, *University of Michigan* — The Structured Clinical Interview for DSM-5 (SCID) is a commonly utilized tool for clinicians to deliver clinical diagnoses of psychiatric disorders based on the relative DSM-5 criteria. The attention-deficit/hyperactivity disorder (ADHD) module of the SCID involves a trained practitioner asking a subject a series of questions about their experiences with ADHD symptoms and subsequent diagnostic criteria. From the anecdotal evidence provided, the practitioner determines whether each symptom or diagnostic criterion qualifies as being above threshold or not. When conducting research using adult participants with ADHD, researchers often administer the SCID to validate participant self-reports of having a formal diagnosis of ADHD. However, administering the SCID is a time-consuming process, especially when sample size goals include hundreds of participants. Thus, I developed an automated SCID survey in Qualtrics, allowing participants to complete the SCID on their own time and have the survey deliver a classification of "ADHD" or not to determine eligibility for a given research project. This paper will explore the use and validation of this automated version of the ADHD module of the SCID compared to practitioner-led SCIDs.

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6:00–7:30 PM (1017)

The Role Of Attentional Control in Deception While Under Cognitive Load. EVAN M. BRENNAN, *Montana State University*, KEITH A. HUTCHISON, *Montana State University* — Deception is believed to be more cognitively demanding than telling the truth (Gombos, 2006). The cognitive load approach (Vrij et al., 2006) to studying deception was used to determine the relationship between attentional control (AC), or the ability to coordinate thought and action by modulating competition between relevant and irrelevant information, and deceptive ability, indicated by how long participants took to verbally respond (i.e., reaction times, RTs) to computer-delivered questions. After completing three tests assessing AC (i.e., the RSPAN, antisaccade, and Stroop tasks), participants answered autobiographical questions truthfully and dishonestly while retaining a sequence of dots from a matrix that represented either the low (four dots; straight line) or high (six dots; scattered) cognitive load manipulation. Linear mixed effects modeling analysis showed that lying took significantly longer than telling the truth, but that RTs were moderated by combined scores across the three AC tasks.

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6:00–7:30 PM (1018)

A Combined Experimental/Individual-Differences Examination of the Influence of Motivation on Cognitive Ability Assessments. STEPHEN A. CAMPBELL, *The University of Texas at Arlington*, MATTHEW K. ROBISON, *The University of Texas at Arlington* — Previous research has found motivational states

may affect cognitive performance, such that people who report higher motivation tend to have better performance. However, it remains unclear how motivation might influence estimates of cognitive ability at a factor level. The present study examines the influence of performance feedback at the task and factor level, as well as correlations between motivation and task performance. Participants completed 12 tasks measuring working memory, attention control, long-term memory, and fluid intelligence. Providing feedback has been shown to increase motivation. So, under this hypothesis, we randomly assigned participants to one of two conditions: a feedback condition and a control (no-feedback) condition. Participants self-reported their motivation before each task. We found no differences in motivation between groups. However, we found significant differences between conditions in task performance for all attention control and some long-term memory tasks. Finally, we estimated factor scores for attention control, working memory, long-term memory, and fluid intelligence and found significantly higher factor scores in the feedback condition for all factors except fluid intelligence.

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6:00-7:30 PM (1019)

Loneliness Effects on Attentional Shift to Emotional Faces. ADRIANA PATRIZIA GONZALEZ PIZZIO, *Sapienza University of Rome*, ANNA PECCHINENDA, *Sapienza University of Rome* — The direction of another's eye-gaze is important for social interactions as it can indicate the focus of attention and the object of interest of the other person. It has been suggested that the attentional shift elicited by the observed gaze direction of an emotional face may be of evolutionary advantage as it facilitates the detection of potential dangers and rewards, and thus, enhance survival opportunities. Here we investigated whether perceived loneliness enhances gaze-cueing effect for emotional faces signalling affiliation or threat compared to neutral faces. To this aim, 134 young individuals completed a non-predictive gaze-cueing task with happy, angry, and neutral faces to assess the effects of loneliness on attentional orienting. Findings showed cueing effects for individuals with low levels of perceived loneliness as well as for individuals with high levels of perceived loneliness. However, the pattern of cueing effects was different for the three emotional expressions. The present findings are discussed in the context of current theories on loneliness and social cognition.

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6:00-7:30 PM (1020)

Influence of Media Multitasking, Cognitive Load, and Smartphone Addiction on Divided Attention Performance. KATHRYN NASON, *University of New Brunswick Saint John*, JONATHAN WILBIKS, *University of New Brunswick Saint John* — Mixed results have been found for effects of media multitasking frequency on divided attention ability. In addition, there is a lack of evidence to support cognitive differences in those who qualify for a usage disorder concerning their mobile device. In the current study, performance was measured using the Sustained Attention to Response Task (low cognitive load) and a letter number sorting task (high cognitive load). Participants completed both tasks with and without a video presented simultaneously. Eye tracking data was used to evaluate when each participant was looking at both the stimulus and the video. Speed, accuracy, and number of fixations on each stimulus were analyzed for each participant. Results demonstrated no cognitive differences among heavy and light media multitaskers, or those who qualified for disordered use criteria compared to those who did not. In addition, no differences were observed between the control condition and the experimental condition with the video present. This work provides insight into the lack of evidence for cognitive differences in those who are more habitual media multitaskers, as well as an inability to support cognitive differences in those who meet criteria for a usage disorder.

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6:00-7:30 PM (1021)

Brain Network Synchronization of Individuals with Differential Cognitive Abilities. DOLLY T. SEEBURGER, *Georgia Institute of Technology*, JASON TSUKAHARA, *Georgia Institute of Technology*, RANDALL W. ENGLE, *Georgia Institute of Technology* — The low-frequency fluctuations of brain signals are hypothesized to facilitate the coordination of information processing across the brain (Buzsáki & Draguhn, 2004). Researchers have found periodicity in these signals that last ~20 s, characterized by the anti-correlation between the default mode network (DMN) and the task positive network (TPN) (Majeed et al., 2011). Recent work has shown group differences in these quasi-periodic patterns (QPP) related to attention (Abbas et al., 2019; Seeburger, 2023). In our study (targeted N = 200), we aim to understand the QPP and how it relates to individual differences in cognitive abilities. Preliminary findings (N=40) showed that high attention control individuals have a stronger anti-correlation between the DMN and TPN compared to low attention control individuals. Furthermore, the frontoparietal control network synchronizes with the dorsal attention network in high attention control individuals, but in low attention control individuals, it synchronizes with the DMN.

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6:00-7:30 PM (1022)

Attention Control Differences Predict Both Source and Recognition Memory Performance. CHONG ZHAO, *University of Chicago*, EDWARD VOGEL, *University of Chicago* — Individual differences in attention control are known to predict long-term memory performance in challenging source memory tasks that require subjects to report the location at which a memory item was presented. However, it is unclear whether attention control also predicts easier recognition memory tasks, including ones in which responses are guided by familiarity. We tested this question in four experiments using sequences of 100 visual exemplars, varying from five exemplars to one unique exemplar in each semantic category. We found that individual differences in attention control similarly predicted those in source memory and recognition memory, despite varying semantic crowdedness levels of visual exemplars. Moreover, source and recognition memory performance remain highly correlated even

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after regressing out attention control. This suggests that a more generalized memory factor may exist that is distinct from attention control abilities.

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6:00-7:30 PM (1023)

To What Extent Is Attention Control Modality-General?. ALEXANDER P. BURGOYNE, *Georgia Institute of Technology*, DOLLY T. SEEBURGER, *Georgia Institute of Technology*, RANDALL W. ENGLE, *Georgia Institute of Technology* — To shed light on the modality-specificity of attention control, we developed three auditory-based tests of attention control that used an adaptive response deadline (DL) to account for speed-accuracy tradeoffs: Auditory Simon DL, Auditory Flanker DL, and Auditory Stroop DL. In a large sample, we investigated the psychometric properties of the three Auditory DL tasks, tested whether attention control is better modeled as a unitary factor or modality-specific factors, and estimated the extent to which unique variance in modality-specific factors contributed incrementally to the prediction of dichotic listening and multitasking performance. Our analyses indicated that the trio of Auditory DL tasks have strong psychometric properties and demonstrate convergent validity with visual tests of attention control. Although auditory and visual attention control factors were highly correlated, the two factors were dissociable and accounted for unique variance in modality-matched outcome measures. Nevertheless, the majority of the predictive validity of attention control was modality-general, not modality-specific. The results suggest an interplay between modality-general attention control and modality-specific processing

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6:00-7:30 PM (1024)

Ignore that Pokémon! Can Pokémon Expert Suppress Pokémon Distractors?. JESSICA N. GOETZ, *University of Central Florida*, MARK NEIDER, *University of Central Florida* — When searching for a category of expertise (e.g., faces), presenting distractors of another category of expertise (e.g., cars), increases response times (RTs) (McGugin et al., 2011). Recent research has found that distracting information can be learned and suppressed to improve RTs on a visual search task (see Wöstmann et al., 2022, for review). We investigated whether experts could suppress distractor objects matching their expertise in a visual search task when explicitly instructed. Modifying the Vanderbilt Expertise Test (McGugin et al., 2012) and Novel Objects Memory Test (Richler et al., 2017), we added and verified the reliability of a test category for Pokémon experts. In a separate study, participants searched for target T's embedded in novel objects or Pokémon where Pokémon were always distractors. Prior to analysis, we categorized participants as Pokémon experts or non-experts using our modified expertise test. We predicted that experts would suppress the category of expertise and be more accurate than non-experts. We found that both groups had similar accuracies ($p = .2$) and were unable to suppress Pokémon ($p = .6$) indicating that experience, and perhaps object identification training, may not attenuate distraction.

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6:00-7:30 PM (1025)

An Exploration of Prevalence Effects for Threatening and Non-Threatening Targets. MARKO HERNANDEZ, *New Mexico State University*, MICHAEL HOUT, *New Mexico State University*, HAYWARD GODWIN, *University of Southampton*, JAKUB POLÁK, *Charles University*, BRYAN WHITE, *New Mexico State University*, ANDRAS N. ZSIDO, *University of Pécs* — Research indicates that low prevalence targets are missed more often in visual search than higher prevalence ones. This adaptive trait increases the efficiency of cognitive systems by not wasting resources in looking for rare items, but missing one's target can be a problem in evolutionary and modern settings. Previous research found attentional benefits to objects associated with danger (i.e., having emotional/visual characteristics similar to threats). While people rarely encounter such items, missing one could be fatal, so we might expect to see an attenuated prevalence effect for such targets. We conducted an experiment investigating whether attentional benefits to threats convey them with protection against prevalence effects. People searched for threatening (snakes), visually similar nonthreatening (caterpillars), nonthreatening negative (cockroach), or control (rabbits) objects in low (10%) or high (50%) prevalence. We replicated prevalence effects but in contrast to prior work, results showed that threats were missed most frequently, and efficiency was greatest for neutral items. This novel finding calls into question the robustness of prior work that used suboptimal methods (only high prevalence, low density displays).

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6:00-7:30 PM (1026)

Investigating Competition in Attentional Templates of Object Categories. Y. ISABELLA LIM, *University of Toronto*, JAY PRATT, *University of Toronto* — Previous research has shown that attentional templates can be shifted and sharpened, but less is known about the flexibility of categorical templates. We ask how encountering exemplars changes the shape of such templates, specifically through a biased competition mechanism found when up- or down-regulating objects. In Experiment 1, we tested whether this competition is required in template formation. In each trial, participants either attended or suppressed one of two exemplars of the same category or did both at the same time. They then searched for that category in an array containing either the attended or suppressed exemplar. Search for suppressed objects was slower than attended objects, but this did not differ when competition was present or absent. This suggests competition at encoding is unnecessary for forming categorical templates. To address template shape, Experiment 2 tested whether category templates are tuned narrowly or broadly by manipulating search uncertainty. Tuning was narrow regardless of uncertainty, suggesting templates are biased towards specific exemplars just encountered. Overall, this study further illuminates the nature of attentional templates for category representations.

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6:00–7:30 PM (1027)

Two Heads Are Better Than One When Visual Attention Must Be Switched Between Color Channels. BRANDON NOLASCO, *University of California, Riverside*, APRIL KARLINSKY, *California State University, San Bernardino*, DAVID A. ROSENBAUM, *University of California, Riverside* — Skill learning has been studied extensively for individuals but hardly for teams. In a novel touchscreen paradigm, participants saw 36 colored-letter targets in each trial. In the solo condition, participants touched all 9 red v's but none of the 9 red w's and all 9 blue q's but none of the 9 blue p's. In the dyad condition, one participant pressed all the 9 red v's but none of the 9 red w's, while the other participant touched all 9 blue q's but none of the 9 blue p's. Both groups quickened with practice. Moreover, dyad times were less than solo times by roughly a constant amount of time at all levels of practice. The difference between solo participants and dyads was due to longer times when solo performers spontaneously switched colors. We found that two heads are better than one when visual attention must be switched between color channels.

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6:00–7:30 PM (1028)

The Sense of Agency as a Source of Selection History in Visual Search. ADAM VILANOVA-GOLDSTEIN, *University of Notre Dame*, JAMES BROCKMOLE, *University of Notre Dame* — A sense of agency arises when our actions cause anticipated effects in the world. Past research has shown that agency biases selective attention toward objects we control relative to those we do not (Wen & Haggard, 2018; Huffman & Brockmole, 2020). This study considered whether and how repeated agency over an object produces a selection history that may, in turn, augment this attentional bias. Participants briefly controlled the motion of one of four uniquely colored objects on a computer screen while the others moved randomly. Then, all objects stopped and one or more gaps appeared in the contour of each circle. The circle with one gap constituted a search target. As in prior work, search on a particular trial was facilitated when a target was previously under the participant's control. This benefit was larger if participants also controlled the target on the previous trial. Search was even faster if both agency and target identity repeated over consecutive trials. This additivity of agency-based and identity-based selection histories indicates that the sense of agency is linked to object identity and that this link is maintained over time to guide attention.

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6:00–7:30 PM (1029)

Aging Leads to Deficiencies in Mechanisms of Reactive Attentional Control But Proactive Distractor Suppression Is Preserved. ANDY J. KIM, *University of Southern California*, JOSHUA SENIOR, *University of Southern California*, MARA MATHER, *University of Southern California* — Older adults exhibit increased distractibility and deficiencies in inhibition, while some mechanisms of attentional control are preserved. To understand these mixed findings, we investigated how aging modulates multiple mechanisms of attentional control including goal-directed target search, proactive distractor suppression, attention capture, and reactive disengagement. When engaged in feature-search mode and proactive distractor suppression, older adults made fewer first fixations to the target but their ability to inhibit the task-irrelevant salient distractor was equal to that of young adults. When engaged in singleton-search mode and reactive distractor disengagement, older adults demonstrated significantly elevated attention capture by the task-irrelevant salient distractor, increased fixation times in orienting to the target, longer dwell times on incorrect saccades, and increased saccadic reaction times. We propose that age-related deficiencies in mechanisms of attentional control arise from shifts in top-down vs. bottom-up biased competition, specifically favoring stimulus-driven reflexive orienting of attention due to a slowing of top-down processing that is not evident when proactively engaged.

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6:00–7:30 PM (1030)

Expected Reward Predicts Eye Fixations During Visual Search. GREGORY ZELINSKY, *Stony Brook University*, SEOYOUNG AHN, *Stony Brook University*, ZHIBO YANG, *Stony Brook University*, YUPEI CHEN, *Stony Brook University*, SOUNAK MONDAL, *Stony Brook University*, MINH HOAI, *Stony Brook University*, DIMITRIS SAMARAS, *Stony Brook University* — We model search behavior as seeking out reward. Our premise is that finding a search target is rewarding, and that search fixations are controlled by computing and maximizing expected goal-related reward. We estimate this reward using inverse-reinforcement learning (IRL), a data-driven method for learning a reward policy by training on search fixations. We trained our model using COCO-Search18, a dataset consisting of 6202 images, 18 target categories, and ~300K fixations. From the model's policy, we compute maps of the reward expected at every image location—reward maps—and found that they predict the scanpaths of both target-present and absent search fixations, closely approaching the noise ceiling imposed by behavioral variability. The model also captures interpretable and cognitively plausible aspects of search behavior, such as learning to withdraw rewards from previously searched locations (i.e., it learns inhibitory tagging), learning to terminate search after reward becomes depleted, and learning and using an object context and "support objects" to facilitate its search for targets.

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6:00–7:30 PM (1031)

Improving Focus Beyond the Initial Field of View: Exploring Context-Guided and Misguided Attention Selection Through Reaction Times and Head Tracking in Virtual Reality. ARTYOM ZINCHENKO, *Ludwig-Maximilians-Universität München*, ANANYA MANDAL, *Ludwig-Maximilians-Universität München*, ROBERT ROZEK, *Ludwig-Maximilians-Universität München*, HEINRICH RENE LIESEFELD, *University of Bremen*, THOMAS GEYER, *Ludwig-Maximilians-Universität München* — In a series of studies, we explore the influence of context on attentional selection in 3D virtual environments. Using a contextual cueing task, we tested if participants could locate a T shape amongst L shapes, even

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when targets shifted beyond their initial field of view. Unique to our approach, we assessed head movements as one of the key factor in this search process. Our findings reveal that even in scenarios requiring head movements, participants could identify targets based on a repeated distractors-only configuration within the initial field of view. This suggests that contextual cueing is not confined to 2D screens but extends to more complex, 3D settings. Our research underscores the significant role context plays in guiding attention, opening new avenues for understanding human interaction with 3D virtual environments.

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6:00-7:30 PM (1032)

Sentence Interpretation in Bilinguals. EVELYN RODARTE, *University of Houston* — The present study investigates the real-time costs of sentence interpretation in early Spanish/English bilinguals. Hernandez et al. (1994) indicated that bilinguals use an amalgam (a combination of LI and L2 strategies) of monolingual strategies in choosing the agent of a sentence. However, the reaction time (RT) data reveal a slightly larger language-specific component than the agent choice data. Bilinguals appear to fall more "in between" the two monolingual groups in their agent choice profiles than in their RT profiles. The present study aims to replicate and extend the investigation of morphosyntactic sentence interpretation patterns in bilinguals with the same online sentence interpretation task using updated methods not available to Hernandez et al. (1994). This study sets the stage for future work looking at individual differences in bilingual and monolingual populations.

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6:00-7:30 PM (1033)

Emotion Across Language: Developing a Bilingual Emotion Norm. DAILYN Q. CLARK, *University at Albany, SUNY*, JEANETTE ALTARRIBA, PHD, *University at Albany, SUNY*, ROBERTO R. HEREDIA, *Texas A&M International University* — Bilingual speakers differ versus monolingual speakers in how they process, perceive, and recall emotion words, and also differ in how they process emotion terms between their first and second languages (Altarriba, 2003; Altarriba & Canary, 2004; Garrido & Prada, 2018; Veléz-Uribe & Rosselli, 2019). While these findings are widely known and robust, very few studies have utilized a within-subjects design (Garrido & Prada, 2018; Ong et al., 2017; Veléz-Uribe & Rosselli, 2019). The aim of the current study was to create a bilingual emotion word norm using a within-subjects design to address the perception and processing differences seen in bilingual speakers. A total of 2,592 words comprised the stimuli set, with 1,296 words from the Stadthagen-Gonzalez et al. (2017) database. They were then translated into English. Participants rated emotion state, emotion-laden, concrete, and abstract words in both English and Spanish on five characteristics: valence, arousal, concreteness, imageability, and context availability. Findings will primarily focus on the differences in ratings between the two languages, and results will further inform the bilingual emotion word literature particularly with regards to stimuli selection.

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6:00-7:30 PM (1034)

Does Degree of Language Brokering Affect Performance on an Emotional Stroop Task?. KARINA FEBRE, *Texas A&M University*, OMAR GARCIA, *Texas A&M International University*, JYOTSNA VAID, *Texas A&M University* — Words and phrases across languages develop an emotional quality to them, much like the experience of language brokering (informal translation) that many bilinguals engage in. Yet little research has explored the emotional processing of words by language brokers. Extending previous bilingualism research on the emotional Stroop effect, the current research aims to explore if the degree of language brokering affects performance on an emotional Stroop task utilizing negative, neutral and taboo words. 180 Spanish-English adult bilinguals at a large southwest university completed the task online via Pavlovia. Based on prior brokering research in other contexts, we hypothesize that interference from emotion-laden words in the first language will be greater for bilinguals with extensive brokering experience relative to those with less brokering experience. Expanding bilingualism research to include language brokering experience as a source of variability is important to further understand the emotional resonance of a first and second language.

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6:00-7:30 PM (1035)

Individual Differences in Learning Writing Systems. KIMBERLY LOUIS-JEAN, *Tufts University*, ARIEL M. COHEN-GOLDBERG, *Tufts University* — Reading is a crucial skill and research on its acquisition has primarily focused on how children "crack the orthographic code" and whether the properties of one's L1 influence how an L2 writing system is learned. The present study used artificial orthographies to investigate individual differences in learning new writing systems. Seventy-three adults were taught 2 novel orthographies pairing unfamiliar symbols to sounds in two learning conditions: explicit (ᓚ-/b/) and implicit (ᓚᓂᓇ-/buv/). Results indicated that ability in paired associate learning significantly predicted learning in both conditions and that age inversely predicted ability in the implicit condition. Sex was not a significant predictor in either condition. Interestingly, almost half of participants performed better with explicit training than implicit training and vice versa. These findings indicate that variability in age and learning ability influences adult acquisition and demonstrates the utility of artificial orthographies in understanding reading acquisition.

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6:00-7:30 PM (1036)

The Impact Of Language Experience On Neuropsychological Performance And White Matter Integrity In Young Adult Bilinguals: An Examination Using Diffusion Tensor Imaging. SOMAYYA SALEEMI, *University of Ottawa*, SHANNA KOUSAIE, *University of Ottawa* — Research suggests that bilingualism preserves white matter (WM) integrity and buffers against cognitive decline in older age. The current investigation aims to clarify the potential association between language experience (i.e., AoA, fluency, codeswitching), neuropsychological performance,

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and WM integrity in a sample of young bilingual adults (data collection is ongoing; currently n=15). WM integrity will be analyzed using tract-based spatial statistics (TBSS), and WM tract properties (i.e., fractional anisotropy [FA], axial diffusivity [AD], radial diffusivity [RD]) will be related to indices of language and cognition using regression-based analysis techniques. It is predicted that lifelong bilinguals will show greater FA/reduced RD, indicating better WM integrity, especially between language processing and executive control brain regions, like the left inferior frontal gyrus, left caudate and left angular gyrus. Resting-state fMRI analysis in the current sample has revealed differences in connectivity between these brain regions as a function of codeswitching frequency.

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6:00–7:30 PM (1037)

Explicit and Implicit Memory Effects on Approach/Avoidance Decisions with Single or Multiple Presentations. ALLISON SKLENAR, *University of Illinois Chicago*, ANDREA FRANKENSTEIN, *University of Illinois Chicago*, PAULINE URBAN LEVY, *University of Illinois Chicago*, ERIC LESHIKAR, *University of Illinois Chicago* — Correctly explicitly remembering positive/negative impressions of social targets leads to respective approach/avoidance (AA) decisions. The current study investigated whether mouse-tracking, a tool used to measure implicit bias, could be used to measure the impact of implicit memory on AA decisions. Additionally, given that multiple presentations lead to stronger memories, the current study also investigated whether the effect of memory on AA decisions would be stronger with multiple presentations of targets at encoding, or if memories impact decisions regardless of strength of the memory. Participants formed impressions of social targets represented by a picture and trait-implying behavior, presented once or twice. Impression memory was tested. Participants then decided whether they would want each person as their neighbor using mouse-tracking. Results will be discussed related to expanded understanding of the effect of memory on AA decisions as well as novel application of the mouse-tracking technique for implicit memory.

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6:00–7:30 PM (1038)

Model-Based Foraging in Structured Environments. THEA ZALABAK, *Washington University in St. Louis*, LAURA BUSTAMANTE, *Washington University in St. Louis*, WOUTER KOOL, *Washington University in St. Louis* — In order to maximize reward, humans need to face problems that require goal-directed planning. Optimal foraging theory explains how organisms maximize reward—by engaging with a current option or searching for a better one. This framework (given by the Marginal Value Theorem) assumes that such decisions rely on a strategy that is inconsiderate of the structure of the environment, leaving no room for planning. We developed a task to study how people employ goal-directed (or model-based) planning strategies during foraging. Specifically, we explore the degree to which participants make forage/leave decisions using an internal model of the task structure vs. a simpler strategy comparing expected rewards against average reward rate. We also study how they choose which reward option to travel towards after leaving another. We found that forage/leave decisions and travel choices were informed by participants' knowledge of the transition structure combined with reward learning. Our results indicate that foraging decisions use goal-directed planning over internal representations of structured environments. Additionally, computational modeling suggests that deviations from optimality are driven by an overreliance on these representations.

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6:00–7:30 PM (1039)

Characterizing The Nature of Information Transmission Between Decision and Motor Systems in Delayed Perceptual Reports. JOHAN ACHARD, *Université de Franche-Comté*, NATHAN EVANS, *University of Queensland*, GORDON D. LOGAN, *Vanderbilt University*, THIBAULT GAJDOS, *Aix-Marseille University*, MATHIEU SERVANT, *Université Bourgogne Franche-Comté* — When perceptual decisions are mapped onto actions, recent electromyographic (EMG) investigations of muscular activity have shown that the duration of motor execution increases as stimulus discriminability decreases. These findings suggest a continuous transmission of information from decision to motor systems. Here we ask whether this processing scheme holds when a time lag is imposed between a commitment to a choice and the expression of this choice through actions. To this aim, we recorded the EMG activity of response-relevant muscles in a response signal variant of the random dot motion task. Stimulus presentation was fixed to 2 seconds, and we manipulated the delay (3, 5, or 7 seconds) between the offset of the stimulus and the onset of the response signal. Mean response time significantly increased as stimulus discriminability decreased. EMG data further revealed that this modulation was caused by a modulation of processes upstream motor execution.

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6:00–7:30 PM (1040)

The Impact of Language on Intentions to Donate Blood. ZEYNEP ASLAN, *University of Chicago*, JANET GEIPEL, *University of Exeter*, LEIGH GRANT, *University of Chicago*, BOAZ KEYSAR, *University of Chicago* — The COVID-19 pandemic reduced rates of blood donation, causing the worst blood shortage in over a decade. Here, we investigated the impact of language on intentions to donate blood. Chinese-English bilinguals (N = 450) were informed about the benefits of donating blood either in their native or foreign language. We found that informing individuals about the benefits of donating blood in their native Chinese as compared to foreign English increased their willingness to donate blood. Specifically, native language use increased the importance of values associated with helping others, which in turn enhanced the willingness to donate blood. Furthermore, participants who received information in their native language were more likely to search for a nearby donation center when the message emphasized helping others. Our findings have implications for boosting blood donation rates among underrecognized non-native populations and suggest that native language communications could help enhance the diversity of the blood supply.

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6:00-7:30 PM (1041)

Extreme Cognition: Does the Need for Cognition and Emotion Predict Extremist Views?. MEGAN CAPODANNO, *Georgia State University*, HEATHER M. KLEIDER-OFFUTT, *Georgia State University*, JOHN HORGAN, *Georgia State University* — Violent extremism, or the use or threat of use of violence against civilian targets in the pursuit of some social, political, religious, or other ideological agenda, is one of the most disturbing social issues of the current era (Horgan, in press). However, little research has examined the potential underlying cognitive processes associated with the endorsement of these extreme viewpoints and related emotions, such as anger or fear. Need for cognition, or the intrinsic need to understand, engage with, and enjoy thinking, is shown in the literature to influence decision-making (Burkolter & Kluge, 2012). Research has shown that negative emotions such as anger can influence decision-making (Bright & Goodman-Delahunty, 2006). The current research examines if the interaction between need for cognition and negative emotion is related to endorsement of extremist views in social situations. Preliminary results suggest a relationship between need for cognition, emotion, and endorsement of extremist views.

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6:00-7:30 PM (1042)

Psychological Distance in Multiattribute Choice. GAVIN COOPER, *The University of Newcastle, Australia*, SCOTT BROWN, *The University of Newcastle, Australia*, GUY HAWKINS, *The University of Newcastle, Australia* — Numerous studies in economics and psychology have sought to understand how specific features of a consumer's choice options shape their ultimate decision. Existing literature often assumes that the psychological representation of attributes is proportional to the attribute values themselves. In this study, we treat options as points in a multi-dimensional psychological space. Similar options are represented as close points, while dissimilar options are depicted as distant points. Initial findings from a veridical task designed to examine selective influence indicate that this approach is sensitive to various decision strategies. Furthermore, applying the method to an analogous preferential task has shown promise in determining individual participants' decision strategies. This approach opens new avenues for discriminating between possible decision strategies in an individual's choices.

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6:00-7:30 PM (1043)

Do People High in Psychopathic Traits Care About Norms and Consequences? Psychopathic Traits and Utilitarian Moral Judgment Revisited. ZUZANNA FARNY, *University of Silesia in Katowice*, MARIOLA PARUZEL-CZACHURA, *University of Silesia in Katowice* — Past studies found that people high in psychopathic traits show a greater preference for utilitarian over deontological judgments than individuals low in psychopathic traits. However, those results are based on the traditional approach to moral judgment, and that approach was criticized in two models of moral decision-making: the CNI and the two-dimensional models. The current research (N = 702) provides deeper insights into the relationships between psychopathic traits and moral judgment by using different models of moral-decision making and by distinguishing three psychopathy constructs: (1) primary and secondary psychopathy; (2) self-centered impulsivity, fearless dominance, and coldheartedness; (3) disinhibition, meanness, and boldness. We confirmed that people high in psychopathic traits are associated with a higher utilitarian tendency in the traditional approach. We also found negative associations between impartial beneficence and all psychopathy scores. Finally, we showed that this result is not valid when using the CNI model of moral decision-making. Here we found that a higher level of psychopathic traits is related to weaker sensitivity to moral norms and less action averse in morally problematic situations.

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6:00-7:30 PM (1044)

Computationally Modeling the Role of Bottom-up Attention in Multi-Attribute Choice. EESHAN HASAN, *Vanderbilt University*, JENNIFER S. TRUEBLOOD, *Indiana University* — Attention has been shown to play a central role in decision-making and multi-alternative multiattribute choice. However, the role of attention has been elusive and characterized in different ways. In this project, we explore the role of attention by manipulating the salience of different options in a multi-alternative, multi-attribute choice display. We include two sets of trials. In one set of trials, there is a dominant option that is better on both attributes than the other alternatives. In the second set, we use attraction effect trials, where a target option dominates a decoy option but not a competitor. We observe that salience interacts with choice, where the salient option is selected more often, especially in quick decisions in both sets of trials. This suggests that salience plays an important role in the dynamics of multiattribute choice. We test different hypotheses for how salience-driven attention impacts preferences using an evidence accumulation modeling framework where the salient option is given an initial starting point boost or more attention is paid to comparisons with the salient option during deliberation.

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6:00-7:30 PM (1045)

Processing Speed in First-Person Shooter and Non-Video Game Players: A Drift-Diffusion Model Approach. ELEANOR R. A HYDE, *University of Sheffield*, ALICE REINHARTZ, *Medical School Hamburg*, SHUANGKE JIANG, *University of Sheffield*, SYLVIE BELLEVILLE, *Université de Montreal & Institut Universitaire de Gériatrie de Montréal*, TILO STROBACH, *Medical School Hamburg*, CLAUDIA VON BASTIAN, *University of Sheffield* — First-person shooter (FPS) games are a subgenre of action video games, which require players to quickly process and react to sensory information, make decisions, and execute responses (Dye, Green & Bavelier, 2009). Previous research suggests that FPS players may have superior processing speed compared to non-video game (NVG) players, and FPS training may improve processing speed performance (Bediou et al., 2023). However, it is yet unclear which component of processing speed underpins these effects. The present study assessed reaction times and accuracies in FPS and NVG

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players in an online choice-reaction time task. Applying the drift-diffusion model, we further explored differences in evidence accumulation (drift) rates, speed-accuracy trade-offs (boundary separation), and non-decision processes. This research will help our understanding of the decisional processes which underlie processing speed performance differences in FPS and NVG players.

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6:00–7:30 PM (1046)

The Effect of Semantically Related and Unrelated Photos on the Illusory Truth Effect. JAE WOO KWON, *Vanderbilt University*, LISA FAZIO, *Vanderbilt University* — Repetition increases the perceived truth of statements. This illusory truth effect is largely due to the acquired fluency. That is, repetition makes statements easier to cognitively process, and this fluency is used as a cue for truth. This cognitive fluency can also be facilitated if the statements are presented with semantically related photos (increasing perceived truth). In contrast, this fluency can be interrupted if the statements are presented with semantically unrelated photos (decreasing perceived truth). Our key research question is how the repetition and photo effects interact and whether related and unrelated photos amplify or reduce the effects of repetition on belief. Participants (n = 151 US Mechanical Turk workers) rated the truth of new and repeated trivia statements randomly presented with a semantically related, unrelated, or no photo. Repetition increased belief, but the photo manipulation did not influence truth ratings. A follow up study will use political headlines, rather than bland trivia statements. Given the more emotionally charged stimuli, we predict that photos may amplify the effect of repetition for the headlines.

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6:00–7:30 PM (1047)

Does Working Memory Predict Precrastination?. RYAN J. LIEW, *Illinois State University*, DAWN M. MCBRIDE, *Illinois State University*, SANAII N. MASIH, *Illinois State University* — Precrastination is the tendency to complete a task earlier than needed even when it will cost extra effort (Rosenbaum et al., 2014). One possible explanation of precrastination is the reduction of cognitive load needed to remember future tasks—completing the task early reduced one's mental to-do list (i.e., the CLEAR hypothesis, VonderHaar et al., 2019). The current study investigated aspects of working memory in relation to precrastination. In two studies, we measured inhibition and updating aspects of working memory and precrastination rates in cognitive tasks. Despite the expectation that working memory would predict precrastination rates in a conscious effort to reduce cognitive load, no correlation between working memory scores and precrastination rates was evident in the results. One possible explanation of the results is that precrastination is a default, automatic response in most individuals when facing tasks that tax cognitive abilities that are not affected by one's working memory abilities.

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6:00–7:30 PM (1048)

Creativity as a Spatial Search Process. SORAN MALAIE, *University of California, Merced*, MICHAEL J. SPIVEY, *University of California, Merced*, TYLER MARGHETIS, *University of California, Merced* (Sponsored by Michael Spivey) — We are a creative species. But how might our creative abilities have evolved? Creativity may have built on more concrete capacities such as goal-directed search. Past studies have demonstrated an influence of spatial search on more abstract cognitive search (e.g., word generation), suggesting that mechanisms involved in spatial foraging are recycled while "foraging in mind." Here, we investigate whether spatial search has a targeted, selective impact on two kinds of creativity, divergent and convergent. Participants first traced routes on a city map. Between subjects, we manipulated whether those routes diverged to multiple locations, or all led to a single repeated location. We found a systematic impact of spatial search on subsequent creativity: divergent spatial search improved divergent creativity (word stem completion), whereas convergent spatial search improved convergent creativity (compound remote associates). These findings support the idea that sensorimotor processes, such as spatial search, are recycled for high-level cognitive processes like creativity, thus shedding light on the embodied evolutionary roots of human creativity.

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6:00–7:30 PM (1049)

Of Snails and Rockets: When Reading Words Dealing with Speed Influences Motor-Response Times. STEVE BUENO, *Université Sorbonne Paris Nord*, ALIX SEIGNEURIC, *Université Sorbonne Paris Nord*, CHERYL A. FRENCK-MESTRE, *Aix-Marseille University & Centre National de Recherche Scientifique (CNRS)*, HUGUES DELMAS, *Université Sorbonne Paris Nord*, HAKIMA MEGHERBI, *Université Sorbonne Paris Nord* — It is well-known that our cognitive system is influenced by sensory-motor mechanisms. Thereby, reading involves a mental simulation of the actions outlined in sentences and words (Pulvermüller et al., 2005 ; Moody & Gennari, 2010). This study investigates the effect of semantic features of concrete nouns related to motion. Specifically, we measured RTs in a lexical decision task for non-motion test words (e.g., necklace) that were preceded by a cohort of context-words dealing with fast- (e.g., rocket), slow- (e.g., snail), or non-motion concepts as control (e.g., umbrella). Data from 108 participants were processed via mixed models. We hypothesized that the recognition of non-motion test-words would be affected by the type of context: slower RTs when preceded by a cohort of slow context words and faster RTs when preceded by a cohort of fast context words. Moreover, we predicted that the effect of speed context would increase with the size of the prime cohort (two sets: 18 vs. 36 context words). Preliminary results provide partial support for our hypotheses: RTs were inhibited by the slow cohort, however the fast cohort did not influence RTs. Implications on mental simulations in language processing will be discussed.

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6:00-7:30 PM (1050)

Location- and Word-Based Simon Effects and Asymmetries as a Function of Hand-Stimulus Proximity. QI ZHONG, *Purdue Univerisity*, ROBERT W. PROCTOR, *Purdue University* — The Simon effect has been reported to be larger when the hands are placed near the stimuli shown on a display screen than when they are placed farther away. Also, for right-handers, the Simon effect is larger when calculated for the right stimulus location than for the left stimulus location. Separate studies have not shown significant influences of either manipulation using the word-based Simon task. We report two experiments in which right-handers performed location- and word-based Simon tasks with the hands being near and far from the stimuli. Hand-stimulus proximity only had a significant effect on performance with word stimuli, but the Simon effect asymmetry was robust across tasks. The results are consistent with the Simon effect asymmetry being due to the faster right hand providing the congruent responses for the right stimuli but the incongruent responses for the left stimuli.

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6:00-7:30 PM (1051)

Embodied Motor Simulation in Literal and Figurative Language Processing: Insights from tDCS. FELIX PAMBUCCIAN, *Minnesota State University, Mankato* — When we read literal descriptions of motor actions (e.g., grasp the pen), areas of the motor (and premotor) cortex show activity similar to performing to action ourselves. This pattern of activity suggests that mental simulation of a motor action facilitates comprehension of the scenario described in the text, consistent with embodied accounts of cognition (e.g., Barsalou, 1999). However, it is unclear whether motor simulation plays a similar role when action words are used figuratively, as in the phrase grasp the idea. The present study aims to fill this gap by comparing the role of neural motor areas in processing action words in literal and figurative contexts. Anodal transcranial direct current stimulation (tDCS) was used to increase activity in the left primary motor cortex while participants (N = 46) read and responded to short sentences. tDCS stimulation of the motor cortex facilitated processing of both literal and figurative uses of action words, with stronger facilitation for less familiar figurative uses. This pattern may indicate that embodied processing pathways play an important role in understanding novel figurative uses, but are replaced by faster nonembodied pathways as the figurative usage becomes familiar.

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6:00-7:30 PM (1052)

Explaining Pseudodiagnosticity: Core Biases and Heuristic Assumptions. RICHARD ANDERSON, *Bowling Green State University* — When asked to seek out percentage data that would be diagnostic concerning two mutually exclusive hypotheses, people tend to seek non-diagnostic rather than diagnostic data. For example, if your task is to determine whether you are or are not infected with a particular pathogen, and if you know you have Symptom X and Symptom Y, four relevant percentages would be (A) Of those who are infected, the % who have Symptom X; (B) Of those who are infection-free, the % who have Symptom X; (C) Of those who are infected, the % who have Symptom Y; and (D) Of those who are infection-free, the % who have Symptom Y. Suppose you are given the percentage for Cell A (e.g., 70%). Which ONE of the remaining three percentages would you want to know? Previous work indicates that people typically prefer to know C, which would be pseudodiagnostic (it provides no diagnostic information), rather than B which would be diagnostic. The current work demonstrates that (i) pseudodiagnosticity does not depend on the particular percentage value of A, (ii) there are individual differences in pseudodiagnostic and diagnostic preference profiles, and (iii) as part of their judgment strategy, people presume the values of some but not all of the unknown percentages.

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6:00-7:30 PM (1053)

The Effects of Context Type and Pre-exposed Context on Perceived Truth. YOONHEE JANG, *University of Montana* — Judgments on whether a statement is true are influenced by various factors, including context and statement repetition. Specifically, a statement is often judged as true if it has been presented with a related photo even if the photo provides no evidence that the statement is true, and if the statement has been presented before the judgment is made. The present study investigated whether perceived truth is influenced by photos which were presented as context for statements and pre-experimentally exposed. We used related/unrelated photos for statements in one condition, which was compared to the condition of no photos. Half of the photos were pre-exposed for each condition. Participants judged statements as more truthful when they were presented with related photos (vs. with no photos). However, the truthiness effect disappeared when the photo was pre-exposed. In addition, although unrelated photos presented during the judgment trial did not affect perceived truth, there was a slight tendency that the truthiness effect appeared when the photo was pre-exposed. These findings suggest that familiarity through pre-exposure of a photo makes things more believable even if the statement is indeed false.

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6:00-7:30 PM (1054)

Examining the Impacts of Dog Whistle Terminology on Jurors' Judgments, Decisionsn and Memories. JEREMY MILLER, *Willamette University*, MARIAH MOORE, *Willamette University* — Dog whistle (DW) terminology is a well established political phenomena but has been studied less within broader social contexts. In a study consisting of jury-eligible, politically right-leaning Americans, we examined how the inclusion of dog whistle terms in a non-politically affiliated environment impacted jurors' cognitions regarding a court case. Participants were asked to read through a trial in which the race of the victim was manipulated as White or Black, as well as receiving either neutral language or DW language. Analysis showed that in the absence of DW, Black victims (v. White) resulted in initially higher guilt ratings. Unexpectedly, with the inclusion of DW, defendant guilt ratings with the White victim rose to equal the level of the Black victim. Initial analysis of open-ended descriptions

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of the evidence presented in the case revealed significant changes in memory for events when exposed to DW.

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6:00-7:30 PM (1055)

A Robust Spillover Bias in Judgments of Variability. SAMANTHA P. NAVARRO, *California State University, Fresno*, PAUL PRICE, *California State University, Fresno* — We have already found that judgments of the size variability of sets of circles are affected by the color variability of the circles (Mijalli et al., 2023), such that the circles are judged to have greater size variability when they also vary in color. In the present study, we tested the robustness of this spillover bias. Participants (N = 120) saw several sets of 12 lines, where the lines in each set varied in terms of both orientation and color. The level of variability in each dimension (low, medium, or high) was manipulated according to a 3x3 within-subjects factorial design. Furthermore, participants were randomly assigned to judge either the orientation variability or the color variability of each set of lines. A 3x3x2 mixed ANOVA showed a significant linear effect of the level of variability in the non-judged dimension, $F(1,131) = 10.73$, $p < .001$, partial eta-squared = .076. Furthermore, judgments of color variability were biased by orientation variability to about the same degree as judgments of orientation variability were biased by color variability. These results provide further evidence that the spillover bias in judgments of variability is an extremely robust effect.

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6:00-7:30 PM (1056)

Differences in Reasoning Between Autistic and Non-Autistic Individuals. AITAN NETZ, *Muhlenberg College*, ALEXANDRA K. FRAZER, *Muhlenberg College* — This study investigated the differences in reasoning skills between non-autistic and autistic individuals by measuring the extent to which these groups commit two specific cognitive biases; the representativeness heuristic and the availability bias. The representativeness heuristic is a common reasoning error made where people ignore base rates in determining event likelihood, instead relying on category prototypes; the availability bias is another bias in reasoning where people rely on information that comes more easily to mind in making decisions. We hypothesized the autistic group (N = 176) would commit these biases less than their non-autistic counterparts (N = 191). Results indicated that autistic participants used the representativeness heuristic significantly less than the non-autistic participants, though there were no differences in the use of the availability heuristic. These findings are consistent with recent suggestions regarding Dual Process Theory of Autism—specifically, that autistic individuals use more deliberative processing than non-autistic individuals (Brosnan & Ashwin, 2022).

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6:00-7:30 PM (1057)

Does Positive and Negative Information Have the Same Effect on Similarity Judgments? The Empirical Verification of Tversky's Contrast Model. MAGDALENA JABLONSKA, *SWPS University*, ROBERT MACKIEWICZ, *SWPS University*, ANDRZEJ FALKOWSKI, *SWPS University* — Similarity between sets can be expressed as a function of common and distinctive features. According to Tversky's contrast model of similarity (1977), the more common features two sets have, the more similar they are. However, the model does not account for feature valence. Thus, we empirically test the predictions of the model for valenced and non-valenced stimuli (geometrical figures, emoticons, schematic faces and short character descriptions), comparing objective measures with the subjective perceptions of similarity. In three experiments, we found systematic deviations from the model. First, less frequent features have more effect on similarity regardless of their valence. This is in line with the figure-ground hypothesis. Second, similarity for non-similar sets (i.e. with few common features) is inflated, whereas for similar ones is deflated compared to the model, as predicted by prospect theory. Three, the deviations are greater for positive than negative objects, showing that a positive option is rarely very attractive, whereas it is easy to be deemed as bad.

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6:00-7:30 PM (1058)

The Trustworthiness of AI-Generated Summaries of Scientific Papers. YOSHIMASA MAJIMA, *Hokusei Gakuen University* — The present study examines whether the general public trusts the content of AI-generated summaries of scholarly papers.In two studies (N = 460), participants rated summaries generated for specific research articles (Study 1) or overall assessments of summaries generated by AI or experts. The results indicated that, in all cases, participants rated AI-generated summaries as relatively untrustworthy and inaccurate compared to expert-generated summaries. Future work is needed to examine the relationship between general trust in AI and evaluations of the outputs from generative AI.

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6:00-7:30 PM (1059)

Responding to Evidence: The Roles of Intellectual Humility, Self-Esteem, and Personality. EDEN DEL VALLE, *George Fox University*, MACKENNA LEEDY, *George Fox University*, ANYA IMMEL, *George Fox University*, PRATEEK SAMSON, *George Fox University* — The ability to objectively work with information from multiple perspectives is known as intellectual humility. Consequently, intellectual humility plays an important role in disagreements and being willing to hear an opposing view (Porter & Schumann, 2017). In this study, we explored the relationship between intellectual humility, self-esteem, and personality traits. Participants (n = 230) were obtained through Mechanical Turk. Measures included the Comprehensive Intellectual Humility Scale, Rosenberg Self-Esteem Scale, and open-mindedness and agreeableness items from the International Personality Item Pool. Intellectual humility scores were subdivided into four factor scores. Openness to experience was correlated with all aspects of intellectual humility. Agreeableness, however, was only correlated with Independence of Intellect and Ego. Self-esteem was correlated with Openness to Revising and Lack of Intellectual Overconfidence. The results suggest that intellectual humility is more than being willing to agree with a different

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perspective and may be mediated by self-esteem.

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6:00–7:30 PM (1060)

Modeling Quantitative Judgments of Complex Stimuli with Unknown Cue Structure. DAVID IZYDORCZYK, *University of Mannheim*, ARNDT BRÖDER, *University of Mannheim* — Research investigating the processes of multiple-cue judgments usually relies on simple artificial stimuli with predefined cue structures, since the cognitive models used in this area of research require that the cue structure is known. Unfortunately, this hinders the application of these models to situations involving complex stimuli with unknown cue structures. Building upon early categorization research, in two studies we demonstrate how the cue structures of complex and realistic stimuli can be extracted from pairwise similarity ratings with a multidimensional scaling analysis (MDS) and then subsequently be used to model participants' quantitative judgments. After an initial validation study, we use MDS to generate cues for complex stimuli with an unknown cue structure based on pairwise similarity ratings of N = 110 participants. These cues are then used in a hierarchical Bayesian model to analyze judgments of these complex stimuli from N = 80 participants. Our results replicate previous findings that demonstrate the influence of learning tasks and feedback on strategy selection in judgment tasks. This highlights the feasibility of our approach and extends the generalizability of previous findings to more complex stimuli.

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6:00–7:30 PM (1061)

Can People Accurately Draw Statistical Conclusions from Dot Plots?. SARA JARAMILLO, *University of Pittsburgh*, BENJAMIN ROTTMAN, *University of Pittsburgh* — What sorts of graphical formats best convey effect size and degree of certainty of a finding? Error bars are commonly used to show confidence intervals, yet lay people and experts fail to correctly interpret their meaning. There has been a recent push to present individual data points rather than only presenting aggregated summary statistics (e.g., means, confidence intervals, lines of best fit). But it is unclear how well people can aggregate raw data presented in a graphical format. In our study, we presented participants with hypothetical study outcomes of two independent groups in three graph styles: dot plots, mean with 95% confidence interval (CI) plots, and combined plots. We asked participants to make judgments about the effect size using the common language effect size or Bayes factors. Participants were more likely to underestimate effect sizes and Bayes factors for dot plots compared to mean with 95% CI plots and combined plots. Participants' judgments of large effect sizes from dot plots were less accurate for larger than smaller sample. These findings suggest that people have trouble making statistical inferences when presented with raw data points in graphs.

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6:00–7:30 PM (1062)

The Effect of Numeracy and Math Anxiety on Whole Number Bias. JASMINE BONSEL-RILEY, *California State University, San Bernardino*, HIDEYA KOSHINO, *California State University, San Bernardino* — Whole number bias (WNB) occurs when natural number knowledge is applied to rational numbers, leading to errors in mathematical tasks. We investigated WNB using the dual processing theories (DPT) framework, which distinguishes between fast and intuitive Type I processing and slow and analytical Type II processing. The default interventionist (DI) model suggests that Type I processing is initially activated, with Type II processing engaged when conflict arises. In contrast, the hybrid model proposes that Type I processing includes heuristic and logical intuitions. Participants with varying numeracy skills and math anxiety completed a fraction magnitude comparison task. Numeracy had a stronger impact on task performance than anxiety. The low numeracy group exhibited WNB, aligning with the DI model, as they applied natural number knowledge to problem-solving. Conversely, the high numeracy group displayed reverse WNB, suggesting they possessed both natural number and rational number intuitions, aligning with the hybrid model.

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6:00–7:30 PM (1063)

Numerical Values of Digits Modulate Size Perception. AVIV AVITAN, *Ben-Gurion University of The Negev*, DROR MAROM, *Ben-Gurion University of the Negev*, AVISHAI HENIK, *Ben-Gurion University of the Negev* — The link between various codes of magnitude and their interactions has been studied extensively for many years. Among other objectives, this enterprise sought to characterize how individuals integrate information from several channels of magnitude. In the current study, we examined how the physical and numerical magnitudes of digits are mapped into a combined mental representation. In two psychophysical experiments, participants reported the physically larger digit among two digits. In the identical condition, participants compared digits of an identical value (e.g., "2" and "2"); in the different condition, participants compared digits of distinct numerical values (i.e., "2" and "5"). As anticipated, PSEs (points of subjective equality) were smaller for 5-2 comparisons than for 2-2. Moreover, PSEs were larger for 2-5 comparisons than for 5-5. Our results are in line with the shared-representation account of physical and numerical magnitudes.

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6:00–7:30 PM (1064)

Comparing Apples and Oranges: Unraveling the Dissimilarity of Simultaneous Comparison and Comparison to a Standard Tasks using Verbal and Visuospatial Working Memory Load. FRAULEIN RETANAL, *University of Ottawa*, DIYA KIAMENI, *University of Ottawa*, VERONIC DELAGE, *University of Ottawa*, EVAN F. RISKO, *University of Waterloo*, ERIN MALONEY, *University of Ottawa* — The symbolic numerical distance effect (NDE) is an important tool for probing the nature of symbolic numerical representation. In two experiments, we explore the impact of increased verbal and visuospatial WM loads on

symbolic numerical comparison. In Experiment 1, participants compared simultaneously presented digits under a verbal (Exp. 1A) or a visuospatial (Exp. 1B) WM load. In Experiment 2, participants compared numbers to a standard under a verbal (Exp. 2A) or a visuospatial (Exp. 2B) WM load. The effect of WM load differentially impacts the two numerical comparison tasks, evidenced by the modulation of the size of the NDE. Specifically, when comparing simultaneously presented numbers, the size of the NDE decreases as a function of an increased verbal or visuospatial WM load. When comparing numbers to a standard, the size of the NDE is not affected by either an increased verbal or visuospatial WM load. The implications of these data for our understanding of symbolic numerical comparison tasks and numerical cognition more generally will be discussed.

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6:00–7:30 PM (1065)

Arrays Production Reveals Knowledge of Their Shapes Distribution. YOEL SHILAT, *Ben-Gurion University of the Negev*, MOTI SALTI, *Ben-Gurion University of the Negev*, AVISHAI HENIK, *Ben-Gurion University of the Negev*, NAAMA KATZIN — The shape of the convex hull, the smallest convex polygon containing all objects in an array, and quantity are naturally correlated. Lately, we demonstrated how observers rely on the shape of the convex hull to make numerical decisions. Here, we employed a task in which participants actively generated numerical arrays to study the convex hull representation during numerical production. The shapes produced by participants fit the natural distribution previously defined by Buchta (2009). Notably, participants' shape distributions exhibited distinct characteristics, with the tendency to create shapes with more vertices. Furthermore, participants demonstrated the ability to manipulate the dispersion and peak of their shape distribution. These findings emphasize our capacity for an adaptable representation of the produced shapes according to task requirements. Our results provide novel insights into the role of knowledge about physical properties such as shape in numerical decisions.

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6:00–7:30 PM (1066)

A Diffusion Model Decomposition of the Unit-Decade Compatibility Effect in Two-Digit Number Comparison. BELLA E. ZAPATA, *Tarleton State University*, THOMAS J. FAULKENBERRY, *Tarleton State University* — There are multiple competing theories to explain how people form mental representations of two-digit numbers. Nuerk et al. (2001) proposed that decade and unit digits are processed separately. Primary evidence came from the unit-decade compatibility effect (UDCE)—that is, comparisons are faster when both unit and decade digits obey the same order relation (e.g., 23 vs. 55, where both $2 < 5$ and $3 < 5$) compared to when the order of digit relations is opposite (e.g., 27 vs. 55, where $2 < 5$ but $7 > 5$). In this study, we used mathematical modeling to decompose the UDCE. We analyzed data from 53 adults who completed multiple trials of a two-digit number comparison task. The distributions of RTs were fit to a diffusion model via the EZ-diffusion method (Wagenmakers et al., 2007), giving estimates of drift rate and nondecision time for each design cell. The observed UDCE was driven primarily by the drift rate, which was smaller for incompatible trials than for compatible trials. Critically, the nondecision time did not differ between conditions. This implies that the UDCE is due entirely to decision processes (e.g., stimulus information uptake) but not auxiliary nondecision processes (e.g., encoding, motor preparation, etc.).

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6:00–7:30 PM (1067)

Investigation of Possible Developmental Loss of Synesthesia. MICHIKO ASANO, *The University of Tokyo*, HARUKO SAKURAI, *Rikkyo University* — Synesthesia is believed to develop in childhood and is not lost once it is established. However, there are anecdotal reports of loss of synesthesia during adolescence. This study investigated this issue through an online survey in which we asked adult participants whether they currently have number personification synesthesia, and, if not, whether they believe they once had it and lost it during their development. Results showed that 15.3% of participants ($N = 623$) reported that they had lost synesthesia ("lost"), while 15.1% reported that they currently had it ("synesthete"), and the remainder reported that they never had it ("non-synesthete"). Test–retest consistency in associating numbers with person descriptions, which is a hallmark of synesthesia, for the "lost" group was comparable to that of the synesthetes and was significantly higher than that of the non-synesthetes. The results suggest the possibility of a developmental loss of synesthesia.

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6:00–7:30 PM (1068)

The Role of Visual Working Memory Capacity in Facial Recognition. EMILY BURGESS, *Oregon State University*, SHELBY PARRACK, *Oregon State University*, PHILIP ALLEN, *University of Akron*, MEI-CHING LIEN, *Oregon State University* — Distinguishing between faces is a visually demanding task. Here, we examined whether the ability to recognize faces correlates with individual visual working memory (VWM) capacity—a cognitive resource that maintains visual information. Participants first completed a color change detection task, a well-established task for assessing individual VWM capacity. They then performed the Cambridge Face Memory Test-long form (CFMT+) and the University of South Wales (UNSW) face test. With a sample of 120 college students, we found no significant relationship between individual VWM capacity and overall performance on both face memory tests. Yet, a significant positive relationship between the UNSW match-to-sample sorting subtask and individual VWM capacity was shown. These findings offer additional evidence for differential mechanisms recruited for face memory versus face matching tasks. We concluded that some facial recognition tasks recruit general cognitive processes involving VWM capacity, while others recruit face-specific processing mechanisms that are not modulated by individual VWM capacity.

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6:00–7:30 PM (1069)

Divergent Thinking, Intelligence, and Measurement Error. DAVID MARTINEZ, *University of Maryland, College Park* — A perennial topic of interest is whether creativity and intelligence are related and to what extent. The results of lab-based studies suggest that creative thinking—often assessed using divergent thinking tasks—is weakly to moderately correlated with intelligence (i.e., g, gf, or gc). Unfortunately, prior studies tend to have small, range-restricted samples and divergent thinking tasks are typically subjectively scored by a handful of raters and thus unreliable. In this study, I aimed to investigate the correlation between divergent thinking and intelligence in a larger, more diverse sample, and by using a large-language model to score divergent thinking performance (see Organisciak et al., 2022). Like prior research, preliminary results suggest a weak to moderate correlation between divergent thinking (assessed by two alternate uses tasks) and gf and gc. Further exploration of the data suggests that correlations are attenuated by measurement error in the alternate uses tasks. The true relationship between creative thinking and intelligence continues to be obscured by measurement error.

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6:00–7:30 PM (1070)

Unintended Consequences of Human Error Research. JON HOLBROOK, *National Aeronautics and Space Administration*, CYNTHIA NULL, *National Aeronautics and Space Administration* — The literature on human performance is rich with findings of cognitive failures and methods to identify, label, and measure them. In many real-world contexts, however, outcomes are driven far more by successful than failed cognition. Designers of systems intended for human use, in an effort to be "data driven," rely upon findings from the cognitive performance literature to inform their system designs. When most available data are about human error, data-driven designs focus on the human primarily as a source of failure. Designs intended to support or replace humans often fail to acknowledge or understand the capabilities that humans routinely contribute to successful performance. Consequently, designs intended to "protect" the system from "error-prone" humans can design-out the capability for the human to effectively intervene or adapt. The development of paradigms to study successful human performance represents a significant and largely untapped opportunity for research in cognition.

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6:00–7:30 PM (1071)

'We-Mode' in Remote : The Effect of Remote Situations in the Counting Tasks with the Other Agent.. AYAKO H. SANEYOSHI, *Teikyo University*, KAZUMI HANDA, *Teikyo University*, SORA TAKEUCHI, *Teikyo University*, KENTA MUROTANI, *Teikyo University*, DAIKI SHIKANO, *Teikyo University* — "We-mode" is a cognitive mode in which interacting agents share their cognition and representation. We investigated whether the we-mode also occurs in remote situations. In the task, black-and-white objects were presented on the display. Pairs of participants were asked to count the objects with the instructed color. Although they performed the task alone, in the pair condition they could interact with each other via a web meeting application, in which they each counted different colored objects. If we-mode was evoked, counting performance should be worse when the number of objects was different. In the results, performance for the different number condition was actually improved in the pair condition. This result suggests that the remote situation did not induce the we-mode, but rather facilitated their performance.

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6:00–7:30 PM (1072)

One Night of Sleep Deprivation Slows Down Multiple Measures of Reaction Time and Increases miRNA-96 Expression. AURELIEN TARTAR, *Nova Southeastern University*, XAVIER TATIN, *Nova Southeastern University*, KAYLA THOMPSON, *Nova Southeastern University*, JAIME L. TARTAR, *Nova Southeastern University* — Previous work in our lab showed that one night of sleep deprivation increases reaction time on the Psychomotor Vigilance Task, Motor Praxis Task, Visual Object Learning Task, Abstract Matching, Balloon Analog Risk Task, and the Line Orientation Task. Given that changes in miRNA expression occur after sleep loss and can influence cognitive function, we sought to determine which cognition-associated miRNAs would be differentially expressed the morning after sleep deprivation compared to a control morning. Using pooled RNA samples isolated from plasma, we first underwent broad miRNA profiling to identify miRNAs of interest. We found that miR-96 expression was increased after sleep deprivation, and this result was validated by qPCR-based expression analyses. Because over-expression of miRNA-96 has previously been associated with cognitive impairment, our findings reveal possible acute, molecular targets for improving cognitive reserve amidst sleep deprivation.

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6:00–7:30 PM (1073)

Unraveling the Role of Athletic Expertise and Attentional Focus in a Domain and Non-Domain Divergent Thinking Task. MAREIKE B. WIETH, *Albion College*, OLIVIA DAMERON, *Albion College*, ANDREA P. FRANCIS, *Albion College* — While expertise tends to be domain-specific (de Groot, 1965), expert athletes have shown greater divergent thinking even in non-sport specific tasks (Richard et al., 2017). The current study explored the role of attentional focus in the relationship between expertise and domain and non-domain divergent thinking. Lacrosse and non-lacrosse college athletes were asked to generate creative uses for a domain-specific sports item (lacrosse stick) and a non-sports item (eraser). Athletes also reported their lacrosse experience and completed the Attentional Control Scale (Derryberry & Reed, 2002). Consistent with previous research, greater lacrosse experience was associated with greater overall divergent thinking. For the lacrosse stick, lacrosse experience was associated with greater divergent thinking regardless of attentional focus level. However, for the eraser, greater lacrosse experience was only associated with greater divergent thinking when participants also manifested high attentional focus. When expertise was associated with low attentional focus, no advantage was seen.

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These findings indicate that attentional focus of expert athletes plays a different role in domain and non-domain related creativity tasks.

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6:00-7:30 PM (1074)

Openness Predicts Vividness of Visual Imagery. IRA MIGUELLE BANGAWAN, *St. John's University*, DANA CHESNEY, *St. John's University* — This study examines whether there is an association between openness and vivid visual imagery. The personality trait of "openness to experience" may increase a person's exposure to various visual images and stimuli. In turn, this exposure may increase visual imagery. Thus, we predicted that the vivid visual imagery scores for high-openness individuals would be higher than the vivid visual imagery scores for low-openness individuals. To test this, undergraduate participants (n = 48) were recruited to complete an online survey including the Big Five Inventory Openness Subscale and the Vividness of Visual Imagery Questionnaire. In line with our hypothesis, vivid visual imagery was positively correlated ($r(46) = .57$, $p < .001$) with openness. However, there was concern that this correlation may have been due to the openness scale including questions regarding visual imagery. Thus, a second correlation was run which confirmed that the correlation between the openness scale and the visual imagery scale remained significant ($r(46) = .49$, $p < .001$) even when such imagery-based items were dropped from the openness scale scores. These results indicate that vivid visual imagery is associated with the personality trait of openness.

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6:00-7:30 PM (1075)

Effects of Categorical Tonality Perception on Cross-Modal Correspondences between Musical Chords and Colors. SAYAKA HARASHIMA, *The University of Tokyo*, MICHIKO ASANO, *The University of Tokyo*, KAZUHIKO YOKOSAWA, *Tsukuba Gakuin University* — This study investigated whether cross-modal correspondences between musical tones and colors are mediated by concepts rather than tones' physical properties. Consequently, we presented participants, in random order, with computer-morphed musical triad stimuli that varied in physically equal 16 steps from 100% major to 100% minor chord. Then they were asked to (1) select a color from a palette for each triad, (2) identify the tonality of each triad (major/minor), and (3) discriminate the triads; (2) and (3) were conducted to classify participants into those who categorically perceive musical tonality and those who do not. The results demonstrated that the category perception group associated more similar colors with triads from the same category (major-major, minor-minor) than with triads that were physically equally distant but from different categories (major-minor). However, the non-category perception group did not show this trend. The results suggest that the sound-color correspondence is mediated by concepts.

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6:00-7:30 PM (1076)

Implications of the Audiovisual Time-Flow Illusion on Speech-in-Noise Comprehension. MARIEL G. GONZALES, *University of California, Merced*, SUPRATIK NANDI, *University of California, Merced*, BHAVNA GUNDAMARAJU, *University of California, Merced*, ANTOINE J. SHAHIN, *University of California, Merced*, KRISTINA C. BACKER, *University of California, Merced*, MICHAEL J. SPIVEY, *University of California, Merced*, HEATHER BORTFELD, *University of California, Merced* — We previously introduced the Audiovisual Time-Flow Illusion (ATFI), whereby normally paced visual speech combined with skipping or pausing audio are seen as "skipping" or "pausing." The ATFI signifies the auditory modality's role as a time-keeper of the visual modality, whereby visual speech perception "skips" and "pauses" to keep pace with the auditory speech stream. Mouth movements typically precede sound production in natural speech, suggesting that the visual modality has a predictive quality in speech perception. Thus, the ATFI is a demonstration of the visual modality realigning its pace to that of the auditory modality in order to assume its leading (predictive) position. In our current study, we hypothesize that individuals who perceive the ATFI more frequently have stronger visual-to-auditory connectivity, substantiated by their increased visual ability to predict an unfolding auditory stream, making them better at comprehending audiovisual speech-in-noise (SiN). Participants were presented with ATFI stimuli in one condition, and congruent SiN stimuli in another condition. The results are interpreted in terms of their theoretical consequences for competing accounts of the ATFI and its relation to SiN.

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6:00-7:30 PM (1077)

Illusory Truth Occurs with Headlines from Reliable Sources But Not from Unreliable Sources. ALEX LEON, *California State University, San Marcos*, JENNIFER LOZANO, *California State University, San Marcos*, DUSTIN P. CALVILLO, *California State University, San Marcos* — The illusory truth effect occurs when repeated information is believed more than new information. The present study investigated the effect of source reliability on illusory truth. Two preregistered experiments were conducted to examine this effect. Source reliability was manipulated between-subjects in Experiment 1 (N = 160) and within-subjects in Experiment 2 (N = 179). Participants were asked to rate their interest in headlines that they were informed came from reliable or unreliable sources. Participants then rated the truthfulness of the previously seen headlines and new headlines that they had not rated for interest. In both experiments, it was hypothesized that the illusory truth effect would occur with repeated headlines that purportedly came from reliable sources, but not with headlines that purportedly came from unreliable sources. Results supported these hypotheses, demonstrating a boundary condition of the illusory truth effect. These findings suggest that people must trust the source of the information for repetition to increase belief.

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THURSDAY

6:00–7:30 PM (1078)

Temporal Error Monitoring and Benefits of Feedback During Interval Timing. JIAXUAN TENG, *The University of Arizona*, EVE ISHAM, *The University of Arizona* — Monitoring of temporal errors is crucial to survival. However, it is unclear the extent to which temporal error monitoring benefits from feedback. Moreover, feedback schedule, as well as type of errors, may also impact error correction. In the current study, we examined the effects of feedback and feedback schedule on temporal error metrics (i.e., precision, magnitude, and directionality) during a time production task. Participants were randomly assigned to three feedback conditions: no feedback, immediate feedback, and delayed feedback. In each condition, they were asked to produce a 3.6 second interval in two blocks. We observed an improvement in precision and in accuracy of magnitude from Block 1 to Block 2 across all three feedback conditions, suggesting that precision and magnitude errors can be corrected without explicit feedback. However, directionality error did not differ between the two blocks, suggesting that this type of error may be more resistant to correction. In addition, accuracy performance of both the immediate and delayed feedback groups was greater than the no feedback group but did not differ between each other, suggesting a general benefit of feedback but not of delivery schedule.

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6:00–7:30 PM (1079)

A Novel Technique for Remote Data Collection for Sleep Deprivation Research. ELLE M. WERNETTE, *Michigan State University*, ERIK M. ALTMANN, *Michigan State University*, KIMBERLY FENN, *Michigan State University* — Sleep deprivation dramatically impairs cognition. However, our understanding of this impairment is narrow because this research is costly and labor-intensive, resulting in under-powered studies lacking appropriate control conditions. We developed an entirely remote, online procedure to investigate the effect of one night of sleep deprivation on cognition, using attention, and placekeeping as our criterion measures. Participants joined a Zoom meeting; completed attention and placekeeping tasks; and were randomly assigned to either remain in the meeting overnight (deprivation) or leave the meeting, sleep, and rejoin in the morning (rested). All participants completed the tasks again in the morning. We compared our online data with previously published in-person data, and found that attrition was higher in the online study, but that performance did not differ based on modality. Thus, remote sleep deprivation research is a viable alternative to in-person research, making rigorous experimental research more attainable to a broad spectrum of researchers.

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6:00–7:30 PM (1080)

Examining the Effect of Partial Occlusion on Facial Attractiveness by a De-Mosaicking Task. JUN KAWAHARA, *Hokkaido University*, SHUMA TSURUMI, *Hokkaido University* — Existing studies on the effect of occlusion on facial attractiveness yield mixed results. This study aims to examine the impact of partial occlusion on facial attractiveness using a newly developed face de-mosaicking (uncovering) task that does not require explicit rating. If occlusion enhances facial attractiveness, occluded faces should be perceived as rewarding and more likely to be chosen compared to unoccluded faces in a two-alternative choice task. Conversely, if occlusion reduces facial attractiveness, they should be less likely to be chosen. Participants were presented with two mosaicked faces of the same identity, one wearing a sanitary mask and the other not. Results consistently showed that participants preferred the unoccluded faces over the occluded faces, irrespective of the sex of the faces. These findings indicate that occlusion by sanitary masks decreases facial attractiveness. We suggest differences between cognitive ratings and instinctive motivation-based choices regarding attractive faces.

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6:00–7:30 PM (1081)

Circulating Ghrelin Concentrations Predict Impulsive Choice But Not Impulsive Action. FRANZISKA PLESSOW, *Massachusetts General Hospital & Harvard Medical School*, MARIE-LOUIS WRONSKI, *Massachusetts General Hospital & Harvard Medical School*, NAILA SHIRALIYEVA, *Massachusetts General Hospital & Harvard Medical School*, KAMRYN T. EDDY, *Massachusetts General Hospital & Harvard Medical School*, ELIZABETH A. LAWSON, *Massachusetts General Hospital & Harvard Medical School*, MADHUSMITA MISRA, *Massachusetts General Hospital & Harvard Medical School* — Receptors of the appetite-regulating hormone ghrelin are present in the mesolimbic reward circuitry, and preclinical research has shown that ghrelin administration increases impulsive choice and action in rodents. However, whether a similar link between ghrelin concentrations and impulsivity exists in humans remains to be determined. In 40 healthy individuals, we analyzed endogenous ghrelin dynamics (based on total ghrelin concentrations obtained from repeated blood draws) following an overnight fast and consumption of a calorie-standardized meal together with their post-meal performance on delay discounting and go/no-go tasks as assessments of impulsive choice and action, respectively. We hypothesized that higher cumulative concentrations of circulating ghrelin would be associated with more impulsive choice and action. Our findings show that higher ghrelin levels were associated with a higher delay discounting rate, while no association was found between ghrelin concentrations and go/no-go commission errors (including evidence for a zero-correlation by Bayesian correlation approach). The results point towards a role of ghrelin in the regulation of human behavior beyond energy homeostasis that warrants further causal investigation.

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6:00–7:30 PM (1082)

Reward Segmentation During Feedback Improves Gambling Task Performance. DARRELL A. WORTHY, *Texas A&M University*, JEEWON YOON, *Texas A&M University* (Sponsored by Darrell Worthy) — Past research on reward-based decision-making suggests that people often attend more to the frequency of positive outcomes (gain versus loss) than to reward magnitude (amount gained or lost). This bias toward the frequency of gains versus losses, has led to sub-optimal performance in gambling tasks. We tested

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an experimental manipulation designed to enhance attention to the magnitude of choice outcomes, where outcomes were presented in segments of 100 points, rather than all at once. Participants in the segmented condition performed better than participants in the original condition in both a standard gambling task, involving both gains and losses, and a gains-only task where no losses were given. A third experiment indicated that the increased instrumental responses, or button presses, for reward outcomes was a critical factor that led to better performance in Experiment 1 and 2. We propose that the segmentation manipulation enhanced participants' engagement in the task, and led to stronger memory for rare outcomes, which improved performance.

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6:00–7:30 PM (1083)

Cognitive Effort-Based Decision-Making and Individual Differences in Task Preferences. ALYSSA RANDEZ, *Purdue University*, SEBASTIEN HELIE, *Purdue University*, MICHEL REGENWETTER, *University of Illinois Urbana-Champaign*, DANIEL CAVAGNARO, *California State University, Fullerton* — Numerous factors can influence individual differences in cognitive effort-based decision-making. Some people make demand-related decisions (i.e., how challenging an action is) based on factors such as how well they can perform an option (capability judgments) or task components that could tap into different cognitive skills such as working memory or motor interception. Experiment 1 considers these factors by offering three task options and comparing participants' decisions. Models were then compared to determine whether decisions were related to differences in 1) demand levels, 2) individual capability, or 3) task components seemingly unrelated to demand/capability judgments. Experiment 2 compares group and individual differences by directly comparing demand-related and reward-related decisions. The results of these experiments suggest that some decisions were highly influenced by factors seemingly unrelated to demands or monetary incentives. This study furthers how it is essential to consider individual differences and general trends to understand why people choose to perform their actions.

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6:00–7:30 PM (1084)

Information Gain and Positive Reward Prediction Error Predict 'Aha' Experience During Perceptual Belief Updating. YANG CHANG, *National Central University Institute of Cognitive Neuroscience*, DENISE WU, *National Central University* (Sponsored by Yang Chang) — Previous research has indicated that the "aha" experience arises from information gain through receiving sensory evidence and may serve as a metacognitive cue to signal and monitor learning. However, this relationship has only been demonstrated with neutral stimuli, but remains unexplored with stimuli of different degrees of liking. In an online experiment, we employed degraded images (known as Mooney) to induce people's perceptual uncertainty regarding the image content. We asked 37 participants to report their liking of the Mooney images before and after seeing the original image, upon seeing which they also reported their "aha" feelings. It was found that information gain (defined as resolving uncertainty measured by participants' recognition rate) and only the positive but not negative reward prediction error (RPE, defined as the difference of liking between the original and the Mooney image before receiving sensory evidence) correlated positively with the subjective feelings of "aha." These findings are consistent with the notion that through pursuing the rewarding "aha" experience, which is partly induced by stimuli of positive RPE, learning that maximizes information gain is encouraged.

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6:00–7:30 PM (1085)

Moth to Flame: Reward, But Not Self Affects Human Motor Movement in a Value Modulated Attentional Capture Task (VMAC). TESSA CLARKSON, *University of Queensland*, ADA KRITIKOS, *University of Queensland*, SHEILA CUNNINGHAM, *Abertay University*, CATHERINE HASLAM, *University of Queensland* — Value-modulated attentional capture (VMAC) tasks can measure the degree of influence a stimulus has on attention. In these tasks, attentional resources are redirected to the non-target that is made salient and represents a high reward, resulting in slowed response times to targets. This study measures attentional capture and the impact on motor movements to targets in the presence of salient non-targets using mouse trajectories. In Experiment 1, we replicated the established VMAC effect. Additionally, using mouse tracking, we showed that trajectories are longer under high compared with low reward conditions. In Experiment 2, we explored the effect of an ownership manipulation, in which participants have equal opportunity to earn rewards for themselves or a fictitious "other." Participants showed no VMAC effect, and response times for earning a reward for themselves versus another person were comparable. This research sheds new light on the relationship between reward, visual search performance, and motor behaviour, as well as the effect of self-referenced cognitions on visual search.

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6:00–7:30 PM (1086)

Evaluating Threat Cues for the Enhancement of Safety in Virtual Navigation. ASHLEY M. BUZARD, *University of Utah*, JORDAN A. DAVIDSON, *University of Utah*, EMILY TIGHE, *University of Utah*, YU ZHAO, *Vanderbilt University*, BOBBY BODENHEIMER, *Vanderbilt University*, SARAH H. CREEM-REGEHR, *University of Utah*, JEANINE K. STEFANUCCI, *University of Utah* — Augmented reality (AR) enhances navigation by providing guidance for optimal routes, hazards, or areas to avoid. We developed a virtual city where participants were tasked with avoiding a pre-defined threat while navigating to a beacon. To aid in navigation, we implemented two simulated AR cues in the virtual city that indicated threat areas: (1) a world-locked cue that color coded the ground area (GA) to delineate the boundaries of the threat or (2) a screen-locked cue that provided dynamic text to indicate numeric distance to the threat (DT). Participants were instructed to complete each trial by freely navigating to a beacon in an efficient but safe manner. They navigated to six target beacons twice (in random order), once with each cue type in place. The GA cue resulted in the lowest time

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spent in danger areas (safer navigation), while the DT cue resulted in more efficient navigation. We argue that the GA cue was worth this safety versus efficiency trade-off since the loss of efficiency was minimal.

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6:00–7:30 PM (1087)

Path Integration, Rather than Being Suppressed, Used to Update Spatial Views in Familiar Environments with Constantly Available Landmarks. YUE CHEN, *University of Alberta*, WEIMIN MOU, *University of Alberta* — This project examined navigation in familiar environments with self-motion cues and landmarks. Participants learned the location of a specific object and pointed to it after completing an outbound path. Experiments 1 and 1b had landmarks throughout the first 9 trials. On some later trials, the landmarks were presented during the outbound path but unexpectedly removed during homing (catch trials). Baseline trials had no landmarks throughout. Experiments 2-3 added a distractor object during homing on catch and baseline trials. Experiment 4 had two groups of landmarks during homing on catch and baseline trials. Results showed larger homing angular errors in catch trials compared to matched baseline trials in Experiments 1 and 1b. However, the proportion of participants correctly recognizing the original object or landmarks was similar in catch and baseline trials in Experiments 2-4. These results indicated that self-motion cues might be used to update spatial views of the familiar environment during locomotion. Although an unexpected removal of landmarks creates mismatches between updated and real views, impairing homing performance, the updated spatial views can remove the ambiguous targets or landmarks in the familiar environment.

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6:00–7:30 PM (1088)

Labeled Graphs in Navigation Behavior and Route Choice. LUKE CHI, *University of California, Irvine*, MICHAEL J. STARRETT AMBROSE, *University of California, Irvine*, YIWEN RAO, *University of California, Irvine*, ELIZABETH R. CHRASTIL, *University of California, Irvine* — Recent studies challenge the notion of cognitive maps as accurate mental representations of space. Instead, labeled graphs, consisting of landmarks and paths with relative distances, seem to provide a more common spatial representation. Unlike a cognitive map, a labeled graph emphasizes qualitative structural properties over quantitative metrics. To test the influence of labeled-graph properties on navigation, participants learned various virtual environments and then navigated to a goal using a two-alternative forced-choice task. Pathways were metrically identical but differed in the total number of turns, length of the first corridor, or angle of the first turn. Each environment constituted one trial (14 environments and 14 mirrored versions; 28 total trials). We hypothesized that participants would favor pathways with relatively fewer turns despite metrically identical pathway lengths, indicating that labeled graphs are utilized in spatial representations and navigational decisions. Initial findings suggest a preference for routes with fewer turns, although we also observed individual consistent preferences indicating other biases. These findings suggest that non-metric properties influence route choice.

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6:00–7:30 PM (1089)

Contagion Fear: Influence of Mask-Wearing on Distance Perception. ALEX DETRICH, *University of Utah*, DANIELE NARDI, *Ball State University* — The action-specific theory of perception postulates that humans perceive the world in terms of possibilities of action which is influenced by various internal factors, such as purpose, anxiety, and fear (i.e., Vasey et al., 2012). Applying the action-specific theory, this project addressed the influence of contagion fear after the COVID-19 pandemic on distance estimation. Prior research suggests stress, anxiety, and fear can reduce psychological resources used in distance estimation and lead to the feared stimulus being perceived as more threatening. Furthermore, human-to-human distance estimation can be affected by mask-wearing in virtual environments (Singer & Nardi, 2021; Fatouta & Trope, 2021). I expanded the current knowledge on the influence of contagion-related fear and distance perception with an in-person study. Participants estimated their distance to a masked or unmasked human target, in an indoor or outdoor environment. No main effect occurred for mask-wearing and location conditions nor did an interaction between the factors occur on distance estimates. However, when examining reported fear of the target, significant main effects of mask-wearing and location conditions as well as an interaction between the factors.

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6:00–7:30 PM (1090)

Everyday Spatial Experience, Video Games, and Their Influence on Spatial Abilities. MITCHELL E. MUNNS, *University of California, Santa Barbara*, MIKAH Q. NELSON, *University of California, Santa Barbara*, CHUANXIUYUE (CAROL) HE, *University of California, Santa Barbara*, ELIZABETH R. CHRASTIL, *University of California, Irvine*, MARY HEGARTY, *University of California, Santa Barbara* — Spatial abilities can be developed by training and everyday experience, but we know little about how different types of experience are related to specific spatial competencies. Does using maps while hiking improve skill in navigation? Does playing video games improve the same (i.e., navigation) or different (e.g., mental rotation) abilities? Here, we related responses to the Southern California Spatial Activities Questionnaire (SoCalSAQ; Munns et al., 2022) and a video game questionnaire to three objective spatial measures: a walking immersive virtual reality (VR) navigation task, a desktop VR navigation task, and a mental rotation task. Outdoor navigation-related activities were selectively correlated with navigation in walking immersive VR, video game experience was correlated with desktop VR navigation, and participating in technical hobbies (e.g., computer programming) was correlated with mental rotation, but not navigation. These results support the dissociation between large- and small- scale spatial abilities and suggest that they are fostered by different everyday activities.

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6:00–7:30 PM (1091)

The Roles of Proximal and Distal Landmarks in Estimating Human Orientations. YAFEI QI, *University of Alberta*, WEIMIN MOU, *University of Alberta* — This study investigated whether the dominance of distal over proximal cues for orientation is due to the relative cue precision, prior beliefs, or both, and when proximal cues become dominant. Participants learned the locations of objects with both proximal and distal landmarks in immersive virtual environments, and then walked a path. After participants spun at the end of the path to disrupt their orientations, they pointed to the objects when a clockwise-shifted proximal landmark, a counter-clockwise-shifted distal landmark, or both reappeared. Experiment 1 manipulated the relative cue precision and found that the observed weight on the distal cue for participants' heading estimates in the conflict condition changed with but was higher than the weight predicted by the relative cue precision. This indicates that both cue precision and prior beliefs of cue dominance affect the cue usage for orientation. In Experiment 2, participants walked to a target's location, which was explicitly informed. Results showed that the observed weight on the distal cue was lower than the weight predicted by the relative cue precision. This suggests a preference for proximal cues when people are aware of their locations relative to the proximal cue.

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6:00–7:30 PM (1092)

Testing Navigation Differences in Children and Adults using an Online Dual Solution Paradigm. EMILY TIGHE, *University of Utah*, ROBERT BODENHIMER, *Vanderbilt University*, JEANINE K. STEFANUCCI, *University of Utah*, SARAH H. CREEM-REGEHR, *University of Utah* — Navigation is a complex process with strategy and performance varying greatly between individuals, particularly different genders. Examining navigation across development may better allow us to understand the point at which gender differences emerge. We developed an online 3D Dual Solutions Paradigm (DSP; Marchette et al., 2011) to test individuals' navigation strategies. Using a web-based task, our study was more accessible and able to test a geographically diverse group of participants. We tested pre-pubescent children (8-12) and adults (18-40). A solution index (SI) was used to score individuals based on how often they used a shortcut rather than a learned route. Preliminary results suggest pre-pubescent children tend to use learned routes more than adults. For adults, gaming experience improved navigation success and efficiency and appears to account for potential gender differences. In addition to the SI, we are currently investigating more complex methods of classifying routes to assess other potential navigation differences.

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6:00–7:30 PM (1093)

Sex Differences in Human Navigation in Desktop, Immersive, and Real Environments. MANTONG(MABLE) ZHOU, *University of California, Santa Barbara*, CHUANXIUYUE (CAROL) HE, *University of California, Santa Barbara*, ALEXANDER P. BOONE, *Pacific Science & Engineering Group*, ELIZABETH R. CHRASTIL, *University of California, Irvine*, MARY HEGARTY, *University of California, Santa Barbara* — Human navigation abilities are typically studied in desktop virtual environments (VE), with a mouse and keyboard interface, and significant sex differences have often been found (Nazareth et al., 2019). In a typical desktop VE navigation task, participants first learn a specific route through an environment and then are asked to find their way to different landmarks in the environment. Significant sex differences indicate that men, on average, navigate more efficiently and take more shortcuts (Boone et al., 2018, 2019). In recent studies of the same paradigm conducted in ambulatory immersive VE (N = 48, 24 females; N= 122, 76 females), and a real environment (N= 62, 32 females), no significant sex differences were found in wayfinding efficiency. These results highlight the importance of incorporating body-based cues and controlling for the cognitive load of using an interface to a VE when studying individual differences in navigation abilities.

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6:00–7:30 PM (1094)

Temporal Divisions: Segmenting Space through Time. ASHISH K. SAHOO, *University of Florida*, STEVEN M. WEISBERG, *University of Florida* — Spatial memory allows people to build and use representations of the world to effectively navigate environments. Theories of spatial memory using a unified cognitive map have been complemented by hierarchical models in which the environment is divided into global and local navigational systems that allow precise navigation on a local scale but broader contexts instantiated by less precise connections. Segmentation divides a continuous stream of input information into manageable chunks and is found in multiple memory systems. Previous research on spatial navigation has emphasized spatial segmentation – dividing the environment into contiguous areas. Yet, event segmentation, dividing time into contiguous blocks, is a key driver of episodic memory. In general, spatial and temporal distance are highly correlated, making it difficult to determine whether temporal segmentation influences spatial memory segmentation. Here, using a large set of dependent measures to investigate multiple memory systems, we investigate spatial and temporal contiguity separately and test their effects on spatial navigation ability. This study is pre-registered and data collection based on prior power analysis is underway.

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6:00–7:30 PM (1095)

Examining Memory for Objects and Object-Location Associations Using an Open-Field Minecraft Environment. PETER LIU, *University of California, Riverside*, KINNARI ATIT, *University of California, Riverside*, NICOLE COLCHETE, *University of California, Riverside*, KATHERINE SIMON, *University of California, Irvine*, KATHERINE STAVROPOULOS, *University of California, Riverside*, MEGAN SILVA, *University of California, Riverside*, TIANYI WEN, *University of California, Riverside*, ALEXIS FENGER, *University of California, Riverside* (Sponsored by Kinnari Atit) — Successful development of a cognitive map requires learning landmarks and exploring an environment. This study examines memory for objects and object-location

associations within an open-field Minecraft environment in 45 participants. First, participants watched a video of an avatar following a route to 12 objects. In a 24-item object recognition task, participants were then asked to identify the 12 objects and the sequence in which they were presented. Subsequently, participants were then placed at a random location in the Minecraft environment and asked to navigate to the locations of the 12 original objects. Accuracy of object-location associations was calculated using mean Euclidean distances between the actual and replaced object locations; smaller differences equaling higher accuracy. Analyses reveal a significant negative correlation between object replacement accuracy and participants' accuracy in recalling objects in the correct sequence ($r = -0.545$, $p < .001$), suggesting that better memory for object-location association is related to better memory for the objects themselves. These findings provide insight into the factors contributing to hippocampal-based memory formation.

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6:00-7:30 PM (1096)

Can Diamond Plots Mitigate Causal Inferences from Correlational Data?. AMY R. FOX, *Massachusetts Institute of Technology* — Empirical evidence in graph comprehension indicates that humans often draw causal conclusions from common data visualizations like bar charts and scatterplots, even when labels indicate such inferences are unwarranted due to the research design. In 2018, a widely-circulated paper shared on arXiv proposed that a new graphical formalism: Diamond Plots (scatterplots rotated 45 degrees CCW) may ameliorate this problem by challenging a convention ostensibly implied by the Cartesian coordinate system that variables depicted on the x-axis cause changes in variables depicted on the y-axis. In a series of experiments, we test this hypothesis by comparing how scatterplots and diamond plots support appropriate correlational vs. causal inferences and estimation of correlation magnitude and direction. We find that although this new visualization technique may yield a small improvement in causal inference, it also yields a detrimental effect on confidence and accuracy of correlation judgements. Our results suggest that improving reasoning with data visualizations requires more than innovation in graphical formalisms but also an understanding of what individual and situational factors cause unwarranted inferences in the first place.

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6:00-7:30 PM (1097)

An Examination of How Hedging Might Impact Perceived Truthfulness for Scientific Information. D LEE KNAPP, *Kent State University*, JOCELYN R. FOLK, *Kent State University*, JENNIFER M. ROCHE, *Kent State University* (Sponsored by Jocelyn Folk) — Hedging is important in scientific communication as it expresses the evolving nature of science as more evidence is accumulated. This can build trust with readers, which impacts the interpretation and understanding of scientific facts and misconceptions. The current study evaluated how bolded and italicized hedging words impacted ratings of truth judgments of sentences containing scientific facts and misconceptions. University participants read sentences containing no hedge words or hedged words that were bolded, italicized, or normal typeface. The sentences were either scientific facts (intuitive and non-intuitive) or misconceptions (myths or falsehoods). Results indicated that the type of hedging impacted both the accuracy and the magnitude of truth judgments. Hedging helped readers judge intuitive myths more accurately; however, hedging caused falsehoods to seem more true. These findings imply that the orthographic stylings of hedged words might impact a reader's ability to judge the truth of statements, especially when they are false.

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6:00-7:30 PM (1098)

The Influence of Trust in Science on Credibility Judgments of Scientists. VICTORIA JOHNSON, *University of Minnesota*, RINA HARSCH, *University of Minnesota*, PANAYIOTA KENDEOU, *University of Minnesota* (Sponsored by Panayiota Kendeou) — As people more readily believe information from high-credibility sources, perceptions of scientists can have significant impacts on belief in the research findings they convey. However, less is known about the determinants of credibility for scientists within the emotionally and morally charged socio-scientific domains of climate change and health science. In this study, we examined how expertise, trustworthiness, and individuals' general trust in science and scientists influenced perceived source credibility of health and climate scientists. Overall, perceived credibility of scientists was determined by complex interactions with participants' overall trust in science. Participants with low trust in science judged scientists with low benevolence to be less credible than those with high benevolence. However, benevolence had less influence on judgments by participants with high trust in science. These findings suggest that ad hominem arguments against scientists may have detrimental effects on the efficacy of their science communication amidst growing public distrust in science.

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6:00-7:30 PM (1099)

What Did You Ask? Recognition Memory for Questions Is Worse than Memory for Answers. MELISSA J. EVANS, *Vanderbilt University*, SARAH BROWN-SCHMIDT, *Vanderbilt University* — Questions are a core communicative mechanism in every documented language. Questions can elicit information; according to semantic theories, the meaning of a question is the set of its possible answers. We hypothesize, then, that answers to questions will be prioritized in memory, compared to the question itself. We test this hypothesis empirically with a communication game. Participant pairs asked and answered questions about images they viewed on their respective screens. Most screens matched; occasionally partners had a mismatching image, which they sought to locate. Questions and answers referenced these objects (e.g., Q: "What's by the duck?"; A: "A pig"). A subsequent old-new recognition memory procedure probed memory for both question material (duck) and answers (pig). In addition to a generation benefit for self-referenced vs. partner-referenced objects ($\beta=1.57, p<.001$), answers were better recognized than question material ($\beta=.82, p<.001$). These findings are consistent

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with a meaning-based account of question memory, whereby the focus of attention and memory is on the meaning of a given exchange—in the case of questions, prioritizing the answer.

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6:00-7:30 PM (1100)

Exploring the Reader's Mind: Thought Modalities and the Experience of Narrative Transportation. PUREN ONCEL, *University of Minnesota*, ANDREW LAGOS, *University of New Hampshire*, LAURA K. ALLEN, *University of Minnesota* — This study examined how the characteristics of readers' thoughts (e.g., visualizing, hearing their own voice, hearing character or narrator voices) related to their transportation into a narrative. Participants (n = 238) read a narrative silently while being periodically asked to rate their thoughts along multiple dimensions. Results revealed large fluctuations in readers' experiences of visual imagery and character's voices, whereas the experience of participants' own and narrator's voices became more stable. Additionally, thought ratings predicted 43% of their transportation reports; visual imagery and character's voices were positively and significantly predictive of transportation. These findings highlight the importance of examining phenomenological experiences in understanding how readers are transported into narratives. Future studies will investigate the impact of different genres and mediums on thought modalities and transportation experiences.

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6:00-7:30 PM (1101)

Interacting with Diverse Audiences Improves Communication Skills. VANESSA OVIEDO, *University of California, Santa Cruz*, JEAN E. FOX TREE, *University of California, Santa Cruz* — Successful communication is essential for cooperation and collaboration. Interacting with different types of people improves communicators' abilities to convey information clearly to new addressees. Does the type of audience diversity affect communication skills? We tested two types of audience diversity: (1) differences in education levels of addressees and (2) differences in ages, abilities, and language skills. Participants were randomly assigned to describe tangram shapes to a set of addressees who either varied according to education level or according to ages, abilities, and language skills. All participants then completed a memory test for the tangram shapes they described. Those who described the shapes to more diverse addressees (those who varied according to ages, abilities, and language skills) performed better on the memory test. By encouraging greater perspective taking, interacting with more-varied addressees improved communication skills.

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6:00-7:30 PM (1102)

Measuring the Closeness-Communication Bias in the Game Codenames. MIJA VAN DER WEGE, *Carleton College*, HENRY EDMONDS, *Carleton College*, SAMIRA GADO, *Carleton College*, ORI KIM, *Carleton College*, AMANDA R. LILIENFELD, *Carleton College*, SOPHIE RAST, *Carleton College*, SONIA SHAH, *Carleton College*, ALEXEI THOMAS, *Carleton College*, MAYA WOLFF, *Carleton College* — People tend to overestimate how well they are understood in conversation (Keysar & Henley, 2002). This overconfidence is more pronounced between partners and friends than between strangers (Savitsky et al, 2012), between members of the same minimal group, and between people who have shared a brief text-based conversation (Van Der Wege, et al, 2021). These studies were conducted using an intonation task in which speakers attempted to convey a specific meaning using varied intonation. We extended these findings using a more naturalistic and familiar task—a variation of the popular board game Codenames. In this task, participants created clues intended to elicit specific words in a grid and then rate their confidence that a friend and a stranger will guess the correct words. They then make guesses based on the clues provided by a friend and a stranger and rate their confidence in their guesses.

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6:00-7:30 PM (1103)

Adaptive Control Influences Lexical Ambiguity Processing During Language Comprehension. MEGAN A. BOUDEWYN, *University of California, Santa Cruz*, YAQI XU, *University of California, Santa Cruz*, NATHAN CAINES, *University of California, Santa Cruz* — Adaptive control enables us to adjust our behavior after making an error or encountering a processing difficulty. We hypothesized that engaging "domain-general" cognitive control in response to lexical ambiguity leads to facilitated processing of lexical ambiguity in subsequent sentences. EEG was recorded while participants (N = 22) completed a sentence reading task and a Stroop task. Target sentences contained lexically ambiguous words, and followed a sentence with no lexical ambiguity (UA), or a sentence with a lexically ambiguous word (AA). N400 amplitude to the lexically ambiguous word in the UA minus AA condition was used as the language adaptive control measure; the difference in error rate between double mismatch and match-mismatch trials on the Stroop was used as a standard measure of adaptive control. The two adaptive control measures were significantly correlated ($p < 0.05$), with larger adaptive control effects on the Stroop associated with greater N400 facilitation for the AA condition relative to UA. These results are consistent with recent work on domain-general cognitive control in language comprehension, and provide evidence for adaptive control effects engaged by purely linguistic conflict (lexical ambiguity).

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6:00-7:30 PM (1104)

Speech Connectedness of Chinese-English Bilinguals in Consecutive Interpreting. JANAINA WEISSHEIMER, *Federal University of Rio Grande do Norte*, YUE LANG, *Ocean University of China*, INGRID FINGER, *Federal University of Rio Grande do Sul*, JUDITH F. KROLL, *University of California, Irvine* (Sponsored by Yue Lang) — Speech graph analysis has been shown to be efficient in mapping the relationship between spoken language and thought organization in distinct contexts, including monolingual and bilingual populations. Consecutive interpreting, as an exceptional

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language skill acquired by some bilinguals, requires transferring the information between languages within a specific time frame. Despite lower time pressure than simultaneous interpreting, it still imposes significant demands due to on-site translation within limited time constraints. This study used speech graph attributes to examine the correlation between interpreting ability (pronunciation, grammar, accuracy, lexical adequacy and fluency) and speech connectedness. Consecutive interpreting data of 917 Chinese-English bilinguals from the PACCEL corpus were analyzed. Results showed that interpreting scores were positively correlated with long-range recurrences but negatively correlated with short-range recurrences. The pattern of data suggests that interpreting ability reflects the skill to produce more connected and less repetitive speech. We conclude that attributes in speech graph analysis appear to be effective indicators of the interpreting ability of bilingual students.

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6:00-7:30 PM (1105)

The Struggle for Life among Words: How Cognitive Selection Shape Language Evolution. YING LI, *Chinese Academy of Sciences*, FRITZ BREITHAUPT, *Indiana University*, CYNTHIA S. Q SIEW, *National University of Singapore*, THOMAS HILLS, *University of Warwick*, YANYAN CHEN, *Chinese Academy of Sciences*, ZIYONG LIN, *Max Planck Institute for Human Development*, RALPH HERTWIG, *Max Planck Institute for Human Development Center for Adaptive Rationality* — Like biological species, words compete for survival in each language. This research investigates the cognitive mechanisms underlying the rise and fall of English words using two complementary research paradigms: serial reproduction experiment where a story is passed on along a diffusion chain and a quantitative analysis of historical corpora that span the past 2 centuries. We found that the competition among word forms is closely associated with how humans use language: words that are acquired earlier in life, more concrete, and higher arousing are more likely to survive and proliferate. Our results suggest that the micro-level language production behaviors may have scaled up to macro-level patterns in language evolution through generations of language speakers.

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6:00-7:30 PM (1106)

Say the Unsayable: What Are We (Un)Willing to Talk about and with Whom by American and Turkish Speakers?. DUN-YA HU, *Texas A&M University*, SUMEYRA TOSUN, *Medgar Evers College, CUNY*, JYOTSNA VAID, *Texas A&M University*, SOWMIYA SELVARAJU, *Texas A&M University*, NATSUKA KOBAYASHI, *Texas A&M University* (Sponsored by Sumeyra Tosun) — Conversation serves as a fundamental element of social interaction, allowing individuals to share their experiences, express opinions, and establish connections of intimacy or distance. Our study aimed to investigate the willingness of American and Turkish participants to discuss specific topics (politics, sex, race, finance, and religion) and how this willingness may be influenced by gender and addressee (friend vs. stranger) and settings (in-person vs. social media) of the conversation. Participants (34 Turkish and 18 American) were asked to rank five topics based on their willingness to discuss them in conversations with friends or strangers in person or on social media. The results revealed that topic, addressee, settings, and culture clearly affected willingness to conversation. Participants were willing to talk with friends in person the most. Finance was the most preferred topic. Further, culture had an interaction effect on the topic and addressee. Turkish speakers demonstrated differences in their willingness to talk to their friends and strangers on all topics. However, Americans only showed such differences in sex and race. The gender of the speakers did not reveal any effect on taboo topics.

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6:00-7:30 PM (1107)

The Impact of Immigrant and Language Speaking Status on Compliance during COVID-19. REBECCA ALVARADO, *Texas A&M International University*, DANIEL CARRILLO — Based on previous literature exploring the challenges faced by marginalized populations during COVID-19, we expected to find that compliance with COVID-19 guidelines is affected by immigrant and language-speaking statuses. In a secondary analysis of data derived from the COVIDiSTRESS Consortium, N = 10,508 participant scores from a Compliance scale ($\alpha = 0.741$) were included in this study. Scale scores from 42 countries were aligned to ensure consistency across languages. We found that compliance was influenced by minority language and immigration status. Interaction effects revealed that most compliant individuals were non-immigrants who are minority language speakers and least compliant were the immigrants who are majority language speakers in the sample tested. Trust in local news sources and access to reliable information could be potential explanations for these surprising results. Overall, this study contributes to gaps in the literature on compliance during COVID-19.

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6:00-7:30 PM (1108)

Phonological Networks of MS Patients and Age-Matched Healthy Adults. ALLISON LINK, *The Pennsylvania State University*, ABIGAIL COSGROVE, *The Pennsylvania State University*, AMY LEBKUECHER, *Moss Rehabilitation Research Institute & University of Pennsylvania*, MICHELE DIAZ, *The Pennsylvania State University* — Multiple sclerosis (MS) is an autoimmune disorder that results in motor and cognitive deficits. Individuals with MS often report difficulties with word retrieval, which are typically attributed to impairments in speed and cognitive deficits in working memory and executive function. Models of semantic memory suggest that word retrieval failures may result when the activation of a semantic representation fails to activate corresponding phonological representations. Research in our lab (under review) that has examined the semantic networks of aged-matched individuals with and without MS suggests that the semantic networks of those with MS are less flexible and simulated activation spread more slowly compared to healthy individuals. In the present study, we will use phonemic fluency data produced by the aforementioned sample to construct group-level phonological networks from participants with and without MS. Future analyses will examine whether these phonological networks

exhibit the kinds of differences that were observed between semantic networks.

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6:00–7:30 PM (1109)

Understanding the Unspoken: Comprehension and Communication of Uncertainty in Gestures. MERVE TANSAN, *Temple University*, NORA S. NEWCOMBE, *Temple University*, THOMAS SHIPLEY, *Temple University* — During communication, listeners can perceive the certainty of a speaker through the combination of auditory, visual, and contextual cues. We observed that geologists utilize gestures to communicate spatial information and adjust their gestures to indicate level of certainty. While the study of uncertainty in language and facial expressions has been explored, the role of hand gestures in conveying uncertainty remains less understood. This research aims to explore if uncertainty is communicated by gestures and how certainty in gestures impacts speech processing. In one study, participants viewed videos of a speaker presenting spatial information accompanied by either uncertain or certain gestures, we analyzed recall and perception of the speaker's certainty. In a second study, participants were to communicate certain and uncertain information to a listener, to study gesture production during uncertainty. We will discuss the role of gestures in conveying uncertainty in non-expert communication.

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6:00–7:30 PM (1110)

Statistical Learning as Learning Trajectories Through Similarity Space. JASON D. ZEVIN, *University of Southern California*, WENDY QI, *Stanford Medical School*, ZAYA SHIILEGDAMBA, *University of Southern California*, NATHAN NGUYEN, *University of Southern California* — Learning from sequential statistics is a general capacity common to many model systems. One form of statistical learning (SL)—learning to segment "words" from continuous streams of speech syllables in which the only segmentation cue is ostensibly the transitional (or conditional) probability from one syllable to the next—has been studied in great detail. Typically, this phenomenon is modeled as the calculation of probabilities over discrete, featureless units. Here we present an alternative model, in which sequences are learned as trajectories through a similarity space. A simple recurrent network that encodes syllables using representations that capture the similarity relations among them correctly simulates the result of a classic SL study. We then used the simulations to identify a set of "words" that produces the reverse of the typical SL (i.e., part-words are predicted to be more familiar than words). Results from two experiments are consistent with simulation results. We present some additional investigations into the properties of languages that drive these predictions.

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6:00–7:30 PM (1111)

Open Access Network Science: 17 Adjacency Lists for Phonological Similarity Networks Based on the SUBTLEX-US Lexicon. JOHN ALDERETE, *Simon Fraser University*, SARBJOT MANN, *Simon Fraser University* — Network science tools are becoming increasingly important to psycholinguistics, but there exist few open access data sets for exploring network properties of even well-studied languages like English. We constructed several phonological similarity networks (neighbors differ in exactly one consonant/vowel phoneme) using words from a lexicon based on the SUBTLEX-US English corpus, distinguishing networks by size and lemma vs. wordform representations. The resulting networks are shown to exhibit many familiar characteristics, including small world properties and robustness to node removal, regardless of network size and representation type. We also validated the SUBTLEX phonological networks by showing that they exhibit contrasts in degree and clustering coefficient comparable to the same contrasts found in eight prior studies. The data release includes 17 adjacency lists that can be further explored using the NetworkX package in Python and several scripts that allow users to analyze and extend these results.

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6:00–7:30 PM (1112)

Context Variability Promotes Generalization of Newly Learned Pronunciations in Reading Aloud. IRYS-AMELIE CHAMPAGNE, *University of Toronto Scarborough*, MARK PITT, *The Ohio State University*, BLAIR ARMSTRONG, *University of Toronto Scarborough*, NICOLAS DUMAY, *University of Exeter* — Simulation results by Miller et al. (2020) using a neural network model of English spelling-to-sound correspondences indicate that a graded "warping" mechanism enables encoding of rules and exceptions, with the degree of warping being a function of how exceptional the spelling is Thus, significant warping is required to encode exceptions whereas none is required for regulars. Simulation results demonstrated that the number of words with similar pronunciations determines the degree of warping and how likely a pronunciation is to generalize. In a multi-day experiment, we taught participants one, two, or three made-up words that share the same regular, ambiguous, or exceptional rhyme body, but differed in their onset consonant (e.g., bint, kint, fint), which we defined as context variability. Total frequency of exposure to the rhyme body was held constant. All rhyme bodies were learned to a high degree during training (Days 1 and 2), but generalization (on Day 3) varied as predicted by the warping mechanism. Consistent with Miller et al. (2020), increasing context variability led to greater generalization, especially for more exceptional pronunciations. Our findings indicate that context variability drives generalization.

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6:00–7:30 PM (1113)

Non-Sentential Replies to Requests for Information. CATHERINE BROUSSE, *Florida State University*, KATHERINE CHIA, *Florida State University*, MICHAEL KASCHAK, *Florida State University* (Sponsored by Michael Kaschak) — We present two studies examining the production of non-sentential replies to requests for information (e.g., A: How old are you? B: Twenty-two). Across two experiments, we explored whether question difficulty, response latency, the production of disfluencies (e.g., uh or um) at

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the beginning of the response, and the speaker's conversational goals (to be polite or formal) affected the odds of producing a non-sentential response. The data suggest that polite or formal speech leads to lower odds of producing a non-sentential reply. The presence of a disfluency at the beginning of the response has differing effects on the rate of non-sentential responding depending on the speaker's high-level goals. When speakers are being formal, disfluencies are associated with a higher odds of non-sentential replies; when speakers are polite or informal, disfluencies are associated with a lower odds of non-sentential replies.

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6:00–7:30 PM (1114)

Autistic Personality Traits and the Processing of Ironic Criticism in a Nonclinical Sample. MATTHEW LOWDER, *University of Richmond*, JACLYN OPIE, *Children's Hospital of the King's Daughters* — Adults with autism spectrum disorder (ASD) tend to experience problems with the comprehension of nonliteral expressions and other pragmatic features of language. Barzy et al. (2020) recorded eye movements while typically developing (TD) adults and adults with ASD read short discourses in which a character criticized another character using literal or ironic language. Whereas results from TD adults suggested that they comprehended ironic criticism according to a two-stage process, no such effects were found among the ASD adults. The current experiment examined the processing of ironic criticism among a nonclinical sample who varied on a continuum of autistic personality traits. Participants read items similar to those used by Barzy et al. and were given the Autism-Spectrum Quotient (AQ), a self-report measure. Eye-tracking results suggested that participants scoring lower on the AQ showed reading patterns consistent with a two-stage processing model, whereas these effects were reduced among participants scoring higher on the AQ. The results suggest that individual differences in the processing of irony and perhaps other forms of nonliteral language can be explained in part by examining normal variation in certain personality traits.

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6:00–7:30 PM (1115)

The Communicative Function of Gestures During Emotional Storytelling. KATHERINE K. WHITE, *Rhodes College*, ANNIKA JOHNSON, *Rhodes College*, SAREEN MIRZA, *Rhodes College*, BENJAMIN BARFIELD, *Rhodes College*, BRIANNA WILLIAMS, *Rhodes College*, MEGAN WEILMUENSTER, *Rhodes College*, BELLA KIEKLAK, *Rhodes College*, LISE ABRAMS, *Pomona College* — This experiment investigated the role of gesturing in communication by examining the relationship between gestures and word retrieval. Participants told stories about emotional pictures that varied in valence and arousal. Stories were coded for gesture duration, disfluencies (filled and unfilled pauses), editing terms and hedges (fillers), and lexical diversity. Emotional properties differentially influenced gesture and word retrieval. More gestures were produced for stories about pictures that were positive compared to negative, and high compared to low arousal. Disfluencies were more frequent in stories about negative pictures, particularly when they were high arousal, whereas fillers were most common in stories about high arousal, positive pictures. Independent of picture emotion, gestures were negatively correlated with unfilled pauses and lexical diversity, but positively correlated with fillers. Further, individuals who gestured more frequently produced more fillers than those who gestured less frequently. These findings show emotional influences on gesturing, and they suggest that gestures serve a communicative function, accompanying more fluent speech with less complexity and more words to prevent misunderstanding.

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6:00–7:30 PM (1116)

Fine-Grained Differences in Sarcasm Perception and Categorization. DAVID HEATH, *University of Memphis*, STEPHANIE HUETTE, *University of Memphis* — Sarcasm use is well-studied. However, its perceptual counterpart is somewhat neglected. This study established a novel literal-to-sarcastic continuum utilizing pause duration to create stimuli that were used to explore individual differences in sarcasm perception and categorization. The first study demonstrated the efficacy of using pause duration as a marker of sarcasm. In a second experiment, participants heard sentences such as "Mary was very (pause) graceful" and were asked to choose which of two images best represented the sentence. One image aligned with a more literal reading, and the other with a more sarcastic reading. Categorization behavior ranged predominantly literal, to slightly favoring either literal or sarcastic, to predominantly sarcastic. These strategies do not appear to be significantly predicted by prior exposure to sarcasm. This may indicate that individual differences are driven more by perceptual strategies than from internal sources such as memory.

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6:00–7:30 PM (1117)

Dr. AI Can Be Convicted of Malpractice, But Only if the Jury Is Inexperienced with Language AI. DAWSON PETERSEN, *University of South Carolina*, AMIT ALMOR, *University of South Carolina*, VALERIE SHALIN, *Wright State University* — This study investigates how people assign moral responsibility to AI agents. Participants read a vignette about an AI language model that gave dangerous health advice. In the intentional condition, the AI was described as an intentional agent ("Dr. A.I. tried to ...") while in the design condition, it was described as a designed system ("Dr. A.I. was designed to …"). Participants were then asked how much responsibility each party had for patients being hospitalized and how much experience they had with language AI. Participants ($n = 106$) assigned the most responsibility to the company that made the AI ($M = 70$, $SD = 23$), followed by the AI ($M = 49$, $SD = 35$), and the least to the patients ($M = 43$, $SD = 26$). We analyzed the data using cumulative link regression models (Agresti, 2012). For AI responsibility, we found an interaction between condition and AI experience ($z = 2.59$, $p = .009$) such that participants with less AI experience assigned more responsibility to the AI in the intentional condition. For company responsibility, we found an interaction between condition and AI experience ($z = 2.63$, $p = 0.009$) such that participants with high AI

experience assigned less responsibility to the company in the intentional condition.

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6:00–7:30 PM (1118)

The Influence of Distributional Properties of Morphemes on Lexical Decision Latencies. MIRRAH MAZIYAH MOHAMED, *University of Western Ontario*, DEBRA JARED, *University of Western Ontario* — Although research on morphological processing has been extensively studied in English and European languages, there is a growing interest in extending the research to other languages. Here we examined Malay, an Austronesian language that is morphologically rich (e.g., "berperikemanusiaan"/"humane"; root manusia/human, prefixes ber-, peri-, ke-, and suffix -an). We investigated the effects of morphological constituents on lexical decisions for prefixed words. Variables investigated included length, family size, and family frequency for both prefixes and roots, as well as number of orthographic variants, consistency, and productivity for prefixes. Decision latencies were collected for 1,280 Malay words of various morphological structures. Data from the 640 prefixed words were analyzed in a series of GAMM models. Root family size and several prefix variables significantly impacted decision latencies when frequency and length were controlled. Furthermore, we found a larger main effect of each prefix variable for words with three-letter prefixes than for those with two-letter prefixes. We hope that these findings will contribute to a list of phenomena that Malay readers are sensitive to.

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6:00–7:30 PM (1119)

Meaning Activation Among Lexical Experts: Evidence from an Ambiguous Word Priming Task. ASHLEY N. ABRAHAM, *Grinnell College* — Individual differences in reading skill are associated with qualitative differences in word meaning recognition (Ashby et al., 2005). These differences are often attributed to efficient orthographic processing among lexical experts, the most skilled readers, compared to nonexperts (Burt & Jared, 2016). The current study explores the effects of lexical expertise on meaning recognition during a priming task. Participants were briefly exposed (50 ms) to neutral primes or biased ambiguous word primes. After a delay (250 ms), participants made lexical decisions about target words that were either related to the prime word's frequent meaning or its less frequent meaning. Experts took longer to respond to target words when they were related to either meaning of an ambiguous prime than when targets were unrelated to either meaning of an ambiguous prime and when targets were unrelated to a neutral prime. Consistent with predictions from the lexical quality hypothesis (Perfetti & Hart, 2001), this suggests that lexical experts quickly activate multiple meanings of ambiguous words presented in isolation. This finding has implications for understanding individual differences in word recognition.

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6:00–7:30 PM (1120)

Understanding the Conditions for Detecting a Phonology to Articulation Cascade in Speech Production. SARAH IRONS, *Hendrix College*, SIMON FISCHER-BAUM, *Rice University* — Evidence for a cascade from phonological planning to articulatory implementation is observed in tongue twister errors (e.g., Goldrick & Blumstein, 2006) as well as naturalistic speech errors (e.g., Alderete et al., 2021) but not in correctly produced single word reading (Irons & Fischer-Baum, 2020). Further, the evidence in support of the cascade is drawn from word onsets using voice onset time (VOT), while studies that fail to find evidence for a cascade examine vowels in the middle of words using formant measurements. Because of the differences in paradigm, measures, and whether the speech considered was produced in error, it is difficult to draw conclusions about cascading activation. The present work uses two experiments that consider both onset and vowels, as well as errors and correct productions to improve our understanding how methodology might be responsible for conflicting evidence for cascading activation. In experiment one, we examined vowel tongue twister errors to determine if the cascade observed in word onsets is also present in the middle of the word. In experiment two, we use picture word interference (PWI) to determine if cascading activation can be detected phonetically in correctly produced speech.

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6:00–7:30 PM (1121)

Age, Hearing, and Rapid Perceptual Learning of Fast Speech. KAREN BANAI, *University of Haifa*, LIMOR LAVIE, *University of Haifa* — Perceptual learning of speech helps listeners to quickly adapt to situations in which speech recognition is challenging. There are conflicting reports in the literature on the effects of hearing loss and aging on this learning. Here, we reanalyzed data from 141 listeners (ages 65-92) who listened to 10 brief sentences time-compressed to 45%-50% of their natural rates. Learning was tracked with a polynomial model that included linear, quadratic and cubic terms which were all significant. Although over all recognition of time-compressed speech declined with both age and hearing loss, age had no effect on rapid learning in this task. Hearing interacted with the linear learning term but not with the higher order ones. Together, this analysis suggests that age-related hearing loss interferes not only with speech recognition but also with the overall rate of learning. Nevertheless, it does not seem to alter its functional form.

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6:00–7:30 PM (1122)

Perceptual Learning in Speech Reflects Rapid Adjustment of Global Mappings from Acoustic Cues to Phonological Categories. SAMANTHA CHIU, *University of Iowa*, CHEYENNE TOSCANO, *Villanova University*, JOSEPH TOSCANO, *Villanova University*, BOB MCMURRAY, *University of Iowa* (Sponsored by Joseph Toscano) — Previous work using lexically guided perceptual learning has provided mixed evidence about whether listeners learn talker-specific information. We present evidence from a distributional learning paradigm that informs this issue. Listeners

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heard minimal pair words with VOT values drawn from a bimodal distribution that was either shifted left (for one talker) or right (for another talker). After training on one talker, listeners generalized the new VOT category boundary to the other. However, new boundaries were not retained in a second session. Follow-up experiments demonstrated that the lack of talker-specific learning was not due to interference from training on the second talker, did not occur when training was presented using an interleaved design, and did not occur even when listeners were given explicit feedback. Together, these results suggest that perceptual learning leads to rapid adaptation that decays over time and that listeners adjust a global boundary describing the mapping from cues to categories. These results have implications for models that describe talker-specific adaptation in speech perception, and they present new challenges for determining how listeners adjust for talker variability.

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6:00-7:30 PM (1123)

Physical Exertion as a Novel Measure of Listening Effort. CARSON RUMBLE-TRICKER, *University of Guelph*, GURJIT SINGH, *Phonak, Toronto Metropolitan University, & University of Toronto*, MARK J. FENSKE, *University of Guelph* — Attending to and understanding speech in noisy environments can be challenging. Measuring these corresponding increases in listening effort is therefore important for investigating the cognitive mechanisms involved in speech perception, and for assessing the effectiveness of interventions addressing hearing impairments. Here we examined the usefulness of a novel measure of listening effort based on prior evidence in the visual domain that individuals exerted physical effort in exchange for the removal of distracting stimuli. We found that participants (N = 127) would repeatedly press a key to minimize background noise while listening for the last word in a spoken sentence and that the level of this physical exertion increased as needed to minimize perceptual difficulty. Individual differences in trait boredom, absorption, and mind wandering, however, did not affect task performance nor key-pressing rates. These findings provide converging support that understanding speech in noise is effortful, and that the costs of such cognitive effort in the hearing domain are readily exchanged for increases in physical effort. Measures of physical exertion may therefore provide a path towards a useful objective index of listening effort.

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6:00-7:30 PM (1124)

Individual Differences in Use of Phonetic and Lexical Context Across Tasks. WEIYI ZHAI, *McGill University*, MEGHAN CLAYARDS, *McGill University*, MORGAN SONDEREGGER, *McGill University* — Speech perception requires listeners to take into account acoustic cues as well as lexical context and phonetic (coarticulatory) context. Individuals have been shown to vary in how they integrate these factors. To better understand the sources of these differences, we conducted three phoneme categorization tasks on speech continua with 82 native Canadian English speakers. Task 1 (lexical + coartic) embedded a /s-ʃ/ continuum in lexically biasing contexts (e.g., a(s)ume, a(ʃ)ure) followed by different coarticulatory contexts (rounded or unrounded vowels). Task 2 (lexical) had only lexical context cues for /ɛ/-/ɪ/ vowel continua (e.g., v(ɛ)st, k(ɪ)t). In task 3 (coartic) a /d/-/g/ stop continuum in nonsense syllables followed different coarticulatory contexts (/ar/ or /al/). We found those who used lexical context more used coarticulatory context less in task 1, consistent with prior research. However, this correlation disappears when examined across tasks 2 and 3. We also found no correlation between individual use of lexical and coarticulatory context across tasks, suggesting task dependency. Participants' use of acoustic continua was positively correlated across tasks, indicating an individual trait for utilizing acoustic cues.

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6:00-7:30 PM (1125)

Clear Speech Benefit for Word Segmentation Is Modulated by Contextual-Semantic cues: Evidence from Eye-Tracking. ZHE-CHEN GUO, *Northwestern University*, RAJKA SMILJANIC, *The University of Texas at Austin* — Intelligibility enhancing, hyperarticulated clear speech improves listeners' word recognition and segmentation in quiet and in noise. This study investigated how such processing benefit is modulated by semantic context using the visual-world eye-tracking paradigm. English-speaking listeners heard conversational and clear sentences containing temporary ambiguity between the target (e.g., ham) and competitor (e.g., hamster) words across the word boundary (e.g., She saw the ham starting…). The target sentences were preceded by either a congruent or incongruent context sentence, which was semantically biasing toward the target or the competitor. Eye fixation analysis revealed that the congruent semantic context did not facilitate word segmentation for clear speech beyond the benefit found for conversational speech. However, the clear speech segmentation benefit emerged in the incongruent context, where listeners considered the target over the competitor to a greater degree. The findings suggest that listeners dynamically weight signal-dependent (acoustic-phonetic) and relatively signal-independent (contextual-semantic) cues during real-time lexical processing.

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6:00-7:30 PM (1126)

Comparing ASR and Human Listeners on L2 Intelligibility. SEUNG-EUN KIM, *Northwestern University*, BRONYA CHERNYAK, *Technion – Israel Institute of Technology*, OLGA SELEZNOVA, *Technion – Israel Institute of Technology*, JOSEPH KESHET, *Technion – Israel Institute of Technology*, MATTHEW GOLDRICK, *Northwestern University*, ANN R. BRADLOW, *Northwestern University* — Recent studies have found that the intelligibility obtained from automatic speech recognition (ASR) systems parallels that of human listeners, raising the possibility of using ASR to automatically assess intelligibility. The current study extends the human-machine comparison by examining the intelligibility of second language (L2) speech in multiple signal-to-noise ratio (SNR) levels. Short English sentences produced by 14 L2 talkers (L1 Mandarin) were mixed with a speech-shaped noise in eight SNR levels (-4 to 8 in an increment of 2 dB, quiet). For each talker, 10 L1 English listeners and four state-of-the-art ASR systems provided transcriptions

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of the noise-mixed recordings in the order of the hardest to easiest SNR. The speech recognition threshold of each talker at which 50% transcription accuracy is attained and the accuracy at different SNRs will be compared between human listeners and ASR. In addition to providing psychometric functions of L2 intelligibility for a number of L2 English talkers in various SNRs, the analysis will allow us to assess whether the ASR parallels human intelligibility which may facilitate future large-scale speech recognition data collection.

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6:00-7:30 PM (1127)

The Role of Facial Visibility in Perceiver's Judgments of Speech Onset Times. PETER A. KRAUSE, *California State University, Channel Islands*, VERONICA BARKMAN, *California State University, Channel Islands*, A. LUNA, *California State University, Channel Islands*, JACQUELINE LUNA, *California Lutheran University* — Talkers' facial cues are known to aid speech perception and signal social turn-taking conventions. Less is understood about how they affect specific temporal coordination between partners. We tasked participants with timing keypresses to coincide with the beginnings of recorded utterances. Audiovisual recordings of talkers initiating utterances were drawn from a corpus of natural conversations. Recordings were presented in three counterbalanced conditions (within participants): with the talker's face completely visible, with the lower half of the face digitally obscured, or with the face completely invisible. Keypress reaction times were shorter in the full and partial visibility conditions, compared to the no visibility condition; however, contrary to expectation these conditions did not differ from each other. The advantage of the partial and full visibility conditions was magnified when the upcoming utterance was longer than two words. Implications for models of turn-taking, and possible future directions, will be discussed.

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6:00-7:30 PM (1128)

Expectations from Highly Predictable Sentence Contexts Modulate Acoustic Encoding During Early Perceptual Processing. MCCALL SARRETT, *Villanova University*, JOSEPH TOSCANO, *Villanova University* — Prior work has shown that higher-level lexical-semantic predictions influence lower-level acoustic-phonetic processing, but the mechanisms describing this feedback remain poorly understood. Predictions may be modulated by sentence-level characteristics, such as cloze probability or entropy, which may in turn modulate the strength of feedback. In an event-related potential (ERP) experiment, we asked whether these factors influence acoustic encoding at the auditory N1 component, an index of early cortical processing. Listeners (N = 52) heard sentences that varied along these dimensions and identified the initial sound in the sentence-final word. We found that expectations from sentence context significantly influenced encoding of acoustically ambiguous sounds for high cloze probability sentences ($p = .045$), but not sentences with medium or low cloze probability. Speech sound categorization was also influenced by sentential expectations ($p < .0001$), and the strength of this effect interacted with cloze probability and entropy ($p = .032$). This suggests that feedback from highly predictable sentences modulates early perceptual processing and that the strength of listener predictions changes based on sentence-level characteristics.

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6:00-7:30 PM (1129)

Early Neural Encoding of Acoustic-Phonetic Information Is Consistent Across Language Ability. NIKOLE GIOVANNONE, *University of Connecticut*, SHAWN N. CUMMINGS, *University of Connecticut*, ADRIÁN GARCÍA-SIERRA, *University of Connecticut*, JAMES S. MAGNUSON, *University of Connecticut & Basque Center on Cognition, Brain and Language (BCBL)*, RACHEL M. THEODORE, *University of Connecticut* (Sponsored by Rachel Theodore) — Behavioral evidence suggests robust individual differences in sensitivity to acoustic-phonetic information in the speech signal. For example, some listeners with language impairment show deficits in acoustic-phonetic processing, which might underlie linguistic deficits observed in this population. The present study examined the relationship between language ability and early neural encoding of acoustic-phonetic information. Specifically, the N100 ERP component was used to investigate whether listeners with weaker language ability show reduced sensitivity in the encoding of voice-onset-time (VOT, an acoustic-phonetic cue for stop consonants) compared to those with stronger language ability. The results showed a significant effect of VOT on N100 amplitudes, consistent with prior research. However, we found no evidence to suggest that encoding of VOT in the N100 varies with language ability, and Bayes factor analyses provided moderate evidence for the null hypothesis. This suggests that listeners with weaker language ability may not show diminished sensitivity to acoustic-phonetic information during early neural encoding, contradicting the hypothesis that reduced auditory sensitivity underlies linguistic deficits in this population.

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6:00-7:30 PM (1130)

Task-Directed Attentional Shifts Affect Perceptual Learning of Non-Native Accented Speech. BYONNE ATAMNA, *San Jose State University*, CHRISTINA TZENG, *San Jose State University* (Sponsored by Christina Tzeng) — Listeners adapt to variation in non-native accented speech, demonstrating perceptual learning of accent-general characteristics. We examined the extent to which explicit attention to the target speech stimuli affects the robustness of generalized learning to novel utterances and talkers. During exposure, listeners heard English sentences produced by non-native, Spanish-accented talkers while completing tasks that required different levels of attention directed to the target speech stimuli. Listeners either completed alternating transcription and talker identification tasks (explicit condition), a symbol-to-number matching task (implicit condition), or the same tasks as in the explicit condition but with native English-accented sentences (control). Preliminary results show that listeners' test transcription of novel English sentences spoken by novel Spanish-accented talkers in the explicit and implicit conditions was higher than control test performance. These findings suggest that passive listening can yield learning of accent regularities,

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highlighting the automaticity of the perceptual learning process.

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6:00–7:30 PM (1131)

Auditory Attention Guides Statistical Learning Across Competing Speech Regularities. ALANA HODSON, *Carnegie Mellon University*, BARBARA SHINN-CUNNINGHAM, *Carnegie Mellon University*, LORI L. HOLT, *The University of Texas at Austin* — Statistical regularities shape speech perception, flexibly tuning mappings from acoustic input to internal representations. Does attentional focus change how we track and tune the statistics of speech input in complex environments with competing regularities? To investigate, we used a dichotic listening paradigm in which two brief stimulus sequences of beer and pier tokens conveyed either compatible or opposing speech regularities (in the same voice) to opposite ears. The regularities conformed to English norms or deviated from expectations, as in an accent. We measured the influence of statistical learning across the sequences via overt labeling of two fundamental-frequency-differentiated /b/-/p/ test stimuli. Learning aligned with the statistics of the attended ear and was largely robust to opposing statistics presented simultaneously to the unattended ear. Results indicate that perception is aided by selective learning across an attended stream in complex environments with competing statistics.

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6:00–7:30 PM (1132)

Predicting Eyewitness Accuracy: Objective Measures of Spatial Ability Matters. HEATHER M. KLEIDER-OFFUTT, *Georgia State University*, MEGAN CAPODANNO, *Georgia State University* — Eyewitnesses to crime are often tasked with identifying the perpetrator from a lineup, which requires both recollection and recognition of the perpetrators' face. A plethora of studies show that witnesses make errors even in the best of circumstances, but whether certain abilities lead to one being a superior identifier is unclear. In the current study, eyewitnesses watched 6 crime videos and tried to identify the perpetrators from lineups. In addition, they completed objective measures of spatial ability (the Paper Folding Task, Ekstrom et al.,1976) and face recognition (CFMT+, Duchaine et al., 2006) to investigate the relationship among scores in these measures and lineup identification performance. Mediation results indicated an indirect, positive, predictive relationship between spatial imagery ability and lineup identification performance via face recognition ability. Findings suggest that certain individual differences in face-related processing abilities are advantageous for recognizing the perpetrator of a crime.

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6:00–7:30 PM (1133)

The Effect of Suspect-Filler Similarity on Eyewitness Identification Accuracy. TIA C. BENNETT, *University of Birmingham*, MELISSA F. COLLOFF, *University of Birmingham*, HEATHER D. FLOWE, *University of Birmingham*, JASPER VAN DEN BOSCH, *University of Birmingham* — Police lineups usually consist of one suspect and multiple fillers; fillers are people who match the physical description of the suspect but are known innocents. There is no consensus regarding the 'optimal' level of suspect-filler similarity. We investigated the effect of suspect-filler similarity on eyewitness discriminability using a multiple trial simultaneous lineup task. Participants (N = 646) were presented with six randomly selected to-be-remembered target faces—each of a different physical description—and asked to identify each face from six photo lineups. Half of the lineups contained the target, and the other half contained a medium-similarity target replacement. Lineups were randomly generated to contain fillers that were either low, medium, or high similarity to the target or target-replacement. Similarity ratings were obtained from a separate spatial arrangement task. We found that discriminability decreased with lower similarity. However, we discovered that due to lineup randomisation, some lineups looked unfair (i.e., the suspect stood out). To resolve this, we plan to run a second experiment with stricter parameters on the filler pool to ensure all lineups are fair and represent low, medium, or high similarity.

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6:00–7:30 PM (1134)

Comparing the Effect of Liberal and Conservative Eyewitness Instructions forSimultaneous and Sequential Lineups. DANIEL M. BIALER, *Cornell University*, CHARLES J. BRAINERD, *Cornell University* — We previously found a discrimination/bias tradeoff between simultaneous and sequential lineups. Simultaneous lineups produce greater discriminability and sequential lineups produce lower bias. It is however not yet clear whether a lineup can achieve the higher discriminability of simultaneous lineups while maintaining the more conservative bias of sequential lineups. One possible solution is to use simultaneous lineups with instructions that encourage conservative choosing. To test this prediction, we presented participants with simultaneous or sequential lineups with either liberal, conservative, or unbiased instructions. In two experiments, we presented participants with a series of crime videos, followed by a series of lineups, half target present and half target absent. We found that discriminability was higher in simultaneous lineups and that the instructions affected bias. Instructions also affected discriminability with liberal instructions producing lower discriminability than both conservative and unbiased instructions.

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6:00–7:30 PM (1135)

Examining the Vulnerability of Eyewitness Memory in the Presence of Environmental Sounds. KENNETH BARIDEAUX, *University of South Carolina Upstate*, GRACEY ELDRIDGE, *University of South Carolina Upstate* — A large body of research has provided evidence to suggest that memory is oftentimes unreliable after witnessing an important event. Many studies within this area of research have largely focused on the interference that occurs between encoding the event and having to retrieve details about the event after a delay. On the contrary, very few studies have addressed the distractions or interference that might take place while witnessing the event. Across two experiments, we investigated the effects of auditory distractions on recall accuracy after participants viewed a series of 48

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images depicting a car burglary. Results indicated that participants exposed to environmental sounds, mainly crowd noise, had the poorest recall performance. In addition, those exposed to environmental noise were more likely to be influenced by misleading questions. Implications from this study could inform future research and legal practice on the reliability and accuracy of eyewitness testimonials, which may ultimately impact legal decisions.

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6:00–7:30 PM (1136)

Providing Corrective Feedback to Initial Eyewitness Identification Decisions. CHARLES A. GOODSELL, *Canisius College*, ROBERT LOCKAMYEIR, *SUNY Oneonta*, CURT CARLSON, *Texas A&M University–Commerce*, KAYLIE BRUNDAGE, *Canisius College* — We investigated if providing corrective feedback to eyewitnesses making a decision from an initial perpetrator-absent lineup could improve subsequent lineup decisions. Participants viewed a mock crime and after a short distractor task some were asked to make an identification from a perpetrator absent lineup (the rest were dismissed). Half of these witnesses received feedback about their decision. For lineup choosers, the feedback informed them that they had chosen an innocent filler and that suggested that the police did not have the correct suspect and that the investigation would continue. For non-choosers, they were told that their lineup rejection indicated the same thing. Two days later all witnesses returned to view either a perpetrator-present or absent lineup. Results showed that for initial lineup choosers who received corrective feedback, identifications were more reliable than those who did not get the feedback. Future directions and practical applications are discussed.

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6:00–7:30 PM (1137)

Dark Triad Correlates of Facial Recognition. DAWN R. WEATHERFORD, *Texas A&M University–San Antonio*, WILLIAM BLAKE ERICKSON, *Texas A&M University–San Antonio*, STEPHANIE A. GOODING, *Texas A&M University–San Antonio* — Individuals high in Dark Triad traits (D3: Machiavellianism, psychopathy, and narcissism) are more likely to be involved with and witness crimes. As an individual difference, however, little research has examined the relationship between these traits and recognition memory. We sought to fill this gap with a two-experiment sequence. In E1, student participants completed a non-clinical Short D3 assessment followed by a recognition memory task for faces and scenes. Of the personality traits, only narcissism produced a significant relationship such that it negatively predicted facial, but not scene, memory. In E2, participants from the general population completed the same paradigm using more difficult stimuli in an attempt to replicate and extend patterns observed in E1. Although E2 findings are forthcoming, initial evidence may help law enforcement who rely upon high D3 individuals to provide eyewitness, informant, or defendant testimony.

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6:00–7:30 PM (1138)

Fewer Facial Features Yield Superior Discriminability in Simultaneous Lineups. XIAOQING WANG, *University of California, San Diego*, JOHN WIXTED, *University of California, San Diego*, BRENT M. WILSON, *University of California, San Diego* (Sponsored by Brent Wilson) — Previous work has shown that simultaneous lineups yield better discriminability for eyewitness identification compared to sequential lineups. Diagnostic feature-detection theory offers a potential explanation, suggesting that simultaneous lineups, which allow eyewitnesses to view all photos simultaneously, enable them to discount non-diagnostic features and focus on diagnostic ones. The present study investigated whether participants given simultaneous lineups would rely on fewer facial features compared to participants given sequential lineups. Participants viewed pictures of faces and were presented with either a six-photo simultaneous lineup or a sequential lineup. They were then asked to select and rank facial features from a provided list. Participants in the simultaneous lineup condition reported relying on significantly fewer facial features, supporting the diagnostic feature-detection theory's prediction. Critically, despite relying on fewer facial features, simultaneous lineups enhanced discriminability, yielding both a higher hit rate and a lower false alarm rate.

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6:00–7:30 PM (1139)

The Cross-Race Effect in Lineups vs. Showups. SHIQI CHEN, *University of California, San Diego*, KYROS SHEN, *University of California, San Diego*, JOHN WIXTED, *University of California, San Diego* — Discrimination accuracy is usually higher for same-race than for cross-race faces. However, when lineups are used, accuracy within confidence levels often does not differ appreciably for same- and cross-race faces. Whether the same is true for showups is unknown. Furthermore, the theoretical mechanism for the cross-race effect is still unsolved. This study aimed to address both gaps by testing memory for cross-race and same-race faces using lineups and showups. We hypothesized that, with regard to discriminability, the cross-race effect for showups would be larger than that for lineups and that, for both procedures, the confidence-accuracy relationship would be similar for same-race and cross-race conditions. We also explored the relationship between high-confidence negative IDs and evidence of innocence. Contrary to our predictions, a similarly-strong cross-race effect was observed for showups and lineups, and this was true for both the ROC and CAC analyses. Moreover, a strong confidence-accuracy relationship was found for negative IDs for showups in same- and cross-race conditions, but no confidence-accuracy relationship was found for lineups.

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6:00–7:30 PM (1140)

The Effects of Group-Referencing and Valence on Memory for Deese-Roediger-McDermott Word Lists. DUSTIN P. CALVILLO, *California State University, San Marcos*, DERRICK OCAMPO, *University of California, Merced*, KRYSTAL FELIPE, *California State University, San Marcos* — The group-reference effect

occurs when people show enhanced memory for information learned in relation to a group to which they belong. The valence of information also affects memory for it. Two experiments tested the effects of group-referencing and valence on true and false memory with DRM word lists. In Experiment 1, 98 Democrats and Republicans learned positive and negative word lists paired with the words "Democrat" or "Republican" before taking a recognition test. In Experiment 2, 98 Democrats and Republicans decided whether words described typical Democrats, typical Republicans, or if the words were positive characteristics before taking a surprise recognition test. In both experiments, participants had more false memories of positive than negative critical lures. Signal detection analyses revealed that there was a larger liberal response bias with positive than negative words. There was sparse evidence for group-reference effects in both experiments. Political parties may not show ingroup memorial advantages because of the attention partisans pay to their outgroup in this context.

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6:00–7:30 PM (1141)

Effects of True and False Rewarding Memory on Decision Making Across Cultures. NICOLETTE BARBER, *Brandeis University*, DANQIN ZHAO, *Fudan University*, JIAYUE MA, *Fudan University*, ANGELA GUTCHESS, *Brandeis University*, JIANQIN WANG, *Fudan University* (Sponsored by Angela Gutchess) — Culture impacts false memory formation. For instance, Easterners tend to have fewer false memories than Westerners for categorically related information. Building on findings that false memories of previous rewarded experiences can impact decision-making, we extended this research across cultures by comparing Chinese (n = 40) and Americans (n = 40). Categories were normed across cultures to identify words that were categorically related. Participants viewed words related by category; items were paired with reward or no reward. Next, they completed a memory task, recalling whether words (presented items, critical lures, and related lures) were previously shown, and if they were rewarded or not. Finally, in a decision task, participants choose the item they thought would win the most money. Chinese participants formed more true rewarding memories than Americans, although false rewarding memories did not differ significantly between the two groups. There was a cultural interaction on decision preferences such that Chinese participants showed higher preferences to lures associated with reward than Americans, whereas Americans and Chinese were similar in their preferences to choose the critical lure associated with no reward.

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6:00–7:30 PM (1142)

Anodal tDCS of the Left Inferior Parietal Cortex Enhances Memory for Correct Information without Affecting Recall of Misinformation. BERNHARD PASTÖTTER, *University of Trier*, CÉLINE C. HACIAHMET, *University of Trier*, MAXIMILIAN A. FRIEHS, *University of Twente*, CHRISTIAN FRINGS, *University of Trier* — False memories for an original event can inadvertently arise after exposure to post-event misinformation, which was first described as the misinformation effect by Loftus (1979). Transcranial brain stimulation can be used to increase cortical excitability of the brain and affect memory performance. Here, we examined the misinformation effect when stimulating participants' left inferior parietal lobe (IPL), which is crucially involved in recollection and source attribution of episodic memories, with anodal transcranial direct current stimulation (tDCS) during recall testing (n = 30), in comparison to a sham group (n = 30). The results replicated the misinformation effect and additionally showed that anodal tDCS of the left IPL increases correct recall of the original event (a movie) without affecting recall of the misinformation (from an audio recording). The findings suggest that brain stimulation can be successfully used to selectively improve eyewitness recall accuracy for original episodes without affecting false memories.

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6:00–7:30 PM (1143)

False Memories in the DRM Paradigm: An Individual Differences Approach. DANIEL P. BYRNES, *Kent State University*, CHRISTOPHER A. WAS, *Kent State University* (Sponsored by Christopher Was) — This study examined the underlying mechanisms of false memories observed in the Deese–Roediger–McDermott (DRM) paradigm. Previous work has indicated that greater working memory capacity (WMC) and inhibition are associated with lower susceptibility to such false memories. We hypothesize this may be, in part, due to the closely related construct of attention control (AC). We examined if individual differences in AC account for variance in susceptibility to false memories, above and beyond inhibition and WMC alone. We employed a standard DRM procedure in an individual differences approach to examine how WMC, inhibition, and attention control contribute to false memories as indicated by false word recognition on the DRM task. Using a series of multiple regressions, it was found that AC accounted for unique variance beyond that accounted for by inhibition, but not WMC. Surprisingly, inhibition accounted for unique variance beyond WMC and AC for recognition of previously presented words.

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6:00–7:30 PM (1144)

Evaluating the Efficacy of Misinformation Identification Instructions on Additive and Contradictory Misinformation in Older and Younger Adults. MONIKA A. MAZELA, *The University of Southern Mississippi*, MARK J. HUFF, *The University of Southern Mississippi* — Exposure to misleading details about a previous event often yields false retrievals of these details, a pattern termed the misinformation effect. Recently, researchers have distinguished between two types of misinformation, contradictory which reflect misleading details that contrast originally studied details and additive, which reflect supplementary misleading details. We assessed whether instructions to identify contradictory and additive misinformation could reduce misinformation in older and younger adults. Following study of three videos, participants were either trained to identify additive and contradictory misinformation prior to reading narratives with embedded misinformation or read the narratives without a warning of potential misinformation exposure. On final recall, misinformation rates for both types were equivalent,

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and misinformation rates were greater in older adults. Importantly, misinformation identification instructions reduced misinformation, but only for older adults. In younger adults, misinformation was low and equivalent in both instruction groups. Our results suggest that younger adults spontaneously monitor narratives for errors, but older adults require explicit instruction to reduce misinformation.

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6:00-7:30 PM (1145)

How Are Critical Lures Elicited by List Items in the DRM Paradigm? Examining the Interaction of Associative Strength and Recall Order. YAYOI KAWASAKI, *Waseda University*, KAZUHIRO IKEDA, *Shokei Gakuin Univeristy*, J. NICK REID, *University of Manitoba*, ERIKO SUGIMORI, *Waseda University*, MATIA OKUBO, *Senshu University* — Kawasaki & Okubo (2019) investigated the effect of strength of semantic association on false memory by creating word lists for the DRM paradigm where the strength of semantic associations of list items was controlled. For half of the lists (12 lists), the first item of each list had a strong associative value (more than 50%), while for the other half (12 lists), the first item of each had a medium associative value. However, false recall rates of critical lures did not differ between the two list conditions. In this presentation, we investigated how false memory was elicited by list items by analyzing the effects of recall order. Specifically, we examined which and how many recalled list items preceded false recall of the critical lure when false recall occurred, and we examined differences in the orders of recalled list items between people who falsely recalled critical lures and those who did not.

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6:00-7:30 PM (1146)

The Lies We Visualize: The Effect of Visual Imagery on False Memory. KARMYN PEARN, *University of Cental Oklahoma*, JACLYN MAASS, *University of Central Oklahoma* (Sponsored by Jaclyn Maass) — The few studies which investigated the relationship between visual imagery and memory suggestibility have shown mixed results. Dobson and Markham (1993) found people with vivid visual imagery were more susceptible to source misattribution than those with less vivid visual imagery. However, Heaps and Nash (1999) did not find a significant difference in suggestibility between imagined (i.e., visualized non-occurring) events and non-imagined events. There has not been much recent advancement in this area, which may have important implications within forensic settings. The current study seeks to investigate whether people who produce vivid visual images are more susceptible to memory alteration than those with less vivid imagery, as measured by the Vividness of Visual Imagery Questionnaire (VVIQ; Mark, 1973). In Session 1, participants will recall a real memory. Researchers will insert additional (false) details into the recollection. When attending the next several sessions, participants will reread the altered account of the event. At a final session, participants will freely recall the event; researchers will count the number of details changed from the original recollection as a measure of memory suggestibility.

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6:00-7:30 PM (1147)

Misremembering the Juror's 'I Do;: Does the False Memory of Swearing an Oath Impact Courtroom Decision Making?. MARK OAKES, *St. Lawrence University*, CATHY CROSBY, *St. Lawrence University*, ALYSSA NAGY, *St. Lawrence University* — In a criminal trial, the juror's oath is one of the ways the Constitution guarantees the right to a fair and impartial jury of one's peers. Consistent exposure to judicial procedures, including the juror oath, begs the degree to which these procedures are a part of our courtroom schema and their continued utility. The current investigation explores the extent of this juror-oath schema and whether the outcomes of those who swear an oath differ from those who falsely remember swearing an oath during an emotion-eliciting trial summary. Juror oath and emotion-limiting instructions were introduced or omitted during pretrial instructions. Nearly half of the participants who did NOT swear an oath reported that they had, with another quarter unable to recall. These participants were significantly less obliged to follow the judge's instructions, more emotional about the victim and the crime, and more emotionally involved than those who swore an oath. The limiting instruction showed no evidence of similar effects. Findings confirm that the juror oath is a vital part of our courtroom schema and illuminates differences in the outcomes of those who falsely remember the act of swearing an oath, reaffirming the importance of saying, "I do."

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6:00-7:30 PM (1148)

Error Generation and Learning: Feedback Timing Complexities and Warning Conditions. JACQUELINE G. GONZALEZ, N/A, *University of California, Santa Cruz*, HANNAH HAUSMAN, *University of California, Santa Cruz* — This study investigates the complexities of learning from errors and considers influences of feedback timing. Previous research suggests that immediate feedback is essential for benefiting from errors. Is immediate feedback beneficial because it immediately alerts learners of their error, or because the immediate feedback is corrective? Participants learned weakly associated word pairs under errorless (e.g., swim-float) and errorful (e.g., swim-???) conditions, with either immediate feedback, delayed feedback, or delayed feedback with immediate warnings. Within errorful trials, participants either 1) guessed the target then studied the immediately-provided correct answers, 2) guessed all targets before studying the delayed correct answers, or 3) received immediate warnings concerning the correctness of their guesses, later followed by delayed feedback. Delayed feedback, even when accompanied by immediate warnings, did not produce as much learning from errors as immediate feedback. Results will be discussed in terms of spacing, theories of error correction, and memory updating.

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6:00-7:30 PM (1149)

Visual Cues and Peer Videos Differentially Affect College Students' Looking Behaviors and Learning During Online Lessons. TAYLOR MARCUS, *Tulane University*, JILL L. KING,

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Tulane University Brain Institute=, JULIE MARKANT, *Tulane University* — Multimedia lessons often include multiple visual features that compete for students' attention, including perceptually salient visual cues and videos of classmates. Attention to these features may reflect separable attention mechanisms driven by perceptual salience, goal relevance, or social-motivational value. However, it remains unclear how these mechanisms interact during learning. We used eye tracking to examine college students' (N = 71) attention to and learning from pre-recorded video lessons. Across lessons we manipulated the presence of a peer video and visual cues that highlighted relevant text. The presence of both visual cues and the peer video simultaneously elicited a larger increase in looking to the peer video, suggesting that the peer video may capture attention to a greater degree than cued text. However, only looking to the cued text predicted learning efficacy. These results suggest that peer videos have a strong influence on attention during multimedia lessons but may not be beneficial for learning.

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6:00-7:30 PM (1150)

What Is a Picture Worth? Comparing Learning from a Lecture with Pictures Alone to Text Presentations. HALEY MCCOY, *Colorado State University*, MATTHEW G. RHODES, *Colorado State University* — Lectures are an integral part of the college classroom and instructors often construct them with the goal of effectiveness and memorability. One approach associated with the most compelling talks (i.e., TED talks) is to present slides with only pictures and no text. However, little research has been done on the effect of just pictures on lecture slides. We tested the effectiveness of this approach in several experiments. In the first one, participants listened to a voice-recorded lecture about the ice ages, presented with accompanying slides. Participants were randomly assigned to view slides with only a relevant picture on each slide, relevant text describing the topic, or both the picture and text. After a short break, they took a final, 10-question multiple choice test on the lecture. The results showed that those in the pictures only condition answered fewer questions correctly than those in either the text only or text and pictures conditions (who performed equally well). In an additional experiment, we will compare pictures alone to a blank slide with no information. In all, our data thus far suggest that a presentation with pictures alone may hurt learning, a finding with important practical and theoretical implications.

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6:00-7:30 PM (1151)

Age-Related Differences in Temporal Memory Reveal Impaired Integration Mechanisms in Older Adults. MOHIT P. NADKARNI, *University of California, Irvine*, SHARON M. NOH, *University of California, Irvine*, CHRISTINE A. COUGHLIN, *University of Illinois Chicago*, AARON M. BORNSTEIN, *University of California, Irvine*, ALISON PRESTON, *The University of Texas at Austin* — Prior studies have shown that adults remember items with shared contexts as occurring closer in time to one another than those associated with different contexts, even when objective temporal distance is fixed. These temporal memory biases are thought to reflect within-event integration and between-event differentiation processes that organize events according to their contextual similarities and differences, respectively. We examined whether these event integration and differentiation processes decline with age. Younger (ages 18-35) and older adults (ages 60-90) studied picture pairs made up of a scene and a trial-unique face or object. Unbeknownst to participants, trials were organized into same-context and different-context quartets—the latter involved frequent changes in associated scene images. Participants then made temporal distance judgments between the first and fourth face/objects within each quartet. Results indicate that, while between-event differentiation is spared in aging, within-event integration is impaired, potentially reflecting declines in hippocampal-dependent integration mechanisms associated with aging.

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6:00-7:30 PM (1152)

The Wakeful Rest Effect: A Meta-Analysis. DANI PARRA, *University of Notre Dame*, GABRIEL RADVANSKY, *University of Notre Dame* — When people rest quietly for a brief period of time after learning, they have better memory compared to when they engage in a cognitively demanding task. This is called the wakeful rest effect. It has been observed with different kinds of study items, interference tasks, and delay intervals involving younger, older, and amnesic participants. Despite the presumed robustness of the effect, many studies have also failed to observe it, particularly in healthy younger adults. Using a mixed-effects model and including group (i.e., age and amnesia) as a moderator, our meta-analysis aims to identify a more precise estimate of the true effect size of wakeful rest. In addition, a multivariate meta-regression explores the influence of other study characteristics, such as study items, interference tasks, and memory test types. This broad assessment of the literature provides the basis for designing more effective and targeted studies of the wakeful rest effect.

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6:00-7:30 PM (1153)

Awareness of Cross-Generational Differences in Collective Remembering of National Historic Events Through Perspective-Taking: Data from American and German Older and Younger Adults. SHARDA UMANATH, *Claremont McKenna College*, CLAIRE HOU, *Claremont McKenna College*, ELEANOR FARRY, *Claremont McKenna College*, MAGDALENA ABEL, *University of Regensburg*, AMY CORNING, *University of Michigan* — Collective memories refer to a group's shared representations of the past. They are slow to change, but there is evidence that differences exist across age groups. To examine such generational differences, representative samples of over 150 young adults (YAs) and older adults (OAs) in the U.S. and Germany rated their perception of the emotional valence of 12 national historic events for their country. Participants were also asked to imagine how the other age group feels about the same 12 events, to investigate the extent to which generational differences in collective remembering can be perceived and how accurate these perceived

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differences are. Our results replicated previous findings that salient generational differences exist in the collective remembering for national historic events. YAs were generally able to detect diverging views between generations but underestimated OAs' valence intensity for many events. In both countries, OAs were more accurate in imagining YAs' views, suggesting greater cross-generational insight into shifting collective memories. Overall, both age groups perceived generational differences in collective memories about national events, with OAs performing slightly better at the perspective-taking task.

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6:00-7:30 PM (1154)

The Cost of Saving: How Photos and Screenshots Impair Memory. SOPHIA P. FABRIZIO, *Binghamton University SUNY*, REBECCA LURIE, *Binghamton University SUNY*, DEANNE L. WESTERMAN, *Binghamton University SUNY* — The term "digital amnesia" has been used to describe the experience of forgetting information that is accessible digitally, such as the results of an internet search. The photo impairment effect is one instantiation of this phenomenon and refers to worse memory for events that are photographed versus experienced without being photographed. This study shows that this impairment extends to other methods of digitally saving information. In three experiments, participants were asked to either view, photograph, or screenshot images of art on an experimenter-provided tablet or their own phones. Memory was substantially worse for images that were saved to any device. The effects of screenshotting were particularly deleterious, with dramatically reduced memory for art that was screenshotted. The results are inconsistent with a divided attention account, as the impairment did not depend on task complexity or device familiarity. Instead, the results are consistent with a cognitive offloading account.

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6:00-7:30 PM (1155)

Will Spacing Retractions Modulate the Continued Influence Effect?. HAILEY ARREOLA, *Purdue University*, DARRYL W. SCHNEIDER, *Purdue University* — The reliance on misinformation even after it has been corrected (e.g., retracted) is known as the continued influence effect (CIE). Research is mixed on whether repeated retractions are more effective than a single retraction at reducing the CIE. We investigated whether repeated retractions and how they are organized (massed or spaced) modulate the CIE. In two experiments, participants read a news story containing misinformation followed by no retraction, a single retraction, massed repeated retractions, or spaced repeated retractions, then answered questions about the story. In Experiment 1 (N = 186), a single retraction reliably reduced the CIE, but two repeated retractions did not reduce it further. In Experiment 2 (N = 224), we strengthened the repeated retraction manipulation by adding another retraction. We found three repeated retractions reliably reduced the CIE more than a single retraction did, but it did not matter whether the retractions were massed or spaced. The results suggest that retractions can reduce reliance on misinformation, with a greater reduction occurring when repeated retractions are strongly implemented (three vs. two retractions), regardless of whether the repetitions are massed or spaced.

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6:00-7:30 PM (1156)

Effects of Survival Processing on Directed Forgetting. YUH-SHIOW LEE, *National Chung Cheng University* — Studies have demonstrated that survival-based processing resulted in better memory than non-survival-based processing and the survival processing effect is robust and larger than effects of other highly effective processing (Nairne, 2010). This study used a practice procedure to examine the effect of directed forgetting and manipulated how target information is processed. In the practice procedure, the first presented list (the practice list) of the study item is equivalent to the forget list in the list-method directed forgetting. After the presentation, participants were told that this list is just for practice and should be ignored and that they should concentrate on the second list (the remember list). Two types of deep processing were adopted: survival processing and semantic processing. The survival group was required to rate how relevant each of the target words would be for them in a survival situation. For the semantic group, participants were asked to rate the negativity of each word. The result revealed a larger directed forgetting effect for the survival encoding condition. Survival processing as compared with semantic processing did not reduce intentional forgetting.

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6:00-7:30 PM (1157)

Updating Health Misconceptions: The Influence of Feedback Phrasing and Warnings. RENEE HUNSBERGER, *University of Massachusetts Lowell*, LISA GERACI, *University of Massachusetts Lowell* — Health misconceptions can have negative consequences for people. Research suggests that direct refutations are effective for correcting various types of misconceptions. However, scientists and public health officials often use a more tentative communication style. In contrast, the media and politicians may use more exaggerated and absolute language. We examined the effect of tentative and absolute feedback for improving people's health knowledge. Results showed that tentative feedback was effective for improving accuracy of health knowledge, relative to no feedback. However, absolute feedback was the most effective for updating health knowledge. We also investigated the use of warnings and training to educate people about potential problems with statements using absolute phases (e.g., it has been proven), which may signal that the source is unreliable or biased. Results have implications for best practices for correcting health information.

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6:00-7:30 PM (1158)

The Problematic Effects of Exposures to 'Not-So-Deep Fake Videos' Containing Inaccurate Information. JOSIE A. HOLOHAN, *Northwestern University*, DAVID N. RAPP, *Northwestern University* — An ever-growing body of work consistently demonstrates the negative consequences of exposures to inaccurate information. While this is often discussed as a generalizable concern,

most projects have focused their examination on text stimuli. The few that have examined video presentations have tended to use existing film clips rather than controlled content. The current study used carefully designed materials to examine the consequences of viewing videos conveying inaccuracies. Participants watched brief vignettes involving conversations that potentially included accurate or inaccurate ideas. After viewing the videos, participants judged the validity of statements related to the ideas conveyed in the videos. Exposures to inaccurate ideas made it difficult for participants to successfully judge the truth of related content. They were more likely to incorrectly identify false statements as true after previously watching videos conveying related false ideas than after previously watching videos conveying related true ideas. The results support the generalizable claims offered in previous work and suggest that discussions about whether videos can spread misinformation should not be restricted to deep fake considerations.

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6:00–7:30 PM (1159)

Exploring the Role of Task-Switching Costs in the Production Effect. JASON ARNDT, *Middlebury College*, YUKA TATSUMI, *The Pennsylvania State University Center for Language Science*, LEAH MOWRY, *Middlebury College*, JAHNAVI CHORARIA, *Middlebury College* — The production effect refers to the enhanced memory performance for the words read aloud at study relative to the words studied silently. When recall is used to assess memory, performance for silent items studied in the same list as aloud items (i.e., in mixed lists) is impaired relative to when all items in a list are studied silently (i.e., in pure lists). Our research examined if this impairment is due to task switching (Lambert et al., 2016). We tested two types of task-switching costs. In Experiment 1, the effect of local costs was tested by manipulating the cognitive burden of switching between aloud and silent encoding. This was evaluated by having the encoding task change randomly or predictably (every two words). In Experiment 2, the effect of global costs was tested by manipulating the cognitive burden of maintaining multiple tasks in working memory. This was achieved by having two or four encoding tasks in mixed lists. Experiment 1 showed that local costs did not cause mixed list impairment of silent item memory. Data analysis for Experiment 2 is currently underway. This study's findings will contribute to theoretical understanding of the mechanisms underlying the production effect.

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6:00–7:30 PM (1160)

The Effects of Posture and Handedness on Episodic Memory. STEPHEN CHRISTMAN, *University of Toledo* — Left vs. right hemisphere activation is associated with the encoding vs. retrieval of episodic memories, respectively. Standing, relative to sitting, induces right hemisphere activation, so the effects of sitting vs. standing on episodic memory was examined. Sitting vs. standing was fully crossed with encoding and retrieval in an episodic recall task. Research indicates an inconsistent-handed advantage in episodic memory, degree of handedness was measured. Dependent variables were hits and false alarms. Hit data yielded a marginal effect of handedness ($p = .072$; $\eta p^2 = .032$), reflecting higher hit rates for inconsistent-handers, consistent with past findings of better memory in inconsistent-handers. Analyses of false alarms yielded two effects: a main effect of handedness ($p = .027$; $\eta p^2 = .048$), with inconsistent-handers having more false alarms, and an interaction between handedness and retrieval posture ($p = .034$; $\eta p^2 = .044$). Relative to being seated, a standing posture at retrieval was associated with higher false alarm rates for inconsistent-, but not consistent-, handers. Results are discussed in terms of a Yerkes-Dodson curve effect on the relation between right hemisphere activation and episodic retrieval.

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6:00–7:30 PM (1161)

Exceptional Memory for Dance: Expert and Novice Memory for Long Dance Sequences. RUSSELL L. ADAMS, *University of Illinois Chicago*, PETER F. DELANEY, *University of North Carolina at Greensboro*, ALLISON N. BEATY, *Austin Community College*, JENNIFER WILEY, *University of Illinois Chicago* (Sponsored by Peter Delaney) — Skilled dancers exhibit superior recall for dance sequences compared to novice dancers. However, dance sequences used in past research were typically short, and the participants were often children. Two experiments examined the extent of exceptional memory for expert and novice dancers. In Experiment 1, expert and novice dancers watched 50-step dance sequences from three styles (ballet, altered ballet, and contemporary dance) two times each, reproducing as much as possible from memory after viewing each sequence. Experts recalled many more steps overall and had fewer partially-correct steps compared to novices. Moreover, the experts' superior recall of dance sequences remained consistent regardless of the specific style of the sequence. Experiment 2 used a larger sample of dancers and allowed participants to watch sequences five times with a test after each viewing. The results suggest that expert dancers develop exceptional memory skills comparable to those developed by chess masters.

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6:00–7:30 PM (1162)

Working Memory in Written and Spoken Text Recall Across Proficiency Levels. NATALIA SLETOVA, *University of Florida*, LUDMILA ISURIN, *Ohio State University* — Working memory (WM) is seen influential for a successful second language (L2) learning. The relationship between WM and written and spoken text recall in L2, however, has not been studied widely. This study aimed to fill this gap by analyzing written and spoken text recall in L2 produced by 23 Novice, 21 Intermediate, and 20 Advanced learners of Russian. Accuracy and complexity of produced texts were compared with learners' individual WM capacity measured in both L1 and L2. The statistical analysis of collected data demonstrated that the Russian WM score significantly increased with each level of proficiency. However, WM capacity correlated with accuracy and complexity of produced texts only in the spoken mode of recall. The results are consistent with the cognition hypothesis (Robinson, 2007) postulating that individual differences in attentional abilities appear to be most

relevant when the cognitive demands of tasks are enhanced, indicating that the written task for all levels of learners was not complex enough for accuracy and complexity to correlate with a WM score in either L1 or L2.

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6:00-7:30 PM (1163)

Social Encoding in Retrieval Induced Forgetting.. ASHLEY ZAPPE, *New Mexico State University*, MEGAN PAPESH, *New Mexico State University*, GIOVANNA DEL SORDO, *New Mexico State University* — Retrieval induced forgetting (RIF) occurs when selectively retrieving some items from memory inhibits later recall of other categorically-related items. Prior research explored the influence of social context on RIF, finding that group membership modulates forgetting: When listeners practice retrieval with same-social-group members, they suffer poorer recall of the categorically-related items. The present study examined whether the social group information presented at encoding affects learning and RIF. Participants learned about four categories of items from a presenter whose political identity was the same or different from their own. Then, they retrieved a subset of items from two categories. A final test assessed free recall for all categories. No reliable differences in recall were observed across encoding conditions and no RIF pattern emerged. Overall, this research suggests that the impact of social factors on attention and memory occurs only in narrow circumstances.

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6:00-7:30 PM (1164)

Sleep Quality Modulates the Encoding of Emotional Memories. JAKKE TAMMINEN, *Royal Holloway, University of London*, JESSICA MARCH, *Royal Holloway, University of London*, JESSIE RICKETTS, *Royal Holloway, University of London* — Total sleep deprivation prior to encoding of emotional materials leads to impaired subsequent memory for neutral and positive materials. The impairment for negative materials is smaller or non-existent (e.g., Tempesta et al., 2016) and often attributed to sleep deprivation induced amygdala hyperactivity. Sleep deprivation however has many other effects on cognition, such as increased negative mood, that can benefit negative memory encoding. To clarify sleep's role in emotional memory encoding, we examined sleep quality during a normal night of sleep. One hundred twenty-two participants rated their previous night's sleep quality and proceeded to encode negative, neutral, and positive word pairs. Immediately afterward, one word from each pair was cued for recall by presenting the other word. We found a significant interaction between sleep quality and emotionality for recall accuracy. Participants with high sleep quality recalled more negative word pairs relative to both neutral and positive pairs, a common finding in well-rested participants. Participants with low sleep quality however recalled fewer negative and positive word pairs relative to neutral pairs. Poor sleep, unlike absence of sleep, appears to impair encoding of all emotional materials.

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6:00-7:30 PM (1165)

Spacing Effect and Word Familiarity: Evaluating the Role of Prior Knowledge in Learning from Spaced vs. Massed Schedules. MELINA KNABE, *University of Wisconsin-Madison*, HALEY VLACH, *University of Wisconsin-Madison* — Spacing out information promotes retention more than massing information—a robust finding in psychological science. Research on the spacing effect has primarily manipulated aspects of the learning schedule (e.g., item repetitions, retention interval). Limited work has considered how prior familiarity with the to-be-learned information impacts the spacing effect. The current study addressed this gap by examining how word familiarity affects retention on a massed or spaced schedule. Adults (N = 437) were presented with 24 high familiarity (e.g., apple), low familiarity (e.g., vestige), or nonsense (e.g., blicket) words on a massed and spaced schedule. Retrieval was tested after a 5-minute or a 24-hour delay, revealing a significant spacing effect regardless of word familiarity and test time. Furthermore, overall performance was significantly greater for highly familiar items. These results suggest that spacing is effective regardless of general word familiarity. Ongoing analyses will reveal how learners' direct knowledge of test items—as measured by a vocabulary test—impacts the spacing effect.

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6:00-7:30 PM (1166)

Modeling Recognition Memory Using Multinomial Processing Trees for Discrete and Continuous Data. JAMES F. JUOLA, *Universidad Autónoma de Madrid*, ANAHÍ GUTKIN, *Universidad Autónoma de Madrid*, MANUEL SUERO, *Universidad Autónoma de Madrid* — We address the ongoing question of whether recognition memory processes are discrete or continuous. We used multinomial processing tree models (MPTs), specifically MPT-DC (Heck & Erdfelder, 2016), which allow for the simultaneous inclusion of discrete and continuous variables. We reanalyzed the data from Juola et al. (2019) in a recognition memory paradigm in which confidence levels (CLs) and response times (RTs) were measured. We compared signal detection theory (SDT), the two-high threshold (2HT) model, and the Atkinson-Juola (A-J) model (Atkinson & Juola, 1974). Our findings indicate that the quality of fit depends on the continuous variables involved. Although RTs and CLs were correlated, we were not able to model them together, possibly due to the large number of observations required to obtain an acceptable overall fit (G square test). However, separate models for the RT and CL data showed that most participants' data were better fit with a hybrid model like the A-J model, rather than a model that is purely discrete or continuous.

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6:00-7:30 PM (1167)

The Impact of Masks on Facial Recognition Memory. MARIANNE LLOYD, *Seton Hall University*, PAUL CORRENTE, *Seton Hall University* — Due to the COVID-19 pandemic, masks that obscured faces became common. At the present time, it is often the case that these same people are needing to be recognized without

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a mask. To date, little research has been conducted on how masks impact facial recognition. Across three experiments, we found consistent evidence for impaired recognition of unmasked faces when they were originally studied with a mask. The reverse was not true as faces learned with a mask were recognized fairly equivalently whether they were then tested with or without a mask. This finding occurred both when only masked faces were studied as well as a mixture of masked and unmasked faces.

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6:00-7:30 PM (1168)

The Feeling of 'Aha' as an Integral Aspect of the Revelation Effect. ZEHRA PEYNIRCIOGLU, *American University*, SARA M. WONG, *Emory University*, JOSHUA TATZ, *University of Iowa* — The revelation effect refers to a memory illusion. A recognition test item that needs to be manipulated/discovered before a memory decision is made is more likely to be claimed to have been previously encountered. Recently, we had suggested that a feeling of "aha" accompanying any such item discovery might be implicated in this illusory effect (Peynircioglu, Wang, & Tatz, 2019). Here, we present two experiments that follow up on these preliminary findings and show converging evidence that a sense of insight during the revelation task does at least moderate if not create the memory illusion. Solving anagrams of the to-be-recognized items themselves in Experiment 1 and of extra-list items in Experiment 2 both led to the memory illusion compared to simply copying down the intended words, but only if these solutions were also accompanied by a feeling of aha that arose during the solution process. No revelation effect emerged otherwise.

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6:00-7:30 PM (1169)

Strengthening Connections: The Role of Encoding Context on Object-Feature Storage. KATHERINE ARCHER, *Rutgers University – Newark*, KIMELE PERSAUD, *Rutgers University – Newark* — Recent research has sought to examine the long-standing question of memory: How are objects and features represented in memory? Some evidence suggests an independent storage system in which objects and their features are not stored in a bound representation (Utochkin & Brady, 2020), while other findings suggest a dependent storage system where objects and features are stored in a single, bound representation (Balaban et al., 2019). Yet, it is likely that encoding contexts plays a pivotal role in determining which storage system is utilized. In the current study, we use two distinct encoding tasks (a semantic sorting task versus a traditional encoding task) and assess their impact on recognition accuracy, and swap error and guessing rate. Preliminary results suggest that encoding task influences the rate and type of recognition error. This work provides support for our hypothesis that encoding context plays a role in how objects are stored in memory.

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6:00-7:30 PM (1170)

The Influence of One Item on the Meaning of Another May Have a Minimal Effect on Item-Recognition. SERGIO R. BARRA RODRIGUEZ, *University of Alberta*, JEREMY CAPLAN, *University of Alberta* — MONEY-BANK may make you think of gold, but RIVER-BANK may make you think of a shore. The relational influence of one word on the specific features of another could explain spared memory for associations in amnesics (Caplan et al., 2022). A prediction about intact participants' behavior following this model framework was made. If "vault full of gold" is the dominant meaning of BANK, BANK should be less recognizable when studied with its non-dominant meaning (i.e., "shore"). We used 52 double-meaning words we normed, where each meaning can be emphasized by some word. We varied whether double-meaning words (e.g., BANK) were studied with a word that related to its dominant (MONEY) or non-dominant (RIVER) meaning and then tested singly. Although the effect was nominally as predicted, it was too small to be significant. Relational influence in memory may be too subtle to dominate old/new recognition behavior. Alternatively, participants could have noticed the two meanings, and thus check for them at test, undermining effect. This line of research may give us clues regarding the stability of functional representations in memory, as well as the flexibility people have in molding these representations to adjust for current task demands.

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6:00-7:30 PM (1171)

Does Associative Memory Between Highly Similar Items Sacrifice Individual Item Memory Specificity?. JESSIE CHIEN, *University of Southern California*, TEAL EICH, *University of Southern California* — Deliberating between options contributes to the formation of memory association between the options. When a choice between options is made, this binding guides how the unchosen option is inferred based on the outcome of the chosen option, which can be essential in future decisions when the options are re-encountered, as suggested by Biderman and Shohamy (2021). When options are highly similar (e.g., honey vs. maple-glazed donuts), compared to distinct (e.g., donut vs. cannoli), binding of these options may be facilitated, but retrieval of each individual item can be hindered due to interference caused by the high degree of similarity. This, in turn, may negatively affect the ability to optimize future decision-making. Here, we focused on understanding these memory processes that can have crucial implications in decision-making. We investigated the possibility that, when two simultaneously-encoded items are highly similar, associative memory may be more likely to form, but, this may come at the expense of memory specificity for each individual item.

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6:00-7:30 PM (1172)

How Extraneous Facial Markings Affect Face Recognition. VICTORIA A.J KAVANAGH, MSC, *Memorial University of Newfoundland*, KATHLEEN L. HOURIHAN, PHD, *Memorial University of Newfoundland* — Most facial recognition research focuses on recognition through intrinsic facial features (e.g., eyes, nose, and

mouth). In the current study, human recognition for faces containing extraneous features (e.g., moles, scars, tattoos) was tested. In Experiment 1, participants studied a series of faces, some of which were altered to include a mole or a scar, and then completed an old/new recognition task. Results showed that unaltered faces were more discriminable than faces in either altered condition. Experiment 2 used a similar study phase but tested memory using two-alternative forced choice. Results showed better discriminability only for unaltered faces compared to faces with scars. Experiment 3 compared unaltered faces to faces with moles and ones altered to be more traditionally distinct (e.g., altered eye size); an old/new recognition test was used. Better discriminability was found for the distinct faces in comparison to the other conditions; no difference was found between the other conditions. Finally, in Experiment 4, using a different set of face stimuli, we compared old/new recognition for faces with and without tattoos. Results showed similar discriminability between faces in both conditions.

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6:00–7:30 PM (1173)

Feedback as a Catalyst: Optimizing Global Meta-Reasoning in Decision-Making. MATTHEW W. CHRISTIAN, *Flinders University*, GLEN E. BODNER, *Flinders University*, PAUL WILLIAMSON, *Flinders University* (Sponsored by Glen Bodner) — Meta-reasoning refers to the monitoring and regulation of one's reasoning. Previous research has focused on local meta-reasoning, examining measures collected for individual reasoning problems. However, global meta-reasoning judgments about sets of reasoning problems remain understudied. These overall judgments are more salient to the reasoner and hence may better predict decisions about future investments of time and effort. In this study, participants completed two rounds of heuristics-and-biases reasoning tasks. We compared how local and global meta-reasoning measures, specifically focusing on miscalibration (i.e., the extent to which estimates deviate from actual performance), predicted future performance and self-regulated solving time. Additionally, we manipulated feedback provision to assess its impact on both local and global meta-reasoning in the second round. Individual differences in cognitive reflection and actively open-minded thinking were also examined. This research sheds light on potential factors influencing the accuracy of meta-reasoning and its miscalibration at both the local and global level.

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6:00–7:30 PM (1174)

Does Mindfulness Training Promote Students' Beliefs about Knowledge Transfer?. TYREE LANGLEY, *University of Pittsburgh*, AVITAL PELAKH, *University of Pittsburgh*, TESSA BENSON-GREENWALD, *University of Pittsburgh*, MICHAEL J. TUMMINIA, *University of Pittsburgh*, SARAH JAHANIAN, *University of Pittsburgh*, MELANIE GOOD, *University of Pittsburgh*, ERIC KUO, *University of Illinois Urbana-Champaign*, BRIAN GALLA, *University of Pittsburgh*, TIMOTHY NOKES-MALACH, *University of Pittsburgh* — The current study used data from a randomized controlled trial to explore whether a mindfulness intervention could promote students' transfer beliefs—that is, perceptions of their tendency and skills to transfer knowledge across contexts. We hypothesized that a mindfulness intervention aimed at promoting metacognitive awareness and mindsets for navigating a demanding STEM course would increase students' endorsement of transfer beliefs. Undergraduate students (n = 149) were recruited from introductory physics courses and randomly assigned to either a 5-day mindfulness intervention or a no-training control condition. Students completed a self-report survey assessing transfer beliefs four times: before the intervention, immediately after the intervention, and then 2 weeks and 3months post-intervention. Compared to students in the control, those who received mindfulness training reported an increase in transfer beliefs, with the largest effect at 3 months after the intervention. We discuss the implications of these results for theories of mindfulness and knowledge transfer.

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6:00–7:30 PM (1175)

Do Global Judgments of Learning Promote Covert Retrieval? Evidence from Categorized Word Lists. BENTON H. PIERCE, *Texas A&M University–Commerce*, AMANDA R. STEVENS, *Tarleton State University* — Stevens and Pierce (2022) reported that reactivity effects of making judgments of learning (JOLs) extend beyond paired associates to categorized word lists. In the present study, we examined whether the enhanced cued recall following the act of making global (i.e., list-wise) JOLs for categorized lists may be due in part to covert retrieval of the list words when the JOL is made. In a between-subjects design, one group made JOLs following the study of short (six-word) categorized lists (e.g., list of occupations: teacher, dentist, engineer, fireman, lawyer, nurse), a second group covertly retrieved as many list words as possible following study, and a third (control) group engaged in a distracter task following study. Preliminary findings suggest that covert retrieval may not fully account for reactivity effects following global JOLs for word lists.

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6:00–7:30 PM (1176)

The Disappearing Metacognitive Illusion. PATTI SIMONE, *Santa Clara University*, LISA WHITFIELD, *Santa Clara University*, CHLOE MORRISON, *Santa Clara University*, KATE GRIFFIN, *Santa Clara University*, MCKENNA ANDERSON, *Santa Clara University* — People rely on irrelevant cues when estimating their memory. We examined whether such metacognitive illusions depend on contextual cues by measuring metacognition and memory in three experiments using words in small (18 pt) or large (48 pt) fonts. Participants in Experiment 1 (n = 20) saw large and small words in pseudo-random order and gave a judgment of learning (JOL). Participants in Experiment 2 (n = 49) gave JOLs for either large or small words and participants in Experiment 3 (n = 23) gave JOLs for a block of large words followed by a block of small words (or vice versa). We found that font size did not impact recall and did impact metacognition. However, font size impacted JOLs only when font size varied from trial to trial (Experiment 1) or just after the change in blocks

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(Experiment 3). This illusion disappeared when participants saw only one font size (Experiment 2). This metacognitive illusion is dependent on activation of contextual cues.

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6:00–7:30 PM (1177)

Dividing Attention Impairs Metacognitive Monitoring. HOSAIN HESHMATI, *University of Arizona*, JONATHAN TULLIS, *University of Arizona* (Sponsored by Jonathan Tullis) — Accurately judging one's learning is vital because memory predictions dictate what and how we choose to study. Research has largely examined metacognitive monitoring under ideal, controlled settings, but real-world learners frequently study with distractions and under divided attention. Here, we examined how dividing attention impacts the accuracy of metacognitive predictions. Participants studied word pairs that varied along multiple dimensions (i.e., cue-to-target associative strength, concreteness, frequency). Learners predicted how well they would remember word pairs and eventually took a cued recall test. For half of the study lists, participants completed only the memory task (full attention); for the remaining lists, participants studied word pairs while doing a simultaneous continuous response task (divided attention). Dividing attention significantly impaired the resolution and calibration of learners' metacognitive judgments. Dividing attention increased noise during monitoring, which suggests that metacognitive monitoring requires cognitive resources and unrelated tasks compete for those resources.

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6:00–7:30 PM (1178)

Familiarity-Detection from Partially Occluded Faces: Do Separate Exposures to Different Facial Parts Combinedly Increase Familiarity with a Whole Face?. BROOKE N. CARLAW, *Colorado State University*, ANNE M. CLEARY, *Colorado State University* — Prior research on word or musical stimuli indicates that perceived familiarity with a cue during cued recall failure can be systematically increased based on the amount of feature overlap between that cue and studied items in memory (Huebert et al., 2022; McNeely-White et al., 2021, Ryals & Cleary, 2012). Faces are a special case, as evidence suggests that unlike other types of stimuli (e.g., words or music), faces may be primarily processed in a holistic manner. A recent study demonstrated that even when a person's identity was prevented by the presence of a facial occlusion (e.g., surgical mask or sunglasses), familiarity-detection with the occluded face could still occur, suggesting that holistic processing was not a requirement for facial familiarity-detection (Carlaw et al., 2022). In the current experiment, we found that isolating specific feature types at encoding through partial occlusion of faces at study using a surgical mask or sunglasses, then embedding those familiarized feature sets in otherwise novel whole faces at test, systematically and combinedly increased the perceived familiarity of the otherwise novel whole faces. This suggests that whole faces are processed as sets of component parts for familiarity detection.

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6:00–7:30 PM (1179)

Do Unrelated Positive or Negative Experiences Bias Judgments of Learning (JOLs)?. ABIGAIL KORTENHOEVEN, *Texas Tech University*, MICHAEL J. SERRA, *Texas Tech University* — Factors that are related (presentation frequency) and unrelated (font size) to memory performance can affect people's judgments of learning (JOLs), but such factors are usually associated with memory items during encoding. Across multiple experiments, we examined whether a separate, unrelated experience could also bias JOLs. College students studied and made JOLs for paired associates (word pairs), completed a distractor survey, and then tested over those items. Critically, before the study and JOL phase, they either answered 20 grade school level math questions, 20 GRE level math questions, or did nothing. Although the math task was conceptually unrelated and did not affect memory performance, participants made higher JOLs after answering easy math problems and lower JOLs after difficult math problems, versus those who did nothing. In addition, the presence of feedback for math scores lowered JOLs for all groups, though the result was not significant. The results indicate that an unrelated experience, whether positive or negative, can affect JOLs for simple memory materials.

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6:00–7:30 PM (1180)

Now and Later: Timing and Repetition Contribute to Metacognitive Judgments During Map Learning. LAUREN A. MASON, *Tufts University*, KISHANDRA ANNE E. PATRON, *Stanford University*, AYANNA K. THOMAS, *Tufts University*, GEORGE L. WOLFORD, *Dartmouth College*, HOLLY A. TAYLOR, *Tufts University* — A US solider recently went missing during an on-base navigation exercise and was found days later on the opposite side of the course. This event highlights the need to explore factors that contribute to accurate metamemory predictions in spatial contexts. We examined how timing and repeated study contributed to metacognitive judgment formation and landmark memory. Across three experiments, participants studied landmark pairs with or without the context of maps. We manipulated judgment of learning (JOL) timing (immediate or delayed) and stimulus repetition (once or three times). All participants took a cued-recall test without maps. Learners better-remembered pairs studied without maps. JOL magnitudes aligned with memory performance and reflected a greater sensitivity to the study context when judgments were delayed, and pairs were studied repeatedly. Taken together, these data extend verbal learning findings, suggest people can gauge their memory for maps, and offer insight on metacognitive judgment formation during map learning.

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6:00–7:30 PM (1181)

Potentiating Effects of Interim Tests and Metacognitive Judgments on Future Learning. HUNTER VANNAMAN, *University of North Florida*, CHARLES J. FITZSIMMONS, *University of North Florida*, SARA DAVIS, *University of North Florida* (Sponsored by Sara Davis) — Interleaving encoding with retrieval potentiates subsequent learning, a phenomenon known as the forward

testing effect (FTE). The FTE may be explained by retrieval practice inducing metacognitive introspection, influencing future study strategies. Recently, Davis & Chan (2023) found that judgments of learning (JOLs) eliminated the FTE. However, this finding was only observed between experiments, and when eliciting multiple JOLs after each encoding opportunity. We examined the effects of testing and making metacognitive judgments on new learning in a single experiment. After reading each of three sections of a text passage, participants provided one, four, or no JOLs, and either retrieved, restudied, or were not re-exposed to the material. We examined the impact of these prior activities on learning of the final section. The results suggest that JOLs alone can have similar impacts on new learning under some conditions, but only retrieval practice can enhance retention of previously learned information.

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6:00-7:30 PM (1182)

Do Verbal Judgments of Learning Predict Cued Recall Accuracy?. JESSICA GETTLEMAN, *University of Virginia*, DAVID DOBOLYI, *University of Colorado Boulder*, CHAD DODSON, *University of Virginia* — Judgments of learning (JOLs) assess the likelihood that presented information will be remembered in the future, and are typically expressed numerically, using probability scales. However, numeric JOLs are not always reliable predictors of future memory performance (Rhodes, 2015), and there is evidence that people cannot accurately express their memory predictions using percentages (Hanczakowski et al., 2013). To investigate whether we can improve the predictive value of JOLs by collecting verbal information, we presented 243 participants with 16 unrelated word pairs and asked them to explain how likely they would be to recall the target word when presented with the cue, provide specific details about why they indicated this likelihood, and finally, to translate these responses onto a numeric scale. After a 3-minute delay, they completed a cued recall test for these pairs. We examine the relative contributions of verbal and numeric JOLs in predicting cued recall accuracy.

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6:00-7:30 PM (1183)

Visual Perception Modulates Reactions to Misophonia Trigger Sounds. GHAZALEH MAHZOUNI, *University of California, Santa Cruz*, MOOREA WELCH, *University of California, Santa Cruz*, MICHAEL YOUNG, *University of California, Santa Cruz*, VEDA REDDY, *University of California, Santa Cruz*, PATRAWAT SAMERMIT, *University of California, Santa Cruz*, NICOLAS DAVIDENKO, *University of California, Santa Cruz* — Misophonia is characterized by strong negative reactions to everyday sounds, such as chewing or slurping, that can have severe negative consequences for daily life. Here we investigated the role of visual perception in modulating misophonic reactions. Misophonia and healthy controls watched and rated 26 short videos: 13 misophonia trigger sounds (e.g., crunchy chewing) paired with the 13 original video sources (OVS; e.g., video of crunchy chewing), and the same trigger sounds paired with 13 positive attributable visual sources (PAVS; e.g., video of tearing a piece of paper). PAVS-paired sounds significantly increased ratings of pleasantness and reduced the intensity of bodily sensations in both misophonia and control groups, compared to OVS-paired sounds. Importantly, misophonia participants showed significantly more reduction in bodily sensation ratings compared to the control participants. Our results show that the impact of misophonic trigger sounds is attenuated by presenting them alongside positive attributable visual sources.

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6:00-7:30 PM (1184)

Neural Correlates of Audiovisual Integration. JONATHAN CONRADY, *University of South Carolina*, JESSICA GREEN, *University of South Carolina* — Humans are most sensitive to sound and visual spatial frequencies in the range of human speech and faces, with the largest audiovisual integration effects for simple stimuli observed when both modalities fall within their peak sensitivity ranges. Here, we examined the underlying neural activity of frequency-varying, simple audiovisual stimuli across 21 subjects in a simultaneity judgment task. Using scalp-recorded EEG, we found evidence for modulation of the auditory N1 event-related potential (ERP) by simultaneously presented visual stimuli when the auditory stimuli were within the peak sensitivity range. Additionally, when the stimuli were separated in time we observed differences in sensory ERPs for stimuli that were perceived as simultaneous compared to those that were not integrated, as well as variations in the ERP effects based on the frequency range of the stimuli, suggesting that our sensitivity to low-level stimulus features may play a role in the enhanced integration for audiovisual speech.

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6:00-7:30 PM (1185)

Distinct Influences of Semantic Identity and Object Animation on Multisensory Integration in Virtual Reality. SHEA DUARTE, *University of California, Davis*, UTA NOPPENEY, *Donders Institute for Brain, Cognition and Behaviour*, JOY GENG, *University of California, Davis* — To form a coherent perception of the world, we integrate multisensory signals that are likely to originate from a single source. The ventriloquist effect (VE) occurs when a sound is mislocalized towards a concurrent, spatially mismatched visual stimulus. Research suggests that the VE occurs across greater distances for semantically congruent visual and auditory stimuli compared to meaningless ones,. Here, we test the VE across five spatial disparities (0-60 degrees) for Meaningless (sphere + tone), Object (static scissors + snip sound), and Animated Object (animated snipping scissors + snip sound) stimuli. The VE was stronger at small disparities for Animated Objects, but stronger at large disparities for Meaningless stimuli. Bayesian causal inference modeling revealed that Animated Objects were more likely to be integrated, whereas semantic Object information increased the accuracy of integration by improving auditory localization reliability. These results suggest that while realistic motion in animated stimuli increases integration across space, whereas semantic correspondence limits erroneous integration across large distances.

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6:00–7:30 PM (1186)

Involvement of the Superior Colliculus in Low-Level Crossmodal Correspondence. JOHN MCEWAN, *University of Queensland*, ADA KRITIKOS, *University of Queensland*, MICK ZELJKO, *University of Queensland* — Crossmodal correspondence refers to the tendency to preferentially match a certain value of one sensory attribute, with a certain value of another from a different modality. This preference manifests as faster reaction times, and higher accuracy in psychophysics tasks, as well as enhanced binding in multisensory integration paradigms. The neural underpinnings of this association are not fully understood however, particularly the question of where this crossmodal information is combined in the brain. This study uses a psychophysical paradigm to consider possible subcortical processing routes in crossmodal correspondence, via the superior colliculus (SC). Using a luminance masked blue visual target, we exploit the lack of S-cone input to the SC to create crossmodal targets which are not processed subcortically. Results show that inhibition of visual input to the SC prevents the elevation/pitch correspondence but does not affect lightness/pitch or size/pitch. Overall, this further supports claims made in the literature for a distributed crossmodal network across both high and low-level processes and suggests that there may be subtle processing differences even among very similar basic featural associations.

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6:00–7:30 PM (1187)

Influences of Surround Sound Configurations on Visual Spatial Attention. KAYLA SOMA TSUTSUSE, *University of Hawai'i at Mānoa*, SCOTT SINNETT, *University of Hawai'i at Mānoa* — Previous research has shown that exposure to surround sound can enhance spatial attention and improve visual perception in a counting task (Mendonca et al., 2020). However, the counting task used was one where focused visual attention is advantageous and does not include a direct measure of the spatial distribution of attention. The current study investigates the effects of ambient noise played in mono, surround, 5.1, or 7.4.1 sound configurations on performance in three visual spatial attention tasks (i.e., flanker, enumeration, and useful field of vision tasks). It was hypothesized that exposure to surround sound configurations (i.e., 5.1 and 7.4.1) will lead to further dispersion of visual attention, leading to faster response latencies and better accuracy, given that sound can reflexively direct visual attention and enhance the detection of spatially presented visual stimuli (e.g., Santangelo & Spence, 2007). The findings failed to demonstrate that passive exposure to surround sound configurations affects performance on visual spatial attention tasks. Future investigations aim to investigate the effects of task-relevant sound presented in mono, stereo, 5.1, or 7.4.1 sound configurations on visual and auditory spatial tasks.

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6:00–7:30 PM (1188)

Impact of Occlusions on Face Processing Preferences: An Investigation of Stimulus Expectations and Social Media Behavior. MEGHAN D. CAULFIELD, *Marist College*, GRACELYN PENSIERO, *Marist College* — Face processing is a rapid and automatic cognitive process. Simply expecting a face stimulus activates the fusiform face area and initiates processes to extract information about identity, emotion, and intentions, even when the face is covered or occluded. It is a common practice in social media to occlude the faces of individuals to preserve safety and anonymity. However, whether this alters face processing preferences is unknown. Participants (N = 51) were presented with 60 photographs to rate their preferences and social media behavior ("like" and "following") in a 2 (stimulus: faces/scenes) x 2 (occlusion: occluded/unoccluded) within-subjects design. Results indicated an interaction of stimulus and occlusion ($p = .003$) driven by preferences for unoccluded faces compared to occluded. Significant main effects for social media behavior ratings with a greater likelihood to "like" and "follow" photographs that were unoccluded (all p's $< .030$) further supported the detrimental impact of occlusions in photographs. Overall, this study provides an initial contribution to our understanding of the relationship between occlusions and preferences in the context of face processing.

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6:00–7:30 PM (1189)

The Impact of Stimulus Duration Distributions on Perception: A Study via Bayesian Recency Model. HANA HINOHARA, *University of Tokyo*, TAKU OTSUKA, *The University of Tokyo*, YUKO YOTSUMOTO, *The University of Tokyo* — Our perception is shaped not only by the information from current stimuli but also by integrating past experiences with current information, utilizing Bayesian thinking. Although the central tendency and serial dependence are considered evidence of the context effect, they are typically investigated separately, despite being confounding factors. The Bayesian Recency (BR) model can explain these phenomena, as it involves updating the prior distribution at each trial. In the present study, we conducted a reproduction task under two conditions, each with different distributions of stimulus duration, to investigate the effects of stimulus distribution. The results indicate that both central tendency and serial dependence occurred in both conditions. Additionally, we observed differences in the magnitude of individual variability between the conditions. These findings are discussed within the context of a Bayesian model approach.

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6:00–7:30 PM (1190)

Central Tendency Biases Reflecting Distributional Factors and Spatial Layout. STEPHEN DOPKINS, *The George Washington University*, GORDON G. MCINTIRE, *The George Washington University* — A central tendency bias is often observed in recall of quantitative stimuli. The bias can reflect the distribution of stimuli used in a perceptual memory task or the layout from which test stimuli are drawn in a spatial memory task. To explore differences in the central tendency bias for distributional and layout knowledge, we compared memory for length and linear position using essentially the same stimulus parameters in the two cases. The central tendency bias was stronger for length than for linear position and was best fit by linear and quadratic functions in the two cases. An additional bias

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toward zero was present for length but not for linear position. We discuss the implications of the results for the category adjust model, the most influential account of central tendency bias, and, more generally, for the brain representation of quantitative knowledge.

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6:00–7:30 PM (1191)

Spatial Memory Performance in Individuals with Post-Traumatic Stress Disorder on an Active Navigation and Search Task. BIANCA DALANGIN, *DCS Corporation*, ASHLEY RABIN, *DCS Corporation*, HEATHER ROY, *US Army Research Laboratory*, LEAH R. ENDERS, *DCS Corporation* — Impairments in allocentric spatial memory, which involves the ability to recognize the spatial orientation between two or more objects from a fixed viewpoint, is associated with posttraumatic stress disorder (PTSD). Coupled with the impact of attentional threat biases on memory, encoding ability may vary with threat level, especially in PTSD populations. Little work has examined the effects of threat level on different types of spatial memory in PTSD populations. We present preliminary results on spatial memory performance between PTSD and non-PTSD populations in a navigation and search task with varying threat contexts. We predict that individuals with PTSD will have worse spatial memory task performance compared to those without PTSD. Ongoing data collection shows significant threat effects yet small group related differences (N = 9 PTSD, N = 20 non-PTSD). These findings have practical implications on understanding situational awareness in those with and without PTSD under various threat contexts.

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6:00–7:30 PM (1192)

Self-Generated Motor Activity at Encoding Benefits Route Memory. YADURSHANA SIVASHANKAR, *University of Waterloo*, PHILIP HE, *Wilfrid Laurier University*, HÉLÈNE SAUZÉON, *University of Bordeaux*, MYRA A. FERNANDES, *University of Waterloo* — Navigational devices limit the need for decision-making. We examined whether visual navigational guidance during initial exploration of a city hindered memory for routes travelled. In Experiment 1, participants (n = 50) explored 12 cities in virtual reality (VR) for 40 s each, with the goal of finding a star. Navigation strategy was manipulated within-subjects, randomly, and required either actively self-initiating decision-making about the route of travel or following a visually-guided route, both with volitional control of movements using VR paddles, or passively viewing a pre-selected route. Participants later re-entered each city and were asked to "re-trace" the exact route they had traveled. There was an effect of Navigation Strategy on route memory, such that self-directed and visually guided conditions similarly benefited performance significantly more than passive viewing ($\eta^2p = 0.10$). In Experiment 2 (n = 54), we implemented the same procedure using Desktop VR, with navigation via keyboard button press, rather than arm and body movement in Immersive VR. We found no effect of Navigation strategy ($\eta^2p = 0.01$). Together, results suggest motoric involvement during encoding, more so than decision-making, impacts route memory.

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6:00–7:30 PM (1193)

The Effect of Cognitive Style on Map Reading. HATICE DEDETAS SATIR, *University of Mannheim*, STEFAN MÜNZER, *Universität Mannheim* — Cognitive style can impact map reading (Pazzaglia & Moe, 2013) and navigation (Kraemer et al., 2017). Our study explores the relationships between cognitive style, self-reported map memorization strategies, and route learning from a map. Participants received a map with a predefined route, and the route memory was evaluated by using three tasks: verbal (verbal route instructions), pictorial (detecting changes in the study map), and visual-spatial (pointing task). We hypothesized that self-report map memorization strategies and cognitive styles (Blazhenkova & Kozhevnikov, 2009) will predict the corresponding task performance. Experiment 1 (N = 56) revealed that cognitive styles were associated with self-reported map memorization strategies, but cognitive styles did not predict performances in the corresponding tasks. Experiment 2 (N = 72, data collection ongoing) includes reaction time data to complement performance measures. We anticipate faster task responses with increased scores in the corresponding cognitive style. Additionally, gaze patterns will be recorded to gain insights into individual differences.

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6:00–7:30 PM (1194)

The Role of Chronic Stress in Spatial Navigation in Humans. MARJAN RASHIDI, *University of California, Irvine*, CHUANXIUYUE (CAROL) HE, *University of California, Santa Barbara*, MARY HEGARTY, *University of California, Santa Barbara*, ELIZABETH R. CHRASTIL, *University of California, Irvine* — Spatial navigation, going from one place to the other and keeping oriented, is an essential aspect of daily human life. The hippocampus is a brain region important for learning and memory and plays a critical role in navigation. We also experience some level of stress every day. Most stress receptors are in the hippocampus and chronic stress alters hippocampal function, potentially leading to cognitive impairment. Here, we addressed the question of whether there is an association between chronic stress and navigation in humans. We investigated the effects of chronic stress on route learning, wayfinding, spatial knowledge, and strategy use in virtual navigation mazes. Chronic stress was measured via two questionnaires, the Chronic Stress Questionnaire and the Perceived Stress Scale, in 50 healthy young participants. Preliminary results revealed a significant association between chronic stress levels and route learning, and this association was sex-dependent, with females showing worse performance than males.

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6:00–7:30 PM (1195)

No Evidence for Chunking in Spatial Memory of Route Experience. JESSE SARGENT, *Francis Marion University*, LAUREN L. RICHMOND, *Stony Brook University*, DEVIN KELLIS, *University of South Carolina*, MAVERICK E. SMITH, *Washington University in St. Louis*, JEFFREY M. ZACKS, *Washington University in St. Louis* — Research on memory for small-scale spaces (e.g., tabletops, rooms) and geographic scale spaces (e.g.,

states) indicates that people chunk locations by spatial regions. Does such chunking happen early in spatial learning during the navigation of a route? In five experiments, participants watched videos of routes through academic buildings from a first-person viewpoint. Afterward, we tested location memory for target objects encountered along the routes. Contrary to hypotheses, neither physical boundaries (e.g. doorways, walls) nor event boundaries (e.g., task completion) caused consistent evidence of chunking in young or older adults. However, boundaries affected spatial memory differently for the two age groups; boundaries increased and decreased remembered distances for young and older adults, respectively. As a strategy for increasing spatial memory capacity, chunking may be most effective in learning situations that more directly tap perceptual grouping mechanisms (e.g., map learning) and may play a surprisingly small role in spatial learning during navigation.

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Poster Session II

Friday, November 17, 2023, 12:00–1:30 PM US PST, Grand Ballroom

12:00–1:30 PM (2001)

Risk Preferences in Attention and Decision-Making. NUSRAT JAHAN, *Texas A&M University* — In most risky decision-making studies, there is only one possible risk (losing money) that the reward (gaining money) is weighed against. Little is known about decision making when multiple risks need to be evaluated and how experiences in this context influence attentional biases. Do people tend to look out for what they actively avoid and presumably find the most aversive, or do they instead tend to look out for what they are accustomed to selecting as the more favored alternative? The present study examines decision making and subsequent attentional biases in the presence of multiple risks (losing money and getting shocked). Within the initial decision-making task, participants were biased to initially orient to the stimuli that they favored in their decisions, including when selecting between two aversive stimuli. We further observed that choice behavior during training was related to attentional biases when color stimuli were presented as distractors in a subsequent test phase (visual search), including with respect to the aversive stimuli.

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12:00–1:30 PM (2002)

Effort-Driven Attentional Capture. MOLLY R. MCKINNEY, *Texas A&M University* — Individuals who suffer from drug dependence are at higher risk of relapse when under stress and fatigue. Furthermore, our attention system can be persistently biased toward cues of a particular valence (e.g., drug cue), even when such prioritization is no longer consistent with our goals. These parallel findings suggest a potential relationship between the exertion of effort and the control of attention, which we directly examined in the present study. Participants learned pairings between three color squares and corresponding levels of physical effort demand (manipulated via a hand dynamometer): high, low, and no effort. Then, when their goal was to instead search for a circle target and ignore a square distractor, participants were faster to respond when the target was associated with comparatively higher effort and more likely to have their attention captured by the distractor when it was associated with comparatively higher effort. This suggests that the control of attention can be shaped by the exertion of effort, prioritizing stimuli associated with greater physical demands, potentially via mechanisms of aversive conditioning.

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12:00–1:30 PM (2003)

Don't Look Here: Assessing Proactive Suppression of Spatial Locations. KRISTINA REITAN, *Oregon State University,* DOMINICK TOLOMEO, *Oregon State University,* ERIC RUTHRUFF, *Oregon State University,* MEI-CHING LIEN, *Oregon State University* — Can threatening distractor locations be suppressed explicitly? To answer this question, we combined a spatial cuing paradigm with a capture-probe paradigm. There were two target shapes in every search display. To locate the correct target, participants needed to use a spatial cue pointing toward two to-be-ignored locations. There were also two neutral locations that never contained targets or distractors and so did not need to be suppressed. To assess spatial suppression, we presented a probe letter recall task on 30% of trials. If people proactively suppress the threatening to-be-ignored locations, then probe recall accuracy should be lower for these to-be-ignored distractor locations than for neutral locations (a probe suppression effect). However, we found no suppression effects with random trial-by-trial location cues nor with fixed location cues. We argue that people do not proactively suppress threatening distractor locations more than non-threatening neutral locations that never contain targets or distractors.

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12:00–1:30 PM (2004)

Evidence that Distractor Suppression Does Not Require Attentional Resources. DOMINICK TOLOMEO, *Oregon State University,* MEI-CHING LIEN, *Oregon State University,* ERIC RUTHRUFF, *Oregon State University* — Does learned suppression of visual features depend on attentional resources? McDonald et al. (2022) concluded this was the case based on the absence of the PD (believed to index suppression) following a rapid serial visual presentation (RSVP) task. Here, we looked for converging evidence using established behavior measures of suppression. Participants performed an RSVP task followed by a search task. Critically, the search display included a high- or low-salient distractor with a unique color. Suppression was assessed using the capture-probe paradigm, in which letters appeared inside colored circles (30% of trials). Probe letter recall accuracy was lower at locations with distractor colors than the neutral color (baseline), suggesting proactive suppression. Critically, this suppression effect was just as large at Lag 2 (when attentional resources were unavailable) as it was at Lag 8. We argue that proactive suppression of distractors is an implicit process, unconstrained by the availability of attentional resources.

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12:00-1:30 PM (2005)

Examining the Impact of Acetaminophen on Early Attentional Processing of Emotional Images. FELICITY R. WOODSON, *Texas A&M University* — Beyond pain relief, evidence shows that acetaminophen attenuates the evaluative and emotional processing of valent stimuli. Acetaminophen also reduces brain activity in the dorsal anterior cingulate cortex and anterior insula, which are both a part of the brain's salience network that is responsible for guiding attention toward relevant stimuli. The extent to which these pharmacological effects of acetaminophen can be attributed to changes in attentional processing remains unknown. Here we randomly assigned participants to either a control (cornstarch placebo) or treatment (acetaminophen) group before having them perform an emotional attentional blink (EAB) task. Although we replicate a robust emotional attentional blink for both positive and negative images, in our initial experiment there were no differences in performance between groups, suggesting that acetaminophen did not attenuate the magnitude of distraction by the emotionally valent images. A follow up study will use more physically salient (conspicuous) distractors at different lags and include a parallel task in which participants rate the distractors according to valence and arousal.

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12:00-1:30 PM (2006)

An Exploration of the Cross-Modal Generalizability of Selection History-Dependent Attentional Bias. NIYA YAN, *Texas A&M University* — The role of selection history in the control of attention has been a topic of intense research focus, but the generalizability of learning-dependent influences on attention remains understudied. The present study aims to investigate whether learning-dependent attentional facilitation and suppression can extend across different sensory modalities. In Experiments 1 and 2, participants first underwent a learning phase in which spoken color-words were associated with different amounts of reward in a dichotic listening task (Experiment 1) or were used as distractors that were played with varying frequency in an audiovisual Stroop task (Experiment 2). In a subsequent test phase, a visual search task was conducted in which distractors were rendered in the colors that corresponded to the spoken color-words during training. Neither attentional capture nor suppression was observed for stimuli rendered in the previously high-value color (Experiment 1) or the previously more frequent distractor color (Experiment 2). These findings indicate a lack of cross-modal generalizability in the learning-dependent control of attention, consistent with the idea that learning occurs at the sensory level, not the semantic level.

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12:00-1:30 PM (2007)

Attentional Set and Explicit Expectations of Perceptual Load Determine Flanker Interference. JOSHUA O. EAYRS, *Ghent University* — Perceptual load theory (PLT) is a long-standing framework which purports to explain when distractor stimuli will capture attention and when not. While "load effects" are highly robust and replicated, there is considerable debate as to their cause. Here we investigated the roles of perceptual load, attentional set and motivation in determining distractor interference. In three experiments, participants performed an easy (low-load) or hard (high-load) visual search task with flanking distractors. The search was preceded by cues indicating the upcoming load-level with two-thirds reliability. Our results show that both the induced attentional set and explicit expectations of perceptual load interact to determine flanker interference: flanker effects were observed for all trial types except trials cued as high-load which were also preceded by high-load. These effects were not modulated by (reward) motivation. Thus, successful distractor exclusion relies upon at least two top-down factors, neither of which depend upon motivation.

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12:00-1:30 PM (2008)

Memory Representation of Distractor Suppressed by Prior Experiences. BO YEONG WON, *California State University, Chico* — This study aimed to examine the impact of prior experiences on learned suppression, focusing on the memory representation of distractors. To assess the extent of suppression and the memory representation of the distractor, attentional capture and memory errors from unexpected memory tests involving color, location, awareness, and confidence were employed, respectively. These tests were conducted after participants were exposed to three types of prior trial distractors: varied (with various colors), repeated-same (with the same color as the distractor), and repeated-different (with a different color from the distractor). Results revealed that the repeated-different condition exhibited stronger attentional capture (indicating weaker suppression) compared to varied and repeated-same conditions. However, both varied and repeated-different conditions showed higher memory error than repeated-same. These findings suggest that prior experiences shape both distractor suppression and memory representation. Additionally, attentional capture alone does not reliably predict memory quality, as different suppression mechanisms may be triggered by prior experiences.

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12:00-1:30 PM (2009)

Shifting Attention Between Simultaneous Voices: How We Prepare to Listen to a New Speaker. AMY STRIVENS, *Rheinisch-Westfälische Technische Hochschule Aachen University*, ELENA BENINI, *Rheinisch-Westfälische Technische Hochschule Aachen University*, ANDREA M. PHILIPP, *Rheinisch-Westfälische Technische Hochschule Aachen University*, IRING KOCH, *Rheinisch-Westfälische Technische Hochschule Aachen University*, AURELIU LAVRIC, *University of Exeter* — Knowing that another talker at a "cocktail party" will soon begin speaking should allow one to "retune" auditory attention to that voice in advance, but evidence on such preparatory shifts has been inconclusive. We investigated the optimal conditions for encouraging preparatory shifts of attention and detecting their benefits by visually cueing one of two simultaneous voices. We manipulated the probability of a target voice switch, how often the two voices required the same response, and whether feature changes vs. repetitions on an irrelevant voice dimension (e.g.,

location) influenced attention shifts within the relevant dimension (e.g., sex). Preparation reduced the switch cost when switches were rare (25%), but not when they were frequent (75%), suggesting that when switches of the target voice are relatively rare, this encourages stronger commitment to the currently-relevant attentional template. Trial-to-trial transitions of the irrelevant dimension influenced the switch cost for the relevant dimension, suggesting cross-dimension bindings.

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12:00–1:30 PM (2010)

Eye Gaze Is Not Special: The Reversed Spatial Stroop Effect on the Tongue and Arrow Targets. YOSHIHIKO TANAKA, *Senshu University*, TAKATO OYAMA, *Senshu University*, KENTA ISHIKAWA, *Senshu University*, MATIA OKUBO, *Senshu University* — Recent research using spatial Stroop paradigms revealed the unique attentional mechanism of gaze processing—arrow targets elicit the spatial Stroop effect, while gaze targets produce the reversed spatial Stroop effect. The present study examined whether non-gaze stimuli elicit the reversed spatial Stroop effect. Participants discriminated the direction (left or right) of four types of targets (i.e., arrow-only, gaze, tongue, and arrow with mosaic background) presented on the peripheral visual field. While arrow-only and gaze targets replicated previous findings (spatial Stroop and reversed spatial Stroop effect, respectively), a reversed spatial Stroop effect emerged for the tongue target (Experiment 1). Furthermore, the spatial Stroop effect of arrows was numerically reversed when embedded in a mosaic background (Experiment 2). These results may question previous hypotheses emphasizing the unique processing of eye gaze. We propose that the temporal nature of the location conflict and response inhibition are responsible for the reversal of spatial interference.

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12:00–1:30 PM (2011)

Perceptual Fluency and Cognitive Control. EMMA WIEDENMANN, *The George Washington University*, REBEKA C. ALMASI, *The George Washington University*, SARAH B. MALYKKE, *The George Washington University*, SOWON HAHN, *Seoul National University*, MYEONG-HO SOHN, *The George Washington University* — Flexible cognitive control has been demonstrated by the conflict adaptation effect, in which the congruence effect is reduced contextually. Such flexibility also applies to perceptual fluency, in that the performance benefit due to perceptually fluent as opposed to disfluent stimuli is also reduced contextually (Dreisbach & Fischer, 2011). The current study examined whether the contextual modulation is established between perceptual fluency and cognitive congruence. Using an immediate priming paradigm, participants responded to the perceptual quality of the prime stimulus (e.g., clear or blurry) before they performed a target task. In Experiment 1, the target task was to explicitly detect the congruence of the color Stroop stimulus, which requires to compare the color and the word dimensions. In Experiment 2, the target task was to resolve the Stroop conflict, focusing on the color while ignoring the word. The clear primes increased the congruence effect during the conflict detection but reduced the congruence effect during the conflict resolution. These results suggest that perceptual clarity may promote more target-oriented processing.

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12:00–1:30 PM (2012)

Mechanisms of Cognitive Control and Distractor Suppression in Heavy Drinkers. SOJUNG YOUN, *Texas A&M University*, BRIAN A. ANDERSON, *Texas A&M University* — Cognitive control is critical for implementing regulatory behavior to pursue task-related goals. Impaired cognitive control has been linked to weakened self-regulatory processes underlying compulsive substance intake. Consistent with this, previous research has provided evidence for impaired task performance in substance-abusing groups during Stroop and go/no-go tasks. Distractor suppression mechanisms in visual search might also involve overlapping regulatory components that support goal-directed behavior by resolving the attentional competition between distractors and the target of search. However, the efficiency of learning-dependent distractor suppression has not been examined in drug-abusing individuals, and even though cognitive control and distractor suppression share similar components required for goal-directed behavior, a direct comparison between these processes is lacking. Here, we present evidence supporting a divergence of mechanistic processes between cognitive control and attentional control, and impaired learning-dependent distractor suppression in heavy drinkers relative to a control group.

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12:00–1:30 PM (2013)

Inferring Mind Wandering from Perceptual Decision Making. KAIQI ZHANG, *Washington University in St. Louis*, WOUTER KOOL, *Washington University in St. Louis* — People need to sustain focused attention to achieve goals. Yet, attention often lapses, as minds wander towards task-unrelated thoughts. The conventional way to study temporal dynamics in mental states is through intermittent thought probes, which explicitly ask if thoughts are task-related. However, probes are rare and interrupt behavior. We designed a novel paradigm aiming to infer mind wandering (MW) from performance alone. On each trial, participants see a random dot kinematogram with varying evidence and indicate the coherent direction. Importantly, responses are repetitive: 90% of trials exhibit the same direction. To validate our task, participants respond to occasional thought probes. When they reported being off-task, accuracy was higher and RT lower, suggesting less stimulus processing and more reliance on bias. To classify internal states for individual trials from performance, we fit a hidden Markov model with generalized linear models (HMM-GLM) for each state to responses. In a two-state HMM-GLM, RT was lower on off-task trials. Latent states also aligned with self-reported focus. This shows that attentional states can be measured on a trial-to-trial basis without thought probes, paving the way for future WM research.

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FRIDAY

12:00-1:30 PM (2014)

Multidimensional Control Adaptation Is Distractor Specific. DAVIDE GHEZA, *Washington University in St. Louis*, WOUTER KOOL, *Washington University in St. Louis* — Cognitive control flexibly adapts to recent demands, increasing attentional focus in response to conflict. Conventional cognitive control paradigms only feature one task with one source of conflict, and so it is unclear how control adapts when there are multiple sources of distracting information (i.e., suppressing distractors vs. enhancing targets). Therefore, we developed a multi-dimensional task-set interference paradigm, in which stimuli vary across four dimensions. On any given trial, people only need to attend to one of them, with the remainder acting as distractors. By expanding stimulus dimensionality, we test whether control is achieved by enhancement of task-relevant information, or inhibition of task-irrelevant information. Across three studies, we find striking evidence for the latter hypothesis: Control adaption was selectively allocated, with conflict from a given dimension only affecting processing of that dimension on subsequent trials. These results call for an update to classic accounts of cognitive control. We present a new connectionist conflict-monitoring model, demonstrating that multiple conflict detector units are required to produce independent, parallel, dimension-specific attentional control.

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12:00-1:30 PM (2015)

The Effect of Bilateral tDCS on Behavioural and Electrophysiological Measures of Top-Down and Bottom-Up Driven Attention Captured in a Posner Paradigm and the Role of Reward Context. ALEXANDER LOGEMANN, *Eötvös Loránd University (ELTE)*, ATAKAN AKIL, *Eötvös Loránd University (ELTE)*, DEZSO NÉMETH, *Eötvös Loránd University (ELTE) Institute of Psychology Brain, Memory and Language Research Group, Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences; & Lyon Neuroscience Research Center (CRNL), Université de Lyon*, ZSOLT DEMETROVICS, *University of Gibraltar Centre of Excellence in Responsible Gaming & Eötvös Loránd University (ELTE)*, TAMAS NAGY, *ELTE Eötvös Loránd University*, RENATA CSERJESI, *Eötvös Loránd University (ELTE)* — Previous studies suggest that transcranial direct current stimulation (tDCS) aimed at enhancing right over left frontal activity induces a shift towards avoidance relative to approach tendencies. However, it is not clear whether such shift is mediated by changes in the lateralization of right over left frontal activity as indexed by frontal alpha asymmetry (FAA) and whether reward context has a moderating role. This question was addressed in the current study. In total 65 participants (19 men) aged 18-58 years performed, before and after tDCS or sham-tDCS intervention, a Posner task that included a neutral and reward condition, and electrophysiological activity was continuously recorded. In contrast to our hypothesis, tDCS was associated with an enhanced reward-cue associated electrophysiological response with a latency between 560-640ms, characterized as the late directing attention positivity (LDAP). The effect was not mediated by FAA. We discuss an alternative mechanism that explains current and previous observations.

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12:00-1:30 PM (2016)

The Influence of Information Importance on the Consistency of Attention During Learning Among Young and Old Adults. ASHLEY L. MILLER, *University of California, Los Angeles*, ALAN D. CASTEL, *University of California, Los Angeles* — Individuals are less likely to remember an item at test if they experience an attentional lapse (e.g., mind-wandering, external distraction, mind-blanking) during learning. It remains unclear, however, what factors reduce the occurrence of attentional lapses (i.e., off-task thoughts). The present study investigated the potential moderating influences of (1) information importance and (2) age by having young and old adults complete a value-directed remembering task with thought probes embedded into the encoding phase of each list. Both age groups best remembered high-value information at the expense of low-value information, and old adults were more frequently on task than were young adults. Critically, though, both age groups were more consistently focused on task when studying high-value information. Preliminary results also suggest that this ability to modulate the consistency of attention based on value is diminished when participants are unable (or unwilling) to sustain attention over the duration of a task. These findings highlight the impact of information importance in the experience of attentional lapses during study and suggest that some control processes may remain intact in older age.

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12:00-1:30 PM (2017)

Perceptual Inhibition in Older Adults. ALI POURNAGHDALI, N/A, *University of Southern California*, TEAL EICH, *University of Southern California* — Research suggests that older adults have deficits in response inhibition, an effect often queried through the Stroop task. However, older adults may also have impairments in perceptual inhibition. To tease apart these potentially dissociable age-related effects, younger and older adults indicated the color of one of two orthogonally superimposed objects while ignoring color words that were congruent or incongruent to the target object and appeared in the target shape, distractor shape or the background (shape Stroop task). Next, we fit the dual-stage two-phase model of selective attention to each individual's data, which assumes that response selection happens in an early phase that is influenced by the attentional weights of both the object and word color, and a late phase that is derived from the identity of the object color. Our results indicate that older adults have more conservative response and stimulus selection boundaries. They also showed a lower rate of evidence accumulation in the second, but not in the first phase of response selection. These results indicate an impairment of criterion setting and impairment of response selection processes in a later level of information processing in older adults.

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12:00-1:30 PM (2018)

Dissociating Shift Readiness and Stimulus Identity Prediction Errors in an Attentional Orienting Paradigm. ANTHONY W. SALI, *Wake Forest University*, EMILY E. OOR, *Wake Forest University* — The behavioral cost in response time

FRIDAY

(RT) associated with shifting attention relative to holding attention decreases as the shift likelihood increases. These modulations in shift costs may reflect changes in shift readiness, termed attentional flexibility. However, individuals may also form predictions that are yoked to stimulus identities instead of just the shift operation itself. Thus, shift readiness predictions (e.g., "I will shift attention") are confounded with stimulus identity predictions (e.g., "I will see stimulus X"). In the current study, participants completed a rapid serial visual presentation task in which they shifted and held attention in response to embedded visual cues. Target detection RTs served as an indicator of shift and stimulus identity expectations. We manipulated both the frequency of cued attention shifts across alternating blocks of trials and the likelihood of two shift and two hold cues, allowing us to measure shift and identity prediction errors (PEs) simultaneously. We observed RT costs related to both shift readiness and stimulus identity PEs, suggesting that individuals simultaneously track violations of shift expectations and the identities of visual cues.

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12:00-1:30 PM (2019)

Processing Load, But Not Attentional Focus, Affects the Attentional White Bear Effect. MAKAYLA SZU-YU CHEN, *University of Canterbury*, UPASHNA PRASAD, *University of Canterbury*, ZHE CHEN, *University of Canterbury* — The attentional white bear (AWB) effect refers to increased attention to an expected distractor location relative to an empty location (Tsal & Makovski, 2006). We investigated the roles of attentional focus and processing load on the AWB effect. Participants did a flanker task intermixed with an occasional temporal order task. In the latter task, two dots were simultaneously displayed, one at an expected distractor location and the other at an empty location. The results show that the dot at the expected distractor location was more likely to be perceived to occur earlier, indicating the AWB effect. This effect was found regardless of whether the target of the flanker task was relatively large (0.52° × 0.44°) or small (0.28° × 0.22°). Importantly, when participants were required to judge the conjunction feature of the target before doing the flanker task in a go/no-go paradigm, the effect of the AWB was eliminated. These results indicate that the AWB effect is contingent on the availability of attentional resources, but not the extent of attentional focus. The results are also consistent with the proposal of Chen et al. (2023) that the "process-all" mechanism is not "process-always" but can be overridden in certain circumstances.

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12:00-1:30 PM (2020)

Does Alerting Increase Information Processing Speed? A Meta-Analytic Assessment of Posner's Theory. COLIN MCCORMICK, *Dalhousie University*, RAYMOND KLEIN, *Dalhousie University* — Posner, Klein, Summers, & Buggie (1973) published a seminal theory on how alertness impacts information processing 50 years ago, communicating that alerting does not increase information accumulation speed in participants, and instead shifts the response criterion so they respond with less information accumulated (a speed-accuracy trade-off [SAT]). Our meta-analysis addresses a recently reinvigorated interest in Posner's theory by analyzing the relationship between alerting and speed-accuracy performance across a collection of studies with similar methodologies. While there may be evidence for a SAT in the 50 msec foreperiod condition, it appears that participants generate faster responses without any additional cost in accuracy in the 200 msec foreperiod condition, indicating enhanced information processing relative to the earlier foreperiod condition. Theoretical implications are discussed, taking into account the independent contributions of endogenous and exogenous temporal attention.

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12:00-1:30 PM (2021)

Looking Less and Learning More: Assessing Patterns of Visual Attention and Item Memory in Blocked and Interleaved Schedules. EZGI M. YUKSEL, *University of Wisconsin-Madison*, MELINA KNABE, *University of Wisconsin-Madison*, KAITLYNN ELLIS, *University of Wisconsin-Madison*, HALEY VLACH, *University of Wisconsin-Madison*, C. SHAWN GREEN, *University of Wisconsin-Madison*, NATE KORNELL, *Williams College Psychology* — Interleaving—as opposed to massing—information improves learning of categories, such as artists' painting styles (Kornell & Bjork, 2008). Attention is considered a key mechanism of interleaving, yet there is little empirical evidence that learners attend to and remember different information on interleaved schedules. We identified participants' attention allocation in blocked and interleaved schedules, and how this shaped their category learning. Participants (N = 116) studied paintings from 12 artists on either a massed or interleaved schedule before identifying the artists for new paintings. They looked less at the painting and more at the artist name in the interleaved condition. Based on this, we examined if less looking to paintings in the interleaved condition leads to better abstraction of the painting style but harms memory for the studied paintings. The results (N = 86) revealed no significant difference in item memory performance between the conditions. Notably, item memory was barely above chance for both conditions, whereas style recognition was better in interleaved. This work provides initial evidence that the visual attention dynamics during interleaving impact abstraction, but not item memory.

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12:00-1:30 PM (2022)

Allocating Space-Based Attention with Schemas, Words, and Scenes. ADAM J. BARNAS, *University of Florida*, NATALIE C. EBNER, *University of Florida*, STEVEN M. WEISBERG, *University of Florida* — Space-based attention and spatial navigation rely on comprehending spatial directions conveyed in various formats. Previous work revealed that people comprehend spatial directions faster conveyed in schemas (an arrow pointing left) and words ("left") than in maps or scenes (a road turning left) despite shared neural representation of the presented direction. Here, we predicted efficient allocation of space-based attention for cues where spatial direction comprehension is rapid. Participants completed a spatial cueing paradigm that included centrally-presented cues in the form of schemas,

words, and scenes. In a series of experiments, we consistently found an attentional advantage for schemas and, to a lesser extent, words, but not scenes. Furthermore, this advantage was not influenced by the duration of the cue and was only found for precise matches between spatial direction and spatial location of the target. These findings confirm our hypothesis and implicate rapid spatial direction comprehension as a mechanism underlying efficient allocation of space-based attention. These findings also provide the foundation to investigate the role of scene complexity in allocating space-based attention and comprehending spatial direction.

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12:00-1:30 PM (2023)

Tracking Load and Handoff of Attention Between Cerebral Hemispheres. PIOTR STYRKOWIEC, *University of Chicago*, EDWARD VOGEL, *University of Chicago* — Visual attentional tracking is supported by independent attentional resources in each cerebral hemisphere. Because of this lateralized organization of attentional resources, tracking objects that move between hemifields necessitates a handoff of target information between the brain hemispheres. Here, in the EEG study we demonstrate that the number of tracked objects (i.e., tracking load) modulates this handoff. While holding central fixation, participants tracked one or two moving targets among several moving distractors. Targets could move within or between visual hemifields. In the latter case, the sustained EEG response showed that during handoff, two targets were represented in both hemispheres for a shorter period compared to the handoff of just one target. This suggests that attentional tracking resources are hemisphere-specific because in the case of higher load, there are less resources available for information transfer.

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12:00-1:30 PM (2024)

The Effects of Individual Difference in Working Memory Capacity and Inhibition Function on the Relationship Between Sleep-Related Worry and Sleep-Related Attentional Bias. YU-HSUAN LIN, *Chang Gung Memorial Hospital*, HSU-AN-FU CHAO, *National Tsing Hua University* — Sleep-related attentional bias is regarded as one of the maintenance factors of insomnia. Past studies on sleep-related attentional bias showed unstable results. The purpose of this study is to investigate whether working memory mediates the relationship between sleep-related worry and sleep-related attention bias, and whether inhibition regulates the relationship between working memory and sleep-related attention bias. There were 39 good sleepers and 18 people in the chronic insomnia group in this study. The results showed that the mediator moderator model is not significant. Moreover, it was also found that compared with the pictures of neutral objects, the pictures of sleep-related objects were detected more quickly in both chronic-insomnia and good-sleeper groups. Worry traits affected the participant's response speed when detecting stimuli, especially detecting the changes was difficult. These findings suggest that worry traits and the manipulation of sleep-related worry may be the underlying mechanisms of sleep-related attention bias in chronic insomnia and good sleepers.

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12:00-1:30 PM (2025)

Investigating the Relationship among Breath Counting, Mood, and Heart Rate Variability in a Meditation-like Cognitive Task. ALEWA ANAYA, *California State University*, MELISSA LOPEZ DIAZ, *California State University, San Bernardino*, ALEEZAH BUTLER, *California State University, San Bernardino*, ELI ESPARZA, *California State University, San Bernardino*, DESIREE LEON, *California State University, San Bernardino*, ODALYS REYNOSO DIAZ, *California State University, San Bernardino*, JOHN CLAPPER, *California State University, San Bernardino*, HIDEYA KOSHINO, *California State University, San Bernardino* — Despite the recognized benefits of mindfulness meditation, the cognitive and neurological mechanisms involved remain poorly understood. To address this, we combined the breath counting task (BCT) with concurrent heart rate variability (HRV) measurements to explore the relationship between attention and somatic state in a meditation-like cognitive task. Participants counted their breaths in cycles, with cycle length varied across three levels (4, 9, or 14 breaths). The results showed a significant decrease in breath counting accuracy with cycle length, suggesting greater attentional depletion during longer cycles. Higher breath counting performance also predicted better mood after the task. Finally, a positive correlation was observed between individual breath duration and HRV coherence, suggesting a link between task behavior and somatic state. This combined BCT/HRV approach appears to have considerable potential for investigating the relationship between the cognitive and physiological aspects of mindfulness meditation, hopefully contributing to a deeper understanding of its underlying mechanisms.

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12:00-1:30 PM (2026)

Does Spatial Attention Operate Rhythmically? No Evidence for Behavioral Oscillations in Criterion or Sensitivity. SYDNEY ABRAHAMSON, *University of California, Santa Cruz*, JASON SAMAHA, *University of California, Santa Cruz* — Evidence suggests that spatial attention periodically switches between cued locations and un-cued locations. Behavioral studies support this claim measuring hit-rate data from spatial cueing tasks where near-threshold targets are presented at varying densely-sampled cue-target intervals (CTI). Several studies have now observed that hit rates time series can fluctuate around a theta (4-7 Hz) rhythm, indicative of a rhythmic attention sampling process. However, under signal detection theory (SDT), changes in hit rates could either be caused by criterion shifts or sensitivity changes (d'). The present study aimed to tease apart the contributions of criterion and sensitivity to rhythmic attentional sampling by presenting near-threshold grating targets embedded in noise along with noise-only trials. In a first study, 30 observers performed a total of 53,000 trials of a spatial cuing task varying CTI. Despite finding robust effects of attention on d' and reaction time, Fourier analysis of the behavioral time series did not indicate the presence of any theta-rhythmic component in d' or sensitivity, nor in the more standard metric of hit rate. A second study is underway to attempt to better replicate conditions from previous studies.

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FRIDAY

12:00-1:30 PM (2027)

Can Social Stimuli Held in Working Memory Involuntary Orient Attention? The Role of Internal Social Attention.. LUCA CAMMISA, *Sapienza University of Rome*, ANNA PECCHINENDA, *Sapienza University of Rome* — Recent evidence shows that holding in working memory social stimuli (including the direction of eye gaze) can orient someone's attention—a phenomenon called "internal social attention." In this study, 42 university students performed a two-phase gaze cueing task. In the first phase, a neutral face with averted gaze (left or right) preceded the target (Gabor patch), which could appear at the location congruent or incongruent with the gaze direction. Participants responded to the target's position (passive viewing). In the second phase, participants were informed to maintain the neutral face in memory for later recognition (working memory, WM). To disentangle the cueing effect due to gaze direction and the working memory effects, we used a SOA of 900 msec. Results from the recognition task showed that participants held the face-cue in working memory. Importantly, results from the gaze cueing task showed no effects of gaze direction on target processing (i.e., no cueing effects). The findings are discussed in the context of the current evidence on the timing of attentional orienting by gaze direction.

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12:00-1:30 PM (2028)

Going Beyond Speech Perception: Listening Effort in Multilinguals. DANA BSHARAT-MAALOUF, *University of Haifa*, JENS SCHMIDTKE, *University of Haifa, Haifa Center for German and European Studies*, TAMAR DEGANI, *University of Haifa*, HANIN KARAWANI, *University of Haifa* — Speech perception under adverse listening conditions (e.g., in noise) may pose challenges for listeners, especially for multilinguals. This study investigated how listening effort can explain such challenges. Forty-six Arabic-Hebrew-English multilinguals listened to words in quiet and in noise in each of their languages. Listening effort was measured using pupillometry during the perceptual task. The findings showed that perceptual performance was comparable across languages in the quiet condition, but that performance dropped in the noise condition, especially for the non-dominant language. Further, greater listening effort was exerted in noise. Most critically, whereas perceptual performance in the quiet condition did not differ across the dominant and non-dominant languages, pupillometry measures revealed differences across languages. Thus, to achieve the same perceptual performance in the dominant and non-dominant languages, multilinguals had to exert greater listening effort in their non-dominant language, highlighting the importance of assessing multilingual listening effort.

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12:00-1:30 PM (2029)

The Influence of L2 Spanish on L1 English Expectations about Upcoming Information Structure: An EEG Study. ELEONORA BEIER, *University of California, Davis*, SOPHIA KINNEAR, *University of California, Davis*, GEORGE R. MANGUN, *University of California, Davis*, TAMARA Y. SWAAB, *University of California, Davis* — Information structure, or the organization of a sentence's new and given information, is differently conveyed across languages. English primarily relies on prosody to mark new information, while Spanish primarily relies on word order. Previous studies show that expectations for upcoming word order in L2 Spanish, induced through information structural constraints, vary as a function of L2 proficiency. This study tests whether these learned Spanish word order constraints transfer to participants' L1 English, influencing expectations about upcoming information structure. Spanish proficiency was measured using the Lextale-Esp vocabulary test. Participants heard English question-answer pairs focusing either the subject or the object of a sentence while EEG was recorded. We observe changes in neural dynamics associated with the allocation of attention towards the subject or object, as a function of expected information structure. We further test whether L2 proficiency influences the effect of information structure on memory for focused and defocused target words. Overall, this study addresses whether cross-linguistic differences in how information structure is conveyed transfer across languages in bilinguals.

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12:00-1:30 PM (2030)

Language Expectations Influence Cross-Language Activation in Bilinguals. AMY S. DESROCHES, *The University of Winnipeg*, DEANNA C. FRIESEN, *University of Western Ontario*, EMILIE RAE HOEPPNER, *University of Western Ontario*, TANISHA KALIRAO, *University of Western Ontario* — We investigated the role of language expectation for English-French bilinguals during a picture-spoken word matching task with three critical conditions: match (BEACH, "beach"), unrelated mismatch (BEACH, "moose") and L2 competitor mismatch (L2C, BEACH-"plaid", which sounds like the French translation of the pictured item, "plage"). In Study 1, we manipulated language expectation across three blocks: 1) English-only, 2) English with French fillers, and 3) English-only again. Clear evidence for cross-language activation was marked by longer RTs and lower accuracy on L2C vs. unrelated trials on English only blocks. The effect was magnified during the block with French trials, highlighting the role of language expectation on cross-language activation. In Study 2, we monitored ERPs to the same stimuli in the task with French fillers. Similarly, modulations to N400s suggest that language expectations influence cross-language activation. These results have implications for models and theories of bilingual language processing.

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12:00-1:30 PM (2031)

Emotional Attribution in Bilingual Idiomaticity. GIULIA TOGATO, *California State University, Long Beach*, PEDRO MACIZO, *University of Granada Mind, Brain and Behaviour Research Centre (CIMCYC)* — Do bilinguals feel differently in their two languages? We investigated how bilinguals represent rich emotional contents in their first (L1) and second (L2) language by gathering ratings related to the emotionally positive vs. negative interpretation of Spanish idioms. Idioms were rated in the L1 vs. the L2 of participants, based on the idea that reactivity to rich emotional contents would be modulated by the language in which retrieval of

representations takes place. While bilinguals did not show any language specific preference in the emotional attribution as it stemmed from the literal interpretation of idioms, the sign (i.e., positive vs. negative) of the attributed emotionality to the figurative interpretation of the idioms was modulated by the language used for retrieval. Figurative meanings were rated more positively in the L1 and more negatively in the L2. Results are discussed in light of how core affect evokes emotional attribution across different cultures.

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12:00-1:30 PM (2032)

Spoken and Written Word Recognition in Spanish-English Bilingual Older Adults. SALONI UPADHYAY, *University of Iowa*, SI ON YOON, *New York University*, KRISTI HENDRICKSON, *University of Iowa* — Word recognition is a competition process in which multiple similar words are activated (e.g., hearing or reading "cat" also activates "can"). We tested the extent to which older bilingual adults activate both of their languages when reading and listening in one language using eye-tracking in the Visual World Paradigm. Participants (N = 7, mean age = 70 years) heard or saw a word and selected the corresponding picture from a display of four—the target (e.g., cat), competitor (e.g., can), and two unrelated pictures (e.g., bell and bed) across four conditions: two within-language (English-English, e.g., bracelet - braided; Spanish-Spanish, e.g., cuello [neck] – cuento [story]) and two cross-language (English-Spanish, e.g., soap- sol [sun]; Spanish-English, e.g., risa [laugh] – ring). For spoken and written words both languages displayed within language competition, though effects were larger in Spanish. The close letter-sound correspondence in Spanish may boost competition because both letters and sounds signal similarity with the target. Finally, cross-language competition was only apparent when listening and reading in Spanish. This is likely due to language dominancy effects.

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12:00-1:30 PM (2033)

Feeling Your Mistakes: Haptic Feedback Boosts Sign Learning in Adult L2 Learners. LAURA M. MORETT, *The University of Alabama*, MATHEW CIESLA, *The University of Alabama*, MARY BRAY, *University of Alabama*, KAREN EMMOREY, *San Diego State University* — Sign language production relies on haptic, rather than visual feedback for language monitoring—signers do not look at their hands and rely on somatosensory feedback to catch errors. We hypothesized that visual and haptic feedback may play significantly different roles in sign acquisition by L2 learners. Forty-one English speakers learned 20 American Sign Language signs either via visual-only presentation (watch the to-be-learned sign twice) or haptic feedback (e.g., watch the sign then produce it yourself with eyes closed). Individuals were then tested 5 minutes and 1 week after learning to assess short-term and delayed sign recall. Participants who learned with haptic input produced more signs correctly both 5 minutes and 1 week after learning, as compared to participants who learned with visual-only input. These results indicate that haptic input during learning results in more accurate immediate production of signs and boosts long-term retention.

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12:00-1:30 PM (2034)

The Time-Course of Processing Written English Words in American Sign Language-English Bilingual Adults. ELANA PONTECORVO, *Boston University*, AMY M. LIEBERMAN, *Boston University* — When American Sign Language (ASL)-English bilinguals read English words, features of ASL are activated. We investigated the time-course of activation of ASL and English phonology, and semantics, in ASL-English bilinguals. Deaf and hearing adults (n = 8, planned n = 30) participated in a visual world paradigm where they viewed written English words alongside four pictures across conditions: target, semantic competitor, ASL phonological competitor, and English rhyme competitor. Preliminary analysis suggests that bilinguals recognize the target picture shortly after the word appears. Proportion of looks to the target did not differ significantly by condition. The semantic condition showed increased looks to the semantic competitor relative to the unrelated distractors; no other conditions showed significant differences in competitor looking. Further data collection will reveal whether we detect an effect of cross-language or within language phonological distractors. Alternatively, the rapid recognition of single words presented in text may preclude interference from phonological competitors in this task.

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12:00-1:30 PM (2035)

What Do Cultural Identity and Language Experience Tell Us About Language Processing? The Case of Code-Switching in Cantonese-English Bilinguals. ARIEL CHAN, *Stanford University*, SHOICHI IWASAKI, *University of California, Los Angeles*, JUDITH F. KROLL, *University of California, Irvine* — The study we report investigated the impact of cultural identity and language experience on bilingual language processing through code-switching. We examined three groups of Cantonese-English bilinguals: Heritage speakers of Cantonese, born and raised in the U.S; homeland bilinguals, born and raised in Hong Kong; and immersed bilinguals, born and raised in Hong Kong but relocated to the U.S as adult immigrants or international students. All bilinguals completed questionnaires on identity, code-switching, and language use, and participated in a comprehension task on code-switching, a voluntary-switching picture-naming task, and an AX-continuous performance task to assess their cognitive behavior for proactive versus reactive cognitive control. Results showed that switch costs were present in production but absent in comprehension. Switch costs were modulated by language experience in production while they were modulated by a combination of language experience, cultural identity, and cognitive control to varying degrees in comprehension. The findings highlight the importance of sociocultural contexts in language processing.

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12:00-1:30 PM (2036)

Cross-Linguistic Phonetic Transfer Due to Code-Switching in Infant-Directed Speech. ERIKA EXTON, *University of Maryland, College Park*, ROCHELLE S. NEWMAN, *University of Maryland, College Park* — Infants in bilingual environments

must acquire two languages with different phoneme inventories, and the speech they hear often contains code-switches. Previous work has shown evidence of phonetic transfer in code-switched speech. For example, English VOTs may be shorter and more "Spanish-like" near a code-switch. However, it is unclear whether such a pattern is true in infant-directed speech, which has unique phonetic properties including an exaggerated difference between voiced and voiceless stops. In this study, Spanish-English bilingual women narrate stories in IDS and ADS using a set of six wordless picture books. Stories are told in English, Spanish, and while code-switching. VOTs of voiceless stops are measured and analyzed. Preliminary data suggests that the phonetic properties of the speech infants hear while mothers are code-switching differs from unilingual speech. The difference between infant-directed and adult-directed English VOTs is greater in a unilingual than a code-switching context, which may be due to influence from Spanish while code-switching. Future analysis will allow us to evaluate how the proximity to a code-switch influences VOT in IDS and to compare the effect of phonetic transfer.

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12:00-1:30 PM (2037)

Come Back to It Later: Rapid Resolution of Failed Retrievals in Older Bilinguals Reveals the Positive Effects of Aging on Picture Naming Ability. DALIA GARCIA, *San Diego State University & University of California, San Diego*, TAMAR H. GOLLAN, *University of California, San Diego* — Older adults often complain about word-finding difficulties, which could reflect cognitive decline ("older is weaker") or greater ability to retrieve difficult names ("older is wiser"). We investigated these alternatives by comparing young and older Spanish-English bilinguals on the MINT Sprint 2.0, a speeded picture naming test in which participants are given 3 minutes to name as many pictures as they can, and then are prompted to try again to name initially failed items. We compared young (n = 77) versus older bilinguals (n = 31) on ability to resolve initially failed items in each language. Bilinguals resolved more items in the dominant than the nondominant language, and older bilinguals resolved more items than young bilinguals, especially in the dominant language. The association between higher ability to resolve initially failed items and increased (not decreased) language proficiency, better fits with the "older is wiser" account of how aging affects picture naming ability.

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12:00-1:30 PM (2038)

Category Biases Arise from Learning Sets But Not from Choice Sets. SEAN P. CONWAY, *University of Massachusetts Amherst*, ANDREW COHEN, *University of Massachusetts Amherst* — The generalized context model (GCM) classifies items based on similarity to category exemplars. The standard version of the GCM satisfies the independence of irrelevant alternatives (IIA) principle from the decision-making literature, in which the relative preference of two options does not change upon the introduction of a third option. In two experiments, participants learned to classify items into three categories, and were then asked to classify stimuli into various subsets of the three categories. These participants did not violate IIA. In two subsequent experiments, participants again learned to classify items into three categories, but now two of the categories were fixed across participants and the third category varied. These participants showed a violation of IIA in a categorization context, in that relative preference for the fixed categories changed based on which third category was learned. The GCM qualitatively accounts for the data only when category-specific biases are allowed to vary across conditions. A rule-based categorization model with a stochastic criterion did not fit the data as well.

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12:00-1:30 PM (2039)

Globally Coherent Reorganizations of Pre-Learned Categories. JOSHUA C. GLASS, *Binghamton University SUNY*, KENNETH J. KURTZ, *Binghamton University SUNY* — Categorization processes are the basis by which people form and continually update psychological structures to make sense of the world. Of particular interest within categorization research is how the internal structure of categories and the level of flexibility of these representations can change across experience. The current work extends Levering and Kurtz's (2006) investigation of the formation of ideal-based categories by exploring representation change (particularly idealization) of pre-learned categories. We present data showing that after having learned a category, exposure to novel categories within the same domain results in reorganization of the familiar category even when the subject has no further training experience with the familiar category. This finding, in combination with a divergence between the multidimensional scaling solutions based on similarity ratings after versus in the absence of classification training, suggests that learners acquire a domain-level representation that encompasses category-level representations and influences intra-conceptual organization based on the relations between categories within the domain.

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12:00-1:30 PM (2040)

Build-Up and Release from Proactive Interference: Relational Versus Taxonomic Content. ALEXUS S. LONGO, *Binghamton University SUNY*, KENNETH J. KURTZ, *Binghamton University SUNY* — The continuous encoding and recall of sets of word lists comprised of similar semantic content leads to memory deficits via the build-up of proactive interference—and this effect tends to be released when the content is switched to a different semantic category. Recent findings suggest that relational information is stored and accessed similarly to taxonomic content, but proactive interference has yet to be studied in relational categories (i.e., categories that cohere based on fulfilling a particular semantic relationship such as obstacles). To further assess the representation and processing of relational categories and the characteristics of relational content in memory processes, participants were tested in a modern implementation of the classic release from proactive interference paradigm with either taxonomic or relational category content. Free recall performance was compared to assess the build-up and release of proactive interference between conditions and between those exposed to a

content switch or no-switch control. Results suggest that switching to different relational content does not produce a release from proactive interference. Theoretical implications are discussed.

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12:00-1:30 PM (2041)

Improving Generalization Through Data Generation Using the Divergent Autoencoder (DIVA) Model of Category Learning. MERCURY MASON, *Binghamton University SUNY*, KENNETH J. KURTZ, *Binghamton University SUNY* — A fundamental challenge for any learning system, artificial and biological alike, is to be able to account for new, previously unseen data, given prior training experience. In recent years, generative models, like generative adversarial networks (GANs) and variational autoencoders (VAE), have been successful in generating realistic artificial examples that can be used to strengthen the utility and flexibility of deep learning models. In the present work, we use the divergent autoencoder (DIVA) model of human category learning as a method for generating synthetic data with similar distributional properties of the training data (intrinsic generalization) with the end goal of improving test performance (extrinsic generalization) in a supervised learning paradigm. First, we train the model via error-driven learning. Second, using the trained model, we generate artificial labeled items, and use them as additional training data. Finally, we evaluate the model on a previously unseen test set. We compare this training pipeline to a version that does not include data generation. Model performance in this work makes predictions about human performance in tasks like generating additional category members and learning under low training size.

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12:00-1:30 PM (2042)

Investigating the Role of Interactive Simulations in Understanding Equations Representing Change. AMBAR NARWAL, *Indiana University*, BENJAMIN MOTZ, *Indiana University*, EMILY R. FYFE, *Indiana University* — Understanding physics equations involves constructing relationships between symbols that represent concepts such as movement, time, and change. However, it's unclear how someone's experience with these concepts changes how they express their understanding in symbolic forms. In the current study, we examined the role of interactive simulations in activating the base+change form inherent in a speed equation. Undergraduates were assigned to one of the three conditions: Perceptual Simulation, Textual Simulation and Control. Compared to the Control condition, Perceptual and Textual conditions allowed participants to manipulate values of key variables and observe changes in the corresponding physical situations. While the Perceptual condition reflected these changes through animations, the Textual condition reflected the outcomes of the simulation in static text. Post interaction, participants had to construct and identify the equation which best described the physical situations. Preliminary results indicate that compared to the Perceptual and Control condition, Textual simulation facilitated perception of the accurate symbolic form. These results have implications for the role of active learning simulations in physics instruction.

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12:00-1:30 PM (2043)

Explicit Processes Can Aid Implicit Category Learning: The Role of Rule-Based Selective Attention. ANDRES SANCHEZ, *Georgia State University*, BARBARA A. CHURCH, *Georgia State University*, J. DAVID SMITH, *Georgia State University* — The COVIS theory assumes categories can be learned by explicit or implicit category learning systems, and those systems can be differentially examined by using rule-based (RB) or information-integration (II) category structures, respectively (e.g., Ashby & Valentin, 2017). Past research examining the interaction between these two systems has suggested that explicit processes impair implicit learning. How this impairment occurs is debated (Ashby & Crossley, 2010; Crossley & Ashby, 2015; Sanchez et al., 2020). We examined the effect of initial selective attention to rules about dimensions that were either relevant or irrelevant to a later II test to better understand how this impairment occurred. We found that attention to relevant dimensions improved implicit learning, but attention to irrelevant dimensions harmed it. This showed that both systems learn in parallel if the relevant II category information is attended, and selective attention affects both systems suggesting it may operate on shared input representations.

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12:00-1:30 PM (2044)

The Effects of Classification Versus Observation During Category Learning. ENOCH SARAKPO, *Syracuse University*, DANIEL CORRAL, *Syracuse University* — We report a category-learning experiment that examines whether training that involves classification versus observation leads to differential learning, and whether this outcome depends on the type of category that is being learned. Thus, we crossed training (classification vs. observation) and category type (natural vs. featural vs. relational). Some subjects classified stimuli (side-by-side bird pairs) and received corrective feedback after each response, whereas others studied these stimuli, which were presented with the corresponding category label. After training, all subjects completed an endorsement task. Preliminary results suggest that subjects in the observation conditions are better able to learn the natural and relational categories than subjects in the classification conditions. However, this advantage disappears with feature-based categories, as subjects in both training conditions achieved comparable performance on the endorsement task. These findings suggest that the training method that produces superior category learning depends on the type of category that is being learned.

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12:00-1:30 PM (2045)

Perceptual Category Learning Across Sensory Modalities. CASEY L. ROARK, *University of New Hampshire*, BHARATH CHANDRASEKARAN, *Northwestern University* — Categorization requires learning to map variable perceptual input onto discrete

categories. While categories are ubiquitous across modalities, the vast majority of research has focused on category learning in the visual modality. As a result, it is not yet clear whether models of perceptual category learning that focus on a single modality apply across sensory modalities or whether they are better conceptualized as models of modality-specific category learning. Across three experiments, we directly compared auditory and visual category learning in the same individuals and probed the influence of modality-specific perceptual and cognitive biases on learning. We found that modality-specific biases substantially influenced learning even in highly controlled and comparable categorization tasks. We argue that to have models or theories of "perceptual" category learning that are themselves not biased or specific to one modality or another, models and theories of learning must incorporate modality-specific processes and biases.

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12:00-1:30 PM (2046)

Prototypicality Effects in Unsupervised Categorization. JOHN CLAPPER, *California State University, San Bernardino* — While prototypicality effects are a central finding in the literature on supervised categorization, they have not been previously reported in studies of unsupervised categorization. The present research provides two demonstrations of prototypicality effects in unsupervised categorization. In Experiment 1, participants learned four categories in an unsupervised label generation task. Later, they were more likely to assign the same labels to prototypical than non-prototypical examples of these categories. Experiment 2 employed a one-shot categorization task in which participants were shown a single prototype example of a new category and were asked to select other examples from an array. Participants were more likely to choose new examples that shared more features with the initial prototype. These results suggest that prototypicality effects occur in unsupervised as well as supervised categorization, and that theoretical approaches designed to account for these effects in supervised categorization may be applicable to unsupervised categorization as well.

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12:00-1:30 PM (2047)

Urban Mindscapes: Exploring the Conceptual Structure of Where We Live. CHELSEA-LEIGH MCKENZIE, *Western University*, JOHN PAUL MINDA, *University of Western Ontario* (Sponsored by John Minda) — We investigated the conceptual representations of human settlements and communities and how those representations influence the formation of goal-derived categories and ideals. We asked participants to generate features for several kinds of concepts, including settlements, cities, and towns, alongside living and nonliving basic-level concepts from McRae et al.'s (2005) feature production norms. The collected norms and corresponding statistical data are described, showcasing a replication of McRae et al.'s (2005) norms. We observed similar complexity for settlement concepts, but we also found some properties that were unique to these concepts. Our research contributes to the ongoing investigation of the conceptual representation of the built and natural environment and its influence on human thought and behaviour. Our findings provide insights into the structuring of ideals and goal-derived categories, offering a perspective on the intersection of socio-cognitive and cultural research in terms of how we think about where we live.

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12:00-1:30 PM (2048)

Learning Shapes Perceived Similarity of Natural Categories. BRYAN WHITE, *New Mexico State University*, EBEN DAGGETT, *New Mexico State University*, MICHAEL HOUT, *New Mexico State University*, ARRYN ROBBINS, *University of Richmond* — Category learning can change how people think about novel stimuli, allowing an observer to appreciate the similarity of disparate items, and therefore understand conceptual relationships that were not apparent prior to learning. Across three experiments, we examined the relationships between changes in categorical knowledge and their downstream influences on perceptual "psychological spaces" as captured by multidimensional scaling (MDS). Participants learned to categorize items sampled from three superordinate categories following repeated blocks of simultaneous presentation (wherein all items were seen at once, grouped into categories) and sequential testing (wherein items were presented one at a time and participants indicated which category they felt the item belonged to). Participants also rated the similarity of items prior to and following learning, and these proximities were subjected to MDS analysis. We hypothesized that category learning would result in the ability to appropriately label items and to differently appreciate their visual similarities. Our results strongly support this hypothesis for trained exemplars and offer weak support for untrained items.

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12:00-1:30 PM (2049)

Give Me a Break: Pausing to Reflect May Lessen Attention Attenuation in Massed Learning. ANTHONY CRUZ, *University of Western Ontario*, JOHN PAUL MINDA, *University of Western Ontario* — Evidence suggests that relative to massed learning, spaced learning improves information-integration categorization performance by mitigating attention attenuation. The goal of this study was to explore mechanisms that may underlie this spacing effect. Participants (n = 120) completed six blocks of feedback-based category learning either massed (no lag) or spaced (12-hour lag). Between blocks, they made metacognitive judgments, attempting to predict their future performance. Participants either took an immediate (no lag) or delayed (12-hour lag) test. This test included novel and studied items. After each test trial, participants rated their confidence in their response. Stimuli were Gabor patches and participants completed the study remotely from a smartphone. In contrast to our earlier work, the spacing effect was not observed; massed and spaced learners performed at near-equal levels. However, massed learners' attention in this study did not attenuate any more than that of spaced learners. We suggest that metacognitive judgments separating learning blocks protected against attention attenuation, preventing a spacing effect from emerging. This study highlights the need for further research into the spacing effect's underlying mechanisms.

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FRIDAY

12:00-1:30 PM (2050)

Perceptual Learning Based Entirely on Comparisons is Best: Evidence from Skin Cancer Classification. VICTORIA L. JACOBY, *University of California, Los Angeles*, CHRISTINE M. MASSEY, *University of California, Los Angeles*, PHILIP J. KELLMAN, *University of California, Los Angeles* (Sponsored by) — Considerable research has shown that comparing items from different categories can benefit learning. Little work, however, has tested how learning consisting exclusively of active comparisons compares to learning based on item classification. Here, we tested the effectiveness of paired comparisons for learning the differential diagnosis of 10 categories of cancerous and benign skin lesions. A Paired Comparison condition, in which a learner was presented on each trial with a category label and required to choose between instances from two different categories, was compared to Single-Classification and Dual-Classification conditions, where instances of one or two categories were presented for classification on each trial. Undergraduate participants were given a 40-min learning period before completing immediate and one-week delayed posttests on the classification of novel exemplars. Results showed that perceptual learning based exclusively on paired comparison trials produced greater accuracy than classification-based trials at both posttests. Shorter response times for comparison trials during learning suggest that comparison trials are easier to complete yet can promote stronger learning and generalization of complex categories.

12:00-1:30 PM (2051)

The Structure of Cognitive Abilities and Associations with Problem Behaviors in Early Adolescence: An Analysis of Baseline Data from the Adolescent Brain Cognitive Development Study. DAWN MICHELE MOORE, *Stanford University Center for Advanced Study in the Behavioral Sciences*, ANDREW R. A. CONWAY, *New Mexico State University* — Using baseline data (n = 9,875) from the Adolescent Brain Cognitive Development (ABCD) Study examining children aged 9-10 years, the current analyses included: (1) exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) of neurocognitive measures administered during baseline collection and (2) linear regression analyses on the Child Behavior Checklist (CBCL), controlling for demographic and socioeconomic factors. The neurocognitive tasks measured episodic memory, executive function, language skills, processing speed, working memory, visuospatial ability, and reasoning. The CBCL included composite scores of parent-reported internalizing, externalizing, and stress-related behavior problems. The current study is an extension of prior research using a principal components analysis (PCA) of the ABCD baseline data. Our alternative solution used factor analysis and revealed a three-factor structure: verbal ability (VA), executive function/processing speed (EF/PS), and working memory/episodic memory (WM/EM). These factors were significantly correlated with the CBCL scores, albeit with small effect sizes. These findings provide a novel three-factor solution to the structure of cognitive abilities measured in the ABCD Study.

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12:00-1:30 PM (2052)

Differential Development of Attention Orienting and Attention Holding Biases to Caregiver vs. Stranger Faces in Infancy. BROOKE MONTGOMERY, *Tulane University*, BRIANNA HUNTER, *University of California, Davis*, JULIE MARKANT, *Tulane University* (Sponsored by Brianna Hunter) — Infants rely on developing attention skills to both orient to social partners (i.e., attention orienting) and hold focus on these individuals (i.e., attention holding). Previous work has established that infants look longer at caregiver faces, but it is unclear whether this bias extends to attention orienting. We examined attention orienting and attention holding biases to caregiver and stranger faces among 4- to 10-month-old infants (N = 79). We recorded eye movements as infants viewed multi-object arrays that contained either the caregiver or stranger face (single- target trials) or both faces (dual-target trials). We measured both attention orienting (frequency and speed of looking) and attention holding (duration of looking) to the faces. Infants were overall more likely to orient to strangers. With age, infants oriented faster to strangers during dual-target trials but across all trial types infants looked longer to caregivers. These results suggest that attention orienting and attention holding may be differentially biased by face identity in infancy.

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12:00-1:30 PM (2053)

The Cognitive Basis of Prosocial Behaviour and Perspective Taking in Early Adolescence and Young Adulthood. MAHSA MIRZA HOSSEIN BARZY, *University of Kent*, JESSICA MOORE, *University of Kent*, LINDSEY CAMERON, *University of Kent*, HEATHER FERGUSON, *University of Kent* — Perspective-taking (PT) is known to develop alongside a range of prosocial behaviours (e.g., helping and cooperation). In adults, PT has also been linked to socio-cognitive mechanisms including working memory (WM) and inhibitory control (IC). The current study examined whether differences in PT predict prosocial attitudes, behaviour, and understanding, and identified the mechanisms that underlie this relationship in two age groups: adolescents (aged 11-15) and young adults (18+). Furthermore, we explored the degree to which PT and prosociality are influenced by peer relations (size and diversity of participants' social network). Across the whole sample (N = 100 in each group), the ability to take others' perspectives was predicted by individual differences in WM and IC, and PT also predicted individual differences in prosociality. In terms of age group differences, young adults showed enhanced social cognitive capabilities compared to adolescents (across most measures of PT and prosociality), with adolescents displaying more egocentric tendencies.

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12:00-1:30 PM (2054)

Semantic Elaboration in Working Memory: Adult Strategies and Training of Children. LUÍSA SUPERBIA-GUIMARÃES, *University of Missouri*, REESE LAVERS, MAYA STEIGER, KELLEN HENDRIX, NELSON COWAN, *University of Missouri* — Working memory (WM), the ability to maintain

information in a highly activated state to perform cognitive tasks, develops greatly during childhood. There is evidence that, with age, children can encode more information into WM without storing more in the focus of attention (Cowan et al., 2018, *Developmental Science*). We hypothesized that children become more proficient in strategically combining information into multi-item patterns that can be maintained as newly formed chunks. We present first-grade children with random lists of pictured objects to be remembered for immediate serial order reconstruction and train half of them to create, rapidly, short stories about the objects in order. The results so far indicate that the training helps a great deal. An adult control group provides evidence of the diversity of elaborative strategies that they spontaneously use in this task. Improvements in intentionally using knowledge to chunk items thus appear to comprise an important driving factor of WM development in childhood. Until now, there has been a dearth of studies on the development of elaboration in short-term memory procedures.

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12:00-1:30 PM (2055)

Materialism in Preschool Children—The Role of Self-Esteem and Theory of Mind. AGATA TRZCIŃSKA, *University of Warsaw*, WOJCIECH PODSIADŁOWSKI, *University of Warsaw*, PATRYCJA GOLUS, *University of Warsaw*, JOWITA WIELESZCZYK, *University of Warsaw*, KATARZYNA SEKŚCIŃSKA, *University of Warsaw* — Previous research suggests that people may compensate for low self-esteem with materialistic tendencies. Experimental studies have shown that inducing low self-esteem in people increases the level of materialism, while increasing self-esteem decreases materialism. Results supporting the relationship between self-esteem and materialism have also been obtained in children aged 8-17 years. However, the literature lacks studies showing whether such a relationship can also be observed at earlier stages of life. It has been hypothesized that self-esteem in preschool-aged children is negatively correlated with the level of materialism. We also hypothesize that materialism requires the presence of a theory of mind. For example, to develop a thought such as "I want a new toy, you are not cool if you do not have it," a child must be able to think about the thoughts of others. Therefore, theory of mind may play a crucial role in the development of materialism. The study was conducted with preschool-aged children (4-6 years, N = 146). The results suggest that theory of mind moderates the relationship between self-esteem and materialism—in children with a developed theory of mind this relationship is negative, while in others it is positive.

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12:00-1:30 PM (2056)

Generalization of Skill for a Working Memory Recognition Training Procedure in Children: The Benefit of Starting with Easy Materials. CHENYE BAO, *University of Missouri*, NELSON COWAN, *University of Missouri* — When children encounter a new task, it can include the dual challenge of a new task procedure paired with new materials used in the task. We asked to what extent improvements in performance with practice reflect procedural learning versus familiarity with the materials. We did this by examining children's performance on a change-detection working memory task using sets of materials that were easier to master (arrow orientations) or more difficult (shapes) and by starting with one set of materials and switching to the other set. The task on each trial was to determine if a probe item had appeared within a recently presented spatial array of items. We recruited 70 children (34 female), with an average age of 11.27 years. Notably, for children who received the easier materials first, the acquired recognition skills from the easier condition were effectively transferred to the more difficult materials, resulting in enhanced overall performance across tasks. Transfer was less pronounced when children received the more difficult materials first. These findings underscore the significance of adequate practice to prevent poor initial performance, which is important for students' progress rate and task engagement.

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12:00-1:30 PM (2057)

Can Children Learn Visual Symbols to Represent Relational Concepts?. BROOKE N. JACKSON, *Georgia State University*, ANDRES SANCHEZ, *Georgia State University*, BARBARA A. CHURCH, *Georgia State University*, J. DAVID SMITH, *Georgia State University* — Relational conceptualization is often theoretically tied to language, and it has been of interest to cognitive, developmental, and comparative psychologists (e.g., Gentner et al., 2021; Smith & Church, 2021). We examined whether different age groups could learn visual symbols for relations without verbal instructions. Experiment 1 tested whether children (aged 3.5-4.5, 5-6, and 7.5-9 years) could learn to use symbols to declare the type of dimensional match (color or shape). Experiment 2 examined whether children (aged 5-6 and 7-8) could learn to take instruction from symbols to choose the correct match, and then use them to declare the type of match—showing bidirectional use. In Experiment 1, only the oldest age group learned to declare the relations with the symbols and generalize to novel colors and shapes. In Experiment 2, both age groups learned to use the symbols to instruct their choice and generalized, but only the older group used the symbols bidirectionally.

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12:00-1:30 PM (2058)

Laughter Is the Best Medicine: The Relationships Between Humor, Anxiety, and Working Memory. LISE ABRAMS, *Pomona College*, DAVID J. THERRIAULT, *University of Florida* — Anxiety can adversely affect cognition, such as impairing test performance or restricting working memory. One way of reducing anxiety is through humor, and we investigated the perception of laughter on self-reported anxiety and its relation to working memory. In Experiment 1, participants heard and rated laughter sounds for pleasantness, arousal, and humor. Before and after the laughter rating task, participants completed a test of working memory (OSPAN or symmetry span) and a subset of questions from the STAI to measure anxiety. In Experiment 2, participants completed the full STAI battery with subscales for both state and trait anxiety, before and after one of three

intervening tasks: a laughter sounds ratings task, a rating task after hearing neutral sounds, or a symmetry span task. Results showed that perceiving laughter decreased state and trait anxiety scores, whereas neutral sounds had no effect. Furthermore, although hearing laughter did not influence subsequent working memory performance, taking a working memory test increased state anxiety. These findings are interpreted in terms of regulation of negative emotions and the role of high emotional arousal, which can have opposing influences on anxiety.

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12:00-1:30 PM (2059)

How Do Adults with Autism Interpret Dynamic Social Scenes? An Eye Movement Study. VALERIE BENSON, *University of Central Lancashire*, MONICA S. CASTELHANO, *Queen's University*, SIMON P. LIVERSEDGE, *University of Central Lancashire*, SARA V. MILLEDGE, *University of Central Lancashire* — In this study, typically developed adults (TD; n = 8) and adults with Autism Spectrum Condition (ASC; n = 8) were presented with complex dynamic interactions depicting typical sincere, or insincere, interactions between two or more adults (TASIT-S, McDonald, Flanagan & Honan, 2017). Eye movements were recorded during the viewing of the videos. Following each video four questions, directly related to the characters and their interaction in the previous scene, were presented on screen. The questions addressed core aspects of social cognition. In line with our previous findings for static scenes, we predicted that the ASC group would be less accurate, take longer to respond, and show repeated reading of the questions that followed the videos prior to making a response. Behavioural and eye movement data support these predictions and evidence subtle attentional and cognitive processing differences between TD and ASC participants in understanding everyday communication.

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12:00-1:30 PM (2060)

The Roles of Rumination and Agency in Adjusting to Return from COVID-19 Protocols. CHRIS KOCH, *George Fox University*, AMANDA LOUIE, *George Fox University* — The relationship between rumination, in addition to hope and depression, and difficulty adjusting to COVID-19 protocols were examined in this study. Rumination was assessed with the RRQ, hope was measured with the AHS, depression was reported using the PHQ-9, satisfaction with life was measured with the SWLS, and difficulty with COVID-19 protocols and concerns about returning to pre-pandemic lifestyles were assessed on 100-point scales. Participants were college students. Difficulties due to pandemic protocols and concerns about returning to normal activities were normally distributed with means close to 50. Although difficulty and concerns ratings were positively correlated, only concerns about returning to normal activities were related to depression, hope, satisfaction with life, and rumination. Self-reflection was not significantly related to any other variable. In general, individuals who were more concerned about returning to pre-pandemic activities were more depressed, expressed less hope, less satisfied with life, and engaged in rumination more than those who were less concerned about re-entering in-person situations. Mediation analysis suggests that the rumination leads to lack of agency which negatively influences mood.

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12:00-1:30 PM (2061)

Saviour, Scourge, or Spectator? Examining how Psychopathic Traits, Anger, and Moral Reasoning Predict Punitive and Compensatory Restorative Actions in Economic Games. SHARLENE FERNANDES, *Georgia State University*, EYAL AHARONI, *Georgia State University* — People frequently punish others who behave unfairly. When people choose to punish or compensate others, are they motivated by prosocial concerns that benefit others or egoistic motives that maximize selfish outcomes? To address this question, we tested whether psychopathic traits, including callousness, hostility, and low inhibitory control, predicted punishment or compensation of fairness violations using variations of the ultimatum game. In a sample of 513 individuals, high anger and meanness subtraits of psychopathy predicted more punishment, especially towards fair distributors. On the other hand, valuing fairness predicted higher levels of compensation toward victims of unfair offers. These findings highlight the importance of considering individual differences in personality, emotion, and cognition when studying restorative justice behavior. Understanding how personality traits facilitate punitive behavior can lead to the development of practical strategies for managing such behavior.

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12:00-1:30 PM (2062)

The Power of Fear? Understanding Episodic Memory for Threat-Relevant Information. TIANYU (AMBER) HU, *Rutgers University – Newark*, KIMELE PERSAUD, *Rutgers University – Newark* — The retrieval of information from episodic memory is influenced by its emotional significance. Past work on emotion and memory found that individuals show better memory for negative compared to neutral information—yet, negative information can vary on several dimensions, which in turn, might engender differences in how varying negative information are stored in memory. Indeed, people demonstrate an attentional bias towards negative-threatening compared to negative non-threatening information. Here we ask whether this attentional bias feeds forward into memory such that threatening information is better remembered than negative non-threatening and neutral information. To answer this question, we presented individuals with images identified as threatening, negative non-threatening and neutral in a delay recognition task. Preliminary results (N = 16) did not support the hypothesis that threat-relevant information is better remembered than negative non-threatening information, which opens up future questions regarding what kind of information is preferentially encoded and stored. This work serves as an initial step in elucidating the complex interaction between negative information and memory.

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FRIDAY

12:00-1:30 PM (2063)

The Face Behind the Task: Using Affective Ratings to Test Competing Accounts of How Emotionally Expressive Distractors Influence Performance Under Perceptual Load. NIYATEE NARKAR, *University of Guelph*, NATASHA SACCON, *University of Guelph*, RASHMI GUPTA, *Indian Institute of Technology*, MARK J. FENSKE, *University of Guelph* — Salient signals from an emotionally-expressive face can capture attention away from task-relevant objects in the environment. We considered whether the influence of such task-irrelevant distractors depends solely on the availability of processing resources leading to enhancement of their representations (load theory) or the engagement of an inhibitory mechanism that suppresses their representations (inhibition theory). These competing accounts were contrasted by asking participants (N = 141) to affectively rate happy and sad distractor faces appearing on easy (low-load) or hard (high-load) visual-search displays. Because previously-inhibited stimuli are typically rated more negatively than novel stimuli, we used affective devaluation of distractors as an index of inhibition. We obtained no evidence that task-irrelevant faces were inhibited in any condition, yielding support for the load hypothesis. This line of research represents an incremental advance in our attempts to better understand the specific cognitive-affective mechanisms that prioritize stimulus processing.

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12:00-1:30 PM (2064)

Fluctuation in Cognitive Engagement During Listening and Reading of Erotica and Horror Stories. UGO BALLENGHEIN, *Université Paris-Est Créteil & Cognitions Humaine et Artificielle (CHArt)*, JOHANNA KAAKINEN, *University of Turku*, GEOFFREY TISSIER, *CHArt Lab, University of Paris 8*, THIERRY BACCINO, *CHArt Lab, University of Paris 8* — Do emotional text contents influence cognitive engagement and transportation during listening and reading? Two experiments investigated this question during listening and reading of neutral, horror, and erotic stories. We investigated the fluctuation of arousal and cognitive engagement by continuously measuring arousal judgments and head movements of listeners and readers. The results showed that emotional texts were more arousing and induced more transportation than neutral stories. There was a steeper decrease in head motion across time for erotic stories in comparison to neutral or horror stories, in addition to less head motion overall, indicating that erotic texts induced higher cognitive engagement. Moreover, readers' head and eye movements were tracked during reading of emotional and neutral texts. The results showed that emotional texts were more arousing and induced higher transportation than neutral stories. Results on head movements showed less movement during reading of erotic than neutral or horror texts. The present results show that emotional texts impacts cognitive engagement during listening and reading of literary texts and demonstrates the importance of methodological triangulation to study cognitive engagement.

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12:00-1:30 PM (2065)

Effects of Expression Intensity and Response Option Variations on Time to Recognize Facial Expressions of Emotion. CHARLES A. COLLIN, *University of Ottawa*, JUSTIN CHAMBERLAND, *University of Ottawa* — Micro-expressions are low-intensity or partial facial expressions, thought to unintentionally "leak out" when one is trying to mask an emotional state. Despite the faintness of these stimuli, prior research on brief affect recognition performance has almost exclusively used high intensity expressions. In addition, studies have not considered the effects of response options on guessing rates, an important consideration with liminal stimuli. We measured presentation time thresholds for the recognition of 6 basic emotions while manipulating intensity of target expression and presence/absence of a "neutral" response option. Expression intensity affected recognition rates at different presentation durations, depending on the category of the expression. Specifically, low intensity reduced recognition performance at briefer durations for expressions of happiness and surprise than other emotions. In addition, the availability of a neutral response option reduced task performance at shorter presentation durations, but not for anger or fear expressions. These results demonstrate the importance of considering expression intensity and response arrays in understanding the temporal characteristics of face processing.

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12:00-1:30 PM (2066)

Can We Trust the Face Inversion Effects?. CONSTANTIN REZLESCU, *University College London*, YIMING LIN, *University College London* — Successful face recognition is thought to rely on holistic processing, which is typically measured by the inversion, part-whole, and composite effects. However, Rezlescu et al. (2017) showed surprisingly small correlations between these measures, and Gerlach & Mogensen (2023) reported that even face inversion effects are task dependent, questioning their validity as measures of a unitary holistic construct. We conducted a large online study to examine face inversion effects in three widely used tests (CFMT, CFPT, and face matching; Rezlescu et al., 2012) with three aims: i) measure their test/retest reliability that can limit correlations across inversion effects, ii) perform trial by trial analysis to analyse response consistency and confirm test validity, and iii) attempt to replicate Gerlach & Mogensen (2023) findings. Our preliminary results suggest that the low correlations found between measures of holistic processing may be partly explained by issues related to test validity and reliability.

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12:00-1:30 PM (2067)

Dissociating the Effects of Processing Fluency from Aesthetic Experience in Visual Art Viewing. SOFIA SILVOSA, *Duke University*, ANNA SMITH, *Duke University*, ELIZABETH J. MARSH, *Duke University*, FELIPE DE BRIGARD, *Duke Trinity College of Arts & Sciences* — Does the mere-exposure effect enhance aesthetic experiences just as it enhances preference judgments for visual stimuli? In the current study, participants saw 32 abstract paintings three times in an initial exposure phase. They were

then shown 64 paintings (32 novel) during one of two judgment phases (between-subjects): participants were asked either how much they "liked" the painting or how "moved" they were by it. We hypothesized that "liking" judgments would increase with repetition, while "moving" judgments would be unimpacted. While we did not observe any effect of repetition in the "liking" condition, we discovered wide individual differences: participants ranged from significantly preferring repeated images to significantly disliking repeated images. However, participants were less moved by repeated images. Future work will consider the role of novelty in aesthetic experience, as well as investigate the conditions under which the mere exposure effect is most pronounced.

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12:00-1:30 PM (2068)

The Effect of Emotion on Own-Gender Bias in Face Recognition. HSIN-MEI SUN, *The College of St. Scholastica* — Research has shown that females are better at recognizing female faces than male faces. The female own-gender bias in face recognition has been hypothesized to be the result of a higher motivation to process own-group faces more deeply than other-group faces (Mukudi & Hills, 2019). Given that motivation and emotion are intertwined, the current study examined how emotion would modulate the own-gender bias in face recognition. Fifty-one female participants were recruited to watch either a neutral, positive, or negative emotion-inducing video, followed by a face recognition task. During the learning phase of the face recognition task, participants viewed 28 Caucasian male and female faces for later recognition. In the testing phase, participants were presented with a series of faces and asked to indicate whether they had seen the faces before. The results showed that participants remembered more female than male faces regardless of the emotion induced, suggesting that the own-gender bias is not affected by emotions.

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12:00-1:30 PM (2069)

Performance on a Dot Task Differs for Faces Associated With a Positive Versus Negative Valence. REBECCA WELDON, *SUNY Polytechnic Institute*, GABRIELLE WALKER, *SUNY Polytechnic Institute*, YELIZAVETA KIUCHUN, *SUNY Polytechnic Institute*, VERONIKA PALMOVA, *SUNY Polytechnic Institute*, MYEONG-HO SOHN, *The George Washington University*, JINI TAE, *Gwangju Institute of Science and Technology* — Humans learn about stimuli in our environment over time. Previous studies have found that stimuli associated with a positive valence can facilitate cognitive control, but the mechanism remains unknown. In the present study, we aimed to understand whether stimuli associated with a positive valence elicit an approach response on a dot task. In an association phase, participants learned to assign valence to faces that are "mostly positive" (MP; i.e., on 80% of trials this face is displaying a happy expression; on 20% of trials, an angry expression) or "mostly negative" (MN; i.e., 80% angry, 20% happy). In a transfer phase, an MP and MN face were presented side by side (displaying a neutral expression), and a dot appeared on one of the two faces. Participants were instructed to press a left or right key to indicate which side of the screen the dot appeared on. Preliminary analyses show that participants are faster at responding to positive (happy) faces for MP faces and faster at responding to negative (angry) faces for MN faces in the association phase. In the transfer phase, there is a trend for a greater reverse switch cost for MP faces than for MN faces.

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12:00-1:30 PM (2070)

Improving Intuitive Estimates of Food-Related Water Use. BARBARA K. KREIS, *University of Mannheim*, THORSTEN PACHUR, *Max Planck Institute for Human Development & Technical University of Munich*, JULIA GROSS, *University of Mannheim* — Water scarcity is a growing concern spurred by the climate crisis. Food production is a significant contributor to water use. One way to address water scarcity is thus to make consumers aware of how food products differ in their water use. How much do people know about the water use of food products? And how can people's knowledge and food choices be improved? In an online study (N = 102), participants estimated the water use of various food products in liters. Then they received either the actual water use (seeding), a simple rule to estimate water use (rule), or read an unrelated text (control). Then they provided estimates for previously judged and new products. Finally, they indicated which of four shopping lists of food products they considered to have the lowest water use. Participants' initial estimates were poorly calibrated, underestimating water use by 2,652 liters on average and ranking the foods with an accuracy of r = .17. Seeding improved estimates and ranking, while the rule improved only the ranking. Shopping list selection was best in the seeding group and worst in the control group. Our results demonstrate that a simple intervention improves knowledge and enables people to make more sustainable food choices.

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12:00-1:30 PM (2071)

Fuel for Judgment Creep: When Motivated Reasoning and Shifts in Prevalence Produce Biased Concept Change. JEREMY D. STRUEDER, *The University of Iowa*, PAUL WINDSCHITL, *University of Iowa*, INKYUNG PARK, *University of Iowa* — Research by Levari et al. (2018) has demonstrated that people often respond to decreases in the prevalence of target stimuli by expanding their concept of it—a pattern termed prevalence-induced concept change. For example, when blue dots become rare, people shift their criterion of what constitutes blue to become more liberal. In the present work, we investigated how prevalence interacts with a second factor—motivated reasoning—to affect concept-based judgments. Specifically, we tested whether people expand their concept of blue to a larger degree when they are externally motivated to see blue dots. Results showed that, in addition to concept shifts that are induced by prevalence changes, people's concepts of color can also shift as a function of desire. However, this desirability bias did not impact the magnitude of prevalence-induced concept change.

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FRIDAY

12:00–1:30 PM (2072)

Stop Frowning, It's True: Corrugator Activity Indicates Increased Positive Affect After Judging Information as Being True . ANNIKA STUMP, *Heidelberg University Institute of Psychology*, TORSTEN WÜSTENBERG, *Heidelberg University Core Facility for Neuroscience of Self-Regulation (CNSR)*, ANDREAS VOSS, *Heidelberg University Institute of Psychology* — In line with the feelings-as-information theory, a body of research demonstrates more positive (negative) judgments in positive (negative) affective states. Similarly, it has been shown that people who experience positive (negative) affect also tend to judge incoming information as more likely being true (false). Following the argumentation of affect-congruent judgments, we assume that judging information as being true itself possesses a positive affective component. In a truth effect study, we implemented two judgment phases (10 minutes and 1 week after first exposure) in which 75 participants judged the truth of in total 120 (new and repeated) statements. Addressing the present research question, we assessed spontaneous facial reactions via electromyography after participants provided their truth judgments in each trial. Results reveal corrugator relaxations after judging information as being true (vs. false), indicating increased positive affect. Importantly, this finding was unaffected by the repetition status and subjective confidence regarding judgments.

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12:00–1:30 PM (2073)

The Power of Technical Language: How Jargon Use Influences the Credibility of Misinformation. TANISHA Y. BERRIOS HERNANDEZ, *Texas A&M University*, DUN-YA HU, *Texas A&M University*, JYOTSNA VAID, *Texas A&M University* — Misinformation, or the false, misleading account of a fact or event, has become increasingly prevalent with the rise of social media, leading to a variety of unwanted and harmful consequences in society. Once an incorrect impression is formed, cognitive mechanisms such as confirmation bias tend to reinforce it, strengthening its effect. Previous research has shown that presenting images of the brain in a scientific text enhances the perceived credibility of the text, even if the images have no direct bearing on the topic. Similarly, we wondered how the presence of linguistic features that signal scientific credibility might affect perceptions of the text's credibility. An important factor commonly investigated in communication studies that has been overlooked in misinformation research is the use of jargon. In the current study, we explore how the presence and quantity of jargon in information texts affects readers' credibility ratings of the text presented. Participants read text containing different levels of technical language. The text was either factually accurate or inaccurate. We hypothesize that the presence of jargon will lend an air of trustworthiness to a text, which could make false claims harder to reject.

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12:00–1:30 PM (2074)

Biases in Visual Memory Following Judgments of Threat. SEAN DAGEFORDE, *University of Notre Dame*, JAMES BROCKMOLE, *University of Notre Dame* — This study examined the effects of threat categorization decisions on later memory for emotionally valent faces. Stimuli were constructed by blending photographs of human models expressing neutral and angry emotions in different proportions. This resulted in a continuum ranging from neutral to emotionally ambiguous, to threatening. On each trial participants viewed a single face. In the judgment condition, they pressed a button if they thought the face was threatening and withheld a response otherwise. In the observation condition, participants passively viewed the face without making a judgement. Then, participants were shown two faces, one slightly more and one slightly less angry than the previously viewed face and were asked which was most similar to what they saw. In all cases, participants were more likely to choose the angrier face, particularly when the viewed/rated face was emotionally ambiguous. This bias was further augmented for participants in the judgment condition and even larger immediately following a "threat" categorization. Hence, the task of categorizing threats led to memories that were more extreme than what was seen.

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12:00–1:30 PM (2075)

Muddying the Waters: The Effect of Disinformation on the Perception of Truth. KIRANDEEP K. DOGRA, *Western Washington University*, ELLIE MACK, *Western Washington University*, VI LY, *Western Washington University*, SERENA CALKINS, *Western Washington University*, IRA E. HYMAN, JR., *Western Washington University* — What is the goal of sharing disinformation? Disinformation may be shared to convince people to adopt that position. Disinformation may also be shared to create doubt concerning true information and lead people to be less convinced there is an agreed upon position. In this study, we examined how flooding individuals with conflicting information about controversial topics affected what they believed to be true and their belief that there was an expert consensus. We presented some people with true information, some with false information, and others with a mix of true and false information. We hypothesized that individuals presented with only one side would accept that position as true and as the consensus view. In contrast, individuals presented with both sides should be less confident in true information and that a consensus exists. Flooding people with disinformation may muddy the waters, making it harder to discern the truth.

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12:00–1:30 PM (2076)

Polarization in a Global State of Emergency: Quantifying Heterogeneity in Perceived Risks of Pandemic Mitigation Measures. OLIVIA FISCHER, *University of Zurich*, RENATO FREY, *University of Zürich* — Polarization has recently gained increasing attention. However, due to a large measurement heterogeneity, it is difficult to determine the true extent of polarization in society. This study contributes to the understanding of polarization by addressing two research questions: (1) To what degree does polarization manifest itself in the area of risk perceptions regarding Covid-19 measures? and (2) How robust are findings when comparing different operationalizations of polarization? In a mixed design study, 768 US

participants were divided into two groups and presented with three scenarios (mandatory Covid-19 certificates, lockdowns, and vaccine mandates) from either a health or finance perspective. We used a Bayesian approach to estimate polarization in terms of the bimodality coefficient. We found credible polarization in six out of twelve conditions, particularly in those with personal consequences. Additionally, we compared the bimodality coefficient to seven other operationalizations of polarization and found relatively strong agreement between them. The findings have important implications for public policy and highlight the importance of considering the context in which polarization is measured and how it is conceptualized.

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12:00-1:30 PM (2078)

The Use of Visual Anchors to Explain the Differences Between Lower and Upper Graph Distortion Effects in Bar Graphs With or Without an Inversion of the Vertical Axis. SHUO ZANG, *University of Ottawa*, DENIS COUSINEAU, *University of Ottawa* — Graph distortions are common in publications. Bar graphs can easily become misleading by changing the y axis starting point (lower graph distortion) or the y axis upper limit (upper graph distortion). When truncating y axis range from the bottom or from the top, the perceived difference between bars is exaggerated. We hypothesize that the black areas are the visual cues responsible for the lower-graph distortion effect in bar graphs, and the white spaces are the visual cues for the upper-graph distortion effect. In Study 1, we flipped the bar graphs upside-down; in Study 2, only the black areas in the graphs are reversed, reaching an upper horizontal axis. In both Studies, the distortion effects are significant; the lower-graph distortion effect is three times more important compared to the upper-graph distortion effect in normal bar graphs; Study 2 confirmed that the black bars are the visual cues for judging differences on bar graphs. The overall results support a framework of anchors as an explanation for graph distortion.

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12:00-1:30 PM (2079)

The Effect of Active Engagement on Belief in Social Media Posts. YIWEN ZHONG, *Vanderbilt University*, SHANE LITTRELL, *University of Miami*, AMANDA DIEKMAN, *Indiana University*, MICHELLE SEELIG, *University of Miami*, LISA FAZIO, *Vanderbilt University* — As people browse social media, they can actively engage with posts or passively read what's presented. These choices may then change people's beliefs and attitudes towards the content. Existing research finds that active engagement with persuasive messages increases belief change. Similar psychological processes likely occur with online news reading and sharing. In our study participants selected social media posts (true and false news headlines) that they would be willing to share online. They then typed hypothetical comments for half of the posts while passively viewing the others. In two pre-registered experiments (N = 551), we tested if active engagement influences attitudes towards true and false headlines. There were mixed findings on the belief scale; our second study suggested that active engagement significantly increased agreement ratings for news perceived as false. Across both studies, engaged news items were judged to be more relevant to participants' daily life. Our studies demonstrate that commenting may alter how individuals process news content.

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12:00-1:30 PM (2080)

Does Ostracism Increase Susceptibility to Misinformation?. PHUC H. LE, *University of California, San Diego*, KIPLING D. WILLIAMS, *Purdue University*, NADIA M. BRASHIER, *University of California, San Diego* — Misinformation undermines democracy, incites violence, and harms human health. People tend to judge news through the lens of their politics—they are more likely to believe headlines that are concordant with their partisanship. However, we know less about how other social factors, such as everyday experiences of exclusion, increase the appeal of fake news. The current study extends work on the negative effects of ostracism to test whether social exclusion increases susceptibility to misinformation. Participants played Cyberball, a virtual ball-tossing game commonly used to induce experiences of ostracism in a lab setting. Some participants regularly received tosses from other players (included), while others received the ball twice and then were left out for the remainder of the game (excluded). After this brief, 3-minute ostracism episode, participants evaluated true and false news headlines. They indicated how much they believed each headline, as well as how willing they would be to share it. These data have important implications not only for theories of belief revision, but also for interventions on social media platforms, which may not always reach the most vulnerable users.

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12:00-1:30 PM (2081)

Punishment in the Afterlife: How Attitudes About Longer-than-Life Sentences Expose the Rules of Retribution. SHARLENE FERNANDES, *Georgia State University*, EYAL AHARONI, *Georgia State University*, EDDY NAHMIAS, *Georgia State University*, MORRIS HOFFMAN, *Second Judicial District of Colorado*, CAELAN ALEXANDER — Prison sentences that exceed the natural lifespan present a puzzle because they have no more power to deter or incapacitate than a single life sentence. In two survey experiments, we tested the extent to which participants (university students) support these longer-than-life sentences. In experiment 1 (N = 130), participants made hypothetical prison sentence length recommendations for a criminal offender with multiple victims, warranting two sentences to be served either concurrently or consecutively, depending on the experimental condition. In experiment 2 (N = 260), participants voted on a hypothetical ballot measure to either allow or prohibit the use of consecutive life sentences. Results from both experiments revealed that participants supported the use of longer-than-life sentences. In addition, they adjusted these posthumous years in response to mitigating factors in a manner that was indistinguishable from ordinary sentences (experiment 1), and their support for consecutive life sentencing policies persisted regardless of whether the policy was costly to implement (experiment 2),

consistent with a heuristic reasoning process. This study has implications for sentencing policy and for theories of punishment behavior.

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12:00–1:30 PM (2082)

Implementation of Subgoal Labeling and Static Images in Statistics Education. EMANUEL ROJAS, *Georgia Institute of Technology*, RICHARD CATRAMBONE, *Georgia Institute of Technology* (Sponsored by Richard Catrambone) — Statistics is highly relevant to a variety of individuals, thus, it is important to improve statistics instruction to improve proficiency. The subgoal learning model proposes that organizing solution procedures into subgoals can enhance learners' problem-solving performance. We hypothesize that static pictures can provide a comprehensive visual representation of the problem and reduce cognitive load for learners. In the present study we examined the effects of subgoals and static pictures used in worked examples on how effectively participants learn basic statistics definitions and solve familiar and new problems. Cognitive load and problem-solving performance are evaluated. Preliminary analyses suggest subgoal labeling on worked-out examples significantly impacted overall problem-solving performance.

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12:00–1:30 PM (2083)

The Mystic and the Mathematician: Describing and Explaining Similarities in Perceptual Experience of the Supernatural. DAVID LANDY, *Netflix*, ELEANOR SCHILLE-HUDSON, *Stanford University*, TYLER MARGHETIS, *University of California, Merced* — Mathematical reasoning frequently involves visualization over impossible objects, which mathematicians often describe in terms of direct experience. Likewise, individuals in diverse religious communities describe experiences of the supernatural. Drawing on ethnographic work on American Charismatic Christians (Luhrman, 2012), we observe that these experiences share features (phenomenological, cultural, functional) with seemingly unrelated ones: mathematicians' experiences of abstract, non-physical objects. Both mystics and mathematicians describe experiences of intangible or impossible entities (e.g., God, high dimensional shapes), which convey a sense of knowledge or certainty. We argue that these similarities result from a shared psychological mechanism. Research in neuroscience shows that the brain constantly makes predictions about what will occur next ("predictive coding"), these predictions generate perceptual experiences, and strong learned expectations can produce perceptual experiences. Mystical and mathematical training both involve disciplined material practices that could develop expectations of this sort. In sum, we offer a unifying, naturalistic account of commonalities between apparently different human practices.

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12:00–1:30 PM (2084)

Predictive Validity of Raven's Advanced Progressive Matrices: Why Does It Change Across Multiple Administrations?. ERIN R. NEATON, *Michigan State University*, DAVID Z. HAMBRICK, *Michigan State University*, ERIK M. ALTMANN, *Michigan State University* — We previously found that performance on Raven's Advanced Progressive Matrices™ (RAPM) predicted criterion performance more strongly for a second RAPM administration than on a first administration. Here we examined two possible causes: (1) learning effects and (2) transient error—that is, greater self-similarity of participants' performances when predictor and criterion tasks are administered on the same versus different days. Participants completed either one RAPM form on each of two days (Experimental Group) or a control task on Day 1 and RAPM on Day 2 (Control Group). On Day 2, all participants completed Letter Sets and Number Series as criterion tasks. The Experimental Group's RAPM-criterion correlation increased from Day 1 to Day 2. The Control Group's RAPM-criterion correlation was closer to the Experimental Group's Day 1 correlation than to the Experimental Group's Day 2 correlation. This finding suggests that learning effects played a larger role in the Experimental Group's increase in correlation than did transient error. Implications of the results for measurement of reasoning ability are discussed.

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12:00–1:30 PM (2085)

Construction and Validation of the HeiQ: An Operation-Oriented Figural Matrices Test. VANESSA S. PALLENTIN, *Heidelberg University*, DANIEL DANNER, *University of Applied Labour Studies*, JAN RUMMEL, *Heidelberg University* — Figural matrices tests are a popular and well-researched form of assessing inductive reasoning abilities. Although they generally show good psychometric properties, limitations associated with distractor construction prevent most tests from realizing their full potential. The distractor setup allows participants to at least partly identify the correct response by eliminating distractors based on superficial features. We developed a novel figural matrices test—the HeiQ—where the possibility of using these response elimination strategies is drastically decreased. The test showed good to very good reliability and good construct validity. It even superseded the Raven Progressive Matrices tests in criterion-related validity (correlation with final year high school grades ($r = -.49$ $p < .001$)). Furthermore, distractors were construed in a way that analyzing these distractors can give insights into cognitive processes at work during item solving.

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12:00–1:30 PM (2086)

Geometrical Word Problems: An Intersection of Memory, Reading, and Spatial Abilities. PHUC XUAN NHI NGUYEN, *Mississippi State University*, ANDREW F. JAROSZ, *Mississippi State University* (Sponsored by Andrew Jarosz) — Geometrical word problems contain both numerical (e.g., calculating values) and linguistic properties (e.g., comprehending the problem, building an appropriate representation) that can cause difficulty in solution. Several aspects of cognition may help in overcoming these difficulties. The current study examined individual differences in working memory, reading comprehension, and spatial ability in predicting the success of geometrical word problems. Participants completed the running span task, Gates-MacGinitie Reading Tests, paper folding task, and a

battery of geometrical word problems. Results demonstrated that working memory capacity, reading comprehension, and spatial ability independently, uniquely, and positively predicted better performance in geometrical word problems, though they did not interact. Results suggest that these three factors should be considered by the teacher in educational settings to enhance student's performance in mathematics.

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12:00-1:30 PM (2087)

Should We Create Together? Investigating How Collaboration Impacts Creative Problem Solving. ALEXANDER G. KNOPPS, *North Dakota State University*, KATHRYN T. WISSMAN, *North Dakota State University* — Creativity and collaboration are considered fundamental skills for student success in STEM education (Karimi & Pina, 2021) and are consistently among the top-ranked skills for employers (Flaherty, 2021). To assess creativity, the Remote Associates Task (RAT) is an increasingly used tool to measure creative problem-solving performance (Wu et al., 2021). However, no research has systematically investigated the effectiveness of working collaboratively versus individually using this measure. The current research evaluates how collaboration impacts creative problem-solving using the RAT. Participants worked collaboratively (in a dyad) or individually to solve 20 RAT problems (Experiments 1-2) and completed a later, individual test that involved the same 20 RAT problems and 20 novel RAT problems (Experiment 2). Outcomes suggest that collaboration leads to lower performance during initial problem-solving, but may benefit later, individual problem-solving. Evaluating how best to support creative processes in the context of collaboration has implications for supporting student success and helping them develop highly applicable skills.

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12:00-1:30 PM (2088)

Personal Experience-Based Interventions Are More Effective at Creating Belief in Pyramid Power Effects on Concentration than Read-Only Interventions. WILLIAM LANGSTON, *Middle Tennessee State University*, ZACHARY CLARK, *Middle Tennessee State University*, MADILYN EVANS, *Middle Tennessee State University*, ALEXA SUMMERSILL, *Middle Tennessee State University* — The present study is part of a larger project to develop diagnostic criteria for personal experience-based beliefs and to evaluate the impact of belief type on the design of interventions intended to change belief. Prior work showed that the preservation aspect of pyramid power belief was not based on personal experience. In that work, experience (seeing bananas stored in different shaped containers) produced the same belief change as simply reading. However, in those data the aspect of pyramid power relating to pyramids' impacts on living things suggested that this might be a personal experience-based belief. The present study provided a read-only or personal experience-based intervention to evaluate whether intervention type would impact the development of the belief that meditating under a pyramid would increase concentration. The data were that this was a personal experience-based belief and there was a larger belief change effect for the personal experience-based intervention.

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12:00-1:30 PM (2089)

Analytical Thinking, Counterexample Generation, and the Adoption of a Skeptical Stance in Evaluating Conditional Arguments. ROBERT RICCO, *California State University, San Bernardino*, RONNIE DE LEON, *California State University, San Bernardino*, ALANIS R. PEREZ, *California State University, San Bernardino*, JAY VON R. MONTEZA, *University of Denver*, JASMINE BONSEL-RILEY, *California State University, San Bernardino*, HIDEYA KOSHINO, *California State University, San Bernardino* — Individuals with a disposition to engage in analytical (type 2) processing exhibit a more systematic, exhaustive consideration of the possible responses or solutions to a problem. We assessed whether such a tendency would include the generation of more alternative antecedents, i.e., alternative sufficient conditions, for the consequent of a conditional ("if…then") statement, and more examples of cases that falsify or disable the conditional, and whether this, in turn, would promote a more skeptical stance in evaluating conditional arguments. Across two experiments, we found that individuals with a greater tendency to engage in analytical thinking, as measured by the Actively Open-minded Thinking Scale (AOT) and the cognitive reflection test (CRT), generated more alternative antecedents and disablers for conditional statements and were more likely to reject the invited inference on invalid conditional argument forms such as affirming the consequent (AC). In addition, more analytical thinkers tended to be more skeptical regarding the conclusion of the valid modus tollens (MT) conditional argument form.

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12:00-1:30 PM (2090)

Examining Different Approaches of Effort-Discounting in Physical and Cognitive Decision-Making Tasks. LI XIN LIM, *Purdue University*, MICHEL REGENWETTER, *University of Illinois Urbana-Champaign*, DANIEL CAVAGNARO, *California State University, Fullerton*, SEBASTIEN HELIE, *Purdue University* — Past studies often assumed diminished utility with additional effort to acquire a reward. Previous research used the Effort Expenditure for Reward task (EEfRT) and the shell game task (SGT) to explore the impact of physical and cognitive effort on reward valuation (Lim et al., 2023). However, limited understanding of effort-discounting in typical adult decision-making persists. This study aimed to compare two effort-discounting approaches in the EEfRT and SGT: scaling the expected value of a reward by perceived effort cost (E) and subtracting E from the expected utility. Possible choice patterns were generated using these approaches, with varying effort levels. The fit of participants' choices to these patterns were computed with the Q-test (Regenwetter et al., 2014). Results showed that the subtraction-based discounting approach best aligned with most participants' choice behaviors. Moreover, participants exhibited consistent effort-discounting across both tasks, with low discrepancies in the best-fitted choice patterns between the tasks.

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FRIDAY

12:00–1:30 PM (2091)

Too Early or Too late? Risky Action Decisions Under Temporal Uncertainty. TAREN ROHOVIT, *University of Oregon*, ULRICH MAYR, *University of Oregon* — Because the time needed for completing any activity is usually variable, effective planning for future events involves considering the level of temporal uncertainty. Yet, we know little about if and how memories of multiple instances from the same event category are integrated to represent not only the average duration, but also its variability, and thus the risk of over- or underestimating how long an activity will take. To address this question, we developed a novel paradigm in which subjects performed specific activities with either low or high duration variability. In a surprise test phase, they had to estimate the time of these activities in a piece-rate-incentivized manner, while navigating imposed risks related to overestimating or underestimating time. Results show that people generally undershoot in terms of duration estimates, but also are sensitive towards the temporal variability of the memorized events. These results are an initial step toward analyzing people's consideration of temporal risk during action regulation.

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12:00–1:30 PM (2092)

Mindfulness and Behavioural and Electrophysiological Correlates of Inhibition in a Neutral and Reward Associated Context. ATANAS TANNOUS, *Eötvös Loránd University (ELTE) Institute of Psychology*, ATAKAN AKIL, *Eötvös Loránd University (ELTE)*, ZSOLT DEMETROVICS, *University of Gibraltar Centre of Excellence in Responsible Gaming & Eötvös Loránd University (ELTE)*, ALEXANDER LOGEMANN, *Eötvös Loránd University (ELTE)* — Previous studies have shown that mindfulness is associated with improved inhibition. However, the associated brain mechanism and role of reward context are not yet clear. The current study aimed to address these open questions. Participants (n = 65, 19 male and 46 female) between 19-58 years old (M = 23.94, SD = 6.09) performed two versions (neutral and reward-associated) of a stop signal task (SST), and electrophysiological activity was recorded continuously. We replicated the brain activity correlates of successful inhibitory control (evidenced by the stop N2 and stop P3 event-related potentials). However, our initial results do not show a clear relationship between mindfulness and indices of inhibitory control or moderating role of reward context. In addition to these results, we will present additional explorative results regarding the relationship between mindfulness and inhibitory control as a function of the baseline level of inhibitory control and several moderators.

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12:00–1:30 PM (2093)

Relating the Empirical Dimensions of Reinforcement and Category Learning. DANIEL WURGAFT, *Stanford University*, MICHAEL MACK, *University of Toronto* — Learning to represent environmental states occurs both in multidimensional reinforcement learning (RL) and category learning (CL) settings, leading some to argue these two frameworks, traditionally viewed as disparate, share underlying mechanisms. However, in a previous study, we found a lack of relation between RL and CL tasks, possibly due to different representations employed (elemental vs. configural). Thus, in this follow-up experiment, we examined conditions under which RL and CL may converge and the role of representation in their relation. Participants performed two RL and two CL tasks, which varied based on several dimensions (representation type, number of choices, feedback, and framing). A configural RL task revealed that participants learned a category structure even in a probabilistic, reward-based setting. Furthermore, performance in RL and CL tasks requiring the same type of representations was correlated. Yet, representation was not solely responsible for the relations found, and a partial correlation analysis revealed other task factors also contributed to between-task correlations. Our results provide evidence against a dichotomy between RL and CL, showing that the two can converge under certain conditions.

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12:00–1:30 PM (2094)

Subclinical Depression Is Associated with Diminished Threat Sensitivity During Perceptual Decision-Making. HAENA KIM, *University of Chicago*, ANITA RESTREPO, *University of Chicago*, JACK MONDAY, *University of Chicago*, STEPHANIE WU, *University of Chicago*, NAOMI DANIEL, *University of Chicago*, GREG J. NORMAN, *University of Chicago*, YUAN CHANG LEONG, *University of Chicago* — Depressive symptoms are associated with disruptions in threat perception, though the specific nature of this disruption remains unclear. Our study combines psychophysics, computational modelling and pupillometry to investigate the relationship between threat sensitivity and depressive symptoms in a subclinical sample. Participants were presented with visual stimuli and tasked to categorise each stimulus into one of two categories. We manipulated threat associations by probabilistically pairing stimuli from one category with a mild electrical shock. Participants who score higher on a depression scale required more sensory evidence to categorise an image as the thereat-associated category. Analyses using drift diffusion models indicated that this is due to a weaker bias in evidence accumulation towards the threat associated category, an effect that was modulated by trial-by-trial changes in pupil dilation. Together, these results characterize the computational and physiological processes disrupted in subclinical depression and suggest that depressive symptoms are associated with diminished threat sensitivity.

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12:00–1:30 PM (2095)

A Paradigm to Instill the Value of Effort: Evidence for Near- and Far-Transfer Effects. HAUSE LIN, *Massachusetts Institute of Technology &Cornell University*, ANDREW WESTBROOK, *Rutgers University & Brown University*, FRANK FAN, *University of Toronto*, MICHAEL INZLICHT, *University of Toronto* — People who take on challenges and persevere longer are more likely to succeed in life. But individuals often avoid exerting effort, and there is limited experimental research investigating whether we can learn to value effort. Because existing research focuses on enhancing cognitive performance rather than increasing the value of

effort, it also remains unclear whether individuals can learn to care more about challenging themselves than performing well. We developed a paradigm to test an intuitive idea: that people can learn to value effort and will seek effortful challenges if directly incentivized to do so. Moreover, we dissociate the effects of rewarding people for choosing effortful challenges and performing well. Results revealed that rewarding effort increased people's willingness to choose harder tasks, even when rewards were no longer offered (near-transfer). Critically, the effects of this brief manipulation also carried over to an unrelated and unrewarded task (far-transfer). Our results suggest people can learn to value effort and that this valuation can generalize to unfamiliar and unrewarded tasks.

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12:00-1:30 PM (2096)

Transfer from Cognitive Training Is Preserved in Healthy Aging and Reduces Symptoms of ADHD. ALLEN M. OSMAN, *Lumos Labs*, PAUL I. JAFFE, *Stanford University*, EMANUELA OFFIDANI, *Lumos Labs*, KEVIN P. MADORE, *Lumos Labs*, NICOLE F. NG, *Lumos Labs*, KELSEY R. KERLAN, *Lumos Labs*, ROBERT J. SCHAFER, *Lumos Labs* — We found previously that the amount of improvement on a neuropsychological test battery (NCPT) from cognitive training (CT) is relatively uninfluenced by cognitive aging. Here we replicate this finding and show also that transfer from CT increases in adult ADHD. Transfer from CT to the NCPT was examined in adults who reported having been diagnosed with ADHD (N = 828) and in healthy adult controls (HC, N = 6,108). After correcting for age and gender, the ADHD group showed impairment on baseline test scores relative to the HC group but greater improvement following CT. Thus, CT reduced the negative effects of ADHD on baseline NCPT. Increased age (18-90 years) likewise diminished baseline scores in the HC group but, as found previously, did not influence the amount of improvement from CT. The additive effects of aging and CT on NCPT performance suggests that they affected different sets of cognitive functions. Given that cognitive aging and ADHD both impact attention and impulse control, their differences with respect to CT are both surprising and interesting.

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12:00-1:30 PM (2097)

"Un-Google-able": Internet Fixation Occurs Despite Unsuccessful Online Search. DANA-LIS BITTNER, *University of California, Santa Cruz*, MERCEDES T. OLIVA, *University of California, Santa Cruz*, BENJAMIN C. STORM, *University of California, Santa Cruz* (Sponsored by Benjamin Storm) — Looking for information online can increase the likelihood of looking for other information online, a phenomenon known as Internet fixation. Using Google to answer an initial set of questions, for example, can make participants more likely to use Google to answer a new set of questions. In the current experiments, we extended evidence of the Internet fixation effect to a situation in which participants search for information on Wikipedia. Moreover, we failed to find evidence that the extent to which participants experienced the Internet fixation effect was affected by the usefulness of the Internet during initial search. Participants became more likely to use the Internet even when, during initial online searching, only a small portion of the information being sought was actually available. Theoretical implications for the Internet fixation effect are discussed as well as for understanding how people use the Internet as a transactive memory partner.

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12:00-1:30 PM (2098)

AI vs. Human: The Impact of Disclosing the Source of an Argument on the Persuasiveness of Valid and Invalid Arguments. DUN-YA HU, *Texas A&M University*, JYOTSNA VAID, *Texas A&M University* — We previously found that social characteristics of an argument maker (their gender or social status) can influence the argument's persuasiveness, for both logically valid arguments and invalid arguments (fallacies). But what happens when the argument maker is an interactive AI system? Language users increasingly rely on AI-generated information. A recent study showed that AI-generated political content was judged to be at least as persuasive as human-generated content. Participants in that study were not told that some of the content was AI-generated. It thus remains unclear whether the persuasiveness of an argument changes when the source is made known. In this study, we experimentally investigated this question by manipulating the ascribed source (human vs. AI) of logically valid and invalid arguments to see its impact on judgments of argument persuasiveness. Our findings will provide insight into how information is evaluated when it is thought to be AI-generated vs. human-generated.

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12:00-1:30 PM (2099)

Effects of Self-View and Camera Distance on the Quality of Videochat Conversations. LAUREN E. KNOX, *University of California, Santa Cruz*, NICOLAS DAVIDENKO, *University of California, Santa Cruz*, NAMEERA AKHTAR, *University of California, Santa Cruz*, ALAN KAWAMOTO, *University of California, Santa Cruz*, JEAN E. FOX TREE, *University of California, Santa Cruz* — Communication over videoconferencing platforms such as Zoom has become essential to daily life, but there are problems. These problems include poorer quality of communication and increased experiences of Zoom fatigue (feelings of exhaustion after video meetings). We tested whether making Zoom interactions more similar to in-person communication would mitigate negative effects. As archetypal videochat uses head-and-shoulders frames with self-view on, we manipulated (1) camera distance (close or far) and (2) self-view (on or off). Pairs of participants talked to each other over Zoom for ten minutes about how they thought videochat has changed communication before taking a survey measuring communication quality and Zoom fatigue. Communication quality was assessed via self-report measures for social presence and conversation enjoyment, and Zoom fatigue was measured with an additional questionnaire. Preliminary results will be discussed.

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FRIDAY

12:00–1:30 PM (2100)

Information Presentation Congruence: Physiological and Subjective Comparisons of Social Media Content's Effect on Recall. ZOE LOH, *University of California, Merced*, HELIA HOSSEINPOUR, *University of California, Merced*, LACE PADILLA, *University of California, Merced*, SPENCER CASTRO, *University of California, Merced* — As social media scrolling feeds become a major source of information for the American public, understanding how individuals process this information will become essential. The present study assesses how the format of different visual formats and media impact how people process and remember this information. Across two studies, we recorded participant eye movements and pupil sizes while reading sections of a climate change report in the form of 1) a digital PDF and 2) a simulated social media scrolling feed. This report was presented on a computer screen or as a physical paper. At the end of each block, participants answered multiple-choice questions and completed the NASA Task Load Index as a measure of perceived effort. We found that participants reported greater mental demand for the PDF compared to the scrolling feed and for the digital version compared to the physical version. However, we could not conclude a difference in accuracy between the two formats or the two mediums.

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12:00–1:30 PM (2101)

To Vaccinate or Not to Vaccinate: Effects of AI versus Human Fact Checker on Persuasion to Get Vaccinated. AMANDEEP S. DHALIWAL, *The University of Texas at Arlington*, HANNAH SCARBOROUGH, *University of Texas, Arlington*, MELANIE GARCIA, *University of Texas, Arlington*, MADISON NGUYEN — With vaccine hesitancy posing a challenge to public health initiatives, AI presents a promising solution. In this study, we explored people's attitudes towards AI as a medical advisor and a fact-checking agent versus a human. Participants were primed to have either a positive or a negative perception of AI technology and then presented with false/true information about HPV vaccines. We measured individuals' intellectual humility levels specifically within the domain of AI and vaccines. Additionally, we measured media perception, and trust in AI technology. Preliminary results indicate that individuals primed to think positively about AI advisors were more agreeable to getting vaccinated than those negatively primed. However, the positively primed group was also more likely to trust "news headlines" that were false compared to those negatively primed.

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12:00–1:30 PM (2102)

Detecting and Classifying Off-Task Behavior in Online Learning. MATTHEW HAYS, *Amplifire*, CHARLES J. SMITH, *Amplifire* — COVID-19 caused an explosion in online learning. Compared to in-classroom learning, online learning can make it easier for a wider variety of students to access high quality educational resources. Online learning platforms also give students more control over their educational experience, but students' misguided beliefs about their learning can cause them to mismanage it. Online learning systems are also vulnerable to system-gaming behaviors, in which students try to create the illusion of learning as they rapidly "complete" their assignments. We describe several categories and examples of off-task and system-gaming behavior in an online interactive learning platform. We report the frequency of these behaviors in data collected from 10,000 university students. We also describe how to establish detection thresholds and classify behavior as on- versus off-task in other learning experiences. Identifying off-task behavior may support online education by helping instructors intervene with disengaged students or by enabling interactive systems to adapt more effectively. It may also support experimental cognitive science by helping researchers exclude disengaged participants from analyses.

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12:00–1:30 PM (2103)

The Relationship Between Screen Time, Media Multitasking, and Executive Functions in Adolescents. CHUNYU KUO, *National Taiwan Normal University* — This study aimed to investigate the relationship between digital device usage time, media multitasking, and cognitive functioning. The objectives were to understand the current status of digital device usage time and media multitasking among Taiwanese adolescents and explore the relationship between digital device usage time, media multitasking, and cognitive functions. The Media Multitasking Index was used to assess media multitasking. Participants also completed measures such as BIS-11, MAAS, CES-D, SWLS, counting span task, Attention Network Test, and heart and flower task. The findings revealed that adolescents spent an average of 30.98 hours per week on digital devices, with a Media Multitasking Index of 2.26. Digital device usage time was negatively correlated with overall reaction times. The Media Multitasking Index was negatively correlated with working memory capacity, attention control, and inhibitory control. Additionally, media multitasking was positively correlated with depression scores and negatively correlated with mindfulness tendencies.

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12:00–1:30 PM (2104)

Reading with Virtual Agents: Caregivers' and Children's Preferred AI Persona. GRACE LIN, *Massachusetts Institute of Technology*, KATHRYN LEECH, *University of North Carolina at Chapel Hill* — With AI-powered agents being increasingly ubiquitous in our everyday life (e.g., Siri, Alexa) and with their integration into educational technologies available to families with young children, the landscape of how caregivers and children interact together or separately with these technologies is underexplored. Furthermore, recent advances in AI technologies (e.g., chatGPT) have invited open questions regarding its applications and implications. For example, how would caregivers and children use AI-powered conversational agents and how would such AI tools shift the human dyadic dynamics? This poster presents findings from two studies: 1) a study on the use of a semi-intelligent conversational agent to promote early literacy, and 2) the design phase of a subsequent study investigating how the persona of the AI agent affect caregiver-child interactions. Preliminary findings from study 1 suggest that some caregivers preferred

the agent to have a more child-like persona (with the agent having a child's voice), while others found a persona similar to Santa Claus ("it's listening") to be useful. Data collection for study 2 is underway.

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12:00-1:30 PM (2105)

Qualities of Recollection and Purpose for Memory Sharing with Social Media Posts. JULIA S. SOARES, *Mississippi State University*, TANNER GRUBBS, *Mississippi State University*, ZACK MCDONALD, *Mississippi State University* — In the digital age, an increasing proportion of life events can be posted to social media, creating an extended record of autobiographical events for avid users. The current study examined the qualities with which participants recollected events documented through their own social media posts. Undergraduate Instagram users were recruited to review their six most recent posts on the platform. For each post, they answered several questions about how vividly they recollected the documented event, the purpose of their post (e.g., Wang, 2020), and the emotional valence and intensity of their recollection. Participants most frequently reported posting to social media for self-related and social reasons, but qualitative responses about their motivations are being coded. Initial analyses suggest differences in recollective experiences based on participants' motivations for posting, as well as some differences in recollective experience associated with the relative number of comments and likes a posted event received.

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12:00-1:30 PM (2106)

Online Collection of Turkish Semantic Verbal Fluency Data: Benefits and Challenges. MARIA K. WOLTERS, *University of Edinburgh & OFFIS*, RABIA YASA KOSTAS, *University of Edinburgh*, DANYI HE, *Honor Device Co*, SARAH E. MACPHERSON, *University of Edinburgh* — We report on a unique data set of Turkish Semantic Verbal Fluency (SVF) data, collected online using the categories animals, fruit and vegetables, and supermarket items. Given that SVF is an important component of many cognitive assessment batteries, online collection of SVF data is highly useful in telehealth contexts. Native speakers of Turkish living in Türkiye or abroad were recruited through networks including Turkish consulates. Demographic data was collected using Qualtrics, and SVF sequences were collected using a custom web app. 263 participants completed the web survey, and 137 (52%) continued to the web app. We collected a total of n=311 SVF sequences (animals: n = 105, fruits/veg: n = 105, supermarket: n = 101). The online modality allowed us to reach 76 (72%) people from Türkiye and 29 (28%) from the Turkish diaspora. We discuss potential reasons for the drop off between survey and SVF data collection, as well as issues arising when collecting spoken SVF data.

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12:00-1:30 PM (2107)

An Online Study of the Transposed Letter Effect. GIORDANA GROSSI, *SUNY New Paltz* — Two experiments assessed whether the transposed letter (TL) effect could be replicated with online data collection and whether the effect is moderated by spelling ability. In the first experiment, participants performed a lexical decision task with pseudowords created by transposing or substituting two non-adjacent letters (TL, SL, respectively), either consonants or vowels. In the second experiment, participants performed a masked priming lexical decision task that utilized the sandwich technique. TL and SL pseudoword primes were created by transposing or substituting adjacent or non-adjacent letters. Preliminary analyses indicate that participants in the first experiment were slower and less accurate when rejecting TL, compared to SL, pseudowords, and that the difference in accuracy was smaller in participants with higher spelling scores. Participants in the second experiment were faster when target words were preceded by TL, compared to SL, but only for adjacent trials. Therefore, TL masked priming passed the online test, at least when transpositions involved adjacent letters. These findings support the usefulness of online studies to investigate orthographic processes and the factors that affect them.

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12:00-1:30 PM (2108)

Orthographic-Semantic Consistency Effects in Lexical Decision Are Driven by Morphologically Related Neighbors. YASUSHI HINO, *Waseda University*, DEBRA JARED, *University of Western Ontario*, STEPHEN J. LUPKER, *University of Western Ontario* — Recent research (e.g., Marelli & Amenta, 2018; Siegelman et al., 2022) has demonstrated that lexical decision latencies were faster for words with more consistent orthographic-semantic (O-S) relationships, with consistency being defined in terms of the semantics of a word's "orthographic neighbors." Interestingly, however, the definition of orthographic neighbors varied across the studies. In order to more closely examine O-S consistency effects, we computed O-S consistencies based on addition versus substitution neighbors separately for mono-morphemic English words and used those words in a lexical decision task. A significant consistency effect emerged when consistency calculations were based on addition neighbors (e.g., cats-CAT, pant-PAN), but not when consistency calculations were based on substitution neighbors (e.g., cot-CAT, pin-PAN). Furthermore, when the variance due to the number of morphologically-related neighbors was statistically removed, the consistency effect disappeared. These results suggest that O-S consistency effects in lexical decision are due mainly to morphologically-related neighbors.

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12:00-1:30 PM (2109)

ERP Responses Reflect Individual Differences in Visual Statistical Learning. JOANNA MORRIS, *Providence College*, EMMA G. KEALEY, *Providence College*, JOEMARI PULIDO, *Providence College*, NATALIA ALZATE, *Providence College* — Do individual differences in mechanisms of implicit learning play a role in learning to read words? In order to determine the time course and neural processes involved in online statistical learning of visual sequence and their relationship to visual word recognition, we recorded event-related potentials (ERPs) while participants were exposed to continuous sequences with elements organized into

shape-words and then correlated the data with reading profiles derived from tests of spelling and vocabulary. Our data suggest that the ERP responses, in particular the N400, may be correlated with statistical learning and reflect individual differences in the extent to which word reading relies on orthographic versus semantic representations.

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12:00-1:30 PM (2110)

Word Reading Efficiency Is Associated with Resistance to Interference from Adjacent Words. ATHANASSIOS PROTOPAPAS, *University of Oslo*, DZAN ZELIHIC, *University of Oslo*, LAOURA ZIAKA, *University of Oslo*, KRISTIN SIMONSEN, *University of Oslo*, KEITH BAXELBAUM, *University of Iowa*, BOB MCMURRAY, *University of Iowa* — It has been previously demonstrated that visual word recognition is susceptible to interference from adjacent words in adult skilled readers. Here we extend this line of research to Norwegian elementary school children in Grades 2 (N = 36) and 5 (N = 50). Reading efficiency was assessed with two word lists. Children participated in a visual world paradigm with 90 centrally presented backward-masked flanked printed word targets (45 low frequency and 45 high frequency), in three conditions: no flankers (i.e., isolated words), complex visual flankers (strings of letters from unknown alphabets), or word flankers. Targets were viewed for 450 ms (Grade 2) or 250 ms (Grade 5). In a preliminary exploration of the data we used response accuracy as a potential indicator of automaticity. Accuracy was substantially reduced by the presence of flankers. Nonflanked and flanked target response accuracy together accounted for up to 70% of the variance in word reading efficiency (highest proportions in second-graders). Flanked-target accuracy was a significant predictor despite controlling for nonflanked-target accuracy. In contrast, the time to shift the gaze to the correct picture was not associated with word reading efficiency in this sample.

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12:00-1:30 PM (2111)

Beyond Common Words: Unraveling the Impact of Brand Names on Written Word Processing. MELANIE LABUSCH, *Universidad Nebrija & Universitat de València*, MANUEL PEREA, *Universitat de València* — Brand names are usually presented with a unique design, color, and font (i.e., as logotypes). This lack of variability in the visual input may make logotypes more vulnerable to perceptual factors. To examine the nuances of the mental representations of logotypes, we compared original logotypes and modified logotypes differing in font or letter case. In Experiment 1, participants decided whether the stimulus corresponded to a brand name, regardless of graphical information (e.g., IKEA and ikea would be "yes"). In Experiment 2, participants decided whether brand names were related to transportation. In both experiments, response times were longer for the modified brand names, both for the changes in font or letter case. These findings challenge the notion that abstract letter units universally drive lexical access for all types of words. Instead, the mental representation of words may vary depending on the training regime of exposure.

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12:00-1:30 PM (2112)

The Two Languages of the Bilingual Mind: An EEG Study into Cross-Language Morphological Transfer. HASIBE KAHRAMAN, *Macquarie University*, ELISABETH BEYERSMANN, *Macquarie University*, BIANCA DE WIT, *Macquarie University* — We report a series of behavioral and neurophysiological lexical decision experiments that focus on the spatio-temporal dynamics of cross-language morphological processing in same-script Turkish-English bilinguals. Using tightly matched affixed and non-affixed complex nonwords, we examined the separate effects of stems and affixes on cross-language morphological translation priming. Participants responded to L2 English stem targets (e.g., ICE) that were preceded by four different types of complex L1 Turkish nonword non-cognate primes at a 200-ms prime duration: affixed L1 translated nonwords (e.g., buzca [iceish], non-affixed L1 translated nonwords (e.g., buznak [iceald]), non-affixed L1 semantic control primes (e.g., suzur [waterew], and unrelated L1 nonwords (e.g., tuşzur [keyew]). Results showed a clear dissociation between orthographic, morphological, and semantic effects on cross-language morphological transfer. We provide a tentative theoretical framework of cross-language morphological processing in bilinguals. Keywords: cross-language morphological translation priming, non-cognate stimuli, bilingual processing

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12:00-1:30 PM (2113)

Phonological Priming Effects of Near-Homophones during L2 Visual Word Recognition. WONIL CHOI, *Gwangju Institute of Science and Technology*, HYUNAH BAEK, *Ajou University* — We examined the effects of near-homophones with phonetically similar non-native contrasts ("bend"-"band") on lexical decisions by Korean learners of English. We conducted two masked priming experiments. Both experiments used the same materials and procedures with the only difference in SOA: 60 ms in Experiment 1 and 150 ms in Experiment 2. Participants also completed a forced-choice identification task as a measure of the ability to categorize auditory signals into target phonemes. In Experiment 1, the results indicated no effect of near-homophonic primes compared to orthographic controls ("bond"). Experiment 2, however, showed faster reaction times on target words when a near-homophonic prime word was preceded than when an orthographic control word was used as a prime stimulus. This difference did not interact with the identification scores. These results indicate that L2 learners can use phonological codes of L2 words relatively slowly during visual word recognition, and that they used a single phonological representation to encode phonetically similar pairs that are non-contrastive in their native language.

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12:00-1:30 PM (2114)

Unpacking the Sandwich: A Closer Examination of the Contrast between Sandwich Priming and Conventional Masked Priming. MARIA FERNANDEZ-LOPEZ, *Universitat de València*, STEPHEN J. LUPKER, *University of Western Ontario*, PABLO GOMEZ, *Skidmore College*, COLIN DAVIS, *University of*

FRIDAY

Bristol, MANUEL PEREA, *Universitat de València* — Forster and Davis's (1984) masked priming technique (e.g., #####-april-APRIL) has been a valuable tool for investigating the initial stages of visual-word processing. Lupker and Davis (2009) introduced a modified version of this technique (referred to as "sandwich priming"), one that typically boosts the size of masked priming effects relative to those produced with the conventional technique. This modification involves adding a briefly presented pre-prime, the target itself, to the stimulus presentation sequence (e.g., APRIL-#####-april-APRIL). In an attempt to understand the nature of this boost in priming, we conducted two lexical decision experiments using both techniques in a within-subject design (Experiment 1: transposed-letter priming, Experiment 2: form priming). As expected, priming effects were larger with sandwich priming with the cross-method comparison revealing that the sandwich priming technique sped up the related conditions (e.g., arpil-APRIL; afril-APRIL), produced no differences for loosely-related pairs (e.g., afcil-APRIL), and slowed down responses in the unrelated condition (olive-APRIL). We discuss the theoretical and methodological implications of these findings.

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12:00-1:30 PM (2115)

Developmental Trajectory of the "Transposed-Word" Effect During Learning to Read. JONATHAN MIRAULT, *Aix-Marseille University*, BERNARD LÉTÉ, *Université Lumière Lyon 2*, JOHANNES C. ZIEGLER, *Aix-Marseille University*, JONATHAN GRAINGER, *Université Aix-Marseille & Centre National de Recherche Scientifique (CNRS)* — Prior research with adults has demonstrated a "transposed-word" effect whereby it is harder to judge that a sequence of written words is ungrammatical when it is formed by transposing two words in a correct sentence (e.g., "I'm going the to pool") compared with control sequences (e.g., "I'm going the to when"). Here, we investigated the developmental trajectory of this phenomenon. 400 primary school children (third to ninth grade) were presented with ungrammatical transposed-word sequences, the corresponding control sequences, intermixed with an equal number of correct sentences. The experiment was presented as a serious game divided into four successive levels: a silent reading test (SLS-Berlin) followed by three blocks of the grammatical decision task (is this sequence of words grammatically correct or not?). We observed an increase in performance on the silent reading test and the emergence of a transposed-word effect across grades.

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12:00-1:30 PM (2116)

Contextual Diversity Effect on Visual Word Recognition in Korean. JISOO SONG, *Korea University*, KICHUN NAM, *Korea University* (Sponsored by Kichun Nam) — Recent studies have shown that contextual diversity, defined as the number of linguistic contexts in which a word appears, is a stronger predictor of word recognition than word frequency measures in various languages. This study aimed to investigate the impact of contextual diversity and word frequency on visual word recognition in Korean. Hierarchical regression analysis was conducted using reaction time data from a lexical decision task in the Korean Lexicon Project (KLP; Yi et al., 2017). Contextual diversity was operationalized as the number of documents in which a word was used in the Written Corpus (version 1.2) provided by the National Institute of Korean Language. The results of the analysis indicated that contextual diversity accounted for a larger portion of the variance in reaction time data, independent with word frequency. These findings suggest that contextual diversity plays a significant role in facilitating visual word recognition in Korean, independent with word frequency measures.

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12:00-1:30 PM (2117)

Using Mouse Tracking to Explore Cognitive Mechanisms of Thematic and Taxonomic Relations. YU-CHENG LIN, *The University of Texas Rio Grande Valley* — Previous research on the underlying mechanisms governing these concepts has been limited. To address this gap, the present study utilized a mouse-tracking semantic conflict task to capture participants' response times (RTs) and continuous mouse movements. This study explored the activation of both thematically and taxonomically related concepts and examined how their competition unfolds over time during spoken word recognition. Surprisingly, the mouse tracking study revealed that the competition effects in terms of strength and time course were comparable for both thematic and taxonomic relations. This consistency was evident in the temporal characteristics of mouse movements, mean RTs, and the fitting results of the diffusion model for conflict tasks (DMC). Additionally, the analysis of RT distributions indicated that competition effects were particularly prominent in faster responses, indicating pulse-like and short-lived patterns for both thematic and taxonomic competition. These compelling results challenge the existing notion of distinct mechanisms and provide strong evidence for shared underlying mechanisms between thematic and taxonomic relations.

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12:00-1:30 PM (2118)

The Sounds of the Future. DAVID SIDHU, *Carleton University*, JOHANNA PEETZ, *Carleton University* — Sound symbolism refers to an association between language sounds and perceptual and/or semantic properties. One of the most well-studied associations is between front vowels (e.g., the sound in meal) with small/bright shapes, and back vowels (e.g., the sound in maul) with large/dark shapes. Here we tested for a novel association between language sounds and different the more abstract dimension of time (i.e., the future or the past). Across three studies, we found that small-associated sounds tend to be associated with the future, while large-associated sounds tend to be associated with the past. We tested for potential mechanisms of these associations by exploring mediating dimensions (e.g., brightness, speed). We also tested for real world applications by examining whether participants would prefer, for example, futuristic products with labels containing future-associated sounds. Together these results demonstrate that sound symbolism can extend beyond perceptual dimensions (e.g., size) to more abstract dimensions as well.

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FRIDAY

12:00–1:30 PM (2119)

Modifier Position Effects Recognition Memory. PETE WEBER, *Mississippi State University*, HOSSEIN KARIMI, *Mississippi State University* — When words are semantically enriched using modification, comprehenders are cued to pay closer attention, resulting in better recognition memory at a subsequent point (Yoon et al., 2021). Modification can be manipulated linearly such as a post-modified word "a king who is cruel" versus a pre-modified version "a cruel king." Karimi et al. (2019) showed that post-modified words are encoded more robustly resulting in easier retrieval during sentence processing. The current study (N = 71) examined the potential effect of post- vs. pre-modifiers on recognition memory in a self-paced reading task followed by a surprise recognition memory test. The results showed, when compared to baseline (comprising unmodified words), there was significantly better recognition memory when information was pre-modified versus when it was post-modified. Our findings suggest that although post-modifiers may change the perception of target words, pre-modifiers increase attentional resources allocated to them, improving subsequent memory.

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12:00–1:30 PM (2120)

Where and When to Move Eyes for Chinese Readers? Evidence from Hong Kong Corpus of Reading Sentences and Passages by Eye Tracking. YUSHU WU, *City University of Hong Kong*, CHUNYU KIT, *City University of Hong Kong* — Recent years witness a mushrooming of reading corpora of eye tracking across various writing systems. This article showcases the Hong Kong Corpus (HKC) of Chinese Sentence and Passage Reading, featured by a natural reading of logographic scripts and unspaced words. It releases 21 eye-movement measures of 98 native speakers reading simplified Chinese in two scenarios, reading 300 one-line single sentences and 7 multi-line passages (5,250 and 4,967-word tokens respectively). We further carried out (generalised) linear mixed-effects modelling on the predictability of (sub-) lexical factors on eye-movement measures. The outcomes manifest significant impacts of (1) visual complexity, (2) word frequency, and (3) scenarios (S: single-sentence reading vs. P: passage reading) on where and when eyes move next. Specifically, words in less complexity, higher frequency, or contexts of reading passages are more likely to be skipped, fixated shortly or located near word centres. We underscore HKC's reusability in exploring computational models of eye-movement control, divergences between intra- and inter-sentence reading, the universality of cross-linguistic reading and the particularity of Chinese reading, etc.

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12:00–1:30 PM (2121)

Investigating Rational Adaptation in Reliance on World vs. Linguistic Knowledge in L1 and L2 English Speakers. COLE CAUDLE, *University of Pittsburgh*, TESSA WARREN, *University of Pittsburgh*, MICHAEL WALSH DICKEY, *University of Pittsburgh* — We investigated whether speakers whose first language is not English (L2E) rely more heavily on world knowledge than verb knowledge as compared to English L1 (L1E) speakers when completing English sentence fragments. Reliance on verb knowledge was operationalized as a higher rate of providing a locative phrase after a verb that requires one than after a verb that doesn't. Participants provided more locatives after verbs that required them and L2E speakers provided more locatives than L1E speakers. Contrary to the prediction of rational adaptation, there was no interaction of speaker group and verb condition. In further analyses we will: (1) use Lextale scores as a continuous measure of language experience and (2) investigate reliance on world knowledge by measuring the semantic relatedness of the completion to the provided sentence fragment.

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12:00–1:30 PM (2122)

The Effects of Semantic Information on Chinese Word Segmentation. RUQI CHEN, *Chinese Academy of Sciences Institute of Psychology*, XINGSHAN LI, *Chinese Academy of Sciences Institute of Psychology*, LINJIEQIONG HUANG, *Chinese Academy of Sciences Institute of Psychology* — Word segmentation constitutes a pivotal task for Chinese readers owing to the absence of inter-word spaces. Previous empirical and computational investigations predominantly focused on examining the impact of lexical or sub-lexical factors on word segmentation, neglecting the role played by semantic information. This present study endeavors to explore the influence of semantic information on word segmentation during Chinese reading. In Experiment 1, a semantic priming segmentation task involving overlapping ambiguous strings (OAS) was devised. The OAS was preceded by either semantic or repetition primes. Notably, a significant semantic priming effect was observed at a Stimulus Onset Asynchrony (SOA) of 200 ms. Subsequently, Experiment 2 employed the embedding of OAS within sentences, wherein the sentence context furnished semantic information favoring a specific segmentation approach. The findings indicate that semantic information exerts an early influence on word segmentation during the word competition stage. Consequently, this study substantially contributes to the comprehension of the mechanisms underlying Chinese reading and facilitates the development of a Chinese word segmentation model encompassing a semantic component.

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12:00–1:30 PM (2123)

Exploring the Influence of L2 on L1 Processing: Evidence from Adjective Placement in Spanish. BEVERLY COTTER, *University of California, Davis*, FERNANDA FERREIRA, *University of California, Davis* — We investigated effects of a second language on first-language processing by examining crosslinguistic syntactic differences, specifically adjective placement and noun omission in Spanish and English. Spanish and English have distinct grammars: adjectives are postnominal in Spanish but prenominal in English, and single adjectives may serve as nouns in Spanish (e.g., el responsable) but not in English. In this study, heritage Spanish-English and late Spanish-English bilinguals rated 40 Spanish sentences containing a noun phrase that was: adjective-noun (el responsable estudiante), noun-adjective (el estudiante responsable), adjective-only (el responsable), or noun-only (el estudiante). Heritage

speakers showed no clear preference for the noun-adjective or adjective-noun order, and they rated the adjective-as-noun version as least acceptable. In contrast, late bilinguals exhibited a pattern consistent with the syntax of Spanish. We conclude that heritage speakers' syntactic knowledge of Spanish has shifted towards their L2, English. Additional experiments follow up this result using online processing tasks.

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12:00–1:30 PM (2124)

Starting Small or Big: An Artificial Language Paradigm. RACHEL C. EVANS, *Louisiana State University*, JANET L. MCDONALD, *Louisiana State University* — Do people learn better when they are given smaller units (Elman, 1993; Newport, 1990) or larger chunks (Arnon, 2021) of language, and is this dependent on the type of grammatical structure to be learned? We tested these two theories in adults using a novel artificial language with pauses inserted to interrupt grammatical dependencies involved in subject-verb agreement, grammatical gender, and article contrast. Preliminary results show that participants can learn the grammar of studied sentences above chance in every pause condition. However, generalization to novel sentences depended on the pause condition, whether the grammatical dependency was disrupted. Article contrast was generalized in conditions that did not disrupt article noun dependency (Starting Big Theory), but gender was generalized in the condition that did interrupt the dependency (Starting Small Theory). In addition, working memory correlated with the mastery of studied items. Overall language learning does not depend on grammatical dependency disruption, but generalization to novel contexts depends on disruption and type of grammar structure.

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12:00–1:30 PM (2125)

The Effect of Interruption on Non-Literal Structural Representation. DOUGLAS J. GETTY, *University of Pittsburgh*, ANDRÉS BUXÓ-LUGO, *University at Buffalo, SUNY*, SCOTT H. FRAUNDORF, *University of Pittsburgh* — Why does language comprehension not always result in a veridical interpretation of the linguistic input? For instance, not only can implausible sentences (e.g., The pilot gave the mug the girl) be interpreted non-literally, but the comprehension system sometimes obtains a syntactic representation of this non-literal interpretation (Buxó-Lugo & Slevc, 2023; Cai et al., 2022; Christianson et al., 2010; Getty & Fraundorf, 2022). Cai et al. (2022) proposed that such non-literal structural representations result from lingering predictions of plausible alternative structures prior to the completed input. Using structural priming, we present a stronger test of this account using primes interrupted with coughs (e.g., The pilot gave the mug… cough… the girl) that should entrench the comprehender's structural prediction of an upcoming prepositional phrase and thereby enhance the non-literal priming effect. This will be compared to (a) a condition where the cough comes immediately following the subject (pilot), which should not influence prediction of plausible alternative structures, and (b) a condition with no cough. Results will be discussed in terms of the structural prediction account vs. an alternative account based on post-hoc revision.

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12:00–1:30 PM (2126)

English and Japanese Translation Ambiguity: Examining Errors in Production. DIYA GOYAL, *University of Pittsburgh*, NORIKO HOSHINO, *Tsuda University*, NATASHA TOKOWICZ, *University of Pittsburgh* — Translation ambiguity occurs when a word in one language has multiple translations into another language, resulting in slower and less accurate second language processing. We provide translation ambiguity norms between English and Japanese. We collected number-of-translation norms for 562 English-Japanese translation pairs, of which 70% were translation-ambiguous. When back translating the English words into Japanese, we found 54% to be translation-ambiguous, signifying that Japanese may not be as ambiguous as English. We further analyzed types of errors, finding omission errors to be the most prevalent in both translation directions. We also examined production across proficiency, finding lower L2 reading and writing proficiency to be significantly negatively correlated with semantic and form type errors, specifically in the English to Japanese direction. These norms can be used in future research examining ambiguity and provide information on how translation ambiguous words are produced in both directions of translation.

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12:00–1:30 PM (2127)

Did You Say 'Brain' or 'Brave'? An Electrophysiological Investigation of the False Hearing Phenomenon. JACK SILCOX, *University of Utah*, BRENNAN PAYNE, *University of Utah* — When speech does not match expectations, a listener can experience false hearing (FH, e.g., hearing "pen" when "pet" was presented). Recent accounts suggest that FH occurs post-lexically when listeners fail to inhibit an incorrect prediction. In two experiments, we use event-related potentials (ERPs) to characterize the time-course of FH. Target words appeared in a cue-target pair (Exp. 1) or in a sentence context (Exp. 2). Targets were either: a predictable congruent word (CON), a (semantically and phonologically) incongruent baseline (IB), or a phonological lure (PL) which was phonologically related to the CON. Participants frequently reported FH of CON when the PL was presented. Behavior-coupled ERPs across both experiments showed that the N400 to falsely heard PLs was facilitated to the same degree as the CON response, suggesting that, in false hearing, the brain immediately retrieves the meaning of the predicted but incorrect word, rather than engaging in post-lexical resolution processes.

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12:00–1:30 PM (2128)

Passive Statistical Learning of Speech Distributions Is Not Constrained to Specific Phonemes. JENAH BLACK, *Carnegie Mellon University*, NAZBANOU NOZARI, *Carnegie Mellon University*, LORI L. HOLT, *The University of Texas at Austin* — Listeners quickly adjust to systematic violations of speech norms, like a foreign accent. Passive exposure to statistical regularities that either

conform with, or violate, English norms impacts how listeners use acoustic speech dimensions in subsequent phoneme categorization. However, it is unclear if such statistical learning is constrained to specific phonemes or reflects accumulation of statistics across cues that influences perception more broadly. To address this, listeners passively experienced beer-pier and deer-tear tokens that exhibited distinct statistical distributions: one adhered to typical English norms and the other has a subtle accent that violated English norms. Consistent with previous work, subsequent categorization of ambiguous test stimuli reflected a change in the use of the accented acoustic dimension. Critically, results were similar for exposure sequences consisting purely of beer-pier and those combining beer-pier with deer-tear, suggesting flexible statistical learning across acoustic dimensions that is not restricted to specific phonemes.

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12:00–1:30 PM (2129)

The Dual-Task Costs of Audiovisual Speech Processing Across Levels of Background Noise and Semantic Constraint. VIOLET BROWN, *Washington University in St. Louis*, KRISTIN VAN ENGEN, *Washington University in St. Louis* — Successful communication requires that listeners not only identify speech, but do so while maintaining performance on other tasks—like remembering what a conversational partner said or paying attention while driving. Although seeing the talker substantially improves speech identification, evidence is mixed regarding the effect of audiovisual speech on the listener's ability to perform simultaneous cognitive tasks. In this set of six experiments, we assess the influence of audiovisual speech on dual-task costs using a novel dual-task paradigm that can be implemented online or in-lab and can accompany a wide range of speech stimuli. We show that the effects of AV speech on secondary task response times vary depending on the level of linguistic analysis (i.e., words vs. sentences), background noise level, and strength of semantic cues (for sentences). Finally, given the novelty of this task, we also present psychometric data and evidence for convergent validity relative to a commonly used paradigm.

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12:00–1:30 PM (2130)

Piano or Drum? Differential Effects of Pitched and Unpitched Musicianship on Tone Identification and Word Learning. RUNQING CHENG, *The University of Hong Kong*, CHEUK YIU TO, *The University of Hong Kong*, WILLIAM CHOI, *The University of Hong Kong* — Different instruments have different demands on pitch processing. To further investigate music-to-language transfer, this study examined the effects of pitched and unpitched musicianship on tone identification and word learning. A total of 44 Cantonese pitched musicians, unpitched musicians, and non-musicians were compared on their accuracy in tone identification and word learning. For tone identification, the pitched musicians, but not the unpitched musicians, outperformed the non-musicians. For word learning, three groups performed similarly in session 1. In session 7, the pitched musicians achieved significantly higher accuracy than the non-musicians, but the unpitched musicians did not. From the theoretical perspective, the results offer fine-grained empirical support to the precision element in the OPERA hypothesis: higher precision demand in music training drives music-to-language transfer. Methodologically, this study emphasizes the importance of considering the heterogeneity of musicianship when studying music-to-language transfer.

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12:00–1:30 PM (2131)

Impact of Background Noise on Accent Variant Intelligibility. CRISTAL GIORIO, *The Pennsylvania State University*, JANET G. VAN HELL, *The Pennsylvania State University* — Listeners are exposed to different types of accented speech. Accented speech arises from distinct nonnative or regional acoustic-phonetic and prosodic features of a language, resulting in multiple accent variants within a single language. For example, Spanish has many regional variants with distinct sound features. Research shows that listening to speech that differs from a listener's own accent can result in comprehension difficulties (Interlanguage Speech Intelligibility Benefit; ISIB). So far, no study has assessed how different varieties of Spanish are processed, especially in more ecologically valid noisy background conditions. This study examined how monolingual Mexican-Spanish speakers processed accent variants that either matched or mismatched (Argentina-, Colombia-, Panama-, Puerto Rico-, and Spain-accented Spanish) their own. Accent variants were presented in quiet and noisy two-talker babble conditions. There was an intelligibility benefit in the noise, but not quiet, condition when listening to a matched accent variant compared to mismatched variants. Results support that listening to mismatched accent variants is particularly challenging in noisy conditions, further refining the ISIB hypothesis.

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12:00–1:30 PM (2132)

Phonological Neighborhood Density Effects on Spanish Spoken Word Recognition and Word Learning. EGE GÜR, *Bilkent University*, ARTHUR SAMUEL, *Stony Brook University, Basque Center on Cognition, Brain and Language (BCBL), & Ikerbasque*, EFTHYMIA KAPNOULA, *Basque Center on Cognition, Brain and Language (BCBL) & Ikerbasque* — In English, phonological neighborhood density (ND) typically hinders spoken word recognition but facilitates word learning. It is unclear whether the same patterns hold in a transparent language like Spanish: An opposite effect has been reported for word recognition in Spanish, and ND effects on word learning have not yet been investigated in native Spanish speakers. The current study, with native Spanish speakers, examines ND effects on Spanish spoken word recognition and learning. A 4AFC picture-naming task is used to gauge early stages of novel word learning (i.e., lexical configuration), while a lexical decision task provides a measure of full lexical integration (i.e., lexical engagement) of novel words. We test whether ND is beneficial for learning, as has been found with English stimuli. In addition, we orthogonally manipulate ND and word length to look for a possible interaction of these factors in spoken word recognition, motivated by differences in the word length distributions of English and Spanish.

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If ND effects on word recognition are modulated by word length, the conflicting results in the literature can be explained by differences in the stimuli, not by differences in the languages per se.

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12:00–1:30 PM (2133)

Speeded-Implicit Biases Vary for Cuban American Talkers Depending on Perceived Accent. ALEXIA HERNANDEZ, *Stanford University*, MEGHAN SUMNER, *Stanford University* — Studies investigating implicit bias have shown stereotypical associations arise when participants are exposed to text and visual images. In this paper, we investigate whether listeners make stereotypical associations from auditory cues alone by extending a speeded concept priming paradigm to include naturalistic audio clips as primes. Three hundred phrases spoken by Cuban Americans were first normed for racial perceptions and perceived accentedness. Midwestern US listeners heard 40 audio clips (20 of the least and most Hispanically perceived) and made quick decisions about the speakers. Decisions and response times indicate that listeners associated Hispanic accented clips with Hispanic stereotypes even though speakers in reality did not conform to the Hispanic stereotypes at hand. This study suggests implicit bias can arise from auditory cues alone, which has implications not only for societal discrimination and prejudice, but also for theories of speech perception more broadly.

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12:00–1:30 PM (2134)

Neural Mechanisms of Phonemic Restoration in Bilingual Listeners. ZUNAIRA J. IQBAL, *University of California, Merced*, MICHAEL J. SPIVEY, *University of California, Merced*, ANTOINE J. SHAHIN, *University of California, Merced*, KRISTINA C. BACKER, *University of California, Merced* — Phonemic restoration (PR) is an auditory phenomenon in which listeners perceptually fill-in a missing speech segment replaced by noise—thus perceiving the speech as continuous through the noise (Samuel, 1981; Warren, 1970). Prior EEG work has shown that the N1-P2 auditory-evoked potential (AEP), time-locked to the noise interruption onset/offset, is reduced in amplitude when listeners fill-in the missing speech, suggesting that auditory cortex's response to the interruption boundaries is inhibited (Shahin et al., 2012). Moreover, bilinguals have worse speech-in-noise comprehension specific to their second language (Mayo et al., 1997), but little is known about their ability to restore missing speech, reflecting the strength of phonemic encoding. The goal of this experiment is to uncover the neural mechanisms underlying bilinguals' restoration of degraded speech by gauging PR efficacy. We tested whether bilinguals exhibit greater inhibition of N1-P2 AEPs to interruption boundaries, compared to monolinguals, during active versus passive listening. Results are interpreted in terms of alternative accounts regarding the amount of cognitive resources that bilinguals invest to maintain equal speech-in-noise perception as monolinguals.

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12:00–1:30 PM (2135)

The Role of Iconicity in Language: Are Iconic Words More Expressive?. LEONARDO MICHELINI, *Emory University*, LYNNE NYGAARD, *Emory University* — Iconic words are ubiquitous in natural languages. Terms such as "click" and "tiny" contain sounds that resemble or evoke their meaning. The pervasiveness of this phenomenon raises the question of what purpose iconicity might serve in language. Researchers have proposed that iconic words are uniquely "expressive" compared to arbitrary terms, and are therefore regularly introduced into the lexicon to fill that niche. To investigate the plausibility of this hypothesis, we selected different communicative contexts that varied in degree of expressiveness and used corpus analysis to compare the prevalence of iconic words in each. Preliminary evidence suggests that iconicity is used more frequently in situations requiring expressivity than in less expressive contexts. These findings will be discussed in relation to the functional role that iconicity plays in communication and how this informs our understanding of language evolution and development.

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12:00–1:30 PM (2136)

The Underlying Dimensionality of the Mechanisms of Word Recognition in Challenging Listening Conditions. JOHN B. MUEGGE, *University of Iowa*, BOB MCMURRAY, *University of Iowa* — Spoken word recognition is critical for understanding language. It is typically characterized by a dynamic competition between lexical candidates. However, in challenging contexts these dynamics change. This raises two questions: 1) is there any underlying dimensionality to these changes, and 2) are these dimensions the same across different challenging conditions. We report preliminary analyses (N = 107) of a larger study (planned N = 150). Participants were tested in the visual world paradigm in two kinds of challenge (noise and vocoding), with their time course of fixations submitted to a PCA. This found two principal components (PCs) for each condition: one reflected a strategy in which competitors are not fully suppressed; the second reflected a strategy where lexical access is delayed. Both PCs matched profiles found in previous studies of challenging listening and cochlear implant users. Corresponding PCs had moderate correlations across tasks (competitor suppression: r = .51; delayed access: r = .31), but their importance (factor loadings) was reversed across conditions. This indicates word recognition in challenging conditions operates on similar underlying dimensions, but these may rearrange in response to different challenges.

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12:00–1:30 PM (2137)

Re-Coding of Non-Spatial Color Representations into Spatial Codes in a Working Memory Task. KUO-WEI CHEN, *Arizona State University*, GI-YEUL BAE, *Arizona State University* — The present study tested the hypothesis that working memory (WM) re-codes color representations into spatial codes when the re-coding is beneficial for behavior. We recorded EEG while participants performed a color delayed-estimation task where the colorwheel was either randomly rotated or held fixed across trials. We found that

the reports were more precise in the fixed condition. We then tested whether this was associated with the use of the spatial code in the fixed condition by decoding color using EEG signals. The decoding was initially significant but then declined to chance in both conditions. However, it became significant again during the delay period in the fixed condition. Similarly, the decoding using alpha-power (8-12 Hz), which reflects spatial attention, was significant only in the fixed condition. These results confirm the main hypothesis and suggest that the neural decoding may reflect the re-coded spatial information rather than the location-independent stimulus information itself.

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12:00-1:30 PM (2138)

Spatial Attention Is Not Immediately Attracted Toward Memorable Stimuli. GREER GILLIES, *University of Toronto*, JONATHAN S. CANT, *University of Toronto Scarborough*, KEISUKE FUKUDA, *University of Toronto Mississauga* — Some visual stimuli are more memorable than others. Previously, we found that memorable stimuli enjoy a dual benefit within visual working memory (VWM). They are stored more efficiently in VWM and also more competitive at attracting VWM resources than forgettable stimuli (Gillies et al., 2023). In this study, we examined the hypothesis that this competitive advantage of memorable stimuli reflects preferential allocation of spatial attention toward memorable stimuli. To test this, we had participants perform a face VWM task where they had to remember an array composed of both memorable and forgettable faces. Critically, on 20% of trials, letters were superimposed on the faces at various stimulus onset asynchronies. When this happens, participants had to report all the letters they saw instead of faces. This enabled us to examine where spatial attention was allocated at different time during viewing. Here, we found that participants did not report more letters superimposed on memorable faces than on forgettable faces until 900ms after the onset of face stimuli. Thus, our results suggest that spatial attention is not immediately biased toward memorable stimuli.

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12:00-1:30 PM (2139)

How Does Semantic Meaning Enhance Visual Working Memory?. TOMER SAHAR, *The Open University of Israel & University of Haifa*, NURIT GRONAU, *The Open University of Israel*, TAL MAKOVSKI, *The Open University of Israel* — Recent studies showed that real-world objects are better remembered in Visual working memory than visually similar stimuli, stripped of their semantic meaning. However, the exact nature of this advantage remains unclear. We examined whether meaning enables more objects and their locations to be remembered, whether it improves the precision of those representations, or whether it improves item-location binding. Participants were presented with streams of four (Experiments 1&2) or six (Experiment 3) real-world items or their scrambled counterparts. Each item was presented at a unique location and the task was to reproduce one item's location. Overall, location memory was consistently better for real-world items than their scrambled counterparts. Mixture-modeling analyses revealed that both the guess rate and the precision of the report were reliably similar for both types of stimuli, yet participants were less likely to make swap errors for semantically meaningful items. These results suggest that the item's meaning supports an effective identity-location binding rather than increased memory capacity per se. Importantly, they challenge the notion that meaning necessarily increases detail memory, such as the precise location of an item.

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12:00-1:30 PM (2140)

Assessing the Causal Roles of Neuroimaging Correlates of Working Memory: A TMS-EEG Study of the Sensory Recruitment Hypothesis. CHENLINGXI XU, *University of Notre Dame*, ZENGBO XIE, *Vanderbilt University*, JASON SAMAHA, *University of California, Santa Cruz*, NATHAN ROSE, *University of Notre Dame* — Neuroimaging studies of visual working memory (WM) implicate both sensory (posterior P1 ERP) and delay-period (frontal theta) correlates of performance. How both sensory and frontal signals contribute to WM behavior is unclear. To assess their causal roles in WM, delay-period TMS was applied to a retinotopically-mapped region of each participant's left visual cortex on each trial while they retained line-orientations presented in the stimulated and contralateral visual field in WM, and EEG was recorded. Preliminary analyses suggest delay-period TMS to the sensory cortex did not affect frontal theta, but did affect stimulus-, cue- and probe-evoked sensory ERPs, on stimulated (right-cued) compared to control (left-cued) trials. Ongoing analyses will relate these causal modulations to WM performance with measures of biases from irrelevant items. Results will be discussed in terms of the roles of frontally-mediated control processes and the sensory recruitment hypothesis of WM.

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12:00-1:30 PM (2141)

A Model of Feature Encoding in Ensemble Representations. JACOB ZEPP, *University of South Florida*, CHAD DUBE, *University of South Florida* — A large body of recent literature in memory and perception has been devoted to understanding the ability to integrate perceptual information into "summary" representations, known as ensemble codes. While much has been detailed about the prevalence of ensemble effects, less work has been devoted to describing the process of information encoding into the ensemble representation. The current work demonstrates a model of ensemble coding that places the phenomena within STM, such that the fidelity of the ensemble evolves over time as feature information is encoded into STM. Item features are encoded at variable rates, dependent on both retinotopic effects and attentional allocation. The model predicts that ensemble precision can be modulated by limiting the amount of time available for STM encoding, as well as biased through correlating location and feature information. The current model advances the understanding of ensemble coding within the context of memory models.

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FRIDAY

12:00–1:30 PM (2142)

Recombined Probes Test Mechanisms of Order Within Associations. JEREMY THOMAS, *University of Alberta*, JEREMY CAPLAN, *University of Alberta* — Thomas & Caplan (in press) compared several models of association memory that each had different representations of the constituent-order of associations (APPLE OVEN versus OVEN APPLE). Their most successful model assumed that order is stored by modifying item representations based on position (e.g., APPLE is different in APPLE OVEN versus OVEN APPLE). However, this model cannot perform order judgements for AD probes (e.g., words that were in the study list but not paired together, like APPLE DOG) above-chance. In the two experiments we report, participants could in fact judge the order of AD probes above-chance, and as well as for intact probes. These findings are inconsistent with Thomas & Caplan's (in press) model that could handle other experimental paradigms. This suggests that there are a minimum of two mechanisms by which participants judge order within associations, which may be adapted for different task demands.

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12:00–1:30 PM (2143)

Semantic Relatedness Proactively Boosts Memory and Promotes Interdependence Across Episodes. KELLY A. BENNION, *California Polytechnic State University*, JADE PHONG, *California Polytechnic State University*, JAMES ANTONY, *California Polytechnic State University* — In 1949, Osgood proposed that memory is affected by a dual function of cue and target relatedness between initial and later-learned associations. We previously asked how relatedness affects memories retroactively (Antony et al., 2022); here we asked proactively. Subjects initially learned a list of unrelated word pairs. Later, they re-learned some pairs (No Δ condition), while others had a new cue (ΔCue condition), new target (ΔTarget condition), or both (ΔBoth condition). Another set of pairs was not shown, as a control. Critically, Cue-ΔCue and Target-ΔTarget relatedness varied over a wide range of semantic strengths (global vector similarity: -0.14 to 0.95). On a cued recall test 48 hours post-learning, performance followed a No Δ > ΔCue > ΔTarget = ΔBoth = control trend. Intriguingly, in the ΔCue and ΔTarget conditions, performance linearly increased with relatedness, flipping from proactive interference with low relatedness to proactive facilitation with high relatedness. Memory dependence (the correlation between memory for the initial and later pairs) also increased with relatedness in both conditions. Overall, these results support Osgood's idea that relatedness boosts memory both proactively and retroactively.

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12:00–1:30 PM (2144)

Conscious Expectancy Rather Than Associative Strength Elicits Brain Activity During Single-Cue Fear Conditioning. LAURENT GREGOIRE, *Texas A&M University*, TYLER ROBINSON, *Rotman Research Institute, Baycrest*, STEVEN GREENING, *University of Manitoba* — The neurocognitive processes underlying Pavlovian conditioning in humans are still largely debated. The conventional view is that conditioned responses (CRs) emerge automatically as a function of the contingencies between a conditioned stimulus (CS) and an unconditioned stimulus (US). As such, the associative strength model asserts that frequency or amplitude of CRs reflects the strength of the CS–US associations. Alternatively, the expectation model asserts that the presentation of the CS triggers conscious expectancy of the US, which is responsible for the production of CRs. The present study tested the hypothesis that dissociable brain networks related to the expectancy and associative strength theories, respectively, by using a single-cue fear conditioning paradigm with a pseudo-random intermittent reinforcement schedule during functional magnetic resonance imaging. We found a positive linear relationship between the expectancy model and activity in frontoparietal brain areas including parts of the dorsolateral prefrontal cortex and dorsomedial PFC, but no regions whose activity was associated with the associative strength linear model, consistent with the view that conscious expectancy contributes to conditioned responses.

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12:00–1:30 PM (2145)

Destination and Source Memory: Same Same But Different?!. NIKOLETTA SYMEONIDOU, *University of Mannheim*, LILIANE WULFF, *University of Mannheim* — When interacting with others, source memory refers to remembering the origin (source) of information, whereas destination memory describes memory for the target (destination) of information. Different to source interactions, destination interactions usually involve a decision component because people self-select the destination (i.e., person) to whom they want to pass information. This decision component seems to explain why destination memory is typically better than source memory (Marsh & Hicks, 2002). In two computerized experiments, we investigated whether this benefit of destination over source memory vanishes when the decision component is held constant across interaction types. To ensure robustness of results, we used different material across experiments: In Experiment 1, participants gave or received objects from a self-selected person (out of two fixed persons). In Experiment 2, participants told or heard rumors from a self-selected person (out of two fixed persons). We used multinomial modeling for data analysis. In both experiments, participants remembered sources better than destinations. We discuss several explanations (e.g., differences in self-focused attention) that might account for this reversed memory benefit.

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12:00–1:30 PM (2146)

Value-Directed Learning: Rewards and Confidence Support Associative Memory in Category Learning. KATIE SILAJ, *University of California, Los Angeles*, KARINA AGADZHANYAN, *University of California, Los Angeles*, ALAN D. CASTEL, *University of California, Los Angeles* — Learning new information involves identifying what is most important to remember. Prior work has shown that extrinsic rewards paired with items based on the category they belong to can support predictions of importance when faced with new information. In the present experiment, we examined whether participants could predict the values of novel category

exemplars when the category-value pairs changed with each trial. Participants studied a list of words paired with values based on three categories (e.g., animals: mammals = 1 point, birds = 3 points, fish = 5 points) and then predicted the values of new words in the test trial as well as rated their confidence in each value prediction. We found that participants who had higher confidence judgments were more accurate in their value predictions with each subsequent trial. Value-directed learning may be an adaptive strategy when trying to distinguish between different types of information.

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12:00-1:30 PM (2147)

Poor Attentional Control Relates to Hyper-Binding in a Young Adult Sample. EMILY E. DAVIS, *Brock University*, EDYTA K. TEHRANI, *Brock University*, KAREN L. CAMPBELL, *Brock University* — Hyper-binding—erroneous encoding of target and distractor information into associative pairs in memory—is thought to be caused by age-related declines in attentional control. If hyper-binding is caused by poor attentional control, then even young adults with poor attention regulation should show evidence of hyper-binding. Participants (N = 121) viewed objects (targets) superimposed with text (distractors) and completed an object categorization task. Hyper-binding of the target-distractor pairs was tested by presenting intact (original pairs) and rearranged pairs (items previously presented, but not together) from encoding while participants performed the same categorization task. Participants then completed a battery of attentional control tasks. For each participant, hyper-binding scores (rearranged RT – intact RT) and attentional control scores (averaged z-scores across tasks) were calculated and correlated. On average, young adults did not show hyper-binding, but those with poor attentional control showed a bigger hyper-binding effect, ρ = -.216, p = .017. These findings suggest that young adults with poor attentional control may hyper-bind similarly to older adults.

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12:00-1:30 PM (2148)

The Direction of Reminding. JIYU LI, *University of Arizona*, JONATHAN TULLIS, *University of Arizona* — Remindings bolster the recall of temporally distributed related episodes due to either (1) retrieval of related prior episodes during encoding or (2) repeated stimulation of episodes via spreading activation. Retrieval theories suggest that benefits only happen when later episodes (P2s) point back to earlier episodes (P1s), while spreading activation theories suggest that association in either direction could benefit memory. Across 4 experiments, we tested whether the direction of association impacts mnemonic benefits of remindings. Participants studied forward-associated pairs (loud->soft), backward-associated pairs (loud<-silent), and unrelated pairs (loud-×-hazard). Recall was higher in the backward and forward conditions than in the unrelated condition, indicating a significant reminding effect. Recall for the first words in associated pairs (P1 words) was similar across backward and forward conditions. However, recall for the second words in associated word pairs (P2 words) in the forward condition was higher compared to the backward condition. Neither theoretical account of remindings fully describes the data, suggesting additional factors, like strategic output of related episodes, impact recall.

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12:00-1:30 PM (2149)

The Role of Working Memory in Feedback-Based Learning over Long Timeframes. YIWEN ZHANG, *University of Pittsburgh*, BENJAMIN ROTTMAN, *University of Pittsburgh*, ANNE GE COLLINS, *University of California, Berkeley* — Learning from feedback is essential for effective decision-making in daily life. Feedback-based learning involves multiple separate cognitive processes, including reinforcement learning (RL) and working memory (WM). Previous studies investigating RL and WM-based learning focused on short timeframes dynamics, ranging from a few seconds to minutes. However, real-life learning may occur over hours, days, or weeks. This study aimed to investigate the interplay between RL and WM in long-term feedback-based learning. Instead of learning stimulus-action associations with back-to-back iterations in quick succession, participants experienced only one or two iterations per day, for 24 days. In this scenario, WM should only assist participants in conditions where a given item appears more than once in short succession. We predicted that WM use would help immediate performance, but hinder cumulative learning. The results show that (1) when WM was unavailable, the size of the learning sets did not influence learning performance; (2) when WM was available, performance improved significantly, and participants relied less on RL; and (3) using WM during learning hindered long-term retention.

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12:00-1:30 PM (2150)

Benefits of Personalized Feedback on Academic Writing. YASMIN CHOWDHURY, *University of California, Santa Cruz*, JEAN E. FOX TREE, *University of California, Santa Cruz* — The feedback students receive on academic assignments can be invaluable to improving their learning and performance. In a Zoom experiment, we provided participants feedback on a short essay. The feedback was either personalized or non-personalized and was given either via video or text. Participants then wrote a second essay. We tested how the type of feedback and the medium used to give feedback impacted writing performance. We also tested how well writers applied the feedback in their subsequent writing. In addition, we assessed feelings of social presence and self-efficacy, as well as feelings towards the feedback. In preliminary results, we found an improvement in performance, application, and self-efficacy when students were given personalized feedback. We also found an improvement in application and stronger feelings of social presence towards the feedback giver when students received feedback by video. We did not find differences in feelings towards the feedback.

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12:00-1:30 PM (2151)

The effect of instructions on students' drawing of data on bar graphs. LUCY CUI, *University of California, Los Angeles*, PEIKE LI, *University of California, Los Angeles* — Bar graphs

are commonly used in introductory statistics courses. Therefore, it's important to understand how students relate these graphs to data/statistics. Previous research has shown that students have within-bar bias or commit bar-tip limit (BTL) errors, such that they believe all or most data that created a bar graph come from within the bar. This project uses drawings to capture students' (mis)understanding of bar graphs and data distributions. Students draw a dot display depicting the data points they think created the bar average in a bar graph. We manipulated the instructions to encourage students to think about data broadly, variance and/or the scale/y-axis and hypothesized that the activation of more statistical concepts would produce different drawn data and fewer BTL errors. We found that instructions do make a reliable difference in the number of students who produce BTL errors as well as differences in the data distributions that they draw.

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12:00–1:30 PM (2152)

The Effects of Growth Mindset Messaging on Student Performance and Experience. VERONICA CUI, *McMaster University*, MICHELLE CADIEUX, *McMaster University*, CHRISTINE LOGEL, *University of Waterloo*, MARY C. MURPHY, *Indiana University*, FARIA SANA, *Athabasca University*, JOSEPH A. KIM, *McMaster University* — A growth mindset is the belief that one's abilities can be developed over time through effort. Conversely, a fixed mindset is the belief that these abilities do not change over time. Courses taught by instructors with growth mindsets have substantially smaller racial achievement gaps compared to instructors with fixed mindsets. We investigated how the integration of growth mindset messages in weekly quizzes of an online psychology course impacted students': 1) sense of belonging, 2) perception of instructors' mindsets, and 3) midterm performance. Participants (n = 133) were randomly assigned to one of two conditions: with or without growth mindset messages. We did not find significant effects of growth mindset messaging on sense of belonging, perception of instructors' mindsets, or academic performance. However, the sociodemographic variables measuring affected financial stress had a significant negative correlation with sense of belonging. These results add nuance to the growing literature surrounding faculty-level growth mindset interventions.

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12:00–1:30 PM (2153)

Implementing the Pre-Training Principle to Optimize Procedural Learning in an Immersive Virtual Reality Task. CYNTHIA Y. DELGADO, *University of California, Santa Barbara*, RICHARD E. MAYER, *University of California, Santa Barbara* — This study examined how training of procedural skills in an immersive virtual reality (IVR) environment is affected by incorporating the pre-training principle (i.e., providing instruction about key components before a lesson). Ninety-three undergraduate students were taught the scientific procedure of pipetting in an IVR environment and then completed a serial dilution task in person with real pipettes and took a multiple-choice test. Students were randomly assigned to watch an instructional video showing the key objects used in pipetting prior to learning in IVR (pre-training condition) or were not assigned to watch a video (no pre-training condition). Results demonstrated that students in the pre-training condition made fewer pipetting errors on the in-person serial dilution task and scored higher on the multiple-choice test than those in the no pre-training group. These findings support the pre-training principle as an effective technique for optimizing procedural learning in IVR that transfers to real tasks.

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12:00–1:30 PM (2154)

Having Notes on a Test Eliminates the Benefit of Interleaving over Blocking. JOSEPHINE FEALY, *California State University, East Bay*, SINCLAIR NGO, *California State University, East Bay*, JERI L. LITTLE, *California State University, East Bay* — Interleaving items from different categories (e.g., A1, B1, C1) is often better for learning than blocking items by category (e.g., A1, A2, A3). It is unclear whether note-taking interacts with sequence to influence learning. We examined the benefit of interleaving versus blocking as a function of whether participants were able to take notes and use them on a test. Participants studied paintings (half blocked by artist, half interleaved by artist). Some participants took notes and could use them on the test (notesST), some took notes but could not use them on the test (notesS), and some did not take notes (no notes). We found an interaction between sequence and note-taking; in the no notes and notesST conditions, there was a relative advantage for interleaving. However, in the notesST condition, that advantage disappeared. Content of notes is also discussed. This study has implications for learning in educational contexts.

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12:00–1:30 PM (2155)

Incidental Learning in an Online Language App: Evidence from Lingvist Users. JORDAN GALLANT, *McMaster University*, VICTOR KUPERMAN, *McMaster University* — Materials and learning conditions that maximize the opportunity for incidental learning can make language learning more rewarding and efficient. We examined word learning in an additional language (La) using real-world data from the online language-learning app Lingvist (www.lingvist.com). The task consisted of reading a context sentence in the target language and completing the missing target vocabulary item using a complete gloss sentence in the source language. Besides this intentional learning, most target items also occurred within other context sentences, allowing for additional incidental word learning. Data from 3,902 Spanish-speaking and 7,115 German-speaking learners of English revealed improved performance when target vocabulary was encountered in other context sentences. This effect on word learning accuracy was modulated by the degree of cross-linguistic orthographic overlap and other linguistic features. Factors that impact incidental learning are discussed as well as implications for the structuring of app-based syllabi.

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12:00–1:30 PM (2156)

The Impact of Acute Exercise on Explicit and Implicit Memory. WILLIAM COLLINS, *Nova Southeastern University*, CAMILLE MATUSKY, *Nova Southeastern University*, KAYLEE HAMBLEN, *Nova Southeastern University*, ISAAC HAI, *Nova Southeastern University*, GABRIELA MARTINEZ, *Nova Southeastern University*, ANNABELLA CANO, *Nova Southeastern University*, LEANNE BOUCHER, *Nova Southeastern University* — Research has consistently demonstrated that exercise positively impacts cognition, including memory. However, little research has examined how acute bouts of exercise specifically impact implicit memory. The current study compares the effects of exercise on explicit and implicit memory. Participants ran on a treadmill for 30 minutes and then completed an explicit memory task to examine how exercise impacted their explicit memory for target words. Participants also completed a lexical decision task (LDT) to measure implicit memory for the target words. To assess long-term explicit and implicit memory, two days later participants were asked to recall words from the explicit memory task and completed another LDT.

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12:00–1:30 PM (2157)

Statistical Learning of Unimodal and Crossmodal Number Pairs: An ERP Study. FERENC KEMÉNY, *University of Graz* — Previous research demonstrated infants' and adults' ability to detect statistical regularities in linguistic and nonlinguistic input. We investigated whether and how this statistical learning depends on the modality of stimulus presentation. In an EEG study, adult participants observed a continuous stream of visually presented digits or auditorily presented number words. To avoid confounding effects we used digits and number words as stimuli. Unknown to the participants, the numbers formed four number pairs, a unimodal visual, a unimodal auditory and two crossmodal number pairs. For unimodal pairs, predicted (second) numbers were associated with increased frontal N1, as well as increased occipitoparietal N650 amplitudes compared to unpredicted (first) numbers. Such an effect was only observed unimodally, ERP correlates of crossmodal predictions were not observed. Similarly, no prediction-based differences were observed in for auditory numbers. Our study suggests that statistical learning takes place easier in a unimodal context, however, not in favor of the auditory presentation.

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12:00–1:30 PM (2158)

Examining the Selectivity of Feedback Induced Recognition Memory Biases. GIZEM FILIZ, *Washington University in St. Louis*, IAN DOBBINS, *Washington University in St. Louis*, JUSTIN KANTNER, *California State University, Northridge* — Intermixing false positive feedback (FPF) following recognition false alarms or misses, among otherwise correct feedback, induces recognition memory decision biases. We investigated whether these biases reflect broad or class-specific (words vs pictures) changes in recognition. Two experiments tested recognition of intermixed words and pictures, with one class receiving 50% FPF encouraging either liberal (false alarms) or conservative (misses) biases. All remaining feedback was wholly correct, including that for the non-targeted class. In Experiment 1 (N = 160) FPF applied to pictures yielded selective biases that did not spread to intermixed words (FPF applied to words was ineffective). In Experiment 2 (N = 160) FPF applied to words yielded selective biases that did not spread to pictures (FPF applied to pictures was ineffective). Importantly, questionnaire data indicated that subjects were unaware of feedback's purpose suggesting that recognition decision biases can be unintentionally acquired and yet specific to one of two classes of encountered memoranda.

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12:00–1:30 PM (2159)

Effect of Prior Knowledge on Statistical Learning in a Complex Auditory Scene. CLIN KY LAI, *The Pennsylvania State University*, ELISABETH KARUZA, *The Pennsylvania State University* — Four studies were conducted to explore the impact of a noisy environment and participant prior knowledge on statistical learning (SL) performance. Study 1 involved an 8-minute target stream containing paired pseudowords with a transitional probability of 1.0. Study 2 introduced a concurrent background environmental sound stream, either familiar or unfamiliar. Study 3 examined the effect of pre-exposure to the structural properties of the target stream, while Study 4 focused on pre-exposure to perceptually similar pseudowords. Performance was assessed using a familiarity judgment task. The results revealed that SL was successfully acquired in both familiar and unfamiliar background environmental sound conditions, with no significant difference in learning between the two. Structural pre-exposure did not alter the results (Study 3). However, participants struggled to detect the statistical regularities in the familiar condition when pre-exposed to perceptually identical pseudowords (Study 4). Prior knowledge, hence, could interfere with SL performance if perceptually identical.

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12:00–1:30 PM (2160)

Statistical Learning in Autistic Adults—Evidence for Intact Predictive Processing. ORSOLYA PESTHY, *Eötvös Loránd University (ELTE)*, KINGA FARKAS, *Semmelweis University*, DEZSO NEMETH, *Université Claude Bernard Lyon 1, Eötvös Loránd University (ELTE), & Hungarian Academy of Sciences* — The main predictive processing framework of autism claims that atypical behaviour in Autism Spectrum Disorder (ASD) occurs as a result of impaired ability to predict future events based on prior knowledge and incoming sensory stimuli—but empirical evidence does not consequently underpin this idea. However, it is not clear which aspect of predictive processing is atypical in ASD. In this study, we extended the scope of this framework to the acquisition of probability-based regularity without feedback or reward, that is, on statistical learning. Twenty autistic and 22 neurotypical adults participated in performing a 40-minute-long probabilistic statistical learning task. The two groups performed comparably, moreover, the learning dynamics also showed a similar pattern—both were supported by Bayesian analyses. Thus, our study provides evidence that some aspects of statistical

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learning are intact in autistic adults. We discuss potential mechanisms that could be responsible for this result in the light of the original predictive processing framework.

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12:00-1:30 PM (2161)

Decreasing Statistical Learning Between 7 and 14 Years of Age—Evidence from a Longitudinal Study. ESZTER TOTH-FABER, *Eötvös Loránd University (ELTE)*, BENCE C. FARKAS, *Université Paris-Saclay*, KAROLINA JANACSEK, *University of Greenwich*, DEZSO NEMETH, *Université Claude Bernard Lyon 1, Eötvös Loránd University (ELTE), & Hungarian Academy of Sciences* — Statistical learning enables us to extract regularities from the environment and it underlies several motor and cognitive skills. Prior cross-sectional large-scale studies proposed age-related changes across the lifespan in statistical learning. Some studies argue for better statistical learning in childhood, up to 12 years, then a decline in performance in adulthood old adulthood, possibly due to the maturation of the executive control system. However, cross-sectional studies have their limitations. Here, we designed a longitudinal study, where we assessed children at the age of 7, 8, 11 and 14 years. Each time they completed a statistical learning task and several executive functions tasks. Linear mixed models and latent class analyses were employed to assess the trajectory of statistical learning and the possible influence of executive functions. We found decreasing statistical learning, according to both linear mixed models and latent class analyses. Our findings also revealed that better executive function ability at age 14 is related to a decreasing profile of statistical learning between 7 and 14 years of age. Our study provided empirical evidence for better statistical learning in childhood in a longitudinal design.

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12:00-1:30 PM (2162)

The Role of Causality in Understanding How Prior Event Knowledge Impacts New Learning. ALEXA S. GONZALEZ, *University of Houston*, ANNA DRUMMEY, *Villanova University*, TYLER J. HUBENY, *Villanova University*, IRENE P. KAN, *Villanova University* — Although the influence of prior knowledge on new learning is well established, relatively less is known about how different components of prior knowledge structure may contribute to new learning. Here, we focused on event knowledge structure and examined whether events with causal relations provide an additional boost to new learning compared to non-causal associative structures. Using a cued recall paradigm, we found that cued recall performance is best for causal pairs, followed by non-causal pairs, then unrelated pairs. Also, causal relations play a unique role in new learning, beyond that afforded by associative relations. By focusing on the role of causality in event structures, our findings contribute to the understanding of how prior knowledge supports new learning. Future work will examine whether temporal proximity (i.e., temporal distance between events) may also play a role.

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12:00-1:30 PM (2163)

Fake News Exposure Effects on Memory and Perceived Accuracy after Real News Corrections in Older and Younger Adults. PAIGE L. KEMP, *University of North Carolina at Greensboro*, CHRISTOPHER N. WAHLHEIM, *University of North Carolina at Greensboro*, VANESSA LOAIZA, *University of Essex*, COLLEEN KELLEY, *Florida State University* — Fake news can negatively affect memory and beliefs, possibly more for older adults with episodic memory impairment. Competing accounts predict that fake news repetition should either impair or improve memory and belief accuracy, especially for older adults. Two online experiments examined how repeating fake news before corrections affected memory and belief accuracy for news headlines from the internet in younger and older adults. Participants first viewed real and fake news headlines, with the latter appearing once or thrice, then viewed real news corrections before taking a recognition (Experiment 1) or cued recall test (Experiment 2). Neither age nor fake news repetitions affected recognition or cued recall of correct news or false alarms to fake news, but repeated fake news intruded more in cued recall for both age groups. Conditional analyses showed that repeating fake news was especially harmful to memory and belief accuracy when corrections were detected as such and fake news was not later remembered. Together, these results highlight the importance of recollection-based retrieval following the initial detection of real news corrections on subsequent memory and belief accuracy for real news details.

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12:00-1:30 PM (2164)

Let the Music Play: The Beneficial Effects of Musical Rhythms on Verbal Working Memory. BRE-ANNA K. OWUSU, *McMaster University*, ELISABET SERVICE, *McMaster University* — Previous research has shown a relationship between meaningless pseudoword repetition and word form learning. Here we investigated how priming with rhythmic stimulation of varying predictability affects musicians' and non-musicians' short-term memory for nonsense sentences. Sound primes were presented for ~30 s before auditory nonsense sentences containing pseudowords. The primes were either predictable musical rhythms or unpredictable environmental noise. After listening to the prime and the nonsense sentence that followed, participants repeated the sentence orally. Repetition accuracy was coded for whole pseudowords and their syllables for adults aged 18-46 (n = 27 musicians; 30 non-musicians). After listening to predictable musical rhythms, compared to unpredictable noise, both musicians and non-musicians significantly showed higher repetition accuracy. Results suggest that listening to predictable musical rhythms may help both trained musicians and non-musicians to enhance memory for unfamiliar rhythmical structures, such as novel language material. Predictable musical rhythms may provide intervention tools for supporting the linguistic skills and verbal memory of children and adults with atypical language.

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12:00–1:30 PM (2165)

Emotion Effects in Animacy: The Roles of Arousal and Valence. SARAH N. JONES, *University at Albany, SUNY*, STEPHANIE A. KAZANAS, *Tennessee Technological University* (Sponsored by Stephanie Kazanas) — The animacy effect in memory represents better memory for animate words (e.g., warrior) than inanimate words (e.g., sword). This finding replicates across various memory tasks, languages, and other methodology (e.g., Nairne et al., 2017). Researchers can now better test the lexical variables explaining these animacy effects using updated normative data (VanArsdall & Blunt, 2022). One recent study by Meinhardt et al. (2018) tested the role of emotion in these effects, finding arousal did not significantly contribute to memory for animate words. The current study consisted of two experiments, the first replicating Meinhardt et al.'s study investigating arousal. Experiment 2 extends these efforts, controlling words on arousal and comparing memory for animate and inanimate words also varying in valence. In both experiments, mood data were collected to investigate participants' current emotional state on these effects. Together, this study adds to the literature furthering our understanding of what mediates animacy effects in memory.

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12:00–1:30 PM (2166)

Brief Focused Attention Meditation Increased the Effect of Retrieval-Induced Forgetting. LI-HAO YEH, *Chung Yuan Christian University*, PEI-YING HUNG, *Chung Yuan Christian University* — The memory phenomenon that remembering certain items increases the probability of forgetting of other items is called retrieval-induced forgetting (RIF). In the current study, we examined the effects of focused attention meditation (FAM) and open monitoring meditation (OMM) on participants' performance in a typical RIF memory task. Because the principle of FAM is to inhibit unrelated thoughts, and the one of OMM is accepting all thoughts, we hypothesized that these two types of practices would show opposite effects. 107 participants were randomly assigned to OMM, FAM and control groups. A 40-minute mindfulness induction, either OMM or FAM, were inserted before the retrieval-practice in the mindfulness groups. The results showed the typical RIF effects and the RIF effect in the FAM group was significantly larger than that in the OMM and control groups and the RIF effects in the latter two groups were equivalent. The above results may contribute to the understanding of the mechanism of mindfulness on memory regulation.

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12:00–1:30 PM (2167)

Pupil-Based Measures of Attention and the Temporal Organization of Recall. MANASI JAYAKUMAR, *Columbia University*, ARIA S. TSEGAI-MOORE, *Columbia University*, CECILIA NEMETH, *Columbia University*, MOE KHINE, *Columbia University*, MARIAM ALY, *Columbia University* — Episodic memories are temporally organized: items encoded closer together in time are remembered together. We examined how attentional fluctuations during encoding, measured with pupil diameter, affect this temporal organization. We hypothesized that attentional fluctuations during encoding disrupt the formation of temporal contexts, such that suboptimal (vs. optimal) attentional states produce less temporally organized recall. In a modified sustained attention task, participants (N = 32) encoded trial-unique objects while eye-tracking was performed. Participants' memory was then tested with free recall. Pupil size was used to divide trials into those that indexed a better attentional state (larger pupil size) vs. a worse attentional state (smaller pupil size). Attentional state did not affect overall recall, which was similar when pupil sizes were larger vs. smaller at encoding. However, a preliminary analysis revealed a trending effect of attentional state on the temporal organization of recall: worse attentional states were associated with reduced temporal clustering and reduced forward asymmetry of recall. These preliminary results indicate that attentional lapses may disrupt the temporal organization of episodic memory.

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12:00–1:30 PM (2168)

Does Sleep Enhance Memory? Another Replication Failure. ALANNA OSMANSKI, *University of Nevada, Las Vegas*, XUEQING CHEN, *University of Bristol*, COLLEEN M. PARKS, N/A, *University of Nevada, Las Vegas*, LAURA MICKES, *University of Bristol* — The idea that sleep is necessary for the consolidation of memory has come to be treated as a fact. However, there have been multiple failures to replicate the finding that memory is better stabilized during sleep than wake. With these mixed findings in mind, we aimed to replicate a pivotal study by Gais et al. (2006), which showed that a night of sleep starting three hours after a learning episode resulted in better memory than sleep starting 15 hours after learning, even when the amount of interference was controlled across delays. We were unable to replicate this finding; we found no significant differences between the various sleep/wake conditions. Although not a direct replication due to some methodological differences, this study adds to the skepticism that sleep is necessary for the consolidation of long-term episodic memory.

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12:00–1:30 PM (2169)

Recollective Features in the Natural Language Used to Justify Memory Decisions. XINRAN ZHANG, *Washington University in St. Louis*, IAN DOBBINS, *Washington University in St. Louis* — The natural language people use to justify memory decisions predicts recognition accuracy, in part, because it conveys recollection. This study compared a traditional bag-of-words (BOW) classifier to one using BERT embeddings, and newly tests whether classifier recognition scores also predict the later recall of individual recognition probes. During both training and testing, the BERT classifier outperformed the BOW classifier. Nonetheless, a BOW approach was important for explaining the BERT classifier, accounting for a sizeable portion of its variance and confirming that the BERT classifier was also recollection sensitive. Finally, the BERT classifier's recognition scores predicted future recall, and mediated the tendency of hit probes to be recalled more often than false alarm probes. It also predicted positional effects, with earlier recalled words having

higher scores than later recalled words. These data indicate that BERT embeddings capture information that is important for the prediction of recognition accuracy and future recall.

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12:00–1:30 PM (2170)

The Influence of External Cues on Later Recognition Memory: A Double-Test Paradigm. ECEM EYLUL ARDIC, *Washington University in St. Louis*, IAN DOBBINS, *Washington University in St. Louis* — Prior research demonstrates that people successfully incorporate external cues into their recognition judgments. However, whether cue reliance negatively impacts later memory remains unknown. Under a novel double-test paradigm participants encoded words and then in Test 1, made old/new recognition judgments in the presence and absence of 70% valid, predictive cues ("Likely Old," "Likely New," or Uncued). They were then tested again (Test 2), with Test 1 items now serving as targets. During Test 1 cue condition significantly influenced hit ($F(2,96) = 36.35$, $p < .001$) and false alarm ($F(2,96) = 60.07$, $p < .001$) rates. Despite this, Test 2 recognition of previously old items and new items was unaffected by prior cue condition ($Fs < 1$). This simple paradigm provides a rigorous test of whether earlier reliance on external cues limits subsequent recognizability. These data suggest it does not, consistent with decision models assuming independence of decision and retrieval processes.

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12:00–1:30 PM (2171)

Self-Reported Encoding Quality Promotes Lure Rejections and False Alarms. SYDNEY M. GARLITCH, *Millikin University*, RAWAN MOHAMED, *University of North Carolina at Greensboro*, BLAIRE J. WEIDLER, *Towson University*, CHRISTOPHER N. WAHLHEIM, *University of North Carolina at Greensboro* — One function of the hippocampus is to prevent memory interference by supporting distinctive encoding, allowing discrimination of perceptually similar inputs from existing memories. But encoding processes may also contribute to how effectively perceptually similar lures can be discriminated later. In the present study, we examined the role of encoding quality in the classification of similar lures. Participants completed two study-test cycles of an object recognition task. During study, thought probes were inserted to assess self-reported encoding quality and similar lures were used at test to assess mnemonic discrimination. The results showed that on-task study reports were associated with lure discrimination in both within-subject and between-subjects analyses. Within-subject on-task reports were also associated with false classifications of lures as studied objects. These results suggest that self-reported encoding supports lure rejection but also lure false alarms when comparisons between perceptions and existing memories are inaccurate.

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12:00–1:30 PM (2172)

Perceptual Disfluency and Recognition Memory: A Response Time Distributional Analysis. JASON GELLER, *Princeton University*, PABLO GOMEZ, *Skidmore College* — Words made more disfluent, such as those that are blurred or in a hard-to-read typeface, can be better remembered at test under some circumstances. The exact mechanisms behind this memory advantage are not fully understood. Recent research suggests the disfluency benefit arises from interactions between early encoding and later decision-making processes. To examine this, we manipulated level of blurring (i.e., clear vs. low vs. high blur) in a lexical decision task (LDT), which was followed by a surprise recognition memory test. Response latencies in the LDT were analyzed and fit to the ex-Gaussian distribution and visualized with quantile plots. During encoding, blurring differentially impacted ex-Gaussian parameters. High blur affected parameters involved in early and late stage processes, while low blur only affected early processes. At test, high blur words were better remembered compared to clear and low blurred words. This suggests that both early and late processes are crucial for the mnemonic benefits seen in recognition memory. Overall, distributional analysis can be a powerful tool for better understanding the different stages or loci used during encoding and how they relate to memory.

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12:00–1:30 PM (2173)

Continuing to Forget: A Multi-Cue Item-Method Directed Forgetting Study. RYAN HUBBARD, *University of Illinois Urbana-Champaign*, LILI SAHAKYAN, *University of Illinois Urbana-Champaign* — Forgetting can be an adaptive process, removing unwanted past experiences. Directed forgetting research shows that stimuli can be intentionally forgotten, but what if these stimuli are re-encountered later? We investigated this question in four experiments with a novel multi-cue directed forgetting study, where items that were cued to be remembered (R) or forgotten (F) were presented later with either the same cue as before (R-R / F-F), or the other cue (R-F / F-R). Experiment 1 showed improved memory for repeated F-cued items compared to F-cued items presented once; however, F-R items showed no improvement over F-F items, whereas R-R items were remembered better than R-F items, suggesting that additional encoding was diminished following an initial F cue. Experiments 2 and 3 used memory strength manipulations in place of R/F cues to demonstrate the pattern of results of Experiment 1 was not simply explained by memory strength. Experiment 4 showed that using a deeper encoding strategy following F-cues could overcome the diminished encoding effect. Thus, repeated exposure may lead to better memory for the unwanted stimulus, but initial intentional forgetting can also impact future encoding.

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12:00–1:30 PM (2174)

Influence of Visual Degradation on Pattern Completion. MRINMAYI KULKARNI, *Rotman Research Institute*, ROSANNA E. OLSEN, *Rotman Research Institute*, BRADLEY R. BUCHSBAUM, *Rotman Research Institute* — Retrieving memories based on

degraded input is termed pattern completion. We tested how features of the degraded input affect retrieval. Participants encoded 144 real-world scenes in 6 blocks. At test, they made recognition decisions to dynamic displays of old, similar, or new scenes. Test displays were created by stitching together frames containing a degraded scene. In each frame, portions of the scene were randomly occluded by gray tiles. The amount of the scene visible per frame was manipulated. In some trials, visible tiles were scrambled to examine how spatial organisation of available information affects performance. Recognition of old scenes improved with increasing visibility, regardless of scrambling. For similar and new images, visibility benefitted performance for intact, but not scrambled scenes. Preliminary drift diffusion model results indicate that accumulation of evidence for recognition decisions is disrupted when spatial relationships in a scene are disturbed. These findings suggest that recognising old images, and rejecting lures and foils may involve partially different mechanisms.

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12:00-1:30 PM (2175)

Beyond Expectations: Exploring the Boundaries of Recognition Memory for Bizarre Object-Color Pairs. CARLA MACIAS, *Rutgers University – Newark*, KIMELE PERSAUD, *Rutgers University – Newark* — A well-known phenomenon of memory is the bizarreness effect which refers to enhanced memory for objects that are highly incongruent with people's prior expectations. This phenomenon was recently explored in the visual domain of color. Here, we investigate whether the enhanced memory for expectation-incongruent/bizarre objects extends to memory for the object-color binding and whether this binding is well-preserved long-term. Using a 4-AFC task, we assessed recognition for object colors as a function of expectation-congruency one day and 3 days later. Our results revealed no significant difference in recognition memory for bizarre colors compared to expectation-congruent colors on day 1 or day 3. However, we found a significant decrease in recognition memory for bizarre and weak-expectation object-color pairings on day 3 suggesting that bizarre object representations may not be well-maintained long-term. Taken together, these findings challenge current mechanistic accounts of memory for expectation-related information.

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12:00-1:30 PM (2176)

Autobiographical Memory of Scary Media: A Pilot Replication. LISA EMERY, *Appalachian State University*, KARINA KINNEY, *Appalachian State University* — Scary or horrifying movies tend to be well-remembered, particularly if people are exposed to them in childhood or adolescence. Harrison & Cantor (1999) found that such memories occurred in 90% of their sample of college students. The movie content, reported symptoms, and enduring effects of exposure were similar to those found in specific phobias as described in the DSM. In the current study, we asked 100 current undergraduate participants to respond to the Harrison & Cantor prompt. We compared our students' responses to those from the previous study, to determine if the results generalized to the current cohort and time period. The overall results were strikingly similar to the prior research. For example, 91% of the current participants reported that they had experienced an extended reaction to a film or TV program, a figure not significantly different from the prior work, 95% CI [83.6, 95.8]. The movie content also mirrored the prior work, with the depiction of blood, injections, or injury being most common. The current cohort did report a shorter duration of reaction than the earlier cohort, $\square 2(6) = 45.21$, $p < .001$, but also reported more avoidance and mental preoccupation resulting from the exposure.

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12:00-1:30 PM (2177)

'How Worried Were You?': Biases in How Younger and Older Adults Remember Their Prior Feelings About COVID-19. JESSICA UDRY, *Georgia State University*, SARAH BARBER, *Georgia State University*, SAGARIKA DEVARAYAPURAM RAMAKRISHNAN, *Emory University*, BRIANNA WRIGHT, *Georgia State University* — In 2020, the rapid spread of COVID-19 triggered widespread health-related worries. In this study, we examined how accurately younger and older adults could remember the intensity of their prior COVID-19 worry. Given that current feelings strongly predict how people remember past feelings, we expected that current levels of COVID-19 worry would bias memory for past worry levels. However, this phenomenon had not previously been studied in the context of health-related information. It was also unclear whether this memory bias may differ between younger and older adults, given age-related increases in the tendency to overestimate past positive feelings. To investigate these issues, we assessed younger and older adults' COVID-19 worry in November 2020. Six months later, these same participants were asked to recall their prior worry levels and also report their current COVID-19 worry. Overall, people had low accuracy in recalling their prior worry levels. We also found that current COVID-19 worry biased memory of past worry; people currently experiencing high levels of COVID-19 worry overestimating their past worry. However, we did not observe any differences in COVID-19 worry or memory biases between younger and older adults.

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12:00-1:30 PM (2178)

The Use of Trauma Film Paradigm and Visual Negative Stimuli in Memory Reconsolidation Paradigms: A Systematic Review. DIANE H. MOON, B.A., *Southern Methodist University*, HOLLY J. BOWEN, PH.D., *Southern Methodist University* — Memory reconsolidation procedures have shown promise as a potential clinical intervention for trauma-based and other memory-based disorders; however, there have been mixed findings and unsuccessful replications. With unstandardized procedures, nuances in boundary conditions, and clinical RCTs already underway, we need to examine the effectiveness of memory reconsolidation paradigms utilizing fear and trauma stimuli, such as the trauma film paradigm. We conducted a systematic review to methodically investigate the efficacy of memory reconsolidation paradigms in modifying negative explicit and/or implicit memories created from trauma film paradigms or presentation of similar stimuli of negative valence and high

arousal meant to mimic traumatic or aversive memories in healthy, non-clinical samples. We identified 74 studies meeting our inclusion criteria. We aim to characterize the types of stimuli used and examine effect sizes related to different stimuli, memory types, and boundary conditions (e.g., age, strength, reactivation type, intervention type, trait anxiety). This will provide a more comprehensive understanding of how and under what conditions memory reconsolidation procedures modify negative memories.

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12:00-1:30 PM (2179)

Illusions of Control: The Impact of Intention and Valence on the Outcome Density Bias. DORIT WENKE, *PFH Private University of Applied Sciences Göttingen*, CHRISTINE BLECH, *FernUniversität in Hagen*, ROBERT GASCHLER, *FernUniversität in Hagen* — Humans experience themselves as causing events in the outside world when these events follow their actions in a contingent and contiguous manner. Sometimes, they even experience control over the consequences of action when actual control is missing. One such illusion of control is the outcome density bias: Participants often judge to have more control over non-contingent action outcomes when the overall frequency of outcomes is high rather than low. Blanco and Matute (2015; doi.org/10.1027/1618-3169/a000280) demonstrated that the density bias depends on participants' instructed intention to either produce an outcome associated with a monetary reward, or to prevent an outcome associated with a monetary punishment. Our study extends the Blanco and Matute findings by showing that valence of outcomes (laughing vs. frowning smileys) and intention (i.e., the instruction to learn to prevent or to produce outcomes by pressing a key, irrespective of valence) both affect the density bias: More subjective control over frequent outcomes was only observed for positive events and for produce instructions. For prevent intentions and negative outcomes the density bias was reversed.

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12:00-1:30 PM (2180)

Motivated Memory: Selectivity and Incentive-Related Recall in Younger and Older Adults. JASMIN BRUMMER, *University of Zurich*, ALEXANDRA M. FREUND, *University of Zurich*, SEBASTIAN S. HORN, *University of Zurich* — Declarative memory declines across adulthood, but selective recall of important high-value information is relatively unaffected by aging. Using a novel grid paradigm, we conducted three studies to investigate how gain and loss values of items during encoding or retrieval affect memory performance. Memory load was additionally manipulated as the number of simultaneously displayed items. As expected, younger adults demonstrated superior overall item recall than older adults, particularly for items associated with gaining points. The findings indicated relatively similar selectivity in the recall of high-value information by younger and older adults; both age groups were more selective in recall under higher than lower load conditions. We additionally discuss initial findings of participants' gaze dynamics and from a process-dissociation approach to disentangle automatic and controlled components of value-directed memory. Our findings shed new light on the interplay between motivation and memory and on how incentives facilitate remembering across adulthood.

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12:00-1:30 PM (2181)

Does Repetition or Novelty Enhance Curiosity? Implications for Memory and Motivated Learning. ASHLEY CHEN, *University of California, Los Angeles*, MARY C. WHATLEY, *University of California, Los Angeles*, VERED HALAMISH, *Bar-Ilan University*, ALAN D. CASTEL, *University of California, Los Angeles* — Curiosity, an intrinsic desire to seek novel information, benefits students' motivation and learning. In two experiments, we investigated whether repetition or novelty promotes curiosity and strengthens memory for trivia question answers. In Experiment 1, participants were shown 60 trivia questions, half of which were repeated, and asked to rate their curiosity to learn associated answers. They were then tested on their memory for the answers after a 24-hour delay. We found that higher curiosity predicted better memory for both repeated and non-repeated questions, but the effect was stronger for non-repeated items. In addition, curiosity decreased across repetitions and was higher for non-repeated questions, suggesting that novelty may enhance curiosity. Experiment 2 revealed that there were no effects of repetition when participants were asked to first guess the answer to the trivia question before studying its answer, indicating that generation or pretesting may override a novelty preference. Overall, novelty may play an important role in fostering curiosity, but repetition may strengthen encoding for information that individuals are less curious about, which has implications for both theory and educational practice.

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12:00-1:30 PM (2182)

The Effects of Prosocial Decision-Making on Memory for Faces in Younger and Older Adults. SHADINI DEMATAGODA, *Toronto Metropolitan University*, SANA JUNAID, *Toronto Metropolitan University*, JULIA SPANIOL, *Toronto Metropolitan University* — Recent evidence suggests that prosociality increases in adulthood. However, little is known about the impact of prosocial motivation on cognition. The current experiment investigated the effect of prosocial reward on memory in younger and older adults. Participants first completed a financial choice task featuring hypothetical transfers between their own account and a foodbank charity. Prosocial reward was operationalized as the amount transferred to the charity per trial. On each trial, the charity was represented by the face of a foodbank client. Participants later received a surprise old-new face recognition test. On the decision-making task, older adults were more satisfied by, and more likely to accept, transfers that benefited charity than younger adults. However, these age differences did not translate to differences in memory for the faces of foodbank clients. Additionally, faces associated with transfers that were accepted (vs. rejected) were better remembered, suggesting an influence of agency on recognition memory.

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FRIDAY

12:00–1:30 PM (2183)

Avoiding Positivity: Reward Devaluation in Educational Contexts. MYA URENA, *University of Minnesota*, CAITLIN MILLS, *University of Minnesota–Twin Cities*, SAMUEL WINER, *The New School* — Reward devaluation theory (RDT) posits that some depressed individuals may respond negatively to positive material (i.e., devaluing reward), going so far as to actively avoid it. Although there are intuitive everyday life consequences for individuals who "devalue reward" or positivity, limited research has established if (and how) reward devaluation manifests in more ecological tasks. Here we developed and tested for evidence of devaluation in a novel valence selection task across two studies. Participants received incomplete reading prompts and were instructed to choose from a positively-valenced, negatively-valenced, or neutral sentence ending. Study 1 and 2 findings indicated that individuals who reported a higher fear of happiness (a key symptom of depression associated with reward devaluation) were less likely to choose the positive endings (S1: rho = -0.31, p = 0.005; S2: rho = -0.38, p< 0.001) supporting RDT in a novel task that has educational implications.

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12:00–1:30 PM (2184)

Similar Levels of Proactive Interference for High-Value and Zero-Value Verbal Working Memory Items. SARA B. FESTINI, *University of Tampa* — Value-directed remembering involves cuing participants that certain material is more or less valuable to remember. Here, I examined value-directed remembering within working memory (WM). Participants studied words that were arbitrarily assigned 10 points (high-value) or 0 points (zero-value) after encoding. Proactive interference (PI) was also manipulated by occasionally probing recent items from the prior WM trial. Results indicated that significant PI was present for both high- and zero-value memoranda, such that recent probes resulted in lengthened responses times (RTs) and worse accuracy. Interestingly, similar levels of PI were present for high- and zero-value items, as measured by both RT and accuracy. A surprise long-term memory (LTM) recognition test also revealed similar LTM accuracy for both high- and zero-value items. These data inform theories of the voluntary control of WM, including how cuing with zero points is distinct from directed forgetting, as prior research has observed reductions in PI following directed forgetting, but reductions in PI were not observed for zero-value-cued items. This experiment provides evidence that participants tend to maintain zero-value items, rather than remove them from WM.

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12:00–1:30 PM (2185)

Performance-Based Cues Dominate Metamemory Judgments. SKYLAR J. LAURSEN, *University of Guelph*, MONIKA UNDORF, *Technical University of Darmstadt*, CHRIS M. FIACCONI, *University of Guelph* (Sponsored by Chris Fiacconi) — The cue utilization view states that individuals use a variety of cues when making metacognitive predictions of future memory (e.g., judgments of learning; JOLs). These cues typically pertain to inherent characteristics of the memoranda (intrinsic cues), features of the learning environment (extrinsic cues), and the ease with which information can be retrieved from memory (mnemonic cues). Recently researchers have been interested in how individuals integrate multiple intrinsic and extrinsic cues simultaneously when predicting future memory. This work has generally found that learners' JOLs are indeed sensitive to multiple cues and that these cues shape JOLs additively. Here, we examined how cues derived from interacting with studied memoranda (performance-based cues) affect JOLs, and whether they are also integrated with other cues in an additive fashion. Our results showed that performance-based cues powerfully shape JOLs and largely overshadow cues that are perceptual in nature. However, intrinsic cues that carry semantic information may be less sensitive to such overshadowing. Our findings have important implications for our current understanding of cue utilization and integration in metacognitive monitoring.

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12:00–1:30 PM (2186)

Metacognitive Effects of Context Reinstatement Across Episodic and Semantic Memory Tasks. MACIEJ HANCZAKOWSKI, *Adam Mickiewicz University*, KATARZYNA ZAWADZKA, *SWPS University*, CHRISTOPHER MOULIN, *Université Grenoble Alpes* — Episodic information in the form of familiarity contributes to metacognitive judgments concerning semantic memory. But do recollections of specific episodic events also affect such judgments? Here we compared the effects of reinstating the encoding context at the time of retrieval—a manipulation facilitating retrieval of specific episodes of previous study—on metacognitive judgments accompanying both episodic and semantic memory tasks. In a series of experiments examining both prospective (feeling of knowing) and retrospective (confidence) metacognitive judgments, we demonstrate that reinstatement of encoding context affects monitoring of episodic memories but has no discernible effect on monitoring of semantic memories. Thus, while people may become confused by stimulus familiarity when retrieving information from semantic memory, they are capable of separating episodic recollection from the appraisal of semantic retrieval.

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12:00–1:30 PM (2187)

Does Asking About Memory Change Later Performance? A Temporal Bias Analysis of Metamemory Reactivity. KATHERINE R. CHUREY, *University of Guelph*, CHRIS M. FIACCONI, *University of Guelph* — Individuals automatically structure memories in a way that guides later recall attempts. Often, this structuring follows the order in which experiences within a particular temporal context originally occurred, such than individuals may begin recall with their most recent experiences (i.e., recency effect) or the first events experienced (i.e., primacy effect), or they may recall events together that were originally experienced close together in time (i.e., temporal contiguity effect; TCE). Interestingly, some encoding task manipulations – including those commonly used when studying metamemory—have been found to affect how information is

initially processed and, consequently, the patterns observed in later recall (i.e., order memory performance). Indeed, we recently found that the presence of metacognitive monitoring tasks (i.e., judgments of learning; JOLs) at encoding reduced the TCE observed in delayed recall, though the magnitude of this effect was inflated by the presence of other serial position effects (i.e., primacy, recency). Nevertheless, these findings support the notion that measuring metamemory is not an inert process and can affect later patterns of recall.

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12:00-1:30 PM (2188)

Making Judgments of Learning During Learning Does Not Affect Performance in Short-Answer and Multiple-Choice Tests. FRANZISKA SCHÄFER, *Technical University of Darmstadt*, MONIKA UNDORF, *Technical University of Darmstadt* — Several studies revealed that predicting one's memory during learning (judgments of learning, JOLs) has reactive effects on memory performance. Making JOLs typically improves cued recall for related word pairs and recognition for single words but impairs or does not impact cued recall for unrelated word pairs. The educational relevance of these findings is often discussed in the literature. At the same time, there is very little research on the generalizability of JOL reactivity to educationally relevant materials and test conditions. We present three experiments with samples of university students (Experiment 1: N = 99, Experiment 2: N = 95, Experiment 3: N = 88) that examined whether making JOLs affects performance in multiple-choice and short-answer tests on general-knowledge facts. Neither experiment revealed reliable effects of making JOLs on performance which was also found in a continuously cumulating meta-analysis including data from all experiments. These results indicate that soliciting metamemory predictions does not affect test performance for general-knowledge facts in educationally relevant tests. Further research will be needed to examine whether this holds for educationally relevant materials and tests in general.

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12:00-1:30 PM (2189)

Judgments of Learning Reflect the Encoding of Contexts, Not Items: Evidence from a Test of Recognition Exclusion. BELGIN ÜNAL, *University of Illinois Urbana-Champaign*, AARON BENJAMIN, *University of Illinois Urbana-Champaign* — It has been suggested that familiarity (i.e., memory for item independent of context) and recollection (i.e., memory for specific context) contribute to both recognition and metacognition judgments. However, there are few studies investigating the link between these two putative memory processes and judgments of learning (JOLs). In four experiments, we tested memory and metamemory using a continuous exclusion procedure. This procedure allowed us to estimate the influences of memory for context and memory for item on JOLs and licenses conclusions about the relative role of item and context information in supporting judgments of learning. An analysis of forgetting revealed that JOLs reflect both the initial degree of learning and the rate of forgetting, but only of memory for context, and not of memory for items. These findings suggest that JOLs are predictive of memory for context-bound episodes, rather than for the semantic content of those episodes.

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12:00-1:30 PM (2190)

Investigating the Effects of Mediated Associations on Judgment of Learning Reactivity. NICHOLAS P. MAXWELL, *Midwestern State University Texas*, MARK J. HUFF, *The University of Southern Mississippi* — Judgments of learning (JOLs) are reactive on cue-target pairs. This effect, however, is moderated by relatedness, as only related pairs show a memory benefit versus a no-JOL control group. Based on Soderstrom et al.'s (2015) cue-strengthening account, JOLs direct attention towards intrinsic cues which aid retrieval. However, reactivity may instead reflect relational encoding, which is applied selectively based on relatedness. The present study tested these accounts using mediated paired-associates (e.g., lion-stripes), which appear unrelated at encoding yet are indirectly related. A cue-strengthening account predicts no reactivity on mediated pairs while a relational account predicts a memory benefit. Overall, reactivity extended to mediated pairs, regardless of whether cued-recall (Experiment 1) or recognition testing (Experiment 2) was used. Interestingly, JOLs also increased correct recognition of unrelated pairs, a finding that was replicated in Experiments 3 and 4. Thus, positive reactivity on related pairs likely reflects relational encoding when cued-recall testing is used. However, because recognition is based on familiarity cues rather than relatedness, reactivity occurs globally for all pair types.

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12:00-1:30 PM (2191)

The Role of Outcome Uncertainty on Task-Switch Costs and Response-Repetition Costs. JONATHAN SCHACHERER, *Washington and Lee University*, ELIOT HAZELTINE, *University of Iowa* — Actions are represented not just by their specific motor programs, but also by abstract goals and response-related outcomes. For instance, we choose to flip a light switch based on the anticipated outcome of the light turning on. Here, we assessed how outcome uncertainty, defined as the number of experimentally-induced outcomes associated with a given response, affects two measures of task-switching performance: task-switch costs and response-repetition costs. Across two experiments that varied the number of response alternatives (two vs. three), task-switch costs increased as the number of outcomes increased, with a similar pattern for two and three response alternatives. In contrast, response-repetition costs were affected by both the number of outcomes and response alternatives. Outcome repetition led to response-repetition costs with two response alternatives, but response-repetition benefits with three response alternatives. These results illustrate how response selection processes act on representations of response-related outcomes.

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FRIDAY

12:00–1:30 PM (2192)

What Lies Beneath: A Diffusion-Model Account of the Cognitive Cost of Lying. MARTIN SCHNUERCH, *University of Mannheim*, ROBERT SCHNUERCH, *University of Bonn* — Telling a lie is more cognitively demanding than telling the truth. Support for this view comes, inter alia, from instructed-lying paradigms showing that untruthful responses are slower than truthful responses. However, conventional measures of the cognitive cost of lying often ignore error trials and accuracy, focusing instead on latencies of correct truthful and untruthful responses only. To overcome this limitation, we propose to analyze data with the Ratcliff diffusion model. The diffusion model considers the full response-time distributions for both correct and error responses, thus making use of all available information. Using a Bayesian hierarchical diffusion model, we find that the model's drift-rate parameter provides for a more reliable measure of the cognitive cost of lying than conventional approaches. Moreover, we find that truth-vs-lie instructions elicit a response bias that may confound conventional measures that fail to account for it. Thus, our results indicate that the diffusion model constitutes a powerful means to analyze data from lying paradigms and that it offers intriguing avenues for future research on the cognitive mechanisms of lying.

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12:00–1:30 PM (2193)

Gamification as a Means to Improve Data Quality in the Stop-Signal Task?. MICHELLE DONZALLAZ, *University of Amsterdam*, ANDREW HEATHCOTE, *University of Tasmania*, TALIRA KUCINA, *University of Tasmania*, LINDAY WELLS, *University of Tasmania*, DORA MATZKE, *University of Amsterdam* — Response inhibition, the ability to stop responses that are no longer required or appropriate, is commonly examined using the stop-signal task. Usually, individuals are asked to complete many trials, often 300 and more, which can lead to disengagement and ultimately poor data quality. Gamified features have been advocated as potentially addressing motivational issues but outcomes have been mixed. Here we compare a new gamified stop-signal task to a standard version in terms of both data quality and the psychological processes underlying performance by employing a cognitive modeling approach. Using data from web-based experiments, we investigate differences regarding individuals' engagement, and their propensity to attend to the stimuli and perform the task as instructed. We show that the data quality was improved in the gamified version and we discuss the corresponding differences in cognitive model parameters.

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12:00–1:30 PM (2194)

Does Explicit Feedback Improve Time Production Performance in High Impulsivity Individuals?. ELISE Y. LAMBERT, *University of Arizona*, JIAXUAN TENG, *The University of Arizona*, EVE ISHAM, *The University of Arizona* — Compared to low impulsivity (LI), high impulsivity (HI) is often associated with an inaccurate underproduction of time intervals. However, it is unclear whether this underproduction could be improved when feedback is given. In the current study, participants produced a brief 3.6-second interval over a course of four trials. Feedback was given after each trial to half of the participants. The produced duration was subjected to a 2 trial (Trial 1 vs. Trial 4; within-subjects) x 2 impulsivity (Low vs. High median split; between-subjects) x 2 feedback (Feedback vs. No Feedback; between-subjects) mixed ANOVA. A three-way interaction effect was observed. Critically, when feedback was given, the HI group's production improved significantly compared to the LI group. These preliminary findings suggest that HI benefit from feedback, and under some circumstances, the correction could lead to an overproduction of time intervals by HI individuals. Results will be discussed in the context of motivation and impulsivity.

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12:00–1:30 PM (2195)

Reasoning and Cognitive Control: Fast & Slow. AIKATERINI VOUDOURI, *LaPsyDÉ (UMR CNRS 8240) & Université Paris Cité*, BENCE BAGO, *Institute for Advanced Study in Toulouse, University of Toulouse Capitole, Toulouse 31015, France*, GREGOIRE BORST, *Université Paris Cité, LaPsyDÉ, & Centre National de Recherche Scientifique (CNRS)*, WIM DE NEYS, *Université Paris Cité, LaPsyDÉ, & Centre National de Recherche Scientifique (CNRS)* — Influential "fast-and-slow" dual process models suggest that sound reasoning requires correction of fast, intuitive thought processes by slower, controlled deliberation. Recent findings with high-level reasoning tasks have raised doubts about this characterization. In the present studies, we tested the generalizability of these findings to low-level cognitive control tasks. More specifically, we investigated whether people who responded accurately to the Stroop and Flanker tasks could maintain their accuracy when deliberate control was minimized. A two-response paradigm, in which people were required to give an initial "fast" response under time-pressure and cognitive load, allowed us to identify the presumed intuitive answer that preceded the final "slow" response given after deliberation. Across our studies we found that correct final responses in the Stroop and flanker tasks are often non-corrective in nature. Good performance in cognitive control tasks seems to be driven by accurate "fast" intuitive processing, rather than by "slow" controlled correction of these intuitions. We also explore the association between Stroop and reasoning performance and discuss implications for the dual process view of human cognition.

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12:00–1:30 PM (2196)

Repetition Costs in Sequence Chunking. RACHEL M. BROWN, *Rheinisch-Westfälische Technische Hochschule Aachen University*, IRING KOCH, *Rheinisch-Westfälische Technische Hochschule Aachen University* — Mastering sequential skill involves integrating successive actions into groups (chunks), which may allow long and short sequences to be retrieved and executed with similar efficiency. Is this also the case when we switch between different action sequences? Two experiments examined how sequence length effects (prolonged initiation of long compared to short sequences) are modified by switching. Participants performed long (6-item) and short (3-item) action sequences from memory (following practice) as they switched or repeated across trials. Participants performed either one

(Experiment 1) or two (Experiment 2) sequences of each length. Both experiments showed that sequence repetition slowed initiation and decreased accuracy of long compared to short sequences. In Experiment 2, long sequences were initiated faster than short sequences when switching. Chunking long sequences may prolong repetition due to inter-chunk conflict, but chunking may also speed switching by allowing participants to postpone retrieval of later chunks until execution.

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12:00–1:30 PM (2197)

You Would Be So Much Prettier If You Smiled: Facial Emotion Bias and Gender. JESSIE J. PEISSIG, *California State University*, RACHEL MOTOYOSHI, *California State University, Fullerton* — We tested the pop culture phenomenon of "resting bitch face" or "RBF." We hypothesized that gender would affect perception of emotion and that participants would rate women's neutral resting faces more negatively than men's neutral resting faces. To test this hypothesis, we analyzed data from 78 participants who completed an online survey containing 156 trials of face stimuli depicting happiness, disgust, and neutral facial emotions. The data collected in this study revealed that the main effects of the variables sex of face and emotion were significant. The interaction between sex of face and emotion was also statistically significant. Planned contrasts revealed that women's neutral resting faces were rated more negatively than men's neutral resting faces. In addition, women's disgust faces were also rated more negatively than men's disgust faces. In contrast, women's happy expressions were judged as more positive than men's happy expressions. Therefore, we conclude that there is a significant difference in how expressions of emotion are rated based on the gender of the face. Our data show that, compared to men, women's negative and neutral faces are judged as more negative and positive faces are judged as more positive.

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12:00–1:30 PM (2198)

Relationship between Grapheme-Color Synesthetic Associations and Color Discrimination Sensitivity in Non-Synesthetes. KAZUHIKO YOKOSAWA, *Tsukuba Gakuin University*, KYUTO UNO, *Sophia University & Japan Society for the Promotion of Science* — The experience of synesthesia does not occur basically among all but a few synesthetes. However, it has been suggested that the tendency of non-synesthetes to stably associate graphemes with colors varies among individuals, indicating that grapheme-color synesthetic associations may not be unique to synesthetes. It has also been reported that synesthetes differ from non-synesthetes in several perceptual and cognitive characteristics. We focused on the difference in the perceptual trait that synesthetes have higher color discrimination sensitivity than non-synesthetes. We examined whether the tendency of grapheme-color synesthetic association is related to color discrimination sensitivity in non-synesthetes. The results showed that non-synesthetic individuals with a higher tendency of grapheme-color association showed higher color discrimination sensitivity. This suggests that the neural mechanisms involved in synesthesia are not unique to synesthetes but may also be shared by non-synesthetes.

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12:00–1:30 PM (2199)

Looking Preferences for Signing Avatars: Does Naturalness Matter?. RAIN G. BOSWORTH, *Rochester Institute of Technology*, LORNA QUANDT, *Gallaudet University*, MELODY SCHWENK, *Gallaudet University* — Virtual signing avatars have the potential to provide language input to deaf infants, many of whom are born to hearing parents who do not know sign language. Signing avatars vary widely in perceptual artificiality vs. naturalness which may impact visual attention for them. To address visual attention preferences for such stimuli, we tested hearing 6- vs. 12-month-old sign-naïve infants, to examine early nascent visual language preferences. We also contrasted infants whose parents use spoken English at home and signing infants whose deaf parents use ASL at home. Finally, we examined adults' reported perceptual attitudes for these stimuli and examined their gaze patterns. Results indicated that adults who learned ASL earlier rated artificiality more negatively than adults who learned ASL later. Signing infants were more sensitive to movement quality issues seen in artificial avatars than non-signing infants. Understanding what makes a signing avatar comprehensible and likable will help guide future development in human-computer interaction.

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12:00–1:30 PM (2200)

Investigating Same and Other-Race Face Processing: Insights from Visual Strategies and their Electrophysiological Correlates. ISABELLE CHARBONNEAU, *Université du Québec en Outaouais*, VICKI LEDROU-PAQUET, *Université du Québec en Outaouais*, ANTHONY PROULX, *Université du Québec en Outaouais*, LAURIANNE CÔTÉ, *Université du Québec en Outaouais*, ARIANNE RICHER, *Université du Québec en Outaouais*, CAROLINE BLAIS, *Université du Québec en Outaouais*, JUSTIN DUNCAN, *Université du Québec en Outaouais*, DANIEL FISET, *Université du Québec en Outaouais* (Sponsored by Daniel Fiset) — White individuals have more difficulty identifying black compared to white individuals, a phenomenon that is part of the other-race effect (Meissner & Brigham, 2001). Eye-tracking data suggest that they pay less attention to the eyes of black faces (Kawakami et al., 2014), a face feature that is particularly informative for identification. To better understand this bias, we asked 15 White participants to perform two tasks (gender and smile/neutrality) with both White and Black faces while their EEG signals were recorded. In each trial, distinct parts of the face were revealed using the bubbles method (Gosselin & Schyns, 2002). A multiple linear regression analysis on the EEG amplitude at PO8 reveals a strong association with the contralateral eye within the N170 time window regardless of the task or the race of the faces. These data suggest that the eyes of black faces are processed during the early stages of face perception and that it is probably later in the face identification processing stream that this information becomes difficult to process.

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FRIDAY

12:00-1:30 PM (2201)

The rRelationship Between Transliminality and Perceptual Performance Measures. STEVEN J. HAASE, *Shippensburg University*, GARY D. FISK, *Georgia Southwestern State University* — Difficult signal detection tasks create situations where we might think a stimulus was presented when only noise is displayed. One question about this phenomenon is whether individual differences could explain variations in false alarm rates. One possibility is transliminality, the extent to which people agree with statements like: "At the present time, I am very good at make-believe and imagining." We correlated transliminality scale scores with performance on a signal detection task displaying a briefly sandwich-masked target. With a fairly large sample (N = 89), our predictions for liberal bias and higher d' correlating with higher transliminality scores were not supported (r's = - .11 and + .13, respectively). The detection task appears adequate for such a test, given that performance varied to a large extent (d': M = 0.57, SD = 0.80; c(bias): M = + 0.92 (conservative), SD = 0.67). This study was conducted online, and some limitations are discussed.

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12:00-1:30 PM (2202)

The Effects of Target-Mask Similarity and Target Type on Object Substitution Masking. KATHERINE MATHIS, *Bates College*, CAROLINE GRADY, *Bates College*, ABIGAIL SEGAL, *Bates College* — Object substitution masking (OSM) is the finding that target accuracy is impaired by a surrounding mask that persists beyond target offset relative to a mask that terminates with the target. The influence of target identity (animal face or shape) and target-mask congruency (congruent or incongruent) on the magnitude of OSM (immediate or delayed offset) was examined in the current study. Accuracy at identifying the target was measured in 120 trials with 85 participants from Amazon Mechanical Turk. The results showed that OSM effects were larger for congruent relative to incongruent mask-target arrangements, and this pattern was magnified for shape relative to face targets. Implications for theories of OSM are discussed.

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12:00-1:30 PM (2203)

Length Discrimination for Isolated and Embedded Lines (Horizontal-Vertical Illusion). GERMAN PALAFOX, *Universidad Nacional Autónoma de México*, MÓNICA A. CANO-MARIN, *Universidad Nacional Autónoma de México* (Sponsored by german palafox) — Are the just noticeable differences (JNDs; ΔL) for length the same for isolated lines versus lines embedded in an illusory pattern? In the HV illusion, there is a 5%-10% illusory increase in length for the vertical line compared to the horizontal line. If the visual system scales length on the basis of perceived length and Weber's law applies to this representation, then JNDs for V-length in the HV illusion should be slightly larger than those for V-isolated lines. Participants judged (2AFC discrimination task) whether the V-line to the left or to the right of a fixation point was larger; V-isolated and HV lines were presented in separate blocks. Contrary to the hypothesis, JNDs for illusory lines were smaller than those for isolated lines (ΔL-illusion < ΔL-isolated). Although the comparison lines were misaligned in each trial, positional cues from the H-line in the HV illusion may be at play.

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12:00-1:30 PM (2204)

Processing Symmetry Create a Cost or a Benefit?. YING-YU CHEN, *The University of Texas at San Antonio*, JOSEPH W. HOUPT, *The University of Texas at San Antonio* — Some have argued that symmetry is a core feature in visual perception. In this study our goal was to examine whether symmetry boosts processing efficiency. The based task structure was participants need to make a judgement if the target is as the same as the reference line by pressing button on keyboard. For trials with pairs of lines, the lines create symmetry or asymmetry as an incidental feature. We manipulated the (a)symmetry to examine whether the additional information imparted led to faster and more accurate responding. To assess performance, we relied on the capacity coefficient because capacity coefficient is a tool from system factorial technology, which can identify whether additional information is cost, benefit or no change. We found that there was no improvement in response efficiency when changes in were informative in the task. Instead, most participants experience cost when they deal with symmetrical conditions. This suggests that processing symmetry causes extra effort. Our result did not support that symmetry is fundamental feature in visual perception.

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12:00-1:30 PM (2205)

Subjective Valence Creates De Novo Attentional Objects. SIHAN HE, *University of Toronto*, ADAM ANDERSON, *Cornell University*, EVE DEROSA, *Cornell University* — Elements within the same perceptual group are selected together by object-based attention. In three experiments, we explored whether subjective affective valence could produce a perceptual grouping effect on Chinese characters, guiding people's object-based selection. In the first two experiments, we adapted a two-rectangle cueing paradigm without rectangles, placing four characters on the screen to form positive and negative valence groups. The results of the first two experiments show an object-based cueing effect, which gradually emerged across repetitions and was largely driven by positive stimuli. This effect was replicated in a third experiment, where we explicitly controlled emotional priming by arranging five characters to create a central occlusion from competing positive and negative valence groupings. Our findings suggest that affective valences of stimuli can influence how we organize and attend to the external world, generating de novo perceptual groups.

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FRIDAY

Poster Session III

Friday, November 17, 2023, 6:00–7:30 PM US PST, Grand Ballroom

6:00–7:30 PM (3001)

Episodic Memory of Tamarin Monkeys Is Tested Using Object Familiarity Paradigms. JULIE J. NEIWORTH, *Carleton College*, MADELINE THALL, *University of Wisconsin-Madison* — Four aging cotton top tamarins were exposed to a pair of unique objects placed in the same location and at the same time of day for five 15-minute sessions. Behaviors coded included looks, approaches, and manipulations. Next a delay of 1 day or 1 week was imposed. Subjects' memory of the objects was tested by replacing one of the familiarized objects with a new one. The tamarins explored more the novel object of the pair after both delays. To test whether recognition relied on context, the test pair was relocated to a new location (where) or presented at a different time of day (when). Tamarins explored both the familiar and novel objects after a 1-day delay, but explored only the novel object after a 1-week delay with context changes. This demonstrates episodic recognition in monkeys and the possibility of context-free recognition after a longer period of time.

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6:00–7:30 PM (3002)

Differential Conditioning Under a CS-US Interval of 24 Hours in Food Aversion Conditioning in Japanese Fire-Bellied Newts. TOHRU TANIUCHI, *Kanazawa University*, MIKI SUZUKI, *Kanazawa University*, WEISHENG ZHAO, *Kanazawa University* — The present study aimed to investigate whether Japanese fire-bellied newts would exhibit differential food aversion conditioning under a CS-US interval of 24 hours. The newts were given the opportunity to consume either CS+ or CS- (counterbalanced between 40 mg raw beef or chicken gizzard pieces) for a duration of 60 minutes. Following the CS+ presentation, newts received an injection of 0.15 M lithium chloride (LiCl) solution (190 mg/kg), while they received an equivalent dosage of saline after the CS- presentation, either immediately after the CS presentation (Group 0 h) or 24 hours later (Group 24h). The CS+ and CS- trials were alternated, with each conducted four times and separated by 10-day intertrial intervals. Both groups of newts exhibited a gradual preference for CS- over CS+, indicating the successful establishment of differential food aversion conditioning. During a final choice test, where CS+ and CS- were presented simultaneously for 60 minutes, both groups of newts consistently consumed CS- more than CS+, and there was no significant difference between the groups. These findings demonstrate that Japanese fire-bellied newts can acquire food aversion conditioning even with a CS-US interval of 24 hours.

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6:00–7:30 PM (3003)

The Lure of 'What If': Do Monkeys Seek Information About Alternative Outcomes?. ELIZABETH HASELTINE, *Georgia State University*, MICHAEL J. BERAN, *Georgia State University* — Counterfactual thinking is the mental construction of alternatives to past events. Curiosity for the counterfactual acts as an important driver of learning under uncertainty and a technique to improve on past behaviors by informing future choices. We assessed whether nonhuman primates obtained counterfactual information in a similar pattern to humans. This study explored the appeal of counterfactuals when there was no benefit to having informational clarity. Humans and monkeys were presented with a computerized gambling task where they chose between two numerically equivalent visible rewards or an unknown, nonvisible reward. When choosing between the visible rewards, participants could either resolve uncertainty by also viewing the unchosen reward, or they could view a blank control screen. On these trials, most humans (21/31) had a bias toward collecting counterfactual information. Half of the capuchins (5/10) and a third of the macaques (1/3) also showed this bias. These data indicate that nonhuman primates also may be interested in counterfactual information, although additional experiments are needed to confirm this and to see whether they might also give up rewards to gain such information.

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6:00–7:30 PM (3004)

Self-Directed Learning in Nonhuman Primates. JOSEPH MCKEON, *Georgia State University*, MICHAEL J. BERAN, *Georgia State University* — Self-directed learning (SDL), a form of learning wherein individuals take primary control over much of their learning process, emerged as a topic in the field of adult education in the 1960s but has been rarely studied in other species. To investigate SDL in nonhumans, rhesus monkeys and tufted capuchins were tested on a chained sequential learning task. After familiarization with three distinct symbols that represent the number of items to be sequenced, monkeys were either forced to sequence a randomly assigned number of items, or they were allowed to choose the number of items that they would sequence. Evidence for SDL comes from whether monkeys adjust the number of stimuli they choose to sequence based on relative expertise. Because of the important role of metacognition in SDL it is predicted that rhesus monkeys, but not capuchins, will demonstrate evidence of SDL. Support for these predictions would give us new insights into the development of SDL as an evolutionarily advantageous metacognitive trait and one of the first valid measures of SDL in animals.

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6:00–7:30 PM (3005)

Distractor Set Modulates the Priming Effects: The Role of the Distractor Location. HSUAN-FU CHAO, *National Tsing Hua University*, JIA-XIN LONG, *National Tsing Hua University*, FEI-SHAN HSIAO, *Chung Yuan Christian University* — Repeating a prime stimulus as a target in a selective attention task can lead to positive priming or negative priming. According to the distractor set hypothesis, a prime produces negative priming when it matches the distractor set. The present study aimed at examining this hypothesis by systematically manipulating the location of the prime (central/peripheral) and the location of the probe distractor (central/

peripheral) across four blocks. In the probe display, a central stimulus was flanked by two peripheral stimuli. In blocks in which the distractor was the central stimulus, there was a distractor set for the central location; in blocks in which the distractors were the peripheral stimuli, there was a distractor set for the peripheral locations. The results showed that, when the prime was presented at the peripheral locations, the prime produced negative priming when it matched the distractor set and positive priming when it did not. When the prime was presented at the central location, the prime produced less positive priming when it matched the distractor set than when not. In summary, the present study provides supporting evidence for the distractor set hypothesis.

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6:00-7:30 PM (3006)

Working Memory Capacity Correlates with the Alerting-Congruency Interaction. MAYA J. GOLDEN, *Bates College*, TODD A. KAHAN, *Bates College* — Responses to a target are typically faster and more accurate when distractors are congruent rather than incongruent with the response required, and this congruency effect is often magnified following an alerting cue. The current experiment examined whether the alerting-congruency interaction correlates with working memory capacity (WMC). It was expected that congruency effects would be negatively correlated with WMC. However, it was unclear whether the alerting-congruency interaction would also correlate with WMC. Forty participants responded to the direction of a central arrow surrounded by distractors that pointed in the same or opposite direction. On half of the trials an alerting cue was shown before this and on the other half of trials no alerting cue was presented. Participants also completed a complex span task to assess WMC. Results replicate prior work and show that WMC is negatively correlated with the magnitude of the congruency effect. Importantly the current data add to this by showing that the magnitude of the alerting-congruency interaction is positively correlated with WMC.

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6:00-7:30 PM (3007)

Ocular Measures of Controlled Processing: The Role of Working Memory Updating in Proactive Cognitive Control. JASON F. REIMER, *California State University, San Bernardino*, KEVIN P. ROSALES, *California State University, San Bernardino*, STEPHANIE CANCHOLA, *California State University, San Bernardino*, DYLAN M. DIAZ, *California State University, San Bernardino*, LAILA DELGADO, *California State University, San Bernardino*, BRANDON GARIBALDI, *California State University, San Bernardino*, JONATHAN MARTINEZ, *California State University, San Bernardino* — Reimer et al. (2023) found that eye movements made during the cue-probe delay in a spatially modified version of the AX-CPT can be used to measure increases in the use of proactive control. Specifically, in B-cue trials, increased proactive control was related to longer visit durations in the screen location previously containing the cue, while in A-cue trials, increased proactivity was related to shorter visit durations in the same location. Additional studies demonstrated that while patterns of eye movements can also be used to predict working memory capacity (WMC), the patterns were distinct from those marking increased proactivity, suggesting that proactive control and WMC may not be directly related. The purpose of the present study was to extend these results by examining the role that working memory updating and inhibitory processing play in the use of proactive control. The results demonstrated that unlike WMC, increases in the ability to update working memory were marked by the same ocular signature as increased proactivity, while increased inhibitory processing was related to the ability to overcome prepotent eye movements. The implications that these results have on current models of cognitive control will be discussed.

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6:00-7:30 PM (3008)

Exploration vs. Exploitation in a Novel Complex Card Sorting Task: Evidence from Pupillometry. GIOVANNA DEL SORDO, *New Mexico State University*, FABIO TARDIVO, *New Mexico State University*, MEGAN PAPESH, *New Mexico State University* — The exploration-exploitation tradeoff is a key element of adaptive gain theory, suggested to promote the optimization of behavior toward high performance. This tradeoff is closely related to the phasic and tonic modes of the locus coeruleus-norepinephrine (LC-NE) system. Changes in exploration and exploitation control states can be tracked by pupillometry. To measure exploration and exploitation using a paradigm with tonic (baseline) and phasic (task-evoked pupil responses) recordings, the present study used a novel Complex Card Sorting (CCS) task. Participants learn complex classification rules through trial and error using correct-incorrect feedback. This task taps into cognitive flexibility, as participants switch between exploration trials (i.e., testing new rules) and exploitation trials (exploiting the rule that currently applies). The present study measured the relationship between LC-NE functioning and the adaptive regulation of cognitive control through pupillometry, allowing us to confirm the role of adaptive regulation in optimized behavioral performance. Using the CCS task, we also tested a novel method for measuring exploration-exploitation tradeoffs, which should be predicted by individual differences in gF.

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6:00-7:30 PM (3009)

Talk Is Cheap: Examining the Relationship Between Self-Reported and Task-Based Attentional Control. JULIE A. DICARLO, *Tufts University*, NATHAN WARD, *Tufts Univerity* — Self-report is an inexpensive way to assess attentional control, but it remains unclear how well self-reported attentional measures reflect task-based attentional performance. We examined the relationship between self-reported and task-based attentional control outcomes. Subjects (N=182) completed an antisaccade attentional control task followed by a battery of self-reported attentional measures (attentional control shifting and distractibility, attentional cognitive errors, boredom proneness, spontaneous mind wandering, and multitasking preference). Antisaccade attentional task performance was not associated with self-reported attentional control shifting ($r = -0.03$, $p = 0.65$) or distractibility ($r=0.06$, $p=0.43$). Linear regression revealed none of the

self-reported attentional outcomes predicted antisaccade attentional task performance (p = 0.18-0.80). Bayes Factor modeling indicated moderate evidence in favor of the absence of effect of self-reported attentional outcomes on antisaccade attentional task performance (BF = 0.33-0.16). Self-reported attentional outcomes may not capture task-based attentional control abilities, which has implications for researchers interested in measuring individual differences in cognitive function.

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6:00-7:30 PM (3010)

Cognitive Control Settings from Stroop Tasks Transfer to Visual Search. XIAOJIN MA, *Washington University in St. Louis*, RICHARD A. ABRAMS, *Washington University in St. Louis* — We tend to learn from experience how difficult a recurring task will be, and flexibly recruit the appropriate cognitive resources. The phenomenon has been studied with an item-specific proportion congruency (ISPC) Stroop task, where specific colors are paired with congruent color words at different probabilities. Mostly-incongruent colors typically (and appropriately) recruit greater cognitive control than mostly-congruent colors. Our study examined whether the cognitive control settings learned in such tasks can generalize to modulate spatial attentional deployment. Following an ISPC Stroop task, we had participants subsequently perform a visual search task that sometimes included a salient color distractor in the previously mostly-congruent or mostly-incongruent color. Search performance was more severely impaired by the mostly-congruent color distractor, showing carryover of the relaxed control setting to spatial attention. Our second experiment used a cuing task and found again that the mostly-congruent color was more likely to capture attention against the observer's will. The findings for the first time reveal the transfer of static attentional control to spatial attentional allocation.

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6:00-7:30 PM (3011)

Beyond Stimulus-Response Rules: Task Sets Incorporate Information About Performance Difficulty. RICARDO MORALES-TORRES, *Duke University Center for Cognitive Neuroscience*, TOBIAS EGNER, *Duke University* — Our capacity for goal-directed behavior depends on the ability to generate and implement task sets, which are traditionally defined as mnemonic ensembles linking a task goal to stimulus-response mappings for achieving that goal. Here we tested whether task sets also incorporate information about their difficulty, or the level of task-focus required for performing them successfully. In a cued task-switching protocol, participants performed two intermixed tasks with trial-unique stimuli across three phases; baseline, learning, and transfer. While the tasks were equally difficult during baseline and transfer, we manipulated task difficulty in the learning phase, whereby one task had a low, and the other task a high proportion of trials with cross-task interference (requiring different responses across tasks). Comparing interference effects between the baseline and transfer phases, we found that high (low) task difficulty in the learning phase reduced (increased) cross-task interference effects in the transfer phase, indicating that the level of task focus required in the learning phase became associated with each task set. These results suggest that task set representations can entail information about task difficulty.

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6:00-7:30 PM (3012)

Attentional Bias Toward Food Cues Dependent on Satiety States and Body Mass Index. MARC BALLESTERO-ARNAU, *Universitat de Barcelona*, TONI CUNILLERA, *Universitat de Barcelona* — Increased attentional bias (AB) towards food stimuli is suggested to be a consequence of obesity/overweight. However, the impact of extreme hunger states (satiation vs. starvation) on AB has mostly been studied as dependent on the hunger state. In this study, 184 fasted participants, covering the whole range of BMI, completed a modified version of the rapid serial visual presentation (RSVP) task in which images of just previously consumed foods were used as distractors, and half of them were assigned to the group of hungry or satiated. Hunger was manipulated by allowing the satiated group to eat to fullness or consume a small amount of food. The other half of the sample did not have access to food (observers). Preliminary measures on target detection accuracy did not differ among groups. However, non-satiated eaters showed increased AB as a function of BMI, while satiated participants exhibited the opposite result. BMI appears to play a role in predicting AB, showing an "all-or-nothing AB effect" when BMI is high, an effect that depended on the satiation state.

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6:00-7:30 PM (3013)

When Does Mind Wandering Impact Task Performance? The Role of Emotional Valence and Meta-Awareness of Mind Wandering. SHAINI LAL, *Nova Southeastern University*, ALYSSA OQUENDO, *Nova Southeastern University*, MARC A. ASTACIO, *Nova Southeastern University*, MATTHEW WELHAF, *Washington University in St. Louis*, JONATHAN BANKS, *Nova Southeastern University* — Although the impact of mind wandering is affected by several factors, such as task difficulty and emotional valence, less is known about how awareness of these task-unrelated thoughts (TUTs) may impact task performance. The current study examined the impact of the emotional valence and awareness of TUTs on sustained attention performance. Results suggest that negatively valenced TUTs and TUTs without awareness were negatively correlated with task performance. Intra-individual analyses of performance on trials immediately prior to thought probes suggest that all emotionally valenced TUTs predict poorer no-go accuracy and greater reaction time variability relative to on-task reports. Negatively valenced TUTs predicted poorer no-go performance above and beyond other emotionally valenced reports. In moments when participants reported being aware of their TUTs, they also performed better on the preceding no-go trial. Emotional valence and meta-awareness of TUTs may impact on performance possibly due to the reactivity these thoughts produce.

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FRIDAY

6:00-7:30 PM (3014)

Item-Specific Control Adjustments Transfer Across Response Modalities. JACKSON COLVETT, *Washington University in St. Louis*, LOGAN WETZ, *Washington University in St. Louis*, ISHAAN S. ALVA, *Washington University in St. Louis*, JULIE BUGG, *Washington University in St. Louis* — People can learn associations between conflict likelihood and a predictive cue, then reactively retrieve relatively focused or relaxed control settings upon reoccurrence of that predictive cue. A key theoretical question concerns whether the presence of a predictive cue automatically triggers those control adjustments. We investigated whether stimulus-control associations learned while responding with one response modality (i.e., manual keypress) would transfer and lead to control adjustments when all predictive cues were 50% congruent and all stimuli were responded to using a different response modality (i.e., vocal response). In Experiment 1, we separated the inducer and diagnostic response modalities into separate blocks. We observed no transfer to the diagnostic modality, potentially due to the change in response modality or a strong event boundary between blocks. Critically, we observed transfer to the diagnostic modality when we intermixed trials from both response modalities into the same block in Experiment 2, demonstrating that the adjustments from stimulus-control associations can be generalized across modality.

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6:00-7:30 PM (3015)

Influence of Cross-Modal Load on Cognitive Processing and Decision-Making. ASHLEY D. COOK, *US Air Force Research Laboratory*, ELIZABETH L. FOX, *US Air Force Research Laboratory* (Sponsored by Elizabeth Fox) — Thoughtful design of multi-task scenarios alleviate some competition for limited attentional resources. However, tasks that demand separate perceptual resources may still result in processing overload. In this experiment, participants completed visual decision-making tasks: which of 2 primary targets were present and detection of another visual target with or without simultaneously performing an auditory n-back task (0, 1, 2, 3). We applied a nonparametric metric to assess competition for common resources through dual-task cost and multi-task efficiency. We found dual-task cost in both tasks when paired, and the multi-task deficit increased with higher n-back. Additionally, we found n-back miss rates depended on both n-back difficulty and the presence of the visual task. Our data illustrate processing rates slow in both visual search based decision-making tasks and an auditory working memory task and more with increased working memory demands. These data provide fodder about competition for common resources and theories of attention.

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6:00-7:30 PM (3016)

Multi-Tasking or Multi-Distracting?: iPad Affordances Influence Onlooker Distraction During Classroom Learning. SARA G. GOODMAN, *St. John Fisher University*, AVIANA ESTEVEZ, *St. John Fisher University*, KRIS SCHALL, *St. John Fisher University* — Digital multitasking during classroom instruction contributes to reduced comprehension. Even non-multitasking students seated near a multitasking neighbor experience comprehension decrements (Sana et al., 2013). Existing research on classroom distraction largely focuses on laptops and cellular devices. However, tablet computers present additional affordances to consider, including orientation differences that change screen viewability from the onlooker's perspective. Tablets can be oriented horizontally mimicking laptop screens, or laid flat on a desk. Further, common multitasking endeavors can vary from visually boring tasks (e.g. text processing) to visually salient (e.g. playing video games). In this 2 x 2 factorial study, we investigate how viewability (high/upright vs. low/flat) and visual salience of the distracting activity (high vs. low) interact to affect comprehension outcomes for non-multitasking onlookers. Findings from this research focus on best practices and policies for technology use in the classroom, especially as campuses transition to 1:1 device initiatives.

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6:00-7:30 PM (3017)

Does Doodling Impact Our Ability to Retain Information?. SUSAN E. RUPPEL, *University of South Carolina Upstate* — Previous research has shown that doodling has had a positive effect on attention. One area of concern with these studies, however, is in how they define doodling. These studies used the term "doodling" when they had their participants shade in a predetermined shape. This then raised the question, would actual doodling result in the same positive effects as shading? The current study tried to answer this question by having participants either shade in predetermined shapes or doodle participant-generated images while engaging in a task. It was hypothesized that of the two different presentation conditions, participants would retain more information in the audio only condition than they would in the visual only condition. It was further hypothesized that the group who were shading predetermined shapes would also retain more information than the group who were doodling, because shading does not require as much attention or cognitive resources. With doodling you must first decide what to draw and then concentrate on bringing that image to reality, while shading does not require much attention, leaving cognitive resources left over to focus on new information. Results were partially consistent with our hypotheses.

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6:00-7:30 PM (3018)

The Bidirectional Effects of Engaging in Phone Negotiations While Driving. HANNAH PANNELL, *University of South Florida*, ISABELA BRAVOS CISNEROS, LEWIS W. EVANS, *University of South Florida*, MICHAEL NASCIMENTO DE SOUZA CARVALHO, *Research in Endocrinology and Cardiometabolic Health (REACH) Lab*, MACY J. ROUSE, *University of South Florida*, MICHAEL HOPKINS, *University of South Florida*, JASON SCHMIDT AVENDAÑO, *University of South Florida*, KAELYN WOFFORD, *University of South Florida*, RUTHANN ATCHLEY, *University of South Florida*, PAUL ATCHLEY, *University of South Florida* — Phone use while driving divides an individual's already limited cognitive capacity, resulting in each task

being performed poorly. Research typically examines the impact of conversations on driving. The effect of driving on the quality of the conversation, particularly work-relevant conversations, is less well-established. The current study examines the bidirectional influences of negotiating via phone and driving abilities. A two-party negotiation task was employed in which participants must negotiate one distributive and two integrative issues. Additionally, a recently developed U.S. hazard perception task (HPT) was used to simulate the cognitive demands of driving. Participants were assigned to one of three conditions: (1) completing just the HPT, (2) completing just the team retreat negotiation task, or (3) completing both the HPT and the negotiation task simultaneously. Results suggest that a concurrent driving task negatively impacts negotiation performance.

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6:00-7:30 PM (3019)

Object Detection Modifies Face Detection. DEAN G. PURCELL, *Oakland University*, ALAN L. STEWART, *Stevens Institute of Technology* — We measured visually masked detection thresholds for intermixed trials of two classes of stimuli: Faces with normal or rearranged features and line drawings seen as 3D objects or the same lines rearranged to appear 2D. Prior experiments have shown a detection disadvantage both for rearranged features compared to normal features (FDE) and 2-D objects compared to 3-D objects (ODE). Here we intermixed trials of these 4 types of stimuli. This procedure eliminated the FDE, but not the ODE. However, the elimination of the FDE occurred because half of the observers showed a disadvantage (Cohen's d=1.18) for upright faces and half showed an equally large disadvantage (d=1.12) for rearranged features. This unintended sorting of observers into two opposite responding groups is a novel finding. The object detection data showed no such effect. Being exposed to mixed face and object trials may change a response criterion for face stimuli for some observers.

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6:00-7:30 PM (3020)

Salient Distractors Bias Information Accrual Rather Than Quitting Thresholds in Visual Search. MARK W. BECKER, *Michigan State University*, ANDREW RODRIGUEZ, *Michigan State University*, DERREK MONTALVO, *Michigan State University* — Moher (2020) recently reported that adding a salient distractor (SD) to a visual search display results in more misses and faster target-absent reaction times, a pattern interpreted as a reduction in the quitting threshold; participants searched less of the display before responding target absent. This finding could have implications for real-world searches with distraction. However, in those experiments the SD shared critical features with the frequent distractors. In two experiments we expand on this finding by showing that the pattern of results maintains when a SD does not share critical features with the frequent distractors, but reverses when the SD shares features with the target. The pattern of results is consistent with the SD providing a rapid accumulation of evidence towards its associated boundary in a drift diffusion framework—when it shares features with the target there is a burst of evidence accumulation toward the "present" boundary, when it is a distractor there is a burst of evidence toward the "absent" boundary. We believe this account of the SD's impact provides a more parsimonious account than a quitting threshold account and can better explain when a salient distractor will harm or help target detection.

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6:00-7:30 PM (3021)

Attentional Decision Bias Without Singleton Search in the Three-Item Search Task. BRYAN R. BURNHAM, *The University of Scranton* — Selection history in the three-item search task shows how encoding a target feature facilitates activation of that feature on following trials; however, the target-defining feature (color) is usually both relevant to locating the target and the priming feature. Recently, we (Burnham, 2023, Attention, Perception & Psychophysics) decoupled the target feature (shape) from the priming feature (color) so the target appeared unpredictably as a singleton or nonsingleton. Priming was observed even with the target feature and priming feature being orthogonal, with larger priming effects seen when the current target was a singleton. The present study reduced the likelihood the target was a singleton across trials, thereby reducing bias toward singleton search. Even with reduced top-down bias the results revealed feature priming effects that were larger when the current target was a singleton. Importantly, diffusion analyses revealed that pretrial selection bias (z) predicted the larger priming effects when the target was a singleton. The results suggest that feature priming reflects pretrial decision bias to select the recent target feature, and this decision bias is enhanced if the target is a singleton.

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6:00-7:30 PM (3022)

Aligning Top-Down and Voluntary Attention Control. JAMIE M. TROST, *University of Notre Dame*, BRADLEY S. GIBSON, *University of Notre Dame*, SCOTT E. MAXWELL, *University of Notre Dame* — Our previous research has shown that only ~50% of participants aligned top-down and voluntary attention control in response to standard manipulations of top-down information in the spatial cueing paradigm. Here we report that these previous findings can be replicated under conditions in which the standard manipulation of top-down information was conveyed by a number cue (as opposed to an arrow or onset cue). More importantly, we also found that this percentage could be increased to ~90% by combining the standard manipulation of top-down information with a novel manipulation of volition in which participants were given the opportunity to freely choose the direction of the spatial cue on each trial. Moreover, most of these participants (85%) distributed their direction choices equally across the four directions and did not repeat cued direction on successive trials, which is critical for distinguishing voluntary control processes from experience-based control processes such as selection history.

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FRIDAY

6:00–7:30 PM (3023)

How Pointing Gestures Guide Visual Search. OLIVER HERBORT, *Julius-Maximilians-Universität Würzburg*, LISA-MARIE KRAUSE, *Julius-Maximilians-Universität Würzburg* — People often combine pointing and speech to refer to distal objects. An observer of the gesture then needs to search the vicinity of the pointed-at position for an object matching the verbal object. We tested the hypothesis that observers encode the uncertainty associated with the perception of a pointing gesture. This information is expected to restrict the size of the area in which observers search for the referent. In a series of experiments, participants were immersed in a VR environment, which featured an array of shapes. A virtual person repeatedly pointed at different shapes in the array. Participants were asked to find a specific target shape or to determine whether the pointer might be pointing at a specific shape. An analysis of the participants' eye movements and reaction times revealed that pointing gestures determined where participants looked for the referent. Moreover, pointing gestures restricted the area of the search display that was considered. In summary, the experiments suggest that observers of pointing gestures represent pointing uncertainty and use this information to find targets on visual displays.

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6:00–7:30 PM (3024)

A Dynamic Field Model of Guided Visual Attention in Natural Environments. RAUL GRIEBEN, *Institut für Neuroinformatik, Ruhr-Universität Bochum*, JAN TEKÜLVE, *Institut für Neuroinformatik, Ruhr-Universität Bochum*, JOHN P. SPENCER, *University of East Anglia*, GREGOR SCHÖNER, *Ruhr-Universität Bochum* (Sponsored by Gregor Schoener) — We present a neural process model based on dynamic field theory (Schöner et al., 2016) to answer long-standing questions in the field of visual attention. We show how combined bottom-up and top-down guidance explains: 1) the unexpected efficiency of triple conjunction search (Nordfang & Wolfe, 2014); 2) the influence of task-irrelevant size singletons on search (Proulx, 2007); and 3) how a third correlated, task-irrelevant feature improves search efficiency (Found, 1998). The model accounts for our behavioral data (Grieben et al., 2020) on the influence of scene memory on search efficiency (Wolfe et al., 2000; Becker & Pashler, 2005). Inspired by Guided Search 6.0 (Wolfe, 2021), we extend the model to natural scenes to explain: 1) how a mapping from the distributed representation of a CNN to the localist representation of a dynamic neural field may be learned; 2) how guidance templates learned from visual input enable categorical guided visual search; 3) how guidance templates in working memory may be adapted to different tasks; 4) scene grammar (Võ, 2021), a particular case of scene guidance in natural scenes (Wolfe et al., 2011); and 5) how functional visual fields influence search (Wu & Wolfe, 2022).

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6:00–7:30 PM (3025)

Self-Pacing in Attention-Demanding Search Task Enhances Stimulus Discriminability and Reduces Uncertainty. RUNHAN YANG, *University of Illinois Urbana-Champaign*, AARON BENJAMIN, *University of Illinois Urbana-Champaign* — Allowing subjects to control the pacing of stimuli can improve performance in visual search. The purpose of the current study is to decompose this benefit by examining how simple visual information is represented. We employed a common visual search task in which set sizes varied across blocks of trials. Some subjects controlled the onset of each trial and others did not. A visual search model based on signal-detection theory revealed that self-pacing both increases target strength and decreases target variability. The between-trial wait times of self-pacing subjects supported the view that these benefits arise in part from the fact that participants appreciated the greater difficulty of larger set sizes and deployed a policy of waiting longer on larger set sizes of waiting longer in order to offset those decrements.

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6:00–7:30 PM (3026)

Does Instruction About "Part-Whole" Relationships Affect Search Efficiency for a Color x Color Conjunction in a Three-Dimensional Search Display?. THOMAS G. GHIRARDELLI, *Goucher College*, JOSH LICHTI, *Goucher College*, CLAUDINE SCHWARTZ, *Goucher College*, MARIAH LEES, *Goucher College*, SAM C. BYRNE, *Goucher College*, LAURA C. JUDA, *Goucher College*, OLIVE SCOTT, *Goucher College*, MARISSA SPACHT, *Goucher College* — We tested the claim of Wolfe et al. (1994) that search for a color x color conjunction could be efficient if the two colors were perceived hierarchically (e.g., as a part and a whole) in our unique 3D search display. Our novel task requires participants to retrieve a LEGO target from among a set of LEGO bricks randomly distributed on a tabletop. Previously we replicated the findings of Wolfe et al. in a feature search and a part-part search but failed to replicate their findings in the part-whole task (Ghirardelli et al., 2023). In the current study we presented participants with two different search tasks (with 'part-part' and 'part-whole' targets) and manipulated the verbal instructions to describe the target in the part-whole task and examined whether explicit instruction about the hierarchical relationship would enhance search efficiency. Our results suggest that the manipulated instructions had no effect on search efficiency.

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6:00–7:30 PM (3027)

Examining the Timecourse of Drowning Detection and Recognition. LYNDSEY K. LANAGAN-LEITZEL, *Eastern Connecticut State University* — Prompt detection and recognition of drowning is critical for successful rescue by lifeguards. This study examined how the degree of motion facilitates detection of drowning during a drowning incident. Nine videos depicting real lifeguard rescues of drowning patrons were selected. Three were truncated to show only behavior prior to the drowning ("non-drowning") and six were truncated to show only the behavior immediately prior to the lifeguard's rescue ("drowning"). Each 12-sec video was reduced to 24 still frames, which were shown to participants individually, in streams of two, or in streams of three. For each trial, participants indicated

via a button press whether they detected a drowning and then clicked the swimmer of greatest concern. Data collection is ongoing, but preliminary analyses show that participants were more accurate in non-drowning trials than in drowning trials (likely reflecting a target-absent response bias, or the number of non-lifeguards in the sample so far) and were most accurate if shown three-frame streams. Exploration of the swimmer behaviors that produced false alarms is ongoing. These results will help inform lifeguard training practices as well as basic research into occupational visual search tasks.

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6:00–7:30 PM (3028)

Metaphor Interpretation in a Second Language: Interpretive Diversity and Figurative Conventionality. MIKI IKUTA, *Nagoya University*, HAMAD AL-AZARY, *Lawrence Technological University*, KOJI MIWA, *Nagoya University* — Although recent work has demonstrated that metaphors in a second language (L2) are processed more shallowly than in a first language (Ikuta & Miwa, 2021), the relationship between metaphor interpretations and properties of metaphors in L2 has not been systematically studied. To address this, we collected metaphor interpretations in L2 and analyzed their relationship with metaphor conventionality. Twenty-six Japanese learners of English were asked to interpret a normed-set of 84 English metaphors (Roncero & de Almeida, 2015). Metaphors were presented in English (e.g., Life is a journey), and participants were asked to write three interpretations. The entropy score for the metaphors was calculated as a measure of interpretive diversity (Utsumi, 2005). Our results demonstrated that people produced more diverse metaphor interpretations in L2, which was negatively correlated with conventionality. Less conventional metaphors resulted in more diverse interpretations in L2, replicating findings in L1. (Roncero & de Almeida, 2015).

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6:00–7:30 PM (3029)

An Evidence Accumulation Account of Masked Translation Priming in Two Bilingual Populations. CAMILLE A. SCRIMSHIRE, *California State University, San Bernardino*, SARA ALICIA L. AMADOR, *California State University, San Bernardino*, PABLO GOMEZ, *Skidmore College* — This research addresses how we can best use a bilingual experimental paradigm to understand the bilingual lexicon. We used the drift-diffusion model for testing the cognitive processes involved in bilinguals when they switch languages while reading. We used a lexical decision task with masked translation priming, which is a useful tool to understand the orthographic and lexical processing used in early moments of reading, which expands on the work by Gomez et al. Two theoretical positions are implemented within a diffusion model framework: (1) translation priming is orthographic and manifest as savings in the encoding process, and (2) translation priming is semantic and manifest as part of the evidence accumulation process in the lexical decision. We compared heritage speakers to sequential speakers and found them to be the same in the way their cognitive functions allow them to switch languages while reading. We also found that there is facilitation involved when translation priming is orthographically and/or conceptually similar to target words. We discuss what these findings imply and how the savings hypothesis should be applied to the non-selective way bilinguals access the lexicon.

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6:00–7:30 PM (3030)

Cognitive Effort During Code-Switching: A Coregistration of ERPs and Pupillometry. DANIEL PFAFF, *University of California, Santa Cruz*, LIV J. HOVERSTEN, *University of California, Santa Cruz* — Everyday, we naturally switch between different registers, communication styles, and even languages. Hearing a code-switch reliably elicits an N400 event-related potential (ERP), a negative-going neural component that indexes lexical access, and a code-switch also causes an increase in pupil size known as the pupil dilation response (PDR). We integrated these measures in an experiment involving Spanish-English bilingual participants listening to auditory stimuli with a code-switch, and in this way simultaneously co-indexed physiological and neurological responses to the same event. Overall, data replicate earlier results that a code-switch produces an increased N400 amplitude and increased pupil size, but for the first time, on the single trial level, an increased pupil size at the time of the code-switch reliably predicts N400 amplitude. This lends two major insights: one, code-switches demand increased cognitive effort, and two, higher levels of attention before the code-switch can partially modulate cognitive demands.

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6:00–7:30 PM (3031)

Examining Language Suppression in Bilinguals Using the Reading Span Task. DIANA URIBE, *The University of Texas at El Paso*, ANA SCHWARTZ, *The University of Texas at El Paso* — Studies on language control report an asymmetrical switch cost in which switching from the weaker language (L2) to the more dominant language (L1) is more costly than the reverse, suggesting that the L1 is inhibited. However, the asymmetrical cost is rarely observed in comprehension studies. In the present study, we used the reading span task to test for the potential role of language inhibition during comprehension by manipulating the match in language across the primary task (holding target words in working memory) and the secondary task (judging the semantic plausibility of sentences). If one language must be actively inhibited in the interest of comprehending the other, then recall should be worse when sentences are in the alternative language. Spanish-English bilinguals completed four reading span tasks in which the sentences were either in English or Spanish and the follow-up target words for recall were in either English or Spanish. In contrast to our hypothesis recall performance was better when the two subtasks were in different languages than when they were in the same language, suggesting that working memory is more directly affected by within-language competition than cross-language.

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FRIDAY

6:00–7:30 PM (3032)

Brewing Bilingualism: Inducing Bilingual Language Regulation Changes Via Sound Immersion During Reading. SARAH WANG, *University of California, Davis*, FEIYA SUO, *University of Oregon*, MELINDA FRICKE, *University of Pittsburgh*, MEGAN ZIRNSTEIN, *Pomona College* — When bilinguals or language learners are immersed in the second language (L2), these contexts can provide direct and indirect support for L2 use and acquisition. This is in part due to the available language-related information in the local immersion environment, but also by facilitating an aspect of L2 acquisition that is also quite hard to master: inhibiting or regulating the dominant first language (or L1). A critical question, then, is whether language immersion, broadly speaking, supports processing in the same language and whether skill in regulating the dominant L1 can be supported in different immersion contexts. In this presentation, we will review two eye tracking studies that investigate the effect of language sound immersion on reading comprehension. Of particular note is a condition where non-dominant language readers appear to benefit from immersion in a language that is unknown to them, and in some cases also from immersion in the L2.

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6:00–7:30 PM (3033)

Effects of Bilingual Language Control on Speaking. RACHEL WILLIAMS, *The University of Texas at El Paso*, KYLE WOLFF, *The University of Texas at El Paso*, CHRISTIAN RUIZ, *The University of Texas at El Paso*, ALEXIA HERNANDEZ, *Stanford University*, IVA IVANOVA, *The University of Texas at El Paso* — Language control is the set of mental mechanisms used by bilinguals to use situation-appropriate language(s) and avoid interference from non-relevant language(s). The frequent practice of language control plays into the mind and brain adaptations conferred by bilingual experience—but currently our understanding of it comes almost exclusively from constrained lab tasks. This on-going study aims to establish language control effects on spontaneous speech in a dual-language context (speaking two languages in close succession when they are not interchangeable, imposing high control demands). In one session, Spanish-English bilinguals will describe a comic in English before and after describing a comic in Spanish; in another session, the same bilinguals will describe two comics in English before and after a distractor task (Pac-man). We will measure any changes in predetermined speech characteristics in English when changing relative to not changing languages: Both theory and evidence predict slower speech rate, more pauses, fewer words, fewer unique words and higher-frequency words after changing languages. An additional novel hypothesis is that adverse effects on only some characteristics may protect others.

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6:00–7:30 PM (3034)

Parafoveal Processing in Bilingual Readers: Semantic Access Within But Not Across Languages. LIV J. HOVERSTEN, *University of California, Santa Cruz*, CLARA D. MARTIN, *Basque Center on Cognition, Brain and Language (BCBL) & Ikerbasque* — Prior research has investigated the quality of information a reader can extract from the parafoveal word to the right of the currently fixated word. However, very few studies have considered parafoveal processing in bilinguals, who may differ from their monolingual counterparts due to slower lexical access and susceptibility to cross-language activation. We conducted an eye-tracking experiment using the boundary technique in which parafoveal previews appeared either in the same language as the rest of the sentence (non-switch) or in the alternate language (code switch), and semantic relatedness was manipulated between previews and targets. Semantic preview benefits emerged for within-language synonyms in bilinguals' native and non-native languages but not for cross-language translations. Furthermore, code-switched previews were skipped less often than non-switches and no more often than words that participants marked as unfamiliar. These data suggest that bilingual readers can extract semantic codes from the parafovea in both native and non-native languages, but that activation of the alternate language is down-regulated such that words in the alternate language are not accessible while reading in a monolingual language context.

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6:00–7:30 PM (3035)

Different Language Control Mechanisms in Comprehension and Production: Evidence from Paragraph Reading. CHUCHU LI, *University of California, San Diego*, KATHERINE J. MIDGLEY, *San Diego State University*, VICTOR FERREIRA, *University of California, San Diego*, PHILLIP J. HOLCOMB, *San Diego State University*, TAMAR GOLLAN, *University of California, San Diego* — We investigated bilinguals' language control mechanisms in paragraph reading comprehension versus production. Chinese-English bilinguals read paragraphs with language switches using an RSVP paradigm silently while ERPs were measured (Exp. 1) or aloud (Exp. 2). Each paragraph was mainly written in Chinese or English with eight words switched to the other language. In Exp1, language switches elicited an early, long-lasting positivity when switching to the nondominant language; in the other switch direction, the positivity started at a later stage, and the size of the effect was never larger than when switching to the nondominant language. Switch effects on function words were not significantly larger than those on content words in any time window, in either switch direction. In Exp. 2, participants produced more cross-language intrusion errors when switching to the dominant language than to the nondominant language, and more errors on function words than content words, suggesting larger switch costs when switching to the dominant language and on function words. Our results suggest that language dominance and part of speech affect comprehension and production differently, suggesting different language control mechanisms across modalities.

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6:00–7:30 PM (3036)

Young and Older Adults' Proper Name Retrieval Following a Mindful Breathing Exercise. LORI E. JAMES, *University of Colorado Colorado Springs*, HANNAH LEVITT, *University of Colorado Colorado Springs* — Although brief mindful breathing

exercises have been shown to facilitate some cognitive processes in young adults, to our knowledge, they have not been examined in older adults. In this experiment, we tested whether a brief mindful breathing exercise improved young and older adults' retrieval and production of the names of famous individuals. Over Zoom calls, participants engaged in 10 min of guided mindful breathing or listened to 10 min of a story and then performed a name retrieval task. We measured tip-of-the-tongue (TOT) instances, the retrieval failures in which known words and names are temporarily and frustratingly unable to be produced. Results provided no evidence that mindful breathing reduced TOT rate in participants from either age group, in spite of condition differences in self-reported state mindfulness following the manipulation. Results provide initial evidence that brief mindful breathing exercises do not benefit name retrieval. Findings are discussed in the context of related research addressing the effects anxiety and dispositional mindfulness on word and name retrieval.

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6:00–7:30 PM (3037)

Listen to Your Heart: The Episodic Memory Benefit from Interoception across the Adult Lifespan. KYOUNGEUN LEE, *The University of Texas at Austin*, AUDREY DUARTE, PHD, *The University of Texas at Austin* — Episodic memory declines with aging. To develop future memory intervention, finding a malleable factor supporting one's memory is crucial. Interoception, the ability to perceive, interpret, and integrate bodily signals, is a potential factor that may play a significant role in episodic memory. In this fMRI study, we examined the relationship between interoception and episodic memory, and age-related changes in it. Participants encoded images in Interoceptive-orienting (IO) and Exteroceptive-orienting (EO) conditions. In IO, they rated images based on the intensity of heart sensation; while in EO, based on the size of main subjects. Recognition memory was tested a week later. Preliminary data indicate superior memory in IO compared to EO, regardless of age, and IO was supported by the insular and ACC, which are relatively well-preserved across adulthood. Our findings propose interoceptive-orienting as a beneficial mnemonic strategy for everyone. This project sheds light on developing novel interoception-based interventions to boost one's memory.

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6:00–7:30 PM (3038)

Large Neutral Amino Acids Moderate the Effects of Metabolic Syndrome on Cognitive Performance in Middle-Aged Adults. CHERRY YOUN, *The University of Texas at Austin*, BARBARA STRASSER, *Sigmund Freud University Vienna*, DIETMAR FUCHS, *Medical University of Innsbruck, Biocentre, Institute of Biological Chemistry*, HIROFUMI TANAKA, *University of Texas at Austin*, ANDREANA HALEY, *University of Texas at Austin* — Two large neutral amino acids (LNAA), tryptophan (TRY) and tyrosine (TYR), are precursors to cerebral neurotransmitters and are involved in cognitive function. Higher levels of LNAA in young adults are associated with improved cognition, while these associations appear to reverse over time. Given that exposure to metabolic syndrome (MetS) may induce premature cognitive aging, this project examined the effect of LNAA on cognitive performance in 88 midlife adults, ages 40-61 years, at metabolic risks. We used linear regression models with the interaction between LNAA and MetS while covarying for sex, age, and education. TRY metabolites moderated the relation between MetS and verbal memory. TYR metabolites were not significant moderators of the association between MetS and executive functioning, but TYR moderated the relationship between MetS and global cognitive functioning. This study highlights the links between LNAA and cognitive performance in midlife adults at metabolic risks. Our results support the negative association between LNAA and cognition among the aging population, and indicate that such association may be extended to midlife adults with metabolic risks, possibly due to precocious biological aging related to MetS.

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6:00–7:30 PM (3039)

Do Auditory Environments Affect Cognitive Control? Is It Related to Cognitive Ageing, Too?. ETSUKO T. HARADA, *University of Tsukuba*, TOMOYASU SAWADA, *University of Tsukuba*, TOMOYA OZASA, *University of Tsukuba*, ERIKO ANKYU, *University of Tsukuba* — In recent days, many people wear headphones or earphones while they are working at their desks, and one of the reasons why they do so is said to concentrate on their work, which looks related to functions of cognitive control. Because cognitive control is also thought of as a key factor of cognitive ageing, we executed an experiment with three visuospatial cognitive tasks with older and younger adults, to compare their task performances under four auditory conditions, with classical music presentation, soundscape presentation, or just wearing noise-canceling headphones to the non-auditory stimulation, the control. Results showed that wearing noise-canceling headphones, regardless of the contents of the auditory stimulus, provided higher accuracy and/or quick responses with all visuospatial tasks, but not with linguistic n-back tasks. Many of those results were common with both age groups, however, there were some differences between groups, which will be reported.

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6:00–7:30 PM (3040)

The Transfer Conundrum: (Very Limited) Transfer Effects in Affective Executive Functions Training. LUKA JURAS, *University of Zagreb*, MARINA MARTINCEVIC, *University of Zagreb*, IVANA HROMATKO, *University of Zagreb* — Transfer effects in cognitive trainings are often debated, with the nature and content of transfer tasks (i.e., their similarity) suggested to obscure the clarity of findings. In this study, we investigated the effects of a 20-session (10 weeks) executive function training with middle-aged adults (N = 100, ages 49-65 years old), using structurally similar and structurally different transfer tasks. The training employed affective EF tasks to capitalize on the overlapping nature of affect and WM thus fostering training gains. In a pretest/posttest follow-up (6 months) design, with three randomized groups (updating training with affective n-back, inhibition training with affective Stroop task, control), training effects on respective trained tasks were found in updating and

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inhibition groups. However, neither of the groups showed generalized training effects on either structurally different tasks related to the trained abilities, or the tasks tapping untrained abilities. Nonetheless, observed gains in trained tasks remained stable after 6 months.

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6:00-7:30 PM (3041)

Relationship Between Aging and EEG Microstate Dynamics: Transition Dynamics Considering Topographic Polarity. SHIHO KASHIHARA, *Advanced Telecommunications Research Institute International*, TOMOHISA ASAI, *Advanced Telecommunications Research Institute International*, HIROSHI IMAMIZU, *Advanced Telecommunications Research Institute International and University of Tokyo* — Spontaneous electrical neural activity recorded at rest is thought to reflect large-scale brain dynamics and has been implicated in various cognitive functions, mental states, and individual characteristics. One example is the effect of aging; it has been suggested to be related to the EEG microstates (EEGms) features of resting-state EEG as one of the psychophysiological indices of age-related functional decline. EEGms are characteristic topographic patterns and have recently attracted renewed interest in describing brain spatiotemporal dynamics. In this study, we examined the age-related differences in resting-state electrical neural activity between young and elderly adults, considering the polarity of EEGms and their location on the manifold space, to understand EEGms dynamics as more continuous transitions. The results showed that transitions between specific states labeled msC, D, and E in EEGms studies were less frequent in the elderly group than in the young group.

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6:00-7:30 PM (3042)

Age, Ability, Expectations: Uncovering the Intricacies in Working Memory Training Gains. ANDREA VRANIC, *University of Zagreb*, MARINA MARTINCEVIC, *University of Zagreb*, LUKA JURAS, *University of Zagreb* (Sponsored by Andrea Vranic) — Working memory training gains vary greatly, speculatively due to differences in cognitive and motivational characteristics. Magnification and compensation accounts have been proposed to explain, respectively larger or smaller training benefits. We aimed to investigate WM updating training gains, operationalized as average task difficulty across training sessions, with regard to baseline ability, age and expectations regarding the efficacy. A sample of 24 young and 38 middle-aged adults participated in the 20 adaptive n-back training sessions (over 10 weeks). The results of two multilevel model analyses indicated that linear and nonlinear functions can describe changes during training. Overall, a growth mindset did not predict training gains. Notably, the magnification hypothesis was supported only in young adults, as higher baseline performance was associated with greater gains. Baseline performance was not a significant predictor in middle-aged adults. These findings underscore the importance of age-related differences in cognitive abilities when designing updating training.

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6:00-7:30 PM (3043)

Theory of Mind Predicted by Fluid and Crystallized Intelligence: A Lifespan Approach. SARA GORING, *Claremont Graduate University*, ESTER NAVARRO, *St. John's University* — Theory of mind (ToM) is the ability to infer other's perspective from the social and environmental information that is available. ToM develops early in adolescence (e.g., Schurz et al., 2014; Wellman, Cross, and Watson, 2001), and there is evidence it diminishes into older adulthood compared to young adults (Charlton et al., 2009; Wang & Su, 2013). However, research is needed to understand how this ability changes across the lifespan. With 206 adults ranging from 25 to 69 years old, the continuous age variable was looked at in conjunction with composite variables for fluid intelligence, crystallized intelligence, and ToM. Results indicated there was a trade-off between crystalized intelligence and fluid intelligence for predicting ToM performance. Furthermore, controlling for age-related variability increased the effects of the other cognitive abilities on ToM. Overall, using a lifespan approach to ToM provides more insight into understanding the role of age-related cognitive changes in this ability.

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6:00-7:30 PM (3044)

A Within-Subjects Comparison Dissociating Proactive and Reactive Control in Younger, Middle-Aged, and Older Adults. MERVE ILERI-TAYAR, *Washington University in St. Louis*, JULIE BUGG, *Washington University in St. Louis*, TODD BRAVER, *Washington University in St. Louis* — The Dual Mechanisms of Control (DMC) framework postulates two modes of cognitive control: proactive (anticipatory active maintenance of task goal information) and reactive (transient stimulus- or conflict-triggered reactivation of task goals). Prior work has utilized tasks such as the AX-CPT or Stroop to demonstrate that proactive control may be selectively vulnerable to age-related decline, while reactive control is preserved with increasing age. Here, we developed a novel online variant of the vocal color-word Stroop paradigm to provide the first test of this hypothesis within a single, large sample (N > 300), within-subject design. Younger adults (aged 18-32) exhibited rigorous evidence of distinctive markers for both proactive (list-wide proportion congruence, congruency cost) and reactive control (item-specific proportion congruence, transfer cost). Although older adults (aged 60+) had markers of intact reactive control, evidence of proactive control was absent, while middle-aged adults (aged 33-59) exhibited an intermediate pattern. These results highlight the theoretical power of the DMC framework, as well as the utility of this new Stroop paradigm, for investigating age-related changes in cognitive control function.

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6:00-7:30 PM (3045)

Spontaneous Thoughts and Memory Lingering in Older Adults: An Effect of Inhibition?. KESAAN KANDASAMY, *Toronto Metropolitan University*, LIXIA YANG, *Toronto Metropolitan University* — Emerging studies have shown that spontaneous thoughts are susceptible to environmental influences. Using a free association paradigm, it was found that young adults generated

story-related themes in their spontaneous thoughts after reading a short story, suggesting that lingering content of the story can persist to bias later thoughts (i.e., memory lingering effect). It is unclear whether a control process such as inhibition (i.e., suppressing goal-irrelevant information in memory) is involved in regulating the memory lingering effect. In the current study, we will compare young adults to older adults, a population with normative decline in inhibition, before and after reading a short story. Specifically, using natural language processing tools (i.e., global vectors), we will examine whether the thematic similarity of spontaneously generated thoughts change following exposure to a story. Moreover, we will compare the degree to which thematic content is expressed in the spontaneous thoughts of younger and older adults. We predict that the inhibitory deficit in older adults would enhance their spontaneous memory lingering relative to young adults.

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6:00-7:30 PM (3046)

Effects of Differences in Cognitive Processing on Choice Blindness in Multi-Alternative Decision Making. SEITA OGAWA, *Rikkyo University*, TAKASHI TSUZUKI, N/A, *Rikkyo University* — This study aimed to compare differences in detection rates in the choice blindness paradigm, that is, the accuracy of posterior interpretations of choice intentions, surmised to be caused by differences in cognitive processing. We used a choice set with a decoy effect and measured concurrent detection in one item, asking the participants to confirm their choice after presenting an option that they had not actually chosen. Additionally, we measured retrospective detection by directly asking participants whether they noticed a manipulation. We found no significant association between selection outcome and concurrent detection rate, but there was a significant association between retrospective detection rate, partially indicating that intuitive selection is less accurate in posterior interpretation of selection intentions than effortful selection. This suggests that external feedback is more likely to be accepted as intended selection, and the preceding mental processes contribute less to the posterior interpretation of choice intention in intuitive choices.

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6:00-7:30 PM (3047)

A Dual-Mechanisms of Control Account of Age Differences in Working Memory. CHENLINGXI XU, *University of Notre Dame*, CHANG-MAO CHAO, *University of Notre Dame*, NATHAN ROSE, *University of Notre Dame* — Age deficits in working memory (WM) can be large, but the exact sources are unclear. We hypothesized that young adults outperform older adults on WM tasks because they use controlled attention processes to prioritize the maintenance of relevant information in WM in a proactive mode, whereas older adults tend to rely on the strength of familiarity signals to make memory decisions in a reactive mode. We used a WM task that cued participants to prioritize one item over others, and presented repeated lure probes that cause errors when one is engaging a reactive mode. Results showed that, relative to young adults with full attention available to use proactive-control during the delays, older adults with full attention (and young adults with divided attention) during the delays had exaggerated error rates to repeated lure probes compared to control probes. When the amount of proactive interference was increased (by repeating stimuli across trials) older adults were able to engage proactive control and this eliminated their exaggerated error rate (while young adults with divided attention could not). These results provide evidence for a dual-mechanisms of control account of age differences in WM.

6:00-7:30 PM (3048)

Revealing Habits in a New, Short Hierarchical Paradigm. SARAH OH, *University of California, Berkeley*, ANNE GE COLLINS, *University of California, Berkeley* — Habits are essential to the efficient, effortless performance of everyday, healthy behaviors. Habits' inflexibility can also lead to negative outcomes, from annoying slips of action to destructive mental illnesses. Given habits' importance, there is a surprising dearth of in-lab experiments that can quickly and reliably induce habits in humans, possibly due to the ease with which humans can override habits with goal-directed control. We developed an experimental paradigm based on the intuition that habits emerge when control is relaxed while executing an abstract decision. After learning a multi-stage decision policy in a primary context, participants trained to criterion in a secondary context wherein two stimulus-action associations were reversed. Participants who were trained more extensively in the primary context were more prone to inflexible reliance on the primary decision policy, despite demonstrating good knowledge of both contexts. This overtraining effect emerged within ~1 hour, without relying on artificial constraints such as time pressure.

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6:00-7:30 PM (3049)

A Diffusion Model Decomposition of Wishful Thinking in Stochastic Events. INKYUNG PARK, *University of Iowa*, PAUL WINDSCHITL, *University of Iowa*, J. TOBY MORDKOFF, *University of Iowa*, JEREMY D. STRUEDER, *The University of Iowa* — The wishful thinking (WT) effect occurs when the desire for an outcome inflates the expectation for that outcome. Previous research suggests that WT is stronger when people make predictions about events with similar evidence strengths for possible outcomes. However, it is unclear whether the desire for an outcome impacts evidence search, criteria for evidence judgment, or both. In this study, we developed a new paradigm to uncover the latent psychological components underlying the WT effect using drift-diffusion modeling. Participants made dichotomous predictions about the color of a square randomly selected from grids composed of differently-colored squares. Crucially, certain color outcomes were made more desirable than others, and the strength of evidence was manipulated by varying the proportion of desired-color squares in the grid. Participants' predictions and response times were measured. The behavioral results demonstrated the WT effect—participants were more likely to predict a desired color outcome overall. This tendency was most pronounced when the strength of evidence for the desired versus undesired outcome was

ambiguous. Preliminary findings on drift-diffusion analysis and their implications will be discussed.

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6:00–7:30 PM (3050)

Evolving Probabilistic Tornado Warnings and User Understanding. CHAO QIN, *University of Washington*, SUSAN JOSLYN, *University of Washington*, SONIA SAVELLI, *University of Washington*, JULIE DEMUTH, *National Center for Atmospheric Research*, REBECCA MORSS, *The National Center for Atmospheric Research* — Our previous research showed that color-coded probabilistic information (e.g., 30% chance) incorporated in the current NWS tornado warning polygon improved understanding of the tornado risk among members of the public compared to the polygon alone. Improved protective intentions, such as taking shelter, occurred in some situations. The research presented here examined the same risk communication techniques in a more naturalistic, evolving situation where consecutive updated forecasts/warnings can be issued over a brief period. Participants were residents of the southeastern US to determine the impact on experienced users. We found that participants inferred trends in tornado likelihood (increasing or decreasing over time) based on the values presented in the sequential forecast. Participants also rated higher trust for some formats and some trends. These had implications for their uptake of protective actions. Advantages for explicit probabilistic information in protective decisions, particularly on the second forecast, will be discussed.

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6:00–7:30 PM (3051)

Mechanisms of Training-Related Change in Processing Speed: A Drift-Diffusion Model Approach. ALICE REINHARTZ, *Medical School Hamburg*, TILO STROBACH, *Medical School Hamburg*, THOMAS JACOBSEN, *Helmut Schmidt University/University of the Federal Armed Forces Hamburg*, CLAUDIA VON BASTIAN, *University of Sheffield* — Training of processing speed tasks has shown promising effects for improving cognitive functioning. These training-related changes are often studied using reaction times and error rates, which provide limited insight into mechanisms underlying changes during training. The drift-diffusion model provides estimates of the cognitive processes underlying speeded decision tasks, such as the rate of evidence accumulation (drift rate), response strategies (boundary separation), and processes such as stimulus encoding and motor response (non-decision time). We applied this model to data of a multi-session training study (von Bastian & Oberauer, 2013). Thirty participants performed 20 training sessions over the course of four weeks, with three matching tasks each session: face-, pattern-, and digit-matching. Across all tasks, our results show that drift rates increased throughout processing speed training, while boundary separation and non-decision time decreased during the beginning of training. We discuss this pattern of changes and its relation to improvements in cognitive functioning.

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6:00–7:30 PM (3052)

The Universality of Overconfidence: Diving Deeper into the Dunning-Kruger Effect. DANIELLE SANCHEZ, *University of New Mexico*, BENSON MICHAEL, *University of New Mexico*, ERIC RUTHRUFF, *University of New Mexico* — A highly robust finding in the Dunning-Kruger literature is that individuals with the lowest skill on a task are dramatically overconfident in their abilities. This led to the widely-accepted hypothesis that they are especially blind to their errors, causing them to make mistakes with especially high confidence. Our work challenges this hypothesis. We point out that the Dunning-Kruger effect is actually consistent with the alternative hypothesis that the high-skilled are just as blindsided by their mistakes (they merely make errors less often). We tested between these hypotheses by collecting item-by-item confidence estimates, something seldom done in Dunning-Kruger experiments. Consistent with our alternative hypothesis, results (N = 268) for both a logic task and a grammar task showed that the lowest and highest-skilled performers were equally overconfident when committing errors. We conclude that error blindness is not a product of task skill, but rather a universal characteristic of human cognition.

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6:00–7:30 PM (3053)

Choosing the Tight Frame: How Context Preferences Facilitate Subsequent Decisions. LAUREN S. TREIMAN, *Washington University in St. Louis*, WOUTER KOOL, *Washington University in St. Louis* — Context shapes how we perceive choices and, therefore, how we decide between them. For instance, a large body of literature on the "framing effect" demonstrates that people become more risk-seeking when choices are framed in terms of losses. Despite this research, it remains unknown how people make choices between contexts and how these choices affect subsequent decision making. To address these questions, we designed the Frame Selection Task (FST). On each trial in the FST, participants first choose how risky and safe options are framed, either in terms of gains or losses, and then select between them. We found that participants exhibited frame preferences, with a predominant preference for the gain frame, and that they were willing to incur costs to select options within their preferred frame. Moreover, participants selected frames that facilitated their risk preferences: people with stronger risk aversion displayed a stronger gain frame preference. These results demonstrate how people choose between contexts and that they can combine these preferences with cognitive biases to facilitate decision making.

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6:00–7:30 PM (3054)

Modeling Choice Deferral. FEIYI WANG, *University of Pennsylvania*, SUDEEP BHATIA, *University of Pennsylvania* — We have developed a formal computational model of choice deferral to predict the likelihood of various choice outcomes when a decision maker is presented with multiple options. Importantly, our model captures the distinction between postponement (i.e., delaying the selection of an option from a choice set) and refusal (i.e., rejecting all options offered in a choice set), a distinction that has been confounded

in previous research on choice deferral. Empirical data reveal that key choice variables, such as the number of options in a choice set and option desirability, have diverging effects on postponement and refusal. As the number of options (i.e., set size) increases, postponement increases, but refusal decreases. Furthermore, as the items in a choice set become more desirable on average, refusal decreases, but postponement remains unchanged. Our model was able to capture these observed patterns. Lastly, we find that popular individual difference measures, such as the tendency to maximize, was positively correlated with the behavioral tendency to postpone decisions. Overall, our model serves as a valuable tool for predicting the occurrence of deferral in response to a presented choice set.

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6:00-7:30 PM (3055)

An Investigation of Big Life Decisions. ADRIAN R. CAMILLERI, *University of Technology Sydney* — What are life's biggest decisions? In Study 1, I devise a taxonomy comprising nine decision categories, 58 decision types, and 10 core elements of big decisions. In Study 2, I reveal people's perceptions of and expectations for the average person's big life decisions. In the flagship Study 3, 658 participants described their 10 biggest past and future decisions and rated each decision on a variety of decision elements. This research reveals the characteristics of a big life decision, which are the most common and important and positively evaluated big decisions, when such decisions happen, and which factors predict "good" decisions. This research provides a step forward in helping people improve their lives through better decision-making and living with fewer regrets.

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6:00-7:30 PM (3056)

Metaverse and Behavior: The Influence of Emotions in the Ethical Behavior of Managers and Workers. DAVID PASCUAL-EZAMA, *Universidad Complutense de Madrid*, MERCEDES FEVRE, *Universidad Complutense de Madrid* — Following the 2022 Association of Certified Fraud Examiners report, most occupational fraud cases studied were done by managers (39%) and workers (36%). Furthermore, it has been seen that the emotions individuals feel at that moment (state emotions) can impact dishonesty. Therefore, understanding the impact of emotions on employee ethics could guide CEOs to build processes that could diminish unethical behavior in the workplace. We have measured the (dis)honest behavior with an experimental design based on the die-under-the-cup paradigm. On top, we have induced emotions to study the effect of cheating and lying through videos run in two (2D) or three dimensions (virtual reality, VR) in the metaverse with virtual reality Oculus Rift glasses for a more immersive induction. We ran two experiments: firstly, we compared the results of a 2D induction vs. no video shown (control treatment). Secondly, we compared 2D and VR, where we saw that VR induction generated a more substantial effect on the change of emotion. Although both experiments demonstrated the impact of eliciting emotions in managers and workers, the induction did not affect their (un)ethical behavior.

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6:00-7:30 PM (3057)

Do Expert Decision Makers 'Take-the-First'?. MICHAEL A. VIDULICH, *Air Force Research Laboratory*, PAMELA S. TSANG, *Wright State University* — Some decision-making theories suggest that experts develop intuition to the point that they can take the first course of action that occurs to them with little or no deliberation. Support for such theories has come from option generation experiments in which subjects list the sequence of possible courses of action that come to mind. In the present study, chess players with a range of expertise performed a choice-of-move task and thought aloud during move selection. The quality of the first move mentioned as well as the final move selected were subjected to computer analysis. Contrary to take-the-first predictions, all subjects were more likely to change their move after deliberation than staying the same. Furthermore, the most-expert group was more likely to improve their score from the first to final move than the less-expert groups. The results support the vital role of deliberation to achieve the highest levels of decision making.

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6:00-7:30 PM (3058)

Costs of Regulating our Emotions: Mechanisms Underlying Distraction and Reappraisal and their Effects on Emotional Memory. MIA UTAYDE, *University of Notre Dame*, XINRAN NIU, *University of Notre Dame*, KRISTIN SANDERS, *University of Notre Dame*, JESSICA PAYNE, *University of Notre Dame* — We often downregulate our emotional response in negative situations. Common emotion regulation (ER) strategies include shifting attention (i.e., distraction) and reframing the event to change its emotional impact (i.e., reappraisal). However, these techniques may affect later memory. Less is known about their influence on the emotional memory trade-off, or relative memory for emotional information at the expense of its background context. In one session, healthy participants viewed scenes consisting of negative or neutral objects on neutral backgrounds and rated them for valence and arousal. Participants reported which ER strategies they used throughout the task. Twelve hours later, they completed a surprise task that tested their object and background memory. Participants' increased tendency to use reappraisal was correlated with poorer memory for objects and a reduced memory tradeoff for negative and neutral scenes. Those who reported greater tendencies to divert their attention by thinking of unrelated topics showed decreased memory for negative objects, and their gaze duration toward peripheral backgrounds also decreased. These findings contribute to our understanding of how various ER strategies may negatively impact memory.

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6:00-7:30 PM (3059)

The Impact of Affective States on Memory Retrieval: Exploring the Role of Negative Affect and Depression. YUTONG ZHU, *Teachers College, Columbia University* — This

study explored the influence of affective states on memory retrieval by using affective facial images to induce negative affect in college students with different levels of depression. Participants (N = 20) completed two go/no-go affective word recognition tasks, with intervals featuring sad facial stimuli to elicit negative affect. Results from mixed-model ANOVA indicated a significant improvement in negative word recognition accuracy following the presentation of the facial cue, compared to positive and neutral words ($F(1.31,23.63) = 7.56$, $p = .007$, $\eta p2 = .30$). Furthermore, participants with higher depression levels showed greater accuracy in recognizing affective words both before and after the cue, compared to the low depression group ($F(1,18) = 7.05$, $p = .016$, $\eta p2 = .28$). These findings emphasize the vital role of congruent affective states in bridging learning and memory retrieval processes, while shedding light on its intricate interplay with depression. This study contributes to understanding the mechanisms underlying the interaction between affective states, depression, and memory, with implications for future research and clinical applications.

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6:00–7:30 PM (3060)

Mindfulness Might Improve the Relationship Between Self-Compassion and Flourishing: A Preliminary Study. JASON KATZ, *St. John's University*, DANA CHESNEY, *St. John's University* — Literature suggests that both great mindfulness and great self-compassion predict greater human flourishing. However, it is possible that these factors interact. Mindfulness helps people recognize negative thoughts and feelings, create distance from them, and shift toward other ways of thinking. This suggests that mindfulness helps people identify situations that call for self-compassion and effectively apply it. This study used a correlational design to test whether mindfulness influences the relationship between self-compassion and flourishing. In an online survey, 49 undergraduate participants completed the Flourishing Scale, the Five Facet Mindfulness Questionnaire, and the Self-Compassion Scale. As predicted, a hierarchical linear regression analysis demonstrated that mindfulness significantly moderates the relationship between self-compassion and flourishing: high self-compassion predicted increased flourishing only in those with higher mindfulness scores. Including the interaction term increased the explained variance from R-Squared = .2511 to R-Squared = .3272. This suggests that mindfulness and self-compassion should be practiced together in order to maximize potential benefits.

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6:00–7:30 PM (3061)

High Effort Tasks Lead to More Positive Moods: The Successful Performance and Task Difficulty Hypotheses. LILY RECK, *The George Washington University*, REBEKA C. ALMASI, *The George Washington University*, SARAH B. MALYKKE, *The George Washington University*, MYEONG-HO SOHN, *The George Washington University* — Previous research shows that stimuli associated with a high level of cognitive effort can acquire positive valence and that participants in high effort tasks report overall more positive moods than those in low effort task conditions. However, it is still unclear what aspect of cognitively demanding tasks leads to a bias towards high-effort, positive stimuli and to more positive emotional states. The current study aims to dissociate two hypotheses to better understand this relationship between effort and emotion. The successful performance hypothesis focuses on the conflict resolution opportunities of incongruent trials, which may increase the value of success and subsequent mood. Secondly, the task difficulty hypothesis proposes that the surprising appearance of an occasional incongruent trial in the low effort condition may result in temporarily decreased mood due to the unpleasantness of the unexpected challenge, while encountering an unusually easier trial in the high-control condition may be regarded more positively. Results show no interaction between conflict resolution and emotional state, but mood reports in the low control task difficulty condition were significantly more positive than those in the high condition.

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6:00–7:30 PM (3062)

Investigating the Role of Semantics and Prosody in an Emotional Stroop Task. KAELYN WOFFORD, *University of South Florida*, KABEER TRIKKHA, *University of South Florida*, HANNAH PANNELL, *University of South Florida*, MICHAEL HOPKINS, *University of South Florida*, JASON SCHMIDT AVENDAÑO, *University of South Florida*, PAUL ATCHLEY, *University of South Florida*, RUTHANN ATCHLEY, *University of South Florida* — A traditional Stroop measures a participant's ability to ignore the cognitive interference that arises when two features contradict each other, yielding data on processing speed, selective attention capacity, and response inhibition. The traditional Stroop conflict is between verbal and visuospatial domains. However, conflicts can occur in other modalities, such as between semantics and prosody. In this work, we examine a task that involves processing emotionally valanced phrases with prosody that is congruent or incongruent with the semantics of the phrase. Participants judged either semantic or prosody valance on matching or conflicting trials. Semantics impact prosody judgments, but not the inverse. The data indicate an emotional Stroop task may be a useful measure to explore individual differences in cognitive and emotional processing, such as changes in processing speed due to aging, attention capacity due to distraction, or negative mood.

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6:00–7:30 PM (3063)

Motivated Emotion Regulation Modulates Downstream Memory for and Affective Responses to Previously Encountered Stimuli. ALYSSA J. ASMAR, *University of Denver*, LYNEÉ A. HERRERA, *University of Denver*, KIMBERLY S. CHIEW, *University of Denver* — Emotion regulation impacts memory, with some evidence suggesting enhanced memory for negative stimuli under reappraisal and reduced memory under distraction. Additionally, affective responses to stimuli adaptively change with past exposure and regulation. Regulation strategies are sensitive to motivational manipulations; however, it is currently

unknown how motivated emotion regulation influences memory for and affective responses to previously-encountered stimuli. To address this, participants completed an emotion regulation task under baseline and motivation conditions, and memory and reported affect for stimuli was examined 24 hours later. We observed a memory benefit for reappraised stimuli and a decline in related negative affect from Day 1 to Day 2, suggesting reappraisal benefits for both memory and subsequent affective response. Surprisingly, memory declined and subsequent negative affect increased for stimuli encoded under motivational vs. baseline conditions, suggesting motivational benefits to affective responses on Day 1 are nullified by Day 2, potentially as a function of impaired memory.

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6:00-7:30 PM (3064)

Depression Associated with the Directionality of Timing Errors But Not Magnitude at Shorter Timescales. LOGAN BURMANIA, *University of Arizona*, SARA LOMAYESVA, *University of Arizona*, EVE ISHAM, *The University of Arizona* — Previous studies show depression plays some role in interval timing, however, depression's role in timing errors is not fully understood. The current study examines how different timing errors (magnitude and directionality) differ among those with low and high depression. Timing errors were assessed with 2 (Duration; 3.6 vs. 60s) x 2 (Depression; low vs. high) between-subjects ANOVA (N = 465). For magnitude error, there was a main effect of Duration ($p = .003$), but not of Depression ($p > .05$). Similarly, we observed a main effect of Duration ($p < .001$) but no main effect of Depression ($p > .05$) on directionality errors. However, we observed an interaction between Depression and Duration ($p = .005$) only in directionality errors; such that the high depression group over-produced compared to low depression at 3.6 s, but groups did not differ at 60 s. The results suggest that depression affects the directionality errors but not magnitude errors at shorter timescales.

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6:00-7:30 PM (3065)

Statistical Learning of Affective Attributions. ELIF CELIKORS, *Cornell University*, DAVID FIELD, *Cornell University* — Visual statistical learning has previously been studied using simple shapes. However, humans can learn much more complex stimuli with relatively sparse exposure. One example is learning other people's affective attributions, such as how much they like a stimulus. In this study, we examine if subjects can learn other individuals' artistic preferences of visual art in a statistical learning paradigm. In the first task, participants were asked to guess the average rating given to a set of paintings. After each prediction, participants were shown the correct rating. Subjects' accuracy significantly improved as they were exposed to more images, suggesting that humans can learn average aesthetic preferences and generalize this knowledge to novel images. In the second task, we asked participants to guess anonymous individuals' ratings of the same paintings. Participants' accuracy increased or decreased depending on the predicted individuals' rating pattern. We discuss the implication of these results on the application of statistical learning principles to affective and subjective phenomena.

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6:00-7:30 PM (3066)

The Cognitive and Affective Consequences of Collaborative Learning. LAN ANH DO, *Tufts University*, AYANNA K. THOMAS, *Tufts University* — Collaborative learning has been demonstrated to impact students' cognitive engagement and emotional experiences. The present study compared the effect of collaborative learning (in-person vs. virtual) and individual learning on problem-solving performance, reported emotion (PANAS), and heart-rate variability (HRV). Results showed that the collaborative groups performed better on a symbol substitution problem than the group of participants who worked individually. The benefits of collaboration were also generalized to subsequent individual performance. Furthermore, the collaborative groups of participants demonstrated a higher increase in HRV across problems than the individual group, suggesting a higher level of cognitive engagement. We did not exhibit a significant effect of collaboration on reported emotion (PANAS). However, an analysis of participants' self-report revealed possible causes of stress due to the collaborative activity. Our findings altogether contribute to a more comprehensive picture of how collaborative learning impacts students' cognitive and emotional experiences, thus providing important implications for education.

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6:00-7:30 PM (3067)

Influence of Contextual Factors on Judging the Authenticity of Smiles: Are Personality Traits Relevant?. ADELE GALLANT, *Université de Moncton*, KAROLYN CLOUTIER, *Université de Moncton*, ALEX S. LEBLANC, *Université de Moncton*, ANNIE ROY-CHARLAND, *Université de Moncton* — Smiling is a key skill in communication and is the facial expression most often produced in our social interactions. Even if the smile can be manipulated by the encoder regardless of their felt emotion, there seems to be a recurrent difficulty in assessing authenticity. Few studies explored the influence of context on smile authenticity judgement. In this study, 200 adults judged the authenticity of genuine and simulated smiles, prefaced by a contextual cue that depicted the smiler's personality. The participants' personality traits were also assessed. This novel approach observed two facets of personality traits and their impact on smile judgement. As expected, the genuine smiles were judged more authentic than non-genuine smiles, regardless of if the contextual personality information was positive or negative. The rating varied depending on the valence of the personality cue. The negative personality traits had a stronger influence than the positive ones. For the personality of the participants, our results reveal that they were not significant predictors of smile authenticity judgments. In sum, the contextual information given on the encoders had a bigger impact on authenticity judgement than the personality trait of the decoder.

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FRIDAY

6:00–7:30 PM (3068)

What is 'Special' About the Emotional-Induced Attentional Bias?. YUNA LEE, *Oregon State University*, MEI-CHING LIEN, *Oregon State University*, ROBERT W. PROCTOR, *Purdue University* — Schlaghecken et al. (2017) found larger Simon effects for happy than sad faces. This effect was extended to nonvalenced, neutral objects (e.g., arrows) that required the same response as happy faces. They suggested that attention is biased toward the location associated with a positive-face response. We examined whether the positivity bias is due to the less salient negative emotion (sad faces) not attracting attention away from the happy faces. We used more salient negative, angry faces. We observed larger Simon effects for happy than angry faces. Yet, this enhancement did not extend to arrows when faces and arrows were presented alone (Experiment 1) or simultaneously with distractors (Experiment 2). When emotional and directional words were used in Experiment 3 instead of faces and arrows, a Simon effect was abolished for emotional words but remained for directional words. We argue that attentional bias is solely associated with emotional faces not locations.

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6:00–7:30 PM (3069)

Examining the Sequential Assumption of the Attentional-Perceptual Scan-Path for Emotion Recognition. MYLENE MICHAUD, *Université de Moncton*, ANNIE ROY-CHARLAND, *Université de Moncton* — Research suggests that basic facial expressions are universally recognized, and their recognition rates are widely reproduced. Yet, underlying perceptual mechanisms are not perfectly understood. Some suggest recognition is completed through a holistic process, implying the processing of structural relationships between facial features. Others favor a featural process, involving individual features processing (certain facial areas attract more attention than others), increasing accurate recognition. Nevertheless, neither of those accounts fully explain the underlying processing. Based on previous work, we propose the Attentional-Perceptual Scan-path of Emotion Recognition (APSER) framework. Preliminary accuracy results replicated prior literature. Data indicate all emotions are recognized more rapidly when shown at 100% intensity; except for anger and disgust where no difference was found between 100% and 50%. At every intensity, mean fixation duration was fastest for first and second fixation compared to other fixations. For each emotion we also explore the unique sequential fixation pattern per emotion leading to correct labeling.

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6:00–7:30 PM (3070)

Effectiveness of Vocal Pitch Training, But No Evidence for Transfer. PETER Q. PFORDRESHER, *University at Buffalo, SUNY*, DAVID J. VOLLWEILER, *University at Buffalo, SUNY*, TIM A. PRUITT, *University at Buffalo, SUNY*, EMMA GREENSPON, *Monmouth University*, ANDREA R. HALPERN, *Bucknell University* — Vocal pitch matching accuracy (as in singing) varies considerably across individuals. Recent evidence suggests that vocal pitch matching may improve through training, and that pitch accuracy is correlated with other tasks that may serve a supporting role, such as pitch perception, pitch memory, and auditory imagery. We report three experiments that tested whether these correlations reflect causal relationships. Over 5 days, participants completed a battery of pretest (day 1) and posttest (day 5) tasks to assess vocal pitch matching accuracy and transfer to correlated tasks. Intervening days comprised training in vocal pitch matching (experiment 1), auditory imagery (experiment 2), or no intervention (experiment 3). Pitch matching accuracy improved after vocal pitch matching (experiment 1), but not in the other experiments. Although performance improved on auditory imagery tasks during training (experiment 2), this had no effect on vocal pitch matching. Previous correlations with pitch matching accuracy were replicated. These results call for a re-examination of the standard model of vocal pitch matching.

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6:00–7:30 PM (3071)

Effects of Involuntary Musical Imagery on Verbal and Spatial Working Memory. BENJAMIN SWETS, *Grand Valley State University*, MATTHEW DICKINSON, *Grand Valley State University*, L. ROBERT SLEVC, PHD, *University of Maryland, College Park*, BRENDEN WARDLAW, *Grand Valley State University* — Involuntary musical imagery (INMI), or a song stuck in one's head on a loop, is a common phenomenon after listening to catchy music. Despite its ubiquity, INMI (often colloquially called an "earworm") is not thoroughly understood as a cognitive phenomenon. Some recent research (Killingly et al., 2021, 2023) has found that IMNI interferes with tasks involving the phonological loop, suggesting that IMNI invokes a type of subvocal rehearsal. However, while INMI likely involves many processes (not just rehearsal), prior research has not examined its effects on WM constructs more broadly, such as whether INMI can negatively affect non-verbal aspects of WM; nor has it examined whether INMI can affect performance on a measure of complex WM span (i.e., storage + processing). By inducing INMI and testing its effects on both verbal WM and complex spatial WM span, the present experiments will help clarify the scope of the relationship between working memory and musical imagery.

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6:00–7:30 PM (3072)

Short Version of a Scale Measuring Aesthetic Emotions: The ShortAesthet. URSULA BEERMANN, *UMIT Tirol–Private University for Health Sciences and Health Technology*, GEORG HOSOYA, *Psychologische Hochschule Berlin*, KLAUS R. SCHERER, *University of Geneva & Ludwig-Maximilians-Universität München* — Aesthetic emotions are elicited by cultural activities like music or art. Cultural activities have positive effects on well-being, which may be mediated by emotions. Personality dispositions affect the tendency to feel certain emotions. The Aesthetic Emotions Scale (AESTHEMOS) assesses aesthetic emotions across multiple aesthetic domains. But for field research a shorter scale is needed. To develop the Aesthetic Emotion Short Scale (ShortAesthet), 17 fuzzy sets were drawn from the AESTHEMOS item pool. In two online studies, participants answered personality and emotion

disposition questionnaires, followed by nine music excerpts (Study 1) or nine paintings (Study 2). Each stimulus was followed by the ShortAesthet. The data were analyzed with an item response theory model for continuous responses (a simplified model of the one by Hosoya, 2019). The scale depicted the stimulis' potential to evoke differential emotions. Participants' dispositions (e.g., openness) predicted the tendency to respond with certain emotions (e.g., interest). More studies are planned to further shorten the scale and enhance the applicability in field research. This will help to further study beneficial effects of aesthetic emotions.

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6:00–7:30 PM (3073)

Narrative Listening and Beliefs about Human and AI Music Composers. SARAH H. WU, *Reed College*, KEVIN J. HOLMES, *Reed College* — People often imagine stories when listening to music. Such narrative listening may be driven not just by the music's features, but also by top-down factors like beliefs about the composer. In light of advances in AI-generated art, we examined whether narrative listening depends on the composer's perceived identity as a human or AI system. In Study 1, participants reported greater narrative listening in response to human-composed instrumental music when they believed the music was human-composed than AI-composed, and this relationship was mediated by the perceived intentionality of the composition. In Study 2, experimentally manipulating whether music was believed to be human- or AI-composed yielded greater perceived intentionality in the human condition, which in turn predicted greater narrative listening. Our findings demonstrate that the experience of narrative listening is closely related to beliefs about who composed the music and how, with implications for music perception and AI research more generally.

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6:00–7:30 PM (3074)

Introducing a MIDI Keyboard Interface for Live TTL Event Marking and Note Recording in EEG studies Involving Music Production. RICHARD R. PLANT, *The Black Box Toolkit Ltd*, GARRY TURNER, *The Black Box ToolKit Ltd* — Traditionally it has been difficult to live TTL event mark in EEG studies involving music production using a keyboard—that is, to event marks as a result specific notes, onsets and velocities, or how hard a key was pressed. Here we introduce new hardware and methodology to allow TTL event marks, or triggers, to be recorded on an EEG trace in response to MIDI note on or off, specific notes, or velocity ranges. Moreover any combination can be used to produce triggers in common experiment generator software such as PsychoPy, MATLAB, and suchlike. In addition to event marking, a full MIDI stream of timestamped data is also recorded. This new interface and methodology can also be applied to other MIDI devices allowing for much broader research possibilities.

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6:00–7:30 PM (3075)

Humoresque: Neurophysiological Responses to Improvisation in Humor and Musical Tasks. JASON SCHMIDT AVENDAÑO, *University of South Florida*, LEWIS W. EVANS, *University of South Florida*, ANTHONY PEREZ, *University of South Florida*, MICHAEL HOPKINS, *University of South Florida*, HANNAH PANNELL, *University of South Florida*, KAELYN WOFFORD, *University of South Florida*, JENNIFER A. BUGOS, *University of South Florida*, PAUL ATCHLEY, *University of South Florida*, RUTHANN ATCHLEY, *University of South Florida* — Musical improvisation is a form of creative expression characterized by the spontaneous creation of original and meaningful melodies, harmonies, or rhythms. Improvisation is commonly associated with creative expression, such as jazz music and comedy. Key elements of jazz improvisation include practice, adaptability, expressiveness, timing, and musical awareness, all of which rely on different aspects of advanced cognitive abilities. The same could be applied to humor improvisation in comedy training. Recent studies have found similar alpha oscillatory activities across creative domains, yet the extent of shared neurocognitive resources remains unknown. This study differentiates the effects of jazz piano training and humor improvisation training on cognition and well-being (social isolation and loneliness) while evaluating the effects of improvisation interventions on neurophysiological biomarkers during creative tasks (Melodic Continuation Task and Alternative Uses Task).

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6:00–7:30 PM (3076)

A Complex Relationship Between Emotional Features of Familiar Music and Evoked Autobiographical Memories. RIESA CASSANO-COLEMAN, *University of Rochester*, ELISE COLE, *University of Rochester*, KELLY JAKUBOWSKI, *Durham University*, ELISE PIAZZA, *University of Rochester* — Music can evoke emotionally powerful autobiographical memories. But do the emotional qualities of these memories match those of the music itself—i.e., do happy songs evoke happy memories? Previous studies have indicated that this is not necessarily the case, but they have primarily used unfamiliar stimuli or limited stimulus sets. To more thoroughly investigate this question with a large sample of naturalistic, everyday music, we created a novel corpus of 50 popular songs released from 2008 to 2019. One group of subjects ($N = 50$) rated emotional valence and arousal of the clips, and another group ($N = 87$) reported any memories evoked by the clips. We found that happy songs do evoke happy memories ($p = 0.0013$), but songs with the highest proportion of positive memories were "peaceful" (positive valence, low arousal; $p = 0.0081$). Surprisingly, valence, but not arousal, of the music predicted the energy level of the memories ($p < 0.001$), even though arousal is often thought to reflect energy in music. This suggests a complex relationship between the properties of music and the memories it evokes. Ongoing analyses will deepen our understanding of how features of music relate to emotion evaluation and memory.

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FRIDAY

6:00–7:30 PM (3077)

Absolute Pitch in Involuntary Musical Imagery. MATTHEW EVANS, *University of California, Santa Cruz*, PABLO GAETA, *University of California, Santa Cruz*, NICOLAS DAVIDENKO, *University of California, Santa Cruz* — Memory for isolated absolute pitches (i.e., perfect pitch) is extremely rare in Western, English-speaking populations. However, past research has found that people can voluntarily reproduce well-known songs in the original key much more often than chance. It is unknown whether this requires deliberate effort or whether it manifests in involuntary musical imagery (INMI, or earworms). In our study, 30 participants were surveyed at random times over a week and asked to produce a sung recording of any music they were experiencing in their heads. We measured the "pitch error" of each recording to the nearest semitone by comparing participants' recordings to the original song. We found that 44.7% of recordings had a pitch error of 0 semitones (chance = 8.33%) and 68.9% of recordings had a pitch error of ±1 semitone (chance = 25%). Our results provide novel evidence of accurate memory for absolute pitch in INMI.

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6:00–7:30 PM (3078)

Jazz vs. Classical: Recognition Memory for Genre-Specific Melodies. MATTHEW JIMENEZ, *Louisiana State University*, DAVID SACCARDI, *Louisiana State University*, EMILY ELLIOTT, *Louisiana State University* — While formally trained musicians tend to show higher memory capacity than non-musicians in measures of working memory and recognition abilities, some literature suggests that memory abilities differ across musical genre expertise. In this study, jazz and classical musicians were utilized to investigate the recognition abilities of different musical experts. During exposure, participants were presented with 18 jazz, classical, and Hindustani melodies. During recognition, participants were asked whether they had heard 18 previously presented melodies and 18 novel melodies. The first two pilot stages showed no differences between groups or within melody genres. Our ongoing third pilot stage includes increased stimuli in the recognition period by creating fragments of the melodies from previously experienced melodies and novel melodies. A main effect of melody genre or music expertise could indicate that a particular genre or training style is correlated with higher recognition ability. Future studies could investigate this relationship. If a significant interaction of music expertise and melody genre is found, then perhaps memory for music is context-specific and dependent on musical exposure.

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6:00–7:30 PM (3079)

It's All About that Bass: Background Music vs. Background Noise. MINE MUEZZINOGLU, *University of Maryland, College Park*, ROCHELLE S. NEWMAN, *University of Maryland, College Park*, L. ROBERT SLEVC, PHD, *University of Maryland, College Park* — Why do many people prefer to study or listen to recorded lectures while listening to music? One possible explanation is that the emotional and rewarding effects of music compensates for known decrements of learning in noise. Alternatively, like other types of noise, background music may hinder learning by causing distraction. Participants (N = 54) listened to stories in three background distractor conditions: music, reversed music (acoustically matched, but presumably less enjoyable), and multi-talker speech babble. Following true/false comprehension questions assessing accuracy, participants rated how much they liked each background type. Participants rated music as more enjoyable than reversed music or multi-talker babble. They were also more accurate on comprehension questions in the music condition compared to reversed music and multi-talker babble conditions. Additionally, sensitivity to musical reward predicted higher accuracy in the music condition. Together, these data suggest that music may compensate for adverse effects of background noise by inducing positive affect.

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6:00–7:30 PM (3080)

Musical improvisation as Foraging in Musical Space. TEVIN WILLIAMS, *University of California, Merced*, MATT SETZLER, *Meta*, MINJE KIM, *Indiana University*, TYLER MARGHETIS, *University of California, Merced* (Sponsored by Tyler Marghetis) — Human creativity often involves searching through abstract spaces of ideas, images, or sounds. How do humans navigate these abstract spaces, and might this process overlap with search strategies used to forage in the physical world? Here we focus on free jazz improvisation as a case study in human creative foraging. Using a corpus of audio recordings of professional jazz musicians, we quantify moment-to-moment changes in sound as a trajectory through a high-dimensional 'sound space.' We find that improvising musicians—much like wild animals searching for food—trade off between "exploiting" a particular region and "exploring" for entirely new regions. This overall pattern changed around large, sudden sonic shifts: before such shifts, musicians show markedly more exploration for new sounds; afterwards, they shift significantly toward local exploitation of this new sound. This pattern is strikingly similar to Area Restricted Search, a strategy used by animals to search for food in patchy environments. We conclude that improvisation involves a skillful balance between exploration and exploitation, and speculate that human creativity may recycle search strategies that evolved for search in physical space.

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6:00–7:30 PM (3081)

Is 'Hey Jude' in the Right Key? Cognitive and Sensorimotor Components of Absolute Pitch Memory. STEPHEN C. VAN HEDGER, *Huron University College*, ANDREA R. HALPERN, *Bucknell University*, DAVID J. VOLLWEILER, *University at Buffalo, SUNY*, EVAN SMITH, *Huron University College*, PETER Q. PFORDRESHER, *University at Buffalo, SUNY* — Most individuals regardless of formal musical training have long-term absolute pitch memory (APM) for familiar musical recordings, though with varying levels of accuracy. The present study followed up on recent evidence suggesting an association between singing accuracy and APM (Halpern & Pfordresher, 2022), as well as tonal working memory and

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APM (Van Hedger et al., 2018). Participants from three research sites (n = 108) completed a battery of tasks including APM, tonal working memory, singing accuracy, and self-reported auditory imagery. Both tonal working memory and singing accuracy predicted APM, replicating prior results. Tonal working memory also predicted singing accuracy and auditory imagery. Further tests suggested that the association between singing accuracy and APM was fully mediated by tonal working memory. This pattern comports well with models of vocal pitch matching that include working memory for pitch as a mechanism for sensorimotor translation.

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6:00–7:30 PM (3082)

Contrasting Intuitive and Deliberative Correct Responses on the Two-Response Cognitive Reflection Test. PAUL WILLIAMSON, *Flinders University*, RUBY WILLIAMS, *Flinders University*, HENRY W. STRUDWICKE, *Flinders University*, MATTHEW W. CHRISTIAN, *Flinders University*, TOBY PRIKE, *University of Western Australia* — Research has found that the cognitive reflection test (CRT) is linked to more accurate reasoning, better decision making, and lower anomalistic belief. Some researchers have posited that the CRT is predictive because answering correctly requires overriding inaccurate intuitive responses (i.e., engaging in greater deliberation and error-correction). However, recent studies have found that correct answers are often arrived at rapidly and intuitively. Thus, error-correction is not always required. In our two-response CRT, participants responded to each item twice—an initial response under time pressure and cognitive load and a final response without constraints. Correct responses at both stages signaled accurate-intuition, whereas an initially incorrect response and correct final response signaled accurate-deliberation. We measured two outcomes: anomalistic belief (previously studied) and a new task, judgments about freedom of speech. We hypothesized that accurate-deliberative responses (i.e., those requiring error-correction) would be a stronger predictor of both outcomes in comparison to accurate-intuitive responses.

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6:00–7:30 PM (3083)

Differential Roles of Visual Representational Formats in Probability Word Problem Solving. CHENMU XING, *Tarleton State University*, MEGAN R. BENDER, *Minot State University*, JOMAIRA HERNANDEZ GONZALEZ, *Minot State University*, TAYLOR SMOCK, *Minot State University* — Diagrams, which focus on visualizing problem structures, are argued to facilitate problem solving. Pictures, which depict concrete problem stories, are often linked with problem-solving errors. Recent textbook analysis, however, found a tendency of using pictorial representations for probability problems in some popular math textbook design. To evaluate the roles of different visualization formats in high school probability education, an experiment compared probability word problem solving success by undergraduates in two visual conditions. Each participant solved a pretest (no visualization) and a posttest (pictorial or diagrammatic visualizations for task problems). Half of the problems on each test are of an easy level for given probability topics and the other half difficult. Preregistered analyses revealed differential effects of pictures and diagrams on solving difficult problems in particular: While diagrams improved solution correctness, success rates declined in the picture condition, accompanied by signs of more careless problem processing by solvers with pictures. The findings shed light on the role of visual design in math learning outcomes.

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6:00–7:30 PM (3084)

Visual Complexity Impacts Reader Confidence and Comprehension in Data Visualizations. KYLIE LIN, *Georgia Institute of Technology*, DAVID N. RAPP, *Northwestern University*, CINDY XIONG, *University of Massachusetts Amherst* (Sponsored by Cindy Xiong) — Designing a visualization necessitates decisions that, intentionally or not, impact reader understanding and interpretation. One decision designers often have to make involves considerations as to how much information to include, which can significantly impact perceived complexity and clarity. Existing work has identified a potential trade-off between perceived complexity and comprehension. We extend this account, positing that overly simple visualizations can lead to overconfidence and less-than-rigorous interpretations, decreasing comprehension. Overly complex visualizations also raise challenges, potentially leaving the viewer overwhelmed and allowing for misunderstandings. We examine this issue of complexity, operationalized by the visualization clarity and the amount of information presented, on viewer confidence and comprehension. Participants viewed charts with varying complexity and rated their confidence in their understanding of the information. They also answered comprehension questions and made inferences about visualization takeaways. We model the relationship between visualization complexity and data comprehension and generate design guidelines from the data to optimize viewer comprehension of visualizations.

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6:00–7:30 PM (3085)

The Polysemous Associates Test (PAT) and Reported Aha! Moments. VISHEETA CHANDOLIA, *Texas A&M University*, STEVEN M. SMITH, *Texas A&M University* — Aha! moments, also known as insight experiences, can play a crucial role in problem solving, driving important discoveries. Laboratory methods for studying insight include the use of Remote Associates Test (RAT) problems—three-word problems (e.g., ROCKING-WHEEL-HIGH, solution CHAIR) that sometimes are solved with reported insight. We developed a set of two-word problems whose solutions are homographs (e.g., CUB-TOLERATE, solution BEAR), the Polysemous Associates Test (PAT), based on the idea that thinking of polysemous solutions might involve verbal restructuring. We compared the effectiveness of 32 PAT and 32 RAT problems in evoking metacognitive reports of insight. Participants indicated whether they experienced an aha! moment after each of 64 interleaved RAT and PAT problems. Both types of problems evoked insight reports, and there were more aha! moments for PAT problems, as compared to RAT problems. Our

findings demonstrate the efficacy of PAT as a tool for investigating and understanding insight.

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6:00–7:30 PM (3086)

Creative Collaboration: When Do Brains Add Up?. MICHAEL HOPKINS, *University of South Florida*, MATTHEW C. SIMPSON, *University of South Florida*, ANH VAN NGUYEN, *University of South Florida*, DELNAZ TAHERKALATEH, *University of South Florida*, TAMIRA GODFREY-ANDRADE, *University of South Florida*, HANNAH PANNELL, *University of South Florida*, KAELYN WOFFORD, *University of South Florida*, JASON SCHMIDT AVENDAÑO, *University of South Florida*, PAUL ATCHLEY, *University of South Florida*, RUTHANN ATCHLEY, *University of South Florida* — Creativity has been assessed in individuals but has been less thoroughly tested in groups. It is unclear if group performance is impacted by the type of creativity measured. Our research investigates individual and group performance on verbal (V) and visuospatial (VS) convergent and divergent creativity measures (Convergent: Remote Associates Test [V], Raven's Matrix [VS]; Divergent: Alternate Uses [V], and Open-Ended Figures [VS]). Early findings indicate improved group performance on verbal measures. However, individuals perform as well as groups on visuospatial measures. This suggests communication between group members shows a preferential advantage for verbal creativity measures.

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6:00–7:30 PM (3087)

Exploring Insight in Computer Programming. TAYLOR S. MILLER, *University of Illinois Chicago*, ZAIN K. AAMER, *University of Illinois Chicago*, JENNIFER WILEY, *University of Illinois Chicago* — Lab-based research on insight has typically explored solutions on specially designed puzzles, but there is growing interest in exploring insight in more naturalistic contexts, including as part of courses and course assignments. One context where students report having Aha! experiences is during computer programming. To investigate insight phenomena in the context of computer programming, we conducted a protocol study where computer science undergraduates were tasked with finding the most efficient solutions to C++ programming problems. Success on this task required getting past obvious solutions and finding non-obvious solutions. Participants were asked to think-aloud as they pseudo-coded their solutions on a whiteboard. Preliminary findings showed that restructuring, impasse, and Aha! experiences occur during computer programming. Patterns among these phenomena will be discussed.

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6:00–7:30 PM (3088)

Cognitive vs. Social Factors: Unravelling the Roots of Science Denial. HENRY W. STRUDWICKE, *Flinders University*, LAURA PALMER, *Flinders University*, MATTHEW W. CHRISTIAN, *Flinders University*, TOBY PRIKE, *University of Western Australia*, PAUL WILLIAMSON, *Flinders University* — Motivated rejection of science occurs when individuals with higher reasoning ability more accurately interpret scientific information, but selectively dismiss information that is incongruent with their social identity (e.g., political affiliation). However, this assumes belief in individual political topics is uniform across political groups. We propose a novel paradigm that also measures participants' prior beliefs by having them predict the outcomes of fictitious scientific experiments in neutral and politically contentious scenarios. Subsequently, participants will interpret the results presented in contingency tables. We will categorize congruence of interpretations based on prior beliefs and political group membership to compare their relative impact on motivated rejection of science. We expect that participants' scores on the cognitive reflection test will predict motivated rejection, and that prior beliefs will have a stronger impact than political affiliation. This research provides insight into the extent to which prior beliefs and social identity underlie the motivated rejection of science.

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6:00–7:30 PM (3089)

Insights from the Past: Does Access to Previous Problem Attempts Facilitate Restructuring in Insight Problems?. EMILY CREEL, *Mississippi State University*, JARROD MOSS, *Mississippi State University* — Insight problems are often comprised of a period of impasse during which no new attempts are generated followed by an abrupt realization of the solution arising from the restructuring of an initial flawed problem representation. However, the precise mechanisms precipitating these processes are still being investigated. One hypothesis is that analyzing the unchanging elements of previous attempts may facilitate restructuring. We investigated this hypothesis using three classic insight problems. Participants were provided either three common examples of unsuccessful problem attempts, their own problem attempts, or no previous attempts. The prior attempts conditions eliminate the need to rely on memory to access previous unsuccessful attempts so this mechanism could be investigated. Individual differences in working memory capacity and cognitive reflection were also collected. While there was no overall effect of the prior attempts conditions, both individual difference measures were associated with problem solving success. Cognitive reflection also interacted with prior attempt conditions indicating access to prior attempts may support solving for some individuals over others.

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6:00–7:30 PM (3090)

The Influence of Prior Experience on Causal Inference in Navigation. JONATHAN KELLY, *Iowa State University*, TIMOTHY P. MCNAMARA, *Vanderbilt University*, TAYLOR DOTY, *Iowa State University*, PHILLIP NEWMAN, *Vanderbilt University*, MOHAMMADAMIN SANAEI, *Iowa State University*, STEPHEN GILBERT, *Iowa State University* — Navigation engages multiple sensory systems that provide information about the navigator's location in space. When sensory cues conflict, the navigator must decide whether the conflict results from sensory noise (common cause) or different sources in the world (multiple causes). A Bayesian navigator should consider prior experience with sensory cues when making

this causal inference. Participants each completed 90 trials of a triangle completion task in which they followed an outbound path before pointing to the path origin. Body-based and visual cues were either consistent or separated by a medium or large amount by moving landmarks prior to pointing, resulting in three trial types (no conflict, medium conflict, large conflict). Prevalence of no conflict trials was manipulated across conditions, changing the likelihood that cue conflict resulted from sensory noise or distinct sources. Results indicated lower sensitivity to the probability of a common cause than would be expected by a Bayesian model.

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6:00–7:30 PM (3091)

Perceptual Distortions During Simultaneous Monitoring of Fetal and Maternal Heart Rate. ELISABETH PLORAN, *Hofstra University*, BURTON ROCHELSON, *Northwell Health*, JACKSON SNELLINGS, *Hofstra University* — Fetal heart rate monitoring (FHRT) is standard practice in the United States as a means of assessing fetal well-being during labor. In addition to monitoring FHRT, some obstetrical providers may also display the maternal heart rate tracing (MHRT) on the same monitor. While some recent research suggests that changes in MHRT may be indicative of complications (Kiely et al., 2019; Lappen et al., 2018; Odendaal et al., 2018), other research warns of potential misinterpretation due to signal overlap (Sherer et al., 2005). Our prior work indicated that the presence of multiple heart rate tracings on the same chart in twin gestations may introduce subconscious alterations to the assessment of each FHRT (Ploran et al., 2020). The current study assessed whether similar alterations exist for FHRT presented with and without the MHRT. Assessment of both decelerations and overall level of concern were impacted by the addition of the maternal heart rate line, resulting in lower rates of self-agreement. This suggests that additional visual information on-screen may complicate the assessment of FHRT, even if the competing information is not necessarily overlapping or contains different features and frequencies than the FHRT.

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6:00–7:30 PM (3092)

Modifying Spatial Navigation Strategy through Task Instruction in Younger and Older Adults. JEFFREY KUNATH, *University of Florida*, ADAM J. BARNAS, *University of Florida*, ELIANY PEREZ, *University of Florida*, ZACHARY BOOGAART, *University of Miami Miller School of Medicine*, NATALIE C. EBNER, *University of Florida*, STEVEN M. WEISBERG, *University of Florida* — Spatial navigation strategies change in aging, with older adults selecting familiar routes (response strategies) over novel shortcuts (place strategies). But does this shift reflect a preference, or alterations in underlying abilities? We predicted that older adults would not take shortcuts even when instructed to, suggesting age-related differences are due to ability to use place-based spatial strategies, rather than a preference against them. Fifty-nine younger and 51 older adults completed two separate sessions of a virtual environment in which navigators could select a familiar route or take a novel shortcut. In the first session, all participants received instructions to navigate to the goal. In the second session, half received instructions to attempt shortcuts in the second session. We replicated the finding that younger adults took more shortcuts when instructed. However, no navigation strategy shift was observed in older adults, lending support for the ability hypothesis. These findings can inform the development of age-related interventions, which should focus on improving place strategy abilities.

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6:00–7:30 PM (3093)

Individual Differences in Spatial Navigation and Working Memory. ALEXA K. BUSHINSKI, *Purdue University*, THOMAS S. REDICK, *Purdue University* — Spatial navigation is a complex skill that relies on many aspects of cognition. Our study aims to clarify the role of working memory in spatial navigation, and particularly, the potentially separate contributions of verbal and visuospatial working memory. We leverage individual differences to understand how working memory differs among types of navigators and the predictiveness of verbal and visuospatial working memory. Data were collected from 253 healthy young adults. They all completed multiple measures of verbal and visuospatial working memory and a spatial navigation task called virtual SILCton. We found that better navigators may rely more on visuospatial working memory. Additionally, using a relative weights analysis, we found that visuospatial working memory accounts for a large majority of variance in spatial navigation when compared to verbal working memory. Our results suggest working memory is domain-specific in this context of spatial navigation, with visuospatial working memory being the primary contributor.

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6:00–7:30 PM (3094)

Relative Reliance on Auditory and Self-Motion Cues for Navigation. COREY S. SHAYMAN, *University of Utah*, MAGGIE K. MCCRACKEN, *University of Utah*, HUNTER C. FINNEY, *University of Utah*, PETER C. FINO, *University of Utah*, JEANINE K. STEFANUCCI, *University of Utah*, SARAH H. CREEM-REGEHR, *University of Utah* — Independent navigation is central to quality of life, but can become increasingly challenging with sensory pathology. Although vision is a dominant cue, many with visual impairment lack a salient visual representation of their world and rely on other sensory systems to navigate. Here, we test how individuals weight their hearing relative to their self-motion cues (vestibular and proprioception) in a homing task in immersive virtual reality. Participants physically walked towards a visual target via multiple waypoints in the presence of auditory landmarks. Participants then returned to the target with either auditory cues only, self-motion cues only, or both cues. They also completed a "conflict" condition where auditory cues were covertly shifted relative to self-motion cues to quantify sensory weighting. On average, participants were more accurate and less variable with self-motion cues compared to auditory cues. Performance in the conflict condition was consistent with the

weighting predicted from single cues, suggesting that in the absence of visual landmarks, auditory and self-motion cues are combined optimally.

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6:00-7:30 PM (3095)

An EEG Study of Mental Workload During Spatial Cognition in Extreme Virtual Environments. JUAN BALCAZAR, *Texas A&M University*, JOSEPH M. ORR, *Texas A&M University*, VAHIDEH KARIMIMANSOOB, *Texas A&M University*, MANISH KUMAR DIXIT, *Texas A&M University*, LAUREN JACKSON, *Texas A&M University* — The human brain constructs maps of space using visual, vestibular, and somatosensory information. Electroencephalography (EEG) studies show that spatial-related brain activity is most pronounced in parieto-occipital regions. Reduced alpha activity (8-12hz) and increased theta is reported in individuals navigating new or unfamiliar environments. To date, few studies have tested mental workload when participants are rotated. The present study investigates the associated mental workload in both simulated microgravity and unfamiliar environments (Mars). We used a 16-channel battery-powered LiveAmp 16-Ch wireless system with an integrated 3-axis accelerometer to allow for freedom of movement. We recorded event-related potentials and time-frequency data. We are interested in the P3 component to assess mental workload. We are also interested in theta oscillations, which are known to index workload and reflect spatial encoding. Our study helps inform the future workforce of tomorrow (e.g., astronauts, military), in which altered microgravity and unfamiliar environments are becoming commonplace.

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6:00-7:30 PM (3096)

The Role of Risk Tolerance in Navigation Strategy Decisions. ELIANY PEREZ, *University of Florida*, PETER KVAM, *University of Florida*, RORY M. MCKEMEY, *University of Florida*, STEVEN M. WEISBERG, *University of Florida* — Spatial navigation often requires decision-making under uncertainty. Evaluations of navigation behavior typically focus on ability, and strategy (following familiar routes versus taking novel shortcuts). Yet, neither construct accounts for how navigators make decisions with imperfect knowledge. Here, we focus on one critical factor to address this gap: risk-tolerance—a willingness to explore in the face of uncertainty. Using a pre-registered analysis pipeline, we evaluate whether domain-general risk tolerance captures unique variance in spatial navigation strategy selection using a novel version of the Iowa gambling task (IGT) and a widely used measure of spatial navigation strategy. Controlling for spatial navigation ability, we found that risk tolerance on the novel IGT (exploring a new deck) was associated with taking novel shortcuts ($r(119) = .21$, $p = .022$). These data provide support for the existence of risk-tolerance as a domain-general trait and offer new theoretical insights for how navigation decisions get made.

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6:00-7:30 PM (3097)

This Is Not the Way: Global Directional Cues Do Not Improve Spatial Navigation in an Immersive Virtual Environment. ECE YUKSEL, *University of Florida*, STEVEN M. WEISBERG, *University of Florida*, ZACHARY BOOGAART, *University of Miami Miller School of Medicine* — Knowing where we want to go and how to get there is not always easy. Tools (like maps and compasses) are frequently employed to support navigation behavior in unfamiliar environments, but how does the information they provide align with the task navigators need to solve? A compass, which provides a global reference direction and bearing, provides the same kind of directional information as other distant visual cues, but do these cues help people learn an environment? Here, we present two experiments evaluating whether people more easily learned a large-scale, immersive virtual environment when a global reference direction was provided (either in the form of a compass, or a salient, distal visual landmark – a mountain range). In the first experiment, we found no difference between those who had the compass available and those who did not ($N = 56$). The second experiment ($N = 67$) revealed no difference in participants' performance with a compass provided or a mountain range in the environment. In a combined analysis, we observed that participants did not use the provided cue to set up their reference frames of the environment. Our results inform theories for how reference directions can be used to support spatial navigation behavior.

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6:00-7:30 PM (3098)

Examining the Time Course of Collaborative Inhibition and Post Collaborative Benefits Across Word Lists and Prose Passages. MICHELLE MEADE, *Montana State University*, YUNFENG WEI, *Montana State University*, BROOKE CHARBONNEAU, *Montana State University*, KEITH A. HUTCHISON, *Montana State University* — We examined the time course of collaborative inhibition and post collaborative benefits on recall. Participants studied categorized word lists and prose passages and completed an initial recall test individually or in collaboration with another participant. Participants then completed a subsequent individual recall test after a delay of 5 minutes, 48 hours, or 1 week. On the initial recall test, participants demonstrated collaborative inhibition for both word lists and prose passages. However, on the subsequent individual recall test, the pattern of post collaborative benefits differed across word lists and prose passages. For both word lists and prose passages, post collaborative benefits were present at the 5 minute delay but absent at one week. However, at 48 hours, there was a post collaborative benefit for prose passages but not word lists. These results suggest that the time course of post collaborative benefits differs across materials and there are no lasting effects of collaboration after a 1-week delay.

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FRIDAY

6:00–7:30 PM (3099)

Valence-Based Biases in Collective Temporal Thought: The Role of Framing, Culture, and Age. KRISTI MULTHAUP, *Davidson College*, ZIZHAN YAO, *Davidson College & University of California, Santa Cruz*, PHIA SALTER, *Davidson College* — Prior studies report discrepant biases in American collective memory (e.g., positivity), perhaps due to inconsistent question framing. Few studies have assessed collective temporal thought beyond Western nations or age-related differences in it. The present study investigated valence-based biases in collective temporal thought with between-participants factors of question framing, culture, and participant age. Participants (N = 1,548) from the United States and mainland China, including younger (20-39 yrs) and older (60+ yrs) adults, completed surveys online. Question framing was manipulated in the collective memory section (i.e., participants reported origin events, historically significant events, or events that happened in the last and 10+ yrs) but not in the collective future thought section. Results showed that question framing influenced collective memory biases differently across cultures, whereas there was no significant framing effect on collective future thought for either sample. Older adults' positivity bias was greater than younger adults', although the size of the age effect varied by condition and temporal domain. Question framing, culture, participant age, and temporal domain influence collective temporal thought.

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6:00–7:30 PM (3100)

Impact of Event Description on Event Memory: A Cross-Linguistic Study. WINKI LAW, *The Education University of Hong Kong*, MICHAEL C. W. YIP, *The Education University of Hong Kong* (Sponsored by Michael Yip) — Does the language one habitually speaks influence how one describes an event? English is an agentive language while Japanese is a comparatively non-agentive language, and past research found that English speakers usually use more agentive expressions to describe an event than Japanese speakers, particularly for the accidental event. This study examined how Japanese speakers, English speakers and highly proficient Japanese-English bilingual speakers describe the same event (including accidental and intentional events). The results showed a consistent pattern on event description of the two native groups when they were asked to use their native languages to describe the event; and the Japanese-English bilingual group exhibited the same pattern of results as the English-speaking group when they were asked to use English language to describe the same event, demonstrating a foreign language effect in cognitive processing. However, the patterns of results of the Japanese-English bilingual group are, in turns, consistent with their Japanese counterpart in a follow-up non-linguistic eye-witness memory test. Implications on how different languages shape our event perception and the foreign language effects will be discussed.

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6:00–7:30 PM (3101)

Downstream Consequences of Collaborative Recall: Testing the Influence on New Learning and Protection of Original Learning. GARRETT GREELEY, *Stony Brook University*, SUPARNA RAJARAM, *Stony Brook University* — Collaborative recall influences individual memory downstream. We investigated whether prior collaborative recall, relative to individual recall, modulates the subsequent learning of new material and whether the re-exposure benefits afforded by group recall persist in the context of subsequent learning. In two novel experiments, we leveraged theoretical viewpoints and procedural components from research on collaborative memory and test-potentiated new learning. Participants studied categorized words, completed two recall phases either alone or in collaborative groups, then studied a new list of words that were semantically related to the initial list before individually recalling only the most recent list (Exp. 1) or words from both lists (Exp. 2). Interestingly, prior collaborative retrieval did not influence recall for newly learned information in either experiment. However, prior collaborative recall did reduce prior-list intrusions and other established post-collaborative effects persisted even in a cumulative recall context. These findings suggest that while collaborative recall does not readily influence subsequent learning, the effects of collaborative recall persist even as new learning occurs.

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6:00–7:30 PM (3102)

Exploring Cultural Differences in Spatial Frequency and Orientation Tunings for Face Perception. FRANCIS GINGRAS, *Université du Québec à Montréal*, JUSTIN DUNCAN, *Université du Québec en Outaouais*, FRÉDÉRIC GOSSELIN, *University of Montreal*, DANIEL FISET, *Université du Québec en Outaouais*, CAROLINE BLAIS, *Université du Québec en Outaouais* (Sponsored by Caroline Blais) — Previous studies have shown that East-Asians differ from Westerners in their visual strategies for face processing. Notably, they present different patterns of eye-movements and a preference for lower spatial frequencies (SF). In order to better quantify these differences, we seek to measure the SF tunings of various cultural groups. A first comparison between lab samples of 28 Westerners and 18 East Asians shows the same low SF bias for the Easterners. To increase statistical power, we conducted the same task online, recruiting, as of now, 72 English Westerners, 37 East Asians, 82 South Africans, and 80 West Europeans. Once again, we reveal a low SF bias in Easterners compared to the other groups. We aim to measure tunings for four more cultural groups (Middle East, Southeast Asia, East Europe, South America) in order to have a deeper understanding of potential underlying mechanisms for this difference.

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6:00–7:30 PM (3103)

A Cross-Cultural Study of Sarcastic Language and Workplace Bullying. DAWN G. BLASKO, *The Pennsylvania State University, Erie*, ERICA EDWARDS, VICTORIA A. KAZMERSKI, *The Pennsylvania State University, Erie*, SHARIFFAH SHEIK DAWOOD, *The Pennsylvania State University, Erie* — Workplace bullying may include verbal harassment, sabotaging work or isolation. It may include extreme oversight or unfair evaluations, and can target the individual by gossiping, mocking, or undermining competence. This can lead to social isolation and anxiety, demotivation, and

workplace avoidance. Sarcasm is a common method of verbal harassment and may carry less risk by criticizing indirectly. Participants (n = 824) recruited from three countries (US, Sweden, and Singapore) completed an on-line survey on workplace bullying, use of sarcasm, and Hofstede's cultural dimensions (Hofstede Insights). Sarcasm use correlated with workplace bullying across cultures. Both males and females reported less sarcasm use with bosses than friends. Older adults in all three countries reported less sarcasm, perhaps because of changing societal norms. This work may inform theories of language use as well as provide practical advice in business settings to address indirect forms of bullying.

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6:00-7:30 PM (3104)

Generalizing Fears of COVID-19 Vaccines to Other, Unrelated Vaccines: Ideological and Meta-Cognitive Factors. MARK LACOUR, *University of Louisiana at Lafayette*, ZEBULON BELL, *Louisiana State University of Alexandria* — Vaccines have greatly reduced the prevalence of many diseases. Despite this, vaccine hesitancy runs rampant among certain demographic groups. Past research (conducted outside of the U.S.) found that positive attitudes towards the COVID-19 vaccines "spilled over" to the influenza vaccine. We sought to examine whether similar "spillover" occurred in the U.S. for a range of different vaccines, and to determine how political orientation interacted with such effects. In a cross-sectional design, we compared pre- (n = 165) and post-pandemic (n = 243) attitudes towards a range of vaccines. We found the opposite effect of the aforementioned "spillover" among conservatives. Conservatives had higher risk perceptions for the COVID-19 vaccines but also for unrelated vaccines. We also found that conservatives were more likely to endorse contradictory statements about the sources of their beliefs (e.g., "My opinions about vaccines in general have changed because of the COVID-19 pandemic" and "I have not changed my opinion about vaccines in general based on what I know about the COVID-19 vaccines.") These contradictions in belief monitoring have implications for the persuadability of conservative vaccine skeptics in the US.

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6:00-7:30 PM (3105)

Modulating Factors in Word Recognition of Chinese-Japanese Bilinguals: An Exploratory Linear Mixed Model Analysis of Lexical Decision and Naming Responses. MASAHIRO YOSHIHARA, *Tohoku University*, MARIKO NAKAYAMA, *Tohoku University* — Bilingual word recognition literature has primarily focused on bilinguals of alphabetic languages. Fewer studies have looked at bilinguals of logographic languages. In the present study using linear mixed-effects models, we explored variables influencing Chinese-Japanese bilinguals' lexical decision and naming performances to L2 Japanese targets. The variables examined included task-related (e.g., trial number), participant-related (e.g., L2 proficiency, AoA), and item-related (e.g., cognate status, Japanese word frequency, phonological similarity) factors. Our analyses identified many critical factors. Among others, cognate status was a significant predicting factor in both tasks. Japanese word frequency influenced the processing of only cognate targets in both tasks. Phonological similarity between cognates affected naming but not lexical decision performance. Several significant two-way interactions were also found. The complete findings will be presented in the poster. The present findings shed light on both general and population-specific aspects of bilingual lexical processing.

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6:00-7:30 PM (3106)

Letter Matching in Word Familiarity: Comparing Slot Specific, Relative Position, and Overlap Coding Approaches. ANDREW M. HUEBERT, *Colorado State University*, ANNE M. CLEARY, *Colorado State University* — Research on word reading has suggested three ways in which letter position is coded. These are absolute position coding, relative position coding, and overlap position coding. In two experiments we examined which of these approaches best characterizes the letter matching process that can lead to feelings of word familiarity. Participants studied words (e.g., EXHUSBAND, BANDWAGON, ULTIMATUM) and were later given three fragment types corresponding to studied words. Some contained the letters in the same absolute locations as they were studied (e.g., _ _HU_BA_ _), others the same relative locations of letters (e.g., _ND_ _ _AG_), and others with adjacent letters swapped (e.g., _ _IT_TA_ _). Participants also got the same three types of fragments but that did not correspond to studied words. In both experiments, even when a corresponding word could not be identified, participants were able to distinguish between fragments corresponding to studied words from fragments not corresponding to studied words. This occurred equally for all three fragment types. This suggests that letters can produce word familiarity even if they are out of position, similar to how people can read scrambled words.

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6:00-7:30 PM (3107)

The Effects of Interword Spacing on Visual Word Recognition: An Eye-Tracking Study Using a Flanked-Word Visual World Paradigm. STEFANIA KYRIAKIDOU, *McMaster University*, LAOURA ZIAKA, *University of Oslo*, BOB MCMURRAY, *University of Iowa*, DZAN ZELIHIC, *University of Oslo*, KRISTIN SIMONSEN, *University of Oslo*, ATHANASSIOS PROTOPAPAS, *University of Oslo* — Parafoveal processing facilitates reading efficiency by partially preprocessing upcoming words during the preceding fixation leading to shorter subsequent fixations on these words. However, recent studies on single word recognition, using a flanking design resembling multi-element contexts encountered in sentence reading, have documented interference effects induced by adjacent words. Such findings suggest that parafoveal processing comes with an intrinsic cost —at least at a word level. To investigate whether the spatial proximity between fixated and nearby words further modulates such processing costs, we use 60 high-frequency and 60 low-frequency backward-masked flanked printed word targets in a Visual World Paradigm with three spacing conditions: normal (default) spacing, half spacing, and double spacing.

FRIDAY

Data from 54 Norwegian-speaking adult readers indicated that inter-word spacing affects single word recognition in multi-element displays. Closer proximity between foveal and parafoveal words led to slower and more fragile word recognition, not interacting with frequency, suggesting that spatial proximity affects foveal efficiency equally across more and less frequent words.

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6:00-7:30 PM (3108)

Exploring the Relationship Between Grammatical Gender Violations and the Processing of Non-Binary Spanish Pronouns. ALEXANDRA ROMÁN IRIZARRY, *University of California, Irvine*, JUDITH F. KROLL, *University of California, Irvine*, JULIO TORRES, *University of California, Irvine* — Speakers of grammatically gendered languages are sensitive to grammatical gender violations. What is less known is how speakers of a masculine/feminine gender system process non-binary forms that serve as gender neutral. Because most Spanish speakers do not come of age with non-binary forms, we examined how processing non-binary forms in Spanish differs from processing canonical grammatical gender violations. Spanish-English bilinguals completed two self-paced reading tasks, one that examined grammatical gender violations, and another that assessed processing of non-binary Spanish pronouns. They also completed the Bilingual Language Profile and two cognitive tasks. Results showed that reading times on masculine and feminine incongruent pronouns did not predict reading times on non-binary pronouns. Only working memory predicted reading times on non-binary forms. This suggests that, at the pronoun level, canonical grammatical gender violations are processed differently than non-binary Spanish forms. We hypothesize that the former requires linguistic resources while, the latter engages cognitive mechanisms.

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6:00-7:30 PM (3109)

Predictors of Word and Sign Superiority Effects for Deaf Readers. EMILY SAUNDERS, *San Diego State University*, CASEY STRINGER, *University of South Florida*, GRACE C. SINCLAIR, *University of South Florida*, FRANCES G. COOLEY, *University of South Florida*, ELIZABETH R. SCHOTTER, *University of South Florida*, KAREN EMMOREY, *San Diego State University* — The quality of lexical representations likely drives lexical superiority effects (sublexical components are recognized better in real than in pseudowords). We tested deaf signers' performance when identifying letters from words/pseudowords and handshapes from signs/pseudosigns. Participants were more accurate at real items than pseudo-items for both languages (lexicality effects). Spelling skill, not reading comprehension, predicted the magnitude of the lexicality effect for English. This result is in line with recent data suggesting spelling ability reflects the most precise measure of lexical quality for English (Andrews et al., 2020). ASL comprehension skill did not predict sign lexicality effects, and there is no clear equivalent to spelling skill in a nonwritten language. While the relationship between lexicality effects and awareness of sublexical structure in ASL remains to be determined, our results suggest that lexical superiority effects are not driven by global language ability, but may be driven by awareness of sublexical components.

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6:00-7:30 PM (3110)

Investigating Input Variability and the Emergence of Novel Orthographic Representations. OLGA SOLAJA, *Scuola Internazionale Superiore di Studi Avanzati (SISSA)*, MARIA FERNÁNDEZ-LÓPEZ, *Universitat de València*, MANUEL PEREA, *Universitat de València*, DAVIDE CREPALDI, *International School for Advanced Studies (SISSA)* — Variability helps to establish generalized and stable representations of a category. In the context of reading, this is shown in the advantage of handwriting training when learning new letters compared to other methods (e.g., typing or tracing). In the present experiment, we asked whether letter detectors become more resistant to distortion when trained with variable input. During a 5-day training, participants learned a novel alphabet of 11 BACS characters in handwritten format. Participants were required to practice reading, listening, and handwriting. We also used a set of non-trained 11 BACS characters during the sessions as a visual control. Before and after the training, they completed a masked priming same-different task with the novel alphabet letters. The key manipulation was in the primes: the identity/unrelated primes could be presented in a printed or distorted (CAPTCHA-like) format. Results showed identity priming both in printed and distorted primes, although the effect was stronger for the printed format. These effects increased after the 5-day period for both trained and untrained scripts. Thus, exposure to a variable input helps exhibit distortion resistance in the letters, even without explicit training.

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6:00-7:30 PM (3111)

Readers Show Trade-Offs Between Print-Speech Correspondences and Semantic Imageability in Visual Word Naming. DEANNE WAH, *University of Western Ontario*, MARC F. JOANISSE, *University of Western Ontario* — English spelling is quasi-regular, marked by inconsistent print-speech correspondences. Contemporary reading models propose that words are recognized through the joint contribution of analytic (decoding print-to-speech) and holistic (whole-word) processes. Here we investigate the contribution of both mechanisms on naming times in skilled adult readers. We quantified the reliance on different grain sizes of print-speech information (vowel vs. context-dependent correspondences) and how this might interact with whole-word mechanisms (indexed by imageability effects). Adults read words that varied along lexical and sub-lexical variables, using latency to measure processing difficulty. The degree of reliance on competing mechanisms was identified using slope estimates from regression models. We observe that greater reliance on vowel correspondences best accounted for variance in naming time, compared to context-dependent correspondences. Additionally,

context-dependent correspondences were found to trade-off with semantic imageability, particularly for low imageability words, suggesting that adults relied more on decoding for these words.

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6:00-7:30 PM (3112)

Towards a Model of Braille Letter Processing. PABLO GOMEZ, *Skidmore College*, ANA BACIERO, *Bournemouth University*, SARA ALICIA L. AMADOR, *California State University, San Bernardino*, CAMILLE A. SCRIMSHIRE, *California State University, San Bernardino*, MANUEL PEREA, *Universitat de València* — Braille is a tactile writing system designed for individuals with visual impairments. It consists of a series of raised dots that can be felt with the fingertips. Each Braille character, or "cell", is formed by a pattern of up to six dots arranged in two columns of three dots each. To read Braille, individuals use their sense of touch to feel the raised dots on a Braille surface. By running their fingers over the dots, Braille readers can perceive the patterns and interpret the corresponding letters, numbers, punctuation marks, and other symbols. We present a series of experiments that address letter recognition and letter position coding in Braille reading for both fluent readers and naïve participants. We propose a model that outlines the features involved in assembling Braille characters and summarize previous work on letter position coding in the tactile modality. While we believe that Braille should be understood in its own right, we contrast both letter processing and letter position coding to processing in the visual modality.

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6:00-7:30 PM (3113)

Click and Share Intentions of Headlines: Language Matters, Accuracy Does Not!. YEWON KANG, *University of Minnesota*, VICTORIA JOHNSON, *University of Minnesota*, DITI BHADRA, *University of Minnesota*, PANAYIOTA KENDEOU, *University of Minnesota* — Misinformation is often shared on social media through misleading headlines. However, little research has systematically examined the linguistic properties of these headlines. In this study, we investigated which speech acts are associated with click and share intentions. We examined various speech acts, including assertion, assertion with reveal, concessive continuation, rising declarative, wh-question, polar question, polar-alternative question, wh-question with reveal, and conditional with a wh-question consequent—all applied to actual true and false headlines. For each headline, participants indicated their intentions to click and share. Results showed complex associations between speech acts and the likelihood of being clicked and shared. For example, the assertion speech act was highly clickable and shareable, with no significant difference between true and false headlines. These findings suggest that speech acts are significant predictors of click and share intentions and should be considered in future research on the spread of misinformation.

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6:00-7:30 PM (3114)

Bilinguals Show Earlier Integration of Newly Learned Novel (Pseudo)Word meanings than monolinguals: An ERP study. DAISY LEI, *The Pennsylvania State University*, CHLOE ENGIN, *The Pennsylvania State University*, MARLEN CORDOVA-PEDROZA, *The Pennsylvania State University*, ZOFIA WODNIECKA, *Jagiellonian University Institute of Psychology*, JANET G. VAN HELL, *The Pennsylvania State University* — Polish-English bilingual speakers were trained on novel English (pseudo)words paired with a novel meaning and image to examine whether there are overnight consolidation effects unique to L2 learners compared to monolingual English learners (data from Lei et al., 2022). Participants were trained on one set of novel word meanings on Day 1 and another set on Day 2. They were tested on all trained words via an EEG-recorded semantic priming task on Day 2. Consolidation was examined in N400 and LPC time-windows. Bilinguals' ERP data demonstrated LPC semantic priming effects for novel words trained on both Day 1 and Day 2, whereas monolinguals showed this effect only for Day 1 words but not for Day 2 words. Bilingual learners demonstrate earlier semantic priming effects for recently learned words compared to monolingual leaners, suggesting that prior language learning experience plays an important role in learning and encoding novel word meanings.

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6:00-7:30 PM (3115)

The Influence of Native Language and Sentence Form on Memory of Motion Events. STEPHANIE LOPEZ, *Louisiana State University*, JANET L. MCDONALD, *Louisiana State University* — According to linguistic relativity, speakers of manner-on-verb languages (e.g., English) and path-on-verb languages (e.g., Spanish) attend to motion events based on their manner and path, respectively. Native English speakers and Spanish-English bilinguals performed a recognition memory task on studied items as well as new items differing in either manner or path from studied items. Half the studied events were easy to verbalize and half were hard. Correct recognition of studied videos correlated to how the participant chose to describe the event—including the manner on the verb and the path in a prepositional phrase or elsewhere helped people recognize hard to verbalize targets. A second study had English-speaking participants use only manner or only path descriptions. Extending results we presented last year, we found a three way interaction between description condition, ease of expression and type of new item such that participants were able to reject videos that mismatched how they described them in terms of manner or path, but this effect was stronger for the easy than hard to verbalize items. A similarity judgment task also found that description type affected similarity judgments more for easy than hard to verbalize items.

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FRIDAY

6:00–7:30 PM (3116)

The Effect of Attention in Third Language Acquisition—An Eye-Movement Study. XIAOYU LUAN, *Waseda University*, ERIKO SUGIMORI, *Waseda University*, YAYOI KAWASAKI, *Waseda University* — Our study examined attention's role in third language acquisition using eye-tracking and output tasks. Participants, intermediate Japanese-speaking Chinese learners and Chinese natives, read sentences in Chinese with three structures: relative clauses, prepositional phrases, and SVO word order. They interacted with four sentence types, each exhibiting a different structural error, and later constructed sentences with same structures. Findings reveal both groups pay more attention to semantic-impacting errors (e.g., relative head noun misposition) than form-impacting ones (e.g., word order). Interestingly, learners, despite heightened sensitivity to sentences with relative clause misuse during reading, still frequently exhibited this misuse, possibly due to their second language (English) influence. This suggests attention's role in third language learning is similar to second language acquisition, guiding learners towards semantic information. However, implicit and explicit knowledge development might not synchronize. Despite noting misuse in the input phase, learners might repeat these errors in the output phase, unconsciously transfer features of the previously acquired languages that are similar to the language being learned.

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6:00–7:30 PM (3117)

Real-Time Grammatical Interpretation Across Dialects and Listeners. ZACHARY MAHER, *University of Maryland, College Park*, JAN EDWARDS, *University of Maryland, College Park*, JARED M. NOVICK, *University of Maryland, College Park* — Grammatical differences due to dialect variation are common and listeners use them to make social inferences. We use eye-tracking to ask how listeners (monodialectal speakers of Mainstream American English [n=31] and bidialectal speakers of MAE and African American Language [AAL, n=36]) use knowledge of dialect differences to guide sentence comprehension in real time. In both dialects, a word segmentation ambiguity forced listeners to rely on the agreement morphology of the verb to determine if the subject of the sentence was singular or plural (e.g., The duck(s) swim in the pond). Crucially, in AAL, a singular interpretation is available, while in MAE, only a plural interpretation is available. Participants viewed images corresponding to a singular or plural interpretation of the subject. They were more likely to look at singular images when sentences were spoken by an AAL than an MAE speaker, and bidialectal participants were overall more likely to select a singular than a plural image. The groups did not differ in their level of differentiation between speakers. These results suggest that listeners adapt their interpretation of morphosyntactic cues based on both their linguistic experience and models of others' grammars.

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6:00–7:30 PM (3118)

Characterizing the Relationship between Accented Speech Intelligibility and Listening Effort. MEL MALLARD, *Washington University in St. Louis*, KRISTIN VAN ENGEN, *Washington University in St. Louis* — Unfamiliar accents can make speech comprehension difficult, both by reducing intelligibility and by increasing the effort listeners must exert to understand speech. Intelligibility refers to the proportion of words a listener can identify (100%, 50%, etc.), while listening effort refers to the cognitive resources that must be devoted to listening. Lower intelligibility is generally related to higher effort, but these two constructs are also independent: for example, two 100% intelligible utterances may elicit different amounts of effort. This study aims to characterize the relationship between intelligibility and effort across a range of accented speakers using a dual-task paradigm. We present English sentences produced by four speakers of varying intelligibility. During each sentence, listeners must also respond to a vibrotactile stimulus (with RT indexing effort). As predicted, preliminary data show RTs differing across conditions in an inverse relationship with speaker intelligibility. The full analysis will characterize this relationship in greater detail.

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6:00–7:30 PM (3119)

Do Syntactic Adaptation Effects Reflect Updating of Linguistic Knowledge or Changes in Processing Strategies? Insights from Drift Diffusion Modeling. KELLY MARSHALL, *University of Maryland, College Park*, JARED M. NOVICK, *University of Maryland, College Park*, L. ROBERT SLEVC, PHD, *University of Maryland, College Park* — Syntactic adaptation has been ascribed to updating of linguistic knowledge. Can brief exposure change knowledge formed over a lifetime? Participants (N = 106) listened to pre- and post-exposure sets of globally ambiguous sentences like "Kate hit the cow with the ball" and moved a mouse to choose a picture matching their interpretation: ball as instrument or as modifier. Verbs were instrument-biased. During exposure, they did the same task and answered questions that either disambiguated the sentence to the modifier interpretation (experimental group) or did not disambiguate (control group). Consistent with adaptation, peak mouse speed (reflecting competition among choices) decreased for modifier choices for the experimental group. Drift diffusion modeling extracted 2 parameters: bias and speed-accuracy tradeoff, indexing knowledge and decision processes, respectively. Bayes factor (BF) analysis showed moderate support against verb-bias change, implying no updating. The tradeoff parameter decreased for only the experimental group, suggesting exposure to modifier structures reduced how much information was collected before the choice—yet BF analysis was indeterminate. Decision-making factors may thus contribute to adaptation effects.

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FRIDAY

6:00–7:30 PM (3120)

Novel Metaphor Processing of First- and Second-Language English Speakers: A Behavioral and ERP Study. ADRIANA MILLER, *The Pennsylvania State University*, RAFAL JONCZYK, *Adam Mickiewicz University*, JANET G. VAN HELL, *The Pennsylvania State University* — Mechanisms underlying creative language processing have been examined by comparing behavioral and ERP responses to novel metaphorical, semantically anomalous, and literal sentences (e.g., the water hugged/cancelled/soaked the swimmer, respectively). Monolingual studies reported graded amplitudes of the N400, reflecting that lexical-semantic access is more difficult for anomalous than for novel metaphorical than for literal sentences. For bilinguals, processing novel metaphors in a second language (L2) is hypothesized to 1) be more effortful due to weaker links between L2 concepts or 2) more efficient due to experience with conceptual representations in two languages. We examined Mandarin-English bilinguals' and English monolinguals' ERP and behavioral responses to full-sentence novel metaphors. L1 users and L2 users both rate anomalous sentences as most unusual and literal sentences as most appropriate. Both groups show larger N400 amplitudes for anomalous than for literal sentences. However, while L1 users show sensitivity to novel metaphors, L2 users do not. Data will be discussed in light of bilingual L2 conceptual networks.

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6:00–7:30 PM (3121)

A Systematic Review of Neural Entrainment in Language and Reading Disorders. CHRISTINE MOREAU, *Western University*, LEAH BRAININ, *Western University*, MARC F. JOANISSE, *University of Western Ontario* — Prior research has suggested auditory neural entrainment (the alignment of neuronal oscillations to rhythmic acoustic patterns in speech or nonspeech sounds) is atypical in children with either reading disability (RD/dyslexia) or developmental language disorder (DLD). This deficit might cause poor encoding and processing of temporal speech information, affecting language and reading development. However, methods for identifying these deficits vary significantly. We present a systematic review (k = 36) summarizing the state of research on neural entrainment in children or adults with DLD or RD. We observe the strongest evidence of impairment in RD, with affected individuals showing differences across a range of methodologies. Generally, they demonstrate atypical neural entrainment to prosody, syllables, and phonemes. In contrast, only four studies were conducted on children with DLD, demonstrating the need for more research in this area. The results point the way forward to a more unified approach to examining neural entrainment in both populations.

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6:00–7:30 PM (3122)

Perceptual Statistical Learning Transfer to Speech Perception Even with Sparse Production Opportunities. TIMOTHY MURPHY, *Carnegie Mellon University*, LORI L. HOLT, *Carnegie Mellon University*, NAZBANOU NOZARI, *Carnegie Mellon University* — Statistical learning in speech perception can transfer to speech production. But prior research indicates that production may be crucial to transfer. We manipulated the proportion of opportunities for production to test the influence of overt production on transfer. Participants passively listened to word sequences that either conformed to, or deviated from, English statistical norms, and subsequently made a perceptual judgment to an ambiguous word and orally repeated it. One group repeated each test stimulus whereas another group repeated only every 10th stimulus. Despite a 10:1 difference in production opportunities, both groups showed a clear influence of the statistical properties of input on their production. Critically, the magnitude of such transfer was comparable between the two groups, indicating that even sparse production opportunities are sufficient to drive the transfer of statistical learning from speech perception to production.

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6:00–7:30 PM (3123)

How Do Accents Influence Speakers' Credibility?. DONOVAN OAKLEY, *Eastern Kentucky University*, MONTSERRAT CRUZ, *Eastern Kentucky University*, CAROLINE E. HAYDON, *Eastern Kentucky University*, SARA INCERA, *Eastern Kentucky University*, HANNAH DAUGHERTY, *Eastern Kentucky University* — We examined the effect of accents on listeners' perceptions of speakers' credibility. Participants rated the credibility of trivia statements on a continuous scale from true to false. We used audio recordings from four accented speakers: Cambodian, German, Midwestern, and Appalachian. Listeners were from Kentucky, so the Appalachian accent presents an interesting condition to disentangle competing hypotheses. According to the "negative bas" account the Appalachian speakers should be rated as less credible. According to the "cognitive ease" account the Appalachian speakers should be rated as more credible. We found that speakers with Appalachian accents were rated most credible (supporting the Cognitive Ease account), while speakers with Cambodian accents were rated least credible by participants. Additionally, Cambodian accented speakers were rated least familiar and most difficult to understand. The Cambodian accented speakers were the only condition wherein familiarity had a positive correlation with credibility.

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6:00–7:30 PM (3124)

Effects of Sentence Predictability on Effort as Measured by Pupillometry. NAOMI K. SELLERS, *University of Connecticut*, HANNAH MECHTENBERG, *University of Connecticut*, EMILY MYERS, *University of Connecticut* — Prediction of upcoming language input has been proposed as a mechanism to support online language processing by forming expectations of what linguistic information will be encountered next given the previously occurring information. In a noisy environment, prediction is thought to facilitate comprehension by reducing the amount of effort needed to process the signal. In this study, we asked if decreasing sentence predictability would increase the listening effort needed to comprehend spoken sentences. Participants listened to sentences with either high or low predictability, masked with multitalker babble, while we

measured changes in pupil area. We used a probe-word verification task to track perception accuracy. Sentence predictability predicted both probe word response accuracy and pupil dilation. This suggests that a sentence's predictability—arising from some combination of linguistic regularities and one's language and world knowledge—can affect not only end-point processing accuracy but also the amount of effort needed to comprehend.

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6:00-7:30 PM (3125)

Individual Differences in Speech Perception Gradiency and Listeners' Recovery from Lexical Garden Paths in L1 and L2. BRIAN W. L. WONG, *Basque Center on Cognition, Brain and Language (BCBL)*, ARTHUR SAMUEL, *Stony Brook University, Basque Center on Cognition, Brain and Language (BCBL), & Ikerbasque*, EFTHYMIA KAPNOULA, *Basque Center on Cognition, Brain and Language (BCBL) & Ikerbasque* — Speech perception gradiency (i.e., the extent to which listeners maintain subphonemic information) has been found to predict the likelihood of recovery from temporarily misleading lexical information in native English speakers (Kapnoula et al., 2021). This suggests that listeners with higher gradiency can entertain multiple hypotheses in parallel, rather than fully committing to one lexical candidate, which in turn enables them to recover more easily from erroneous interpretations. The current study asks (1) whether this finding also holds true in L2 speech processing and (2) whether this relationship is modulated by L2 proficiency. To address these questions, we tested Spanish-English bilinguals living in Spain. Following previous work, gradiency was assessed using the Visual Analogue Scaling task and recovery from lexical garden paths was measured in an eye-tracking/Visual World Paradigm task. Both measures were collected in L1 (Spanish) and L2 (English), in separate sessions. The results will clarify whether gradiency plays the same role in L2 as in L1, and whether more gradient L1 listeners are also more gradient L2 listeners.

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6:00-7:30 PM (3126)

Men Are More Careful than Women? Listener Perception of Final Words in Sentences with Semantically Surprising and Typical Endings. JESSICA E. D. ALEXANDER, *Centenary College of Louisiana*, SARAH IRONS, *Hendrix College*, MACKENZIE G. WILLIAMS, *Centenary College of Louisiana* — When speakers deliver confusing information to listeners, do they alter their speaking style to a more careful pronunciation? We recorded speakers reading sentences that had semantically surprising (but syntactically appropriate) endings (e.g., The bride walked down the chicken) or typical endings (e.g., For dinner we had rice and chicken). Participants listened to the final words from the sentences and typed them, rated them on pronunciation quality, labeled them as careful/casual, and tried to match the sentence prompt to the two potential ending words. There were differences in listeners' perceptions based on the sentence and speaker sex. The sentence context of the word interacted with speaker gender so that the semantically surprising final words were less intelligible, more casual, and rated as less good pronunciations for women, with opposite results for men. Careful and casual speaking styles seem to be used differently by men and women when reading aloud semantically atypical sentences.

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6:00-7:30 PM (3127)

Exploring Abstract Pattern Representation in the Brain and Non-symbolic Neural Networks. ENES AVCU, *Massachusetts General Hospital & Harvard Medical School*, SKYLA M. LYNCH, *Massachusetts General Hospital*, DAVID W. GOW, JR., *Massachusetts General Hospital & Harvard Medical School* — Human cognitive and linguistic generativity depends on the ability to identify abstract relationships between perceptually dissimilar items. Marcus et al. (1999) found that human infants could easily discover and generalize patterns of syllable repetition (reduplication) that depend on the abstract property of identity, but simple recurrent neural networks (SRNs) could not. Here, we investigate whether a related class of models, long short-term memory (LSTM) models, can identify similar patterns of syllable repetition based on training with cochleagrams representing auditory stimuli. Simulations examined the effects of training categories (words vs. patterns) and pretraining to identify syllables on the development of hidden node representations that support repetition pattern discrimination. Representational similarity analyses (RSA) comparing patterns of regional brain activity to patterns of hidden node activation show significant correlations. Our results suggest that associative mechanisms operating over discoverable representations capturing abstract stimulus properties account for a critical example of human cognitive generativity.

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6:00-7:30 PM (3128)

Listeners Balance Segmental and Prosodic Information During Word Recognition. ANDRÉS BUXÓ-LUGO, *University at Buffalo, SUNY* — Listeners make use of many different types of information when making sense of speech sounds and the words they are communicating (e.g., lexical status, Ganong, 1980; visual input, McGurk & MacDonald, 1976; sentence context, Connine, 1987). Prosody provides similar kinds of high-level information. How do listeners combine segmental and prosodic information during word recognition? To answer this question, we used a modified 2 alternative forced-choice task. Participants heard two words per trial and provided judgments of what word they heard. Critical trials consisted of /b/-/p/ minimal pairs (bin-pin) and we manipulated the voice onset time of the second word along a 9-step continuum. Critically, the intonational contour of the second word was also manipulated so that it either had contrastive prosody or neutral prosody. Lastly, we manipulated whether the second word was different from the first word (licensing contrastive focus; bin-PIN) or a repetition of the first word. Results (48 subjects) show that listeners balance segmental and prosodic information when making judgments about word identity such that the same combination of segmental cues is interpreted differently depending on context and intonation.

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FRIDAY

6:00–7:30 PM (3129)

Cantonese Tone Perception in Punjabi Learners of Cantonese: Implications for the Perceptual Assimilation Model for Suprasegmentals. WILLIAM CHOI, *The University of Hong Kong*, DORIS YU, *The University of Hong Kong*, VERONICA KA WAI LAI, *Manitoba University* — The Perceptual Assimilation Model for Suprasegmentals (PAM-S) theorizes how first language tone system influences the discriminability of non-native tone contrasts. We further tested (i) whether PAM-S applied to second language tone discrimination and (ii) whether its applicability hinged on talker variability. Punjabi learners of Cantonese completed the Cantonese tone assimilation task, in which they assimilated the Cantonese tone contrasts as two category (TC), single category (SC), uncategorized-categorized without overlap (UC-no), and uncategorized-categorized with overlap (UC-o) pairs. This yielded testable predictions for PAM-S. Participants further completed the Cantonese tone discrimination task in three contexts. In the double-talker context, they discriminated the UC-no pair more accurately than the SC and UC-o pairs; and the TC pairs better than most SC and UC-o pairs. However, all tone contrasts were equally discriminable in the single-talker and pure tone contexts. Collectively, PAM-S applies to second language tone discrimination, but its applicability hinges on talker variability.

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6:00–7:30 PM (3130)

The Dimensions of Real-Time Spoken Word Recognition in Cochlear Implant Users. SARAH COLBY, *University of Iowa*, FRANCIS X. SMITH, *University of Iowa*, MARISSA HUFFMAN, *University of Iowa*, CHARLOTTE JEPPSEN, *University of Iowa*, JOHN B. MUEGGE, *University of Iowa*, ETHAN KUTLU, *University of Iowa*, BOB MCMURRAY, *University of Iowa* — Word recognition is a critical nexus of language processing, connecting incoming speech to meaning. For normal hearing adults, the competition process underlying word recognition is well established. Lexical candidates that match the input are activated as the signal unfolds and compete for recognition. However, listeners execute this competition process differently: development and aging affect the speed of activating words (activation rate), while hearing loss affects both the later resolution stage (sustained activation) and can entirely delay competition (wait-and-see). We sought to determine the fundamental dimensions on which real-time processing varies across listeners. We used the visual world paradigm to examine a population of cochlear implant users (N = 101) who vary in their language ability and demographic/audiological factors. A principal component analysis revealed three dimensions of word recognition that mirror previous results. Each dimension was predicted by different auditory and demographic factors (age, onset of deafness, auditory fidelity) and each predicted outcomes over and above auditory fidelity. This suggests that these are orthogonal dimensions along which listeners vary, not all-or-nothing strategies.

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6:00–7:30 PM (3131)

Using EEG to Compare Multiple Top-Down Factors on Speech Perception. LAURA M. GETZ, *University of San Diego*, SAMANTHA EASON, *University of San Diego* — Using a cross-modal semantic priming task, the auditory N100 can be modulated for ambiguous targets based on top-down expectations (Getz & Toscano, 2019). Here, we looked at how reaction times and N1 amplitudes were affected by four top-down factors in a purely auditory task: semantic priming, lexical status, word frequency, and neighborhood density. Participants heard primes that either led to a specific expectation of the target ("MARCHING band") or no specific expectation ("EVENING bomb"). Auditory targets began with voiced (/b,d,g/) or voiceless (/p,t,k/) stop consonants, and were crossed for minimal vs. word-nonword pairs, high vs. low frequency, and high vs. low density. We found (N=32) prime type had the largest effect on reaction times ($F = 52.08$), followed by density ($F = 27.30$), frequency ($F = 25.16$), and lexical status ($F = 16.21$), all $p < .001$. EEG data collection is ongoing, but results will contribute to understanding the time course of speech perception and the relative strength of different top-down factors.

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6:00–7:30 PM (3132)

Separable Effects of Speech Input Statistics on Phonetic and Talker Processing. SAHIL LUTHRA, *Carnegie Mellon University*, LORI L. HOLT, *Carnegie Mellon University* — The acoustic speech signal simultaneously conveys linguistic and social information, but research typically examines these aspects independently. We take a novel approach to understanding potential interactions using statistical learning. Listeners experienced phonetic distributions of beer-pier tokens that conformed to English norms, or deviated from expectations as in a non-native accent. Replicating prior work, listeners down-weight reliance on fundamental frequency (F0)—a secondary acoustic dimension signaling /b/ vs. /p/—when passively-experienced stimulus distributions violate English phonetic norms. Statistical learning transferred to affect how F0 impacted male/female category judgments on the same test tokens. The pattern of transfer was consistent with an adjustment of the weight of F0 in category activation and not a wholesale diminishment of F0 representation. Examination of the transfer of statistical learning between phonetic and gender speech categories offers a new approach to examining interactions between phonetic and talker processing.

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6:00–7:30 PM (3133)

Group- and Individual-Level Memory Asymmetries for Hindi and English Talkers in the Continuous Recognition Paradigm. WILLIAM CLAPP, *Stanford University*, MEGHAN SUMNER, *Stanford University*, CHARLOTTE VAUGHN, *University of Maryland* (Sponsored by Meghan Sumner) — Spoken words are recognized more quickly and accurately when they are repeated in the same voice than in a different voice. While this effect has been widely replicated, we might assume it stable across languages, talkers, and listener populations. Recent work suggests that memory encoding

and retrieval vary based on talkers' voice attributes. In this study, we investigate both the generality of this effect across languages, and the individual-nature of talker-specific memories. Across two continuous recognition memory experiments (American English, Exp. 1; Hindi, Exp. 2), we found that specificity effects held in both languages. Critically, the effect sizes differed across talker demographic categories, and for talkers within demographic categories. This study provides some of the first evidence that there may be broadly human factors that condition the depth of episodic encoding of spoken words—across languages and cultures.

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6:00-7:30 PM (3134)

Cognitive Control Affects Attention to Irrelevant Stimuli During Speech Recognition. SUSAN TEUBNER-RHODES, *Auburn University*, CARLA MARTINEZ-PEREZ, *University of Florida*, SHARON KRAMPER, *Auburn University*, ANDREW LUU, *Auburn University*, REBECCA DUNTERMAN, *Auburn University* — Cognitive control may help individuals understand speech in background noise. We previously found that phonological conflict, which is thought to induce cognitive control, improved subsequent speech recognition in noise during a picture-speech conflict task. However, it is unclear whether cognitive control directs attention to relevant environmental information or resolves conflict between co-activated phonological neighbors. The present study explored how cognitive control operates during speech recognition in noise. Participants listened to and repeated spoken words presented at +4 dB SNR in multitalker babble. Each word was presented with a congruent ("bat"-bat) or incongruent ("scars"-scarf) picture, or without a picture on null trials. Preliminary data (n = 18) show significant facilitation (+34%) and interference (-9%) for congruent and incongruent pictures, respectively. Following conflict, performance improved significantly on incongruent (+23%) but not null trials (+4%, n.s.). Our findings suggest that cognitive control operates primarily by reducing attention to misleading visual information during this picture-speech recognition in noise task.

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6:00-7:30 PM (3135)

Rapid Speech Adaptation under Adverse Listening Conditions. YUTING GU, *University of California, Irvine*, XIN XIE, *University of California, Irvine*, CHIGUSA KURUMADA, *University of Rochester* (Sponsored by Xin Xie) — Listeners can adapt rapidly to nonnative-accented speech after relatively short exposure, resulting in faster and more accurate response. However, it is unclear whether exposure to unfamiliar nonnative-accented speech creates perceptual advantages generalizable to other adverse listening conditions. Under an exposure-test paradigm, we ask whether exposure to speech-in-noise enhances the recognition of nonnative-accented speech and vice versa. During exposure, native speakers of American English heard native-English sentences presented in quiet (Control), in noise (Noise) or Mandarin-accented English presented in quiet (Accent). Then all listeners were tested with both types of challenging speech (Noise and Accent) from a different speaker. Of interest is whether listeners in either Noise or Accent condition outperform—indexed by faster processing and greater accuracy—control listeners not only for the type of speech heard during exposure but also for the unheard type of speech (i.e., exposure-independent adaptation). Generalized mixed-effects regression models will be used to evaluate these effects.

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6:00-7:30 PM (3136)

Examining Shifts of Processing in the Development of Expertise: Is Processing of Sheet Music Related to Word Processing in Musicians and Non-Musicians?. MELISSA BECK, *Louisiana State University*, ARIEL CONNER, *Louisianan State University* — Musicians outperform non-musicians when processing sheet music, potentially due a change in processing as expertise develops. Visual working memory for sheet music was measured with a flicker change detection task for simple and complex sheet music. Previous work has found that musicians can detect the appearance and disappearance of a note faster than non-musicians and we replicated this effect. The effect was present for both simple and complex sheet music but was stronger for complex sheet music. Participants also completed a word/non-word identification task. There was no effect of music expertise on response times for the word/non-word identification task. However, response time on the complex change detection task and the word/non-word identification task were correlated for non-musicians, but not for musicians. This suggests that, for non-musicians, processing sheet music is related to processing words. However, for musicians, the processing of sheet music is different from the processing of words. Therefore, the development of expertise in reading sheet music is associated with a transition away from using word-based processing.

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6:00-7:30 PM (3137)

Distributed Practice Does Not Improve Acquisition or Retention of Drawing Skills. MELODY WISEHEART, *York University*, JESSICA CUCIUREAN, *York University* — Spaced learning has been shown to boost retention in the verbal learning domain. Motor skills studies showed mixed results, with fine and gross motor skills tending to produce a spacing effect, and complex skill learning such as surgical skills, military training, and music training often failing to demonstrate a spacing effect. We examined whether the spacing effect is useful when learning a previously unstudied complex motor skill: observational line drawing. Novice drawers (n = 77) recruited through social media were randomized to one of two conditions: spaced (one lesson once a week) and massed (one lesson daily). Both groups completed 4 drawing classes and a drawing test three weeks after their fourth class. Drawings from the first and last class as well as the test session were evaluated. Bayesian independent samples t-tests revealed equivalent baseline skills at class 1, equivalent learning at class 4, and evidence against a spacing effect at the test session.

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FRIDAY

6:00-7:30 PM (3138)

Individual Differences in Learning a Complex Visuo-Motor Task. EMMA G. CUNNINGHAM, *University of Wisconsin-Madison*, LAUREN E. ANTHONY, *University of Wisconsin-Madison*, LEVI A. KASTEN, *University of Wisconsin-Madison*, EZGI M. YUKSEL, *University of Wisconsin-Madison*, C. SHAWN GREEN, *University of Wisconsin-Madison* (Sponsored by C. Shawn Green) — In this project we examined individual-level predictors of both training performance and the ability to generalize training in the context of a complex visuo-motor task (flying a mini-copter). Participants with minimal-to-no mini-copter experience completed five training sessions of flying a mini-copter on a circular course in a constant direction (e.g., clockwise). Then, in the sixth session, they flew through several "generalization" courses (e.g., flying in the opposite direction as during training, flying through different height hoops than during training, flying a previously unexperienced course, etc.). Participants also underwent an extensive battery of individual difference measures—including cognitive (e.g., spatial imagery, depth perception, motor dexterity), personality, and lifestyle (e.g., video-game habits) measures. Preliminary results indicate substantial variability in all aspects of mini-copter training performance (e.g., initial ability, learning rate, asymptotic performance) as well as in generalization performance, each of which is in turn potentially related to core individual difference factors.

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6:00-7:30 PM (3139)

Investigation of the Relationship Between Motor Sequence Learning and Rule Switching Through Individual Differences. CHIAO-EN CHAN, *National Central University Institute of Cognitive Neuroscience*, DENISE WU, *National Central University*, ERIK CHIHHUNG CHANG, *National Central University* — A good learner should acquire a novel rule efficiently while remaining highly flexible to switch to a new rule, but the relationship between these two abilities is rarely explored. In the current study, we examined these two aspects of learning by obtaining three measures of motor sequence learning in an modified serial reaction time task containing two different repeated sequences: overall learning as reflected in reaction time (RT) difference between repeated and random sequence, learning efficiency as measured by the negative slope of RT improvement across time, and rule switching cost as reflected in the longer RT in the first block of the second than the first rule. The results from 44 participants showed no correlation between the indices of learning efficiency and switching cost. In contrast, the index of overall learning, which includes learning efficiency, practice of key-presses, and the expectation of a rule embedded in the motor sequence, positively correlated with the cost of rule switching. These findings suggested that learning efficiency of repeated motor sequence is independent of rule switching flexibility. Moreover, the better one learns a motor sequence, the more effort one spends to switch to a new rule.

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6:00-7:30 PM (3140)

The Role of the DLPFC in the Retrieval of Probabilistic Sequence Knowledge—An rTMS Study. LAURA SZÜCS-BENCZE, *University of Szeged*, TEODORA VEKONY, *INSERM*, ORSOLYA PESTHY, *Eötvös Loránd University (ELTE)*, NIKOLETTA SZABÓ, *University of Szeged*, DEZSO NEMETH, *Université Claude Bernard Lyon 1, Eötvös Loránd University (ELTE), & Hungarian Academy of Sciences* — The acquisition of probabilistic sequences plays a crucial role in skill development and predictive processing. Recent studies have shown that "inhibition" of the dorsolateral prefrontal cortex (DLPFC) via repetitive transcranial magnetic stimulation (rTMS) can enhance sequence learning. Previous research primarily focused on rTMS-mediated modulation of the encoding phase of sequence learning, which benefits following a certain period of consolidation. In this study, we aimed to investigate whether inhibitory rTMS of the DLPFC can still modulate the retrieval of well-established sequence knowledge. Healthy human participants performed an implicit probabilistic sequence learning task for 25 minutes. Twenty-four hours after the encoding phase, participants underwent either 1 Hz rTMS or sham stimulation for 10 minutes over the left, right or bilateral DLPFC. Participants' sequence knowledge was tested immediately after the rTMS administration. The groups receiving rTMS to the DLPFC showed similar levels of probabilistic sequence knowledge to the sham group. The findings highlight the robustness of implicit probabilistic sequence learning and suggest that the DLPFC plays distinct roles in the encoding and retrieval processes.

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6:00-7:30 PM (3141)

The Role of Language in Remembering and Implementing Newly Instructed Stimulus-Response Rules. FELICE VAN 'T WOUT, *University of Exeter*, EMMA DELERIS — Language is thought to make a crucial contribution to instruction following. Consistent with this, recent evidence has shown that the execution of newly instructed stimulus-response (S-R) rules is impaired when a verbal distractor task (rather than a non-verbal distractor task) has been performed during the instruction phase (Van 't Wout & Jarrold, 2022). Two experiments investigated whether a verbal distractor task negatively affects memory for ("knowing") or implementation of ("doing") newly instructed S-R rules. In Experiment 1 (N = 48), participants completed a series of novel choice-reaction time tasks, with each task consisting of six S-R rules. All tasks were preceded by a 10 second instruction phase (a visual depiction of the S-R rules), during which participants performed either a verbal or a non-verbal distractor task. The verbal distractor task negatively affected both the memory for and implementation of the instructions. Experiment 2 (N = 48) also showed that the detrimental effect of the verbal distractor task remained significant under self-paced encoding conditions. Together, these results show that a verbal distractor task hinders the encoding of (and thereby the implementation) of instructions.

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FRIDAY

6:00–7:30 PM (3142)

Do Students' Pre-Existing Beliefs Influence the Impact of Lecture Fluency on Judgments of Learning, Evaluations of Teaching Effectiveness, and Test Performance?. PAIGE E. NORTHERN, *Southeast Missouri State University*, S. UMA TAUBER, *Texas Christian University* — Students who watch disfluently delivered lectures (monotone voice with minimal eye contact) typically provide lower judgments of learning (JOLs) and instructor evaluations compared to those who watch fluently delivered lectures (enthusiastic tone with eye contact). However, students' pre-existing beliefs about the quality of an instructor may impact these effects. To investigate this, in multiple experiments students read instructor evaluations that were positive, negative, or both positive and negative. Students then watched a fluent or a disfluent lecture, gave a JOL, evaluated the instructor, and completed a test. Lecture fluency impacted JOLs, and both lecture fluency and peer evaluations impacted students' evaluations of the instructor. Lecture fluency did not impact students' test performance in one experiment, but it did in another. These findings demonstrate that pre-existing beliefs and experiences during lectures can impact students' assessments of their learning and instructors.

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6:00–7:30 PM (3143)

The Impact of Requiring Answer Explanations on Multiple-Choice Test Performance and Judgements of Learning. SPENSER CLARK, *Utah Valley University*, ACACIA OVERONO, *Utah Valley University* — Previous studies have shown that having the option to explain the answer to multiple-choice (MC) questions during tests increases the likelihood of selecting the correct answer compared to standard multiple-choice questions. In the present research, we examined whether this benefit persists when participants are required to explain their answers to multiple-choice questions and the impact these types of questions have on judgements of learning (JOL). Participants read a textbook chapter and were assigned instructions for either a MC test or a MC test that required explanation (MCE). Next, participants made JOLs both before and after a 12-question MC or MCE test. Consistent with previous findings, the results revealed that the MCE group outperformed the MC group on the test. Furthermore, JOLs prior to the test showed participants in the MC group overestimated their performance while the MCE group did not show any evidence of bias in their predictions. The post-test JOLs between the groups did not differ. These findings indicate that requiring an explanation for a MC question improves performance on tests and influences JOLs differently than MC tests.

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6:00–7:30 PM (3144)

The Impact of Elaborative Strategy Instruction: A Meta-Analysis. ALISON ROBEY, *SUNY Empire State University*, DAVID MARTINEZ, *University of Maryland, College Park*, PAUL VERHAEGHEN, *Georgia Institute of Technology*, RACHEL THOMPSON, *University of Maryland* — Elaborative strategies are simple, inexpensive, and easy-to-implement interventions that improve performance on long-term memory tasks. Despite their benefits, elaborative strategy instruction is not as prevalent as cognitive scientists might expect. Two potential explanations are (1) underestimations of the effect size of the benefits of strategy instruction and (2) inaccurate beliefs that young adults will always spontaneously engage in elaborative strategy use when beneficial. The current meta-analysis aims to explore the impact of explicit elaborative strategy instruction on long-term memory performance in young adults. Approximately 600 articles were found that examined strategy manipulations. Analyses compare conditions where participants were given elaborative strategy instructions to conditions where participants were given (a) no instructions or (b) instructions to engage in non-elaborative strategies (i.e., rote rehearsal). Potential moderators include the impact of between vs. within-subject designs, the type of memory task (i.e., free vs. cued recall), simultaneous vs. sequential stimuli presentation, and list length.

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6:00–7:30 PM (3145)

Experience, Reflect, and Learn: Developing an Intensive Post-Simulation Guided Reflection to Enhance Experiential Learning in Nursing Education. MADISON LEE, *Vanderbilt University*, CALEB VATRAL, *Vanderbilt University*, CLAYTON COHN, *Vanderbilt University*, EDUARDO DAVALOS, *Vanderbilt University*, GAUTAM BISWAS, *Vanderbilt University*, ERIC HALL, *Vanderbilt University*, JO ELLEN HOLT, *Vanderbilt University*, MARY ANN JESSE, *Vanderbilt University*, DANIEL LEVIN, *Vanderbilt University* — Simulation-based education is impactful because it supports generalization via similarity between learning and application settings. However, simulation instructors often lack comprehensive information about students' simulation performance and students often need additional support linking their experiences with relevant domain knowledge. Verbal post-simulation debriefs help address these needs, but they do not ensure the opportunity for instructors or students to thoroughly reflect on simulation performances, and they offer only limited insights into rich cognitive processes that occur during simulations. We developed an intensive, personalized reflection procedure that allows students to comprehensively review egocentric eye-tracking video by segmenting their experience, classifying each event that occurred during the simulation, and providing ratings of key learning-relevant cognitions during each event. This reflection process leverages the memory-enhancing effects of event segmentation to support self-regulated learning and makes systematic records of student actions available to instructors. Data collected also reveals linkages between learning analytics and student cognitions that may contribute to real-world improvements.

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6:00–7:30 PM (3146)

Snap & Write: Examining the Effect of Taking Photos and Notes on Memory for Lecture Content. MARY TREGO, *University of California, Riverside*, JULIA S. SOARES, *Mississippi State University*, ANNIE S. DITTA, *University of California,*

FRIDAY

Riverside — Recent research has examined the effect of photo-taking of slides on lecture learning; however, the combined effects of photo- and note-taking have not been examined. It is possible that taking both notes and photos of the slides simultaneously increases participants' cognitive load (Sweller, 1994) and impairs learning compared to taking photos or notes alone. In a series of studies, participants watched two lecture videos with four conditions in a fully within-subjects design: observe-only, take photos, take notes, and take both photos and notes simultaneously. Memory performance was tested using short-answer questions. Experiment 1a revealed that taking both photos and notes impaired memory compared to taking notes alone. Experiment 1b was a replication and extension to examine potential mechanisms (e.g., mind wandering, cognitive load) underlying the memory effects. Preliminary analyses have revealed an overall photo-taking impairment effect but no interaction effect, as well as less mind wandering when participants take photos and notes compared to only taking photos. Data collection for Experiment 1b is still underway.

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6:00-7:30 PM (3147)

Fostering Open-Mindedness Through Metaphorical Framing. YVES GERBER, *University of Geneva*, EMMANUEL SANDER, *University of Geneva* — The ability to detach oneself from one's previous beliefs or opinions can be crucial in enabling students to integrate information from multiple sources that express diverse, even contradictory, points of view. The involvement of mechanisms favoring the preservation of beliefs makes this meaningful educational goal challenging. This study explores the effect of an intervention designed to facilitate a detachment from prior beliefs and opinions using metaphorical framing by encouraging a perspective that supports open-mindedness. We compared the evolution of adherence to a false belief about the learning styles of students exposed to an inquiry frame to that of students exposed to a weapon frame before completing an information-searching task. Two hundred four bachelor and master degree students were randomly assigned to one of these experimental conditions. Adherence to the false belief about learning styles decreased 1.61 more in the inquiry condition than in the weapon condition, suggesting that the metaphorical framing of the inquiry favors detachment from the initial opinions over that of the weapon. The results of this study are encouraging from the prospect of using metaphorical framing to promote open-mindedness.

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6:00-7:30 PM (3148)

Augmenting Learning Objectives. STEPHANY D. REA, *The University of Texas at Austin*, VERONICA X. YAN, *The University of Texas at Austin*, FARIA SANA, *Athabasca University* — Learning objectives (LOs), considered a core component of pedagogical design, are often ignored by students. In this study, we investigate ways of encouraging students to more actively engage with and process LOs and examine the impacts on their learning. Participants read three LOs followed by a chapter on decision-making and then answered test questions. Each page corresponded to one LO. Participants were randomly assigned to condition: control (read the LOs), metacognitive (rate confidence in each LO), or pre-questions (attempt to answer the LO). We explored the effects of the LO manipulations on reading time and test performance. The active LO conditions led to greater time spent and higher final test performance for LO1, but benefits faded with each subsequent page. One explanation is that the benefits are content-dependent; another explanation is that benefits of the LO manipulations fade—future research will explore whether interpolating the LOs with readings would preserve the benefits. We also present metacognitive data relating to participants' beliefs about and use of LOs.

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6:00-7:30 PM (3149)

Talking Head Videos Do Not Enhance Learning, But Might Promote Engagement Depending on Individual Preference. DAHWI AHN, *Iowa State University*, JASON C.K. CHAN, *Iowa State University* — COVID-19 greatly increased the online delivery of higher education. A practical question that arises is whether instructors should include their faces in video lectures. Observational research suggests that instructor talking head can increase student engagement (Guo et al., 2014). Here, we investigated this question in an experiment. Participants completed a survey about their preference for face presence in lecture videos and then watched two 8-min lecture videos online, one with and one without the instructor talking head. We also manipulated video playback speed (1x vs. 1.5x vs. 2x) between-subjects as an exploratory question. After each lecture, participants completed an engagement survey and took a test on the lecture they had just watched. Neither engagement nor test performance differed based on the instructor presence. However, participants reported higher engagement when instructor presence aligned with their preference. For example, if participants preferred face-present videos, their engagement was higher in the face-present condition than in the face-absent condition. Lastly, participants in the 2x condition performed poorer on the test compared to those in the 1x and 1.5x conditions.

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6:00-7:30 PM (3150)

The Cognitive Cost of Speed: How Video Playback Speed Relates to the Intrinsic, Extraneous, and Germane Elements of Cognitive Load. ETHAN CASTANON, *Visual Information Sciences and Neuroscience (VISN) Lab*, ANN HILLARY BUENAFE, *Visual Information Sciences and Neuroscience (VISN) Lab*, JUSTIN A. GLUCK, *California State University, Northridge*, STEFANIE A. DREW, *California State University, Northridge*, IVAN ALATORRE — The COVID-19 pandemic transformed educational methods toward online video formats. Previous literature has suggested that cognitive load may have a significant influence on a learners ability to retain information when it comes to video playback speed. This study explored the relationship between different recorded lecture video speeds and cognitive load subcomponents (intrinsic, extraneous, and germane). Based on the literature, we hypothesized that as lecture video playback speed increases, overall cognitive load and intrinsic load would not significantly differ across conditions, but extraneous load would increase and germane load would

decrease. Participants solved a math problem before and after viewing a recorded lecture explaining the problem at either 1.0x, 1.5x, or 2.0x speed, before finally completing a cognitive load survey. Linear regression analyses indicated that increased video speed yielded increased intrinsic load and decreased germane load while overall cognitive load and extraneous load were not significantly related to video speed. Further implications are discussed.

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6:00–7:30 PM (3151)

Can Reading Refutations to False Claims on Social Media Support Accurate Understandings?. DAVID N. RAPP, *Northwestern University*, CLAIRE E. MASON, *Northwestern University*, MANDY M. WITHALL, *Northwestern University* — Exposures to inaccurate information can lead to misunderstandings, and social media posts often contain deliberate or unintended falsehoods. The current study demonstrated the problematic effects of reading inaccurate social media posts, and tested the utility of refutational responses for supporting accurate understandings. In two experiments, participants read Tweets containing true or false information and then answered questions related to the Tweets' contents. In Experiment 1, false Tweets were followed by a partial refutation indicating the idea was wrong, a complete refutation indicating the idea was wrong and also including the correct information, or no reply. In Experiment 2, false Tweets were followed by a complete refutation written in an aggressive or non-aggressive way, or no reply. Participants were more likely to reproduce false information to answer questions after reading Tweets containing false as compared to true information. This was less likely when Tweets were followed by a refutation, with aggressive and non-aggressive refutations similarly beneficial. These findings have implications for designing and navigating information spaces, including but not limited to social media.

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6:00–7:30 PM (3152)

Working Memory Capacity Influences Text Skimming. CHRISTOPHER SANCHEZ, *Oregon State University*, LENA HILDENBRAND, *University of Illinois Chicago*, COURTNEY POWELL, *Oregon State University* — Previous research has identified reliable differences in how individuals skim text for understanding; such that individuals adjust reading patterns based on existing goals or estimates of comprehension. Critical to these explanations is the need for executive processing to manage goal relevant processing. Thus, individual differences in the ability to manage attention and goal relevant information should likewise impact how readers skim text. Participants were asked to read and understand a short expository text under extreme time pressure, and reading time was recorded. Participants also completed a test of comprehension. Results indicated that higher WM individuals more equitably managed their reading, paying more attention to later portions of the passage, whereas lower WM individuals focused their reading on only the first few paragraphs. This suggests, consistent with studies of normal reading, that text skimming behavior is likewise influenced by differences in working memory capacity.

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6:00–7:30 PM (3153)

An Exploration of Story Satisfaction and Memory for Story Details. JOHN TAYLOR, *Southern Oregon University*, EMILIO M.A MCCUTCHEON, *Southern Oregon University* — The investigation of what makes stories satisfying or unsatisfying to people is scarce. We sought to understand whether high satisfaction from reading a good story correlated with better memory, and whether extending the rising action decreased satisfaction and therefore, worsened memory capacity. To extend the rising action of the story, we used an artificial intelligence engine called InferKit. We conducted a randomized experiment on Mechanical Turk where participants read four stories, either in the extended story group or the original stories group. Shortly after reading a story, participants responded on a satisfaction scale and completed a memory test of true or false questions about details of each story. We conducted a two-tailed t-test to analyze the results. Surprisingly, we found that there was no significant difference between the original story's satisfaction versus the extended ones, and the memory capacity in the extended group was actually better than the original group, though not reaching statistical significance. We discuss the results in light of future studies examining satisfaction and memory of stories.

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6:00–7:30 PM (3154)

Validation Processes and Reading Instructions: Is Validation Against Background Knowledge and Prior Text Influenced by Reading Instructions?. MARLOES VAN MOORT, *Utrecht University*, ARNOUT KOORNNEEF, *Leiden University*, PAUL VAN DEN BROEK, *Leiden University* — Prior work on the influence of reading goals on comprehension processes and products involved examinations of how people read and learn valid, true information, but in daily life people frequently encounter false or incongruent information. Therefore, we investigated whether and how reading instructions affect the processing of texts containing false or incongruent information and readers subsequent memory for those texts. We used a self-paced sentence-by-sentence contradiction paradigm with texts that varied systematically in (in)congruency with prior text information and (in)accuracy with readers' world-knowledge. Participants were instructed to evaluate either the accuracy (fact-checking) or the congruency of text information (coherence-checking). Memory for text information was assessed the next day. Results show different patterns of online and offline results that are difficult to reconcile. Instructions influence knowledge-based and text-based validation processes, but they did not differentially affect readers' memory for incongruent and false targets. This suggests that the processing differences elicited by the instructions did not affect readers memory for incongruent or false target information.

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FRIDAY

6:00–7:30 PM (3155)

Nature and Prevalence of Reading Misconceptions Among Parents, Teachers, and Reading Specialists. KYLE STAGNARO, *University of Minnesota*, PANAYIOTA KENDEOU, *University of Minnesota*, ANDREW ZIEFFLER, *University of Minnesota* — Parents, teachers, and reading specialists hold misconceptions about reading. Misconceptions about reading can hinder these stakeholders' efforts to support student success in reading, but little is known about the nature and prevalence of these misconceptions. This study aimed to advance our understanding of misconceptions about reading and reading development held by these three key stakeholder groups. Using a survey design, we identified the prevalence of different misconceptions among stakeholders, as well as differences between stakeholder groups. Misconceptions fell in three categories: pervasive misconceptions, overgeneralized misconceptions, and misconceptions in practice. Results showed that there is a wide range in the prevalence of various misconceptions, but that stakeholder groups held misconceptions at the same rates. These findings have implications for pre-bunking and debunking efforts.

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6:00–7:30 PM (3156)

Changes of Brain Oscillations and Novel Word Integration. LIN ZHOU, *University of Pittsburgh*, CHARLES A. PERFETTI, *University of Pittsburgh* — Word learning processes involve a gradual integration of learned word forms into long-term memory that is affected by sleep-related offline consolidation and training methods (e.g., Zhou & Perfetti, 2022). Brain oscillations can reflect these memory integrations processes. Synchronization in theta (4-8 Hz) is associated with memory encoding and retrieval and the richness of semantic encoding (Bastiaansen et al., 2005). Bakker et al. (2015) found that 24-hour sleep-related consolidation increased theta band synchrony over the left-temporal region. We examined brain oscillatory responses to novel words that mark their integration into long-term memory over time. We hypothesized that meaning richness affects consolidation and tested the effects of meaning training and of 24-hour sleep-related consolidation. Adult participants learned novel words on two consecutive days. On each day, half the words were trained with meaning and the other half with word form only. Immediately after learning on day 2, participants read the newly learned words, existing words and unfamiliar pseudowords while EEGs were recorded. The results showed brain oscillations differences associated with meaning training and sleep-related consolidation.

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6:00–7:30 PM (3157)

Assessment During Learning. BLAKE TELFER, *University of Memphis*, PHILIP PAVLIK, *University of Memphis*, JOHN SABATINI, *University of Memphis*, JOHN HOLLANDER, *University of Memphis* — The assessment for learning (AfL) is quickly becoming preferable for educational outcomes and has already led to mentions in the policy statements of Hong Kong, Australia, and the United Kingdom (Black et al., 2003; Gardner, 2006; Leung, 2004, as cited by Icy, 2007). The goal of this study is to determine if assessment during learning is reliable, despite the presence of learning at the same time. Our proposal is a form of AfL in which intelligent tutoring systems (ITS) can combine student assessment and student learning. Will the learning contaminate ongoing assessment, or will the psychometric properties of tests during learning be similar to standard assessment without feedback? Much of the literature has focused creating more dynamic and effective assessment for giving data to teachers to benefit students after testing such as the concept of "fit for purpose" assessment (Brown & Smith, 1997, cited in Brown, Sally 2005). If the benefits of learning can be maintained during assessment, this could increase classroom efficiency. Some researchers have already proposed using ITS to collect student assessment data that could be used to predict exam scores. (Anozie et. al., 2006; Feng et. al., 2008).

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6:00–7:30 PM (3158)

Beliefs About Access to Offloaded Information at Test Impacts Depth of Encoding. LOIS K. BURNETT, *Stony Brook University*, LAUREN L. RICHMOND, *Stony Brook University* — Cognitive offloading, using physical action to reduce internal cognitive demand, often improves task performance. However, when offloaded information is unavailable at test, performance suffers compared to using internal memory, particularly when participants expect to have access to offloaded information but do not. This may be because people exert less effort at encoding when they expect to be able to rely on the offloaded store at test. In two experiments, we examined if participants' beliefs about the accessibility of offloaded information at test would result in similar patterns of performance as have been observed with deep and shallow encoding instructions. We compared free recall performance under deep and shallow encoding instructions to performance when offloaded notes were expectedly and unexpectedly made unavailable at test. When loss of access to offloaded notes was expected, performance was at least as good as under deep encoding instructions. When loss of access was unexpected, performance was worse than under shallow encoding instructions. Findings suggest that people direct more attention to storing information in internal memory at encoding when they do not expect to have access to the offloaded store at test.

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6:00–7:30 PM (3159)

Does Short Sleep Impair Learning and Memory? A Systematic and Meta-Analytic Review of Studies Investigating Sleep Restriction and Long-Term Memory. REBECCA CROWLEY, *Royal Holloway, University of London*, AMIR-HOMAYOUN JAVADI, *University of Kent*, JAKKE TAMMINEN, *Royal Holloway, University of London* — Modern life is causing up to one half of the global population to sleep for a shorter duration than is recommended for their age group (Kocevska et al., 2021). Given well-documented benefits of sleep on learning and memory, it is important to understand the cognitive costs of short sleep. Here, we analyse 125 effect sizes from 39 reports in the sleep restriction literature involving 1,234 participants published between 1975 and 2023. Based on multilevel modelling, sleep restriction negatively affects

memory with a small effect size (Hedges' g = 0.29, 95% CI = [0.13, 0.45]). Four approaches detected no clear evidence for publication bias. When the current sleep restriction effect sizes were compared with 185 total sleep deprivation effect sizes reported in Newbury et al. (2021), no significant difference in effect size was found, suggesting that missing a few hours of sleep may have similar consequences for learning and memory as not sleeping at all. We argue that this finding is not well-predicted by prominent sleep theories, and is better accounted for by the sequential hypothesis which emphasises complementary roles of each sleep stage for learning and memory.

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6:00-7:30 PM (3160)

I Need Help: Learning Strategy Effects on Decisions to Offload for a Response Term in a Paired-Associate Memory Task. JENNA R. DONET, *Texas Tech University*, PHILIP H. MARSHALL, *Texas Tech University* — This study examined the effect of learning strategy (either mnemonic or rote, between-subjects) on the latency of a recall decision to offload to a Google search engine. Seventy-three participants engaged in a traditional paired-associate learning task with a list of 20 English stimulus words paired with 6-letter Dutch-derived response words. During a final recall task, participants provided a response (correctly or incorrectly) or indicated a desire to offload. Initial mixed ANOVAs revealed group differences, fewer omission errors ($p = .03$) and higher overall latencies ($p = .04$) for the mnemonic condition compared to the rote. However, when added as a covariate in a mixed ANCOVA, total number of omission errors accounted for most of the strategy-related variance in omission latency ($p = .004$). Further examination confirmed that the learning strategy effect influenced overall omission latencies ($p = .046$), but that this effect was mediated by omission errors ($p = .002$). These results suggest Dougherty et al. (2014) and Hussey et al.'s (2014) research on inter-retrieval thresholds extends to offloading decisions as well as memory search terminations.

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6:00-7:30 PM (3161)

Saving: It's Not All in Your Head. CRAIG FELLERS, *University of California, Santa Barbara*, BENJAMIN C. STORM, *University of California, Santa Cruz* — Saving one list of words can improve memory for a second list of words, a phenomenon known as the saving-enhanced memory effect. Past research has observed this effect when participants save an entire list before learning a new one. In two experiments, we showed that the effect can also be observed when participants engage in partial saving—specifically, saving some items within a single list. Importantly, the saving-enhanced memory effect was observed regardless of whether participants saved items on a computer or by writing them out by hand, and regardless of whether participants were tested using a cued-recall final test or a free recall final test. The effect was strongest, however, when participants initiated their recall by outputting non-saved items first. These findings expand our understanding of the saving-enhanced memory effect and shed light on the potential influence of cognitive offloading on human memory.

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6:00-7:30 PM (3162)

From Imagination to (Almost) Reality: Exploring Memory and Contamination Using Virtual Reality. NATÁLIA L. FERNANDES, *William James Center for Research & University of Aveiro*, SÓNIA SANTOS, *William James Center for Research & University of Aveiro*, SAMUEL SILVA, *University of Aveiro Institute of Electronics and Informatics Engineering*, BEATRIZ SANTOS, *University of Aveiro Institute of Electronics and Informatics Engineering*, MARCO VASCONCELOS, *William James Center for Research & University of Aveiro*, JOSEFA N S. PANDEIRADA, *William James Center for Research & University of Aveiro* — Our memory systems are designed to retain disease-related information: neutral objects are better remembered when previously associated with sick vs. healthy people—the contamination effect (CE). Typically, cues denoting the health status of the person interacting with objects are represented through images (e.g., a face with/without signs of disease) or descriptors displayed on a computer screen. Then, a surprise-free recall test for the objects occurs. The success of the manipulation largely relies on the participants' ability to imagine the presented interaction. Here, we explore the CE using virtual reality (VR) aiming for a more controlled and immersive experience. A set of 360-degree videos, depicting actors performing actions of potential contamination (e.g., sneezing) or non-contamination (e.g., whistling) while delivering objects on a table are presented through a VR headset. At encoding, participants identify if the object interacted with a sick or healthy person; then, they have to recall the object names. The results are discussed with reference to those obtained with the traditional procedures. We also discuss the advantages and pitfalls of using these alternative approaches when studying memory phenomena.

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6:00-7:30 PM (3163)

Narrative Protects Against Retrieval-Induced Forgetting of Naturalistic Stimuli. STEPHEN HUCKINS, *Florida State University*, HAYDEE BYARS-WEISER, *Florida State University*, SUMMER CALIRI, *Florida State University*, MADISON GRAY, *Florida State University*, JUSTIN THOMAS, *Florida State University*, PATRICK TOOTLE, *Florida State University*, CHRIS MARTIN, *Florida State University* — Retrieval practice can cause forgetting or facilitation of unpracticed but related information. In two experiments, participants encoded naturalistic stimuli (two videos), that either contained a narrative or did not. Then, they performed retrieval practice on a subset of scenes from one of the videos. In Experiment 1, participants performed a final cued recall task after a 24-hour delay. In Experiment 2, participants performed a recognition task after a 7-day delay. For the no-narrative condition, we found evidence for retrieval-induced forgetting in Experiment 1 and retrieval-induced facilitation in Experiment 2. Conversely, retrieval practice did not affect memory for unpracticed but related content in the narrative condition. These results suggest that narratives can protect against retrieval-induced forgetting of complex stimuli, perhaps by driving integration at encoding. Moreover, whether retrieval practice produces forgetting or facilitation of unpracticed stimuli in the

absence of a narrative may depend on the type of retrieval task.

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6:00–7:30 PM (3164)

Does Encoding Strategy Predict Face Recognition Accuracy?. REBEKAH CORPUZ, *University of Regina*, CHRIS ORIET, *University of Regina* (Sponsored by Chris Oriet) — Research suggests that faces are processed holistically (as an integrated whole) rather than in separate parts (eg., eyes, nose, hair; Farah et al., 1998; Maurer et al., 2002; Piepers & Robbins, 2013; Yin, 1969) and that individuals who use a holistic strategy when learning a new face are more accurate at subsequent recognition (Olsson & Juslin, 1999). In the present study, 89 subjects learned three unfamiliar target identities and completed a recognition sorting task containing photos of the target and similar-looking distractors. Subjects completed a self-report memory questionnaire and rated how confident they were that they would recognize the targets pre-learning, post-learning, and post-sort. Surprisingly, face recognition accuracy did not differ across self-reported encoding strategy. The results suggest that while individuals may believe that they rely on specific encoding strategies when learning a new face, these strategies are not predictive of their recognition accuracy.

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6:00–7:30 PM (3165)

The Effect of Evaluation Activities on Memory. MIN HAE SONG, *Seoul National University*, JOOYONG PARK, *Seoul National University* (Sponsored by Joo Yong Park) — Students are mostly objects rather than subjects of evaluation. Although studies have shown that peer assessment has a high learning effect through exchanging evaluations, there are not many studies on whether evaluation activities promote memory performance. In this context, we investigated the effect of evaluating true or false (T/F) responses to paired words in paired associates learning tasks performance. In Experiment 1, 84 participants studied 50 Swahili words and then studied the pairs further in three conditions: i) evaluating the T/F responses with feedback on the accuracy of the response, ii) same as i) but without feedback, and iii) taking a T/F test with feedback. The results showed that the participants who evaluated with feedback scored highest in the final cued-recall test, followed by those who evaluated without feedback, and lastly those who took a test with feedback. In Experiments 2 and 3, we replicated the result that participants who evaluated without feedback performed better than those who took a test with feedback, using Korean associated word pairs and Latin words, respectively. These findings suggest that evaluation activity by itself can improve memory performance even without feedback.

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6:00–7:30 PM (3166)

Investigating the Combined Effects of Sociality and Emotion on Episodic Memory for Objects and Scenes. NIKITA ADHIKARI, *Rutgers University–Newark*, KAREN E. SMITH, *Rutgers University–Newark*, KIMELE PERSAUD, *Rutgers University–Newark* (Sponsored by Kimele Persaud) — Emotion and sociality exert strong influences on how information is retrieved from episodic memory. Negative emotion, in particular, produces a central-peripheral memory tradeoff: enhancing item memory for central negative elements, but reducing memory for peripheral background information (Bisby & Burgess, 2014). Similarly, sociality influences item memory, with social information being better remembered than non-social information (Gomez et. al., 2020). Yet little research to date has explored the combined effects of valence and social information on item and associative binding in episodic memory. This study examines the combined effects of sociality and valence on single-item and associative recognition. Preliminary results suggest an interaction between valence and sociality, with superior item memory for social and negative valence items compared to non-social neutral items. However, there was only evidence for a central-peripheral tradeoff for social-negative items. We discuss these findings in regards to their implications for memory and decision-making in real world contexts.

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6:00–7:30 PM (3167)

Memory Bias & Disease Contagion: Effects of Intergroup Bias on Recall and Source Recognition Following Activation of the Behavioral Immune System (BIS). KENDAL A. SMITH, *Jackson State University*, JANA FLEET, *Jackson State University*, MARK J. HUFF, *The University of Southern Mississippi* — Activation of the behavioral immune system (BIS) has been shown to increase the likelihood of remembering objects that have been contaminated by pathogens (Gretz & Huff, 2019). Relatedly, BIS activation can increase biases against racial outgroups which may similarly affect memory for objects that have been touched by individuals from one's outgroup vs. ingroup. Our study examines whether the memorability of objects are affected by racial group bias when the BIS is activated. Black and White participants will study videos depicting White or Black actors touching a subset of objects in household scenes. Participants will be informed that the actor was either diagnosed with influenza (a contagious disease that activates the BIS), cancer (a non-contagious disease), or was healthy, followed by a recall and source recognition test for the objects. We anticipate that object memory will be highest when actors have influenza and are a member of the participant's outgroup, indicating an interactive effect of disease contagion and outgroup membership on memory.

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6:00–7:30 PM (3168)

Removal of Item-Context Bindings from Working Memory. LAURA WERNER, *University of Texas Austin*, JARROD LEWIS-PEACOCK, *University of Texas at Austin* — Effective memory function relies on the ability to forget interfering content. A cognitive control mechanism, such as suppression, can be used to remove this information from working memory. Previous research has found that suppressing object or scene images can successfully remove them from the focus of attention, thereby reducing interference on subsequently encoded images. In daily life, we often need to remember associations between objects we encounter and the context they

appeared in. Does suppression impair the long-term memory for the object, its context, and/or the binding between them? In a series of experiments, we explore this question by having participants encode novel object-scene pairs followed by instructions to either actively think about the pair or to suppress the pair from mind. Suppression impaired both object memory and object-scene bindings, suggesting that working memory suppression reduces access not only to individual items but also to the associated contextual details.

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6:00–7:30 PM (3169)

Withdrawn

6:00–7:30 PM (3170)

The Influence of Source Expertise on Recognition Memory and Source Memory. RINA HARSCH, *University of Minnesota*, PANAYIOTA KENDEOU, *University of Minnesota* — The illusory truth effect increases the probability that a previously read statement will be perceived as true. Most research has investigated this effect using single sentence items, which lack context and thus reduce memory cues. In this study, we address this gap by drawing on research in reading comprehension to investigate the role of source and source credibility on memory for sentences embedded within short vignettes. Participants viewed vignettes describing events and two potential explanations for each event. Each explanation was said by a source (domain expert vs. non-expert) or given without a source. Participants completed an explanation recognition task and a cued-recall task to measure source memory. We found that explanation recognition was more accurate than chance, but not affected by presence of a source or source expertise. However, it was associated with accurate source memory, especially for expert sources.

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6:00–7:30 PM (3171)

Information Accumulation on the Item Versus Source Test of Source Monitoring: Insights From Diffusion Modeling. HILAL TANYAS, *University of Mannheim*, JULIA V. LISS, *University of Mannheim*, BEATRICE G. KUHLMANN, *University of Mannheim* — Source monitoring involves attributing previous experiences (e.g., studied words as items) to their origins (e.g., screen positions as sources). The present study aimed toward a better understanding of the temporal aspect of item and source memory. Participants (N = 60) made source judgments for recognized items either in succession (i.e., the standard format) or in separate test blocks providing independent measures of item and source speed. Comparable speeds of item and source memory across test formats would suggest a full separation, whereas different speeds would imply a temporal overlap between item and source memory. To test these alternatives, we used the drift rate parameter of the diffusion model (DM; Ratcliff, 1978). We examined whether the drift rates, together with other DM parameters, assessed separately for the item and source decision varied as a function of the test format. Cognitive speed, the amount of information to decide, and non-decisional time showed differential effects between the test formats. Importantly, the item decision speed was slower if followed by a test for source memory than tested as a separate block, suggesting a temporal overlap in the standard format.

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6:00–7:30 PM (3172)

Role of Initial Viewing Behavior During Retrieval. JONATHON WHITLOCK, *University of Illinois Urbana-Champaign*, LILI SAHAKYAN, *University of Illinois Urbana-Champaign* — Recent studies have revealed the engagement of two attentional systems that interact during memory retrieval: one system involving automatic orientation towards activated memory representations, while the other system involves strategic deployment to compensate for retrieval difficulties. These attentional systems differ in their focus: the first system directs attention to strongly activated memory-related information in an automatic and involuntary manner, while the second system directs attention to weakly activated memory-related information in a compensatory fashion. To examine this phenomenon, eye movement monitoring was employed during retrieval in three experiments. The duration of time spent viewing an item that was initially observed was longer for information associated with activated memory representations and for memories perceived to be strong compared to weak. These findings suggest that the magnitude of activation in memory representations has a greater influence on initial viewing than deliberate strategic viewing intended to compensate for low-fidelity memories.

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6:00–7:30 PM (3173)

Do Age and Working Memory Capacity Influence Context Updating and Semantic Processing: An ERP Study. CATHERINE L. REED, *Claremont McKenna College*, CHANDLYR DENARO, *Claremont McKenna College*, JASMIN JOSHI, *Claremont McKenna College*, ALAN A. HARTLEY, *Claremont McKenna College* — Working memory (WM), a limited amount of information temporarily maintained in an accessible state, is required for the performance of many tasks. Aging is often reported to produce declines in working memory leading to corresponding declines in cognitive performance. However, WM theories differ as to the resource modularity of WM and the role of attention. This study investigated whether selective or general working memory capacities are related to two tasks requiring attention—context updating and semantic processing—and whether age interacts with WM effects. Younger (YA; n = 40; ages 18-23) and older adults (OA; n = 40; ages 69-89) completed three working memory span tasks (operation, reading, and symmetry) and two ERP tasks (P3/visual oddball; N400/word-pair judgment). If specific WM resources are differentially used in the two tasks, then operation span may relate to P3 measures and the reading span may relate to N400 measures. Age groups did not differ in IQ. Results show age-related declines in operation and symmetry spans but not reading span. However, WM spans did not interact with age to influence P3 or N400 effects.

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FRIDAY

6:00–7:30 PM (3174)

Repetition and Rehearsal Improves Serial Recall. GEOFF WARD, *University of Essex*, CATHLEEN CORTIS MACK, *University of Essex*, CHARLOTTE DOHERTY, *University of Essex*, NATHANAEL KNIGHT, *University of Essex*, VANESSA LOAIZA, *University of Essex* — Two experiments examined repetition and rehearsal effects in serial recall using a modified Brown-Peterson task. In Experiment 1, participants were presented with a series of three words followed by between 0 and 8 computer repetitions that prompted participants' overt rehearsal. Participants then completed a backward-counting filler task lasting between 0 and 18 s prior to a test of serial recall. Serial recall was near-perfect at 0s delay even in the absence of rehearsal. However, recall accuracy decreased with increasing retention intervals and increased with increasing numbers of computer-prompted rehearsals. The rehearsal benefits increased at longer retention intervals, being readily observable at delays of 3 s or more. In Experiment 2, one group again received computer repetitions to prompt rehearsals (as in Experiment 1), whilst two further groups rehearsed covertly or overtly prompted only by a flashing arrow. The findings of Experiment 1 were replicated in all three rehearsal groups, showing that repetitions and rehearsals cause improved serial recall. Thus, the rehearsal benefits in serial recall resemble those in free recall, encouraging the theoretical integration of the two tasks.

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6:00–7:30 PM (3175)

Looking to the Past: Differences in Oculomotor Activity Between Verbal and Visuospatial Maintenance. TEODOR Y. NIKOLOV, *Cardiff University*, CANDICE C. MOREY, *Cardiff University* — Evidence suggests that eye movements can be biased toward action- and memory-relevant locations. While the link between oculomotor behaviour and planned actions has been studied extensively, it is not yet clear what factors modulate memory-driven eye movements. We investigated oculomotor activity during maintenance of verbal and visuospatial representations using a paradigm that allows the disentangling of rehearsal from output preparation. To achieve this, we presented participants with a list of seven digits or squares within a grid on one side of the screen and asked them to recall on the opposite side either the full list (Experiment 1) or three retro-cued items (Experiment 2). Both experiments revealed that during maintenance the encoding side was both more likely to be fixated and was fixated for longer in the square recall task compared to the digit recall task, with no clear memory benefit or cost associated with this pattern. These findings add to a growing body of research by investigating oculomotor rehearsal of a list of items and by suggesting the type of representation to be maintained as a key predictor of post-encoding eye movements.

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6:00–7:30 PM (3176)

Does Sensory Discrimination Ability Account for the Relation Between Active Music-Making and Working Memory?. CHRIST BILLY ARYANTO, *University of Sheffield & Atma Jaya Catholic University of Indonesia*, EMMA BLAKEY, *University of Sheffield*, RENEE TIMMERS, *University of Sheffield*, CLAUDIA VON BASTIAN, *University of Sheffield* — Actively making music is related to better working memory, but it is yet unclear why. This study tested whether enhanced sensory discrimination in musicians accounts for this relationship. Healthy adults (N = 267) completed a music questionnaire, music ability tasks, and a series of auditory and visual working memory and sensory discrimination tasks. Measurement models were fitted to the data to analyse the relations between active music-making and both modality-specific (auditory and visual) and modality-general latent factors of working memory and sensory discrimination. The results showed that active music-making was related to sensory discrimination regardless of modality. Moreover, sensory discrimination did indeed account for the relation between active music-making and auditory and modality-general working memory. Therefore, this study indicates that sensory discrimination may explain the relation between active music-making and auditory and modality-general working memory, but not visual working memory.

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6:00–7:30 PM (3177)

Working Memory Capacity Is Positively Correlated with Benefits of Cognitive Offloading in the Saving-Enhanced Memory Paradigm. DOROTHY BUCHLI, *Mercer University*, BENJAMIN C. STORM, *University of California, Santa Cruz* — "Cognitive offloading" refers to the act of preserving cognitive economy and minimizing the processing requirements of a given task by utilizing an external storage device, such as writing information down or storing it on a cell phone or computer. Prior research has demonstrated an interesting consequence of cognitive offloading known as saving-enhanced memory. When participants are prompted to save a subset of information into a folder or digital storage device prior to studying new information, the newly acquired information is better remembered. This benefit occurs because participants offload the old information, thus preventing those items from interfering with the learning of new information. The present study explores whether individual differences in working memory, or the capacity to store and manipulate incoming information, predicts the benefits of cognitive offloading in the saving-enhanced memory paradigm. Results revealed a positive correlation between working memory capacity and saving enhanced memory, such that individuals with a higher working memory capacity demonstrated better memory for newly acquired information on Save trials than No Save trials.

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6:00–7:30 PM (3178)

Effects of Musical Expertise on the Active Processing of Musical and Phonological Information. QUIN CHROBAK, *University of Wisconsin-Oshkosh*, CAITLIN WEIHING, *University of Wisconsin Oshkosh*, AARON KARST, *University of Wisconsin Oshkosh* — Within the multicomponent working memory model (Baddeley & Hitch, 1974), various components are responsible for the processing of specific types of information. Previous research has found that the phonological loop is at least partially responsible for the

processing of musical information, specifically for those with little to no musical experience (Chrobak, Bowe, & Karst, 2019). The current study investigated whether those with extensive musical experience may possess a unique working memory system that is dedicated to the maintenance and processing of musical information. Utilizing a cross-modal articulatory suppression paradigm, individuals with and without musical experience were tested on their recognition accuracy for non-words and tones, with an intervening articulatory suppression task. Results suggest that differential performance profiles are produced as a function of musical experience. Implications for the working memory model are discussed.

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6:00-7:30 PM (3179)

Exploring the Neural Correlates of Attentional Refreshing. ANDREA DIAZ-BARRIGA YANEZ, *Cognitive Mechanisms Research Laboratory, Université Lumière Lyon 2*, MAÏLIS CHARPENTIER-HÉLARY, *École Normale Supérieure de Lyon*, MAXIMILIEN LABARONNE, *Cognitive Mechanisms Research Laboratory, Université Lumière Lyon 2*, GAËN PLANCHER, *Cognitive Mechanisms Research Laboratory, Université Lumière Lyon 2* — Attentional refreshing is a mechanism that consist on the reactivation of memoranda in working memory by bringing it to the focus of attention. Recent work suggests that attentional refreshing involves parietal-occipital alpha desynchronization implying the involvement of visual areas, which in turn suggests the use of mental imagery as a strategy. However, no clear link has been established yet. The present EEG project, investigates the link between mental imagery and attentional refreshing. Participants (n = 18) were requested to maintain concrete words using mental imagery or semantic linking strategies. Preliminary results showed that performance was higher in the condition using mental imagery, and that the mental imagery condition, but not the semantic linking condition, involved occipital alpha desynchronization. Moreover, and in line with previous studies, there was frontal theta activation during word maintenance (regardless of the strategy used). Theoretical implications of our results will be discussed further.

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6:00-7:30 PM (3180)

Metacognitive Monitoring of Memory Performance Using Implicit and Explicit Measures in Children Aged 5-11 Years. RUMANDEEP HAYRE, *University of Birmingham*, MADELEINE INGHAM, *University of Birmingham*, SHONA SMITH, *University of Birmingham*, BROOKE FINDEL, *University of Birmingham*, CHLOE SARGENT, *University of Birmingham*, MELISSA F. COLLOFF, *University of Birmingham* — We tracked metacognitive development using explicit (e.g. confidence) and implicit (e.g. gestures) measures to assess if children can monitor their memory accuracy. Children aged 5-11 (N =1 06) watched video clips and completed a cued recall memory task. On each trial, cued recall was assessed followed by our measurements of metacognition where children rated their confidence and chose to show/hide their response from the experimenter. Each participant was video-recorded for gestures (behavioural & vocal) made during recall. The results showed that Confidence ($\chi2(1)=279.42$, $p<.001$), Age ($\chi2(1)=30.06$, $p<.001$), Show/Hide ($\chi2(1)=189.27$, $p<.001$), Speech Delays ($\chi2(1)=73.18$, $p<.001$), and Head Nods ($\chi2(1)=8.25$, $p=.004$) predicted memory accuracy. A Confidence x Age interaction ($\chi2(1)=6.12$, $p=.013$) suggests the confidence-accuracy relationship improved with age. Children aged 5-11 can use explicit and implicit measures of metacognition to inform about their memory accuracy. The confidence-accuracy relationship improved during childhood which could aid legal-decision makers with assessing the accuracy of child testimony.

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6:00-7:30 PM (3181)

Self and Other Metacognitive Awareness of Young and Older Adults. NAYANTARA KURPAD, *St. Mary's College of Maryland*, LISA GERACI, *University of Massachusetts Lowell*, ROBERT TIRSO, *Texas A&M University* — Research shows that younger adults are often overconfident in their cognitive abilities (e.g., Helzer & Dunning, 2012; Miller & Geraci, 2011) though they are even more inaccurate when judging other's cognitive abilities (Tirso & Geraci, 2020; Tullis & Fraundorf, 2017). In this study, we compared self-, peer-, and opposite-age group predictions and post-dictions for both younger (18-35 years) and older (over 55 years) adults on two measures of cognitive ability: grammar and logical reasoning. Younger adults were recruited from a college sample and older adults were recruited from Mechanical Turk. Results showed that older adults significantly outperformed younger adults on the grammar test and also demonstrated higher predictions only on the grammar test. Overall, both groups significantly overpredicted their own (only on grammar test), peer, and opposite-age performance on both tests. Both younger and older adults post-dictions were lower for themselves, their peer, and the opposite-age group. Thus, metacognitive judgments may be task-specific and age dependent.

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6:00-7:30 PM (3182)

Exploring the Mechanisms Underlying Judgment of Learning Reactivity on Cued-Recall using Eye-Tracking Measures. KARA E. STUART, *University of North Texas*, ANTHONY J. RYALS, *University of North Texas*, WITHERBY E. AMBER, *Creighton University*, S. UMA TAUBER, *Texas Christian University* — Judgments of learning (JOLs) can enhance learning of related word pairs. One potential theoretical explanation for this effect is that the metacognitive process of JOL generation may provide an attentional (potentially psychophysiologically driven) benefit that enhances learning. In the present research, we tested this attentional-reorienting account. Accordingly, participants studied a series of related word pairs while eye movements and pupil dilation were recorded controlling for area of interest. Half of the participants made a verbal JOL for each whereas the other half read the word-pairs aloud. After study, participants took a cued-recall test. Participants who made JOLs outperformed participants who did not (the JOL reactivity effect), and preliminary results indicate enhanced pupil dilation

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for the JOL vs. no-JOL group. Results implicating autonomic arousal during JOL generation and other observed behavior and eye movement patterns are discussed.

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6:00–7:30 PM (3183)

The Impact of Learning Style Beliefs on Metacognitive Judgments. AMANDA R. STEVENS, *Tarleton State University*, BENTON H. PIERCE, *Texas A&M University–Commerce*, JASON MCCAIN, *Northwest Missouri State University*, DAVID J. FRANK, *Youngstown State University* — Many students and educators continue to believe that learning is enhanced when instruction is tailored to one's learning style (i.e., the meshing hypothesis; Pashler et al., 2009), despite a lack of empirical support for the idea. Recent findings suggest that learning style beliefs can influence judgments of learning (JOLs) for visual and verbal stimulus pairs (Knoll et al., 2017). Our goal was to examine the impact of learning style beliefs on several encoding-based and retrieval-based metacognitive judgments, as well as associative recognition memory performance. Additionally, we sought to examine whether priming learners with learning style-related questions moderates any effects of learning style beliefs on metacognitive judgments. Results can be summarized as follows: (1) belief in the meshing hypothesis remains pervasive, (2) learning style beliefs seem to impact learners' metacognitive judgments made during the encoding of multimodal stimuli, but not those made during or after retrieval, and (3) priming learners with learning style-related questions does not moderate the effect of learning style beliefs on encoding-based metacognitive judgments. Practical implications will be discussed.

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6:00–7:30 PM (3184)

Gift and Ghost Authorship and the Use of Authorship Guidelines in Psychology Journals. STEVEN DE PEUTER, *KU Leuven*, GERT STORMS, *University of Leuven* — Breaches of research integrity, including so-called "gift" and "ghost" authorship, have been documented mainly in the biomedical sciences. Less is known about this in social and the behavioral sciences. We invited all authors of papers published in selected issues of psychology-related journals to complete an online survey (2,736 invited, response rate 29.7%). Who can be an author is most often discussed during the design of the study (54% of respondents). Authorship order is equally often discussed during study design as during the writing of the paper (37% and 35% of respondents, respectively). A little over half of the respondents discuss authorship of the selected paper only once. Gift authorship (64% encountered it at least once) is far more prevalent than ghost authorship (27% encountered it at least once). Both are, however, less prevalent in our sample than in a previous study in the biomedical sciences. When the use of explicit authorship guidelines is encouraged by their research institution, respondents more often use explicit guidelines for the selected paper, consider authorship guidelines to be more beneficial, and do consider both who is author and the authorship order to be more fair.

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6:00–7:30 PM (3185)

Relationship Between Active Procrastination and Metacognitive Accuracy in Academic Performance. HARUNA INOUE, *Hosei University*, TETSUYA FUJITA, *Hosei University* — In this study, active procrastination, achievement goal, and commitment to learning outside the classroom were measured at two time points in the first and final sessions of a specialized subject in the Department of Psychology using a questionnaire, and their relationship to behavioral measures of procrastination was examined. As the behavioral measures of procrastination, we used the performance and submission frequency of preparatory assignments submitted each week as part of active learning and the performance of a reporting assignment. In addition, we used the discrepancy between actual and self-rated scores on the reporting assignment as a measure of metacognitive monitoring accuracy, and exploratory examined whether the measure of metacognitive monitoring accuracy was related to the self-reported procrastination. Therefore, those who viewed learning outside the classroom positively were associated with more accurate metacognitive monitoring.

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6:00–7:30 PM (3186)

Democrats Are Better than Republicans at Discerning True and False News But Do Not Have Better Metacognitive awareness. MITCH DOBBS, *Northeastern University*, JOESEPH DEGUTIS, *Harvard Medical School*, JORGE MORALES, *Northeastern University*, KENNETH JOSEPH, *University at Buffalo, SUNY*, BRIONY SWIRE-THOMPSON, *Northeastern University* — Insight into one's own cognitive abilities is one important aspect of metacognition. Whether this insight varies between groups when discerning true and false information has yet to be examined. The current study investigates how demographics like political partisanship and age influence discernment ability, metacognitive efficiency, and response bias for true and false news. Participants rated the veracity of true and false news headlines and provided confidence ratings for each judgment. We found that Democrats and older adults were better at discerning true and false news than Republicans and younger adults. However, all demographic groups maintained good insight into their ability. Although Republicans were less accurate than Democrats, they slightly outperformed Democrats in metacognitive efficiency when a politically equated item set was used. These results suggest that even when individuals mistake misinformation to be true, they are well aware that they might be wrong.

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6:00–7:30 PM (3187)

Global Estimates of Self-Performance in Childhood. CAROLYN BAER, *University of British Columbia*, DANIEL BERNSTEIN, *Kwantlen Polytechnic University* — How do we form global self-performance estimates across multiple trials? Adults leverage subjective confidence on each trial, but underestimate their performance when not given feedback (Rouault & Fleming, 2019). This suggests that feedback helps calibrate self-performance estimates. Here, we preregistered and tested the influence of feedback

on self-performance estimates in a group known to overestimate their performance: children. Children aged 5-12 years (N = 117) compared their performance between two groups of trials. They saw 20 easy size comparisons in one colour (95% accuracy, on average) interleaved with 20 hard size comparisons in another colour (60% accuracy), then indicated which colour they were better at. Children under 9 years needed feedback on hard trials to accurately differentiate easy from hard trials. Children over 9 accurately differentiated the difficulties regardless of feedback. These findings show a decreasing influence of feedback on self-performance estimates throughout childhood, which might be related to reduced overconfidence.

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6:00-7:30 PM (3188)

Confidence Judgments Interfere with Evidence Accumulation. KIT S. DOUBLE, *The University of Sydney*, DAMIAN P. BIRNEY, *The University of Sydney* — Computing confidence in one's decision is a vital part of decision-making. Traditionally psychological experiments have assessed a person's confidence by eliciting confidence judgments either at the time of the decision or immediately afterwards. The notion that such judgments can be elicited without impacting the accuracy of the decision itself assumes that confidence is computed automatically and effortlessly and reporting such confidence judgments involves simply providing a self-report of this process. Here we challenge this assumption by demonstrating that eliciting confidence judgments contemporaneously with a perceptual decision impairs decision accuracy in three experiments. While, in contrast, we find that decision accuracy is not impaired for retrospective confidence ratings nor when the interval between stimulus presentation and the perceptual decision is large enough. These results reveal that providing a confidence judgment interferes with evidence accumulation and challenges the continued use of confidence ratings as an unobtrusive measure of metacognition.

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6:00-7:30 PM (3189)

Metacognitive Accuracy of Fake News Discernment and its Relation to Political Orientation and Cognitive Style. ALICYN AGER, *Idaho State University*, ERIKA K. FULTON, PHD, *Idaho State University* — It is critical to understand who believes fake news and if people are aware of their fake news susceptibility to combat the spread of misinformation. Past research has looked at cognitive style and fake news discernment, but has not tested how accurately people judge their fake news discernment. We explored how cognitive style, political orientation, and fake news discrimination relate to metacognitive accuracy. A pilot sample of 98 Prolific participants completed a fake news discrimination task and gave confidence judgments for each answer followed by the Need for Closure Scale, cognitive reflection test (CRT), and measures of political orientation. Political orientation, CRT performance, and need for closure together significantly predicted fake news discrimination and metacognitive accuracy. Those who showed more analytic thinking and were more liberal performed significantly better on the fake news discrimination task, and more liberal participants were more metacognitively accurate. Also, those with the worst fake news discrimination performance were the most overconfident, consistent with the Dunning-Kruger effect. Results are compared to past research on cognitive style, fake news discernment, and metacognitive accuracy.

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6:00-7:30 PM (3190)

Metacognitive Monitoring and Information Seeking in Open-Ended Decisions. ZHIHAO ZHANG, *University of Virginia*, ANDREW KAYSER, *University of California, San Francisco*, MING HSU, *University of California, Berkeley* — How decisions are made when there is no pre-defined list of options has long been a question that evades the attention of mainstream decision-making research. In these choices (e.g., picking a fast food restaurant for lunch), the need for option generation by the decision-makers themselves creates the possibility of leaving out more preferred options due to memory retrieval failure. In four pre-registered behavioral experiments, we identified metacognitive processes as a key mechanism that may compensate for the constraint that imperfect memory places on decision quality by guiding individuals to expand their option sets. More specifically, feeling-of-knowng elicited immediately after the initial decision demonstrated a strong association with the participants' subsequent switches when provided in a menu, indicating awareness of more preferred options that were inaccessible at the moment. We also found that this metacognitive mechanism drives consumers to adaptively seek information to expand their choice sets. Our work provides a novel perspective on bounded rationality in decision-making by demonstrating adaptive awareness of decision errors due to cognitive limitations.

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6:00-7:30 PM (3191)

Which Task Subgoal Will You Choose First? Sensitivity to Conservation of Task Effort in Chronic Cannabis Users and Non-users. LISA R. FOURNIER, *Washington State University*, SHIKHA PRASHAD, *Washington State University*, ANDREW PAEK, *Washington State University* — We investigated whether chronic cannabis use inflates effort expenditure in a simple transport task. Participants walked down a hallway and picked up two full cups of water (one close and one far from their starting position) in any order of their choice and carried them together without spilling back to their starting position. First-cup choice (close or far) was recorded. Counter to expectations, cannabis users, but not non-users, chose the far cup first more frequently—the more effort-efficient decision. Cannabis users additionally reported expending lower mental demand and task effort compared to non-users. Further, participants who chose the far cup first reported more effort conserving attributions and less pre-task stress; participants who chose the close cup first reported more reactive, automatic response attributions and more pre-task stress. Thus, chronic cannabis users (3.1 mean years of use) tended to conserve mental and physical effort by relying on proactive decision making in this transport task.

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6:00–7:30 PM (3192)

Affordance Norms for 3000 Highly Concrete Nouns. NICHOLAS P. MAXWELL, *Midwestern State University Texas*, MARK J. HUFF, *The University of Southern Mississippi*, ALEN HAJNAL, *The University of Southern Mississippi*, JACOB M. NAMIAS, *The University of Southern Mississippi*, TYLER SURBER, *The University of Southern Mississippi* (Sponsored by Alen Hajnal) — Objects are commonly described based on their relations to other objects (e.g., semantic association) or physical features (e.g., birds have wings). However, objects can also be described in terms of their actionable properties (i.e., affordances), which reflect interactive relationships between actors and objects. While there exist several normed datasets categorizing various aspects of meaning (e.g., semantic features, associations, etc.), to date, norms for affordances have not been generated. This study addresses this limitation by developing a set of affordance norms for 3000 concrete nouns. Using an open-response format, we computed affordance strengths (AFS; i.e., probability of an item eliciting a particular action response) and affordance set-sizes (AFSS; i.e., total number of unique action responses) for each item using 3000 participants. Because our stimuli overlapped with Pexman et al.'s (2019) Body-Object Interaction norms, we tested whether AFSS was related to BOI, as objects with more perceived action properties may be viewed as more interactive. Preliminary analyses, however, revealed a weak relationship between AFSS and BOI, suggesting that affordance properties reflect a separate construct.

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6:00–7:30 PM (3193)

Subjective Time Estimation During a Self-Generated Virtual Walk. EVE ISHAM, *The University of Arizona*, JIAXUAN TENG, *The University of Arizona*, SARA LOMAYESVA, *University of Arizona*, NATHAN GALLEGOS, *University of Arizona*, ANDREW S. MCAVAN, *Vanderbilt University* — Movements and actions have been shown to exert a range of effects on subjective interval timing, resulting in both a reduction and an improvement in temporal estimation accuracy. As such, there is no unifying account to address how time and movements are intertwined. In an effort to understand the relationship between them, we asked whether the duration judgment of a self-generated action would be more or less accurate than a computer-generated action. Participants (N = 28) performed a virtual walk by controlling an avatar with a joystick or viewed the avatar walk on its own. Subsequently, walk duration was reported for both conditions, and performance was indexed as the ratio between the reported and actual walk time. We observed a higher ratio in the self-generated condition, suggesting that self-generated movements dilate the perception of time. This may be due to a higher movement-related cognitive load that results in a dilated subjective duration.

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6:00–7:30 PM (3194)

The Influence of Effector Modality Correspondence on Avatar Perspective Taking. JAMES MILES, *California State University, Long Beach*, KIM-PHUONG VU, *California State University, Long Beach*, LUIS CRUZ MARTIR, *California State University, Long Beach* — Individuals can adapt the spatial perspective of avatars on a display, and response feedback from the avatar enhances the success of such perspective taking (e.g., Böffel & Musseler, 2018). We further examined whether effector modality correspondence influences avatar perspective taking. Fifty participants performed a spatial two-choice reaction time task from the first-person perspective of an avatar on a display. The avatar's arms extended onto the display and selected the same (compatible) or opposite (incompatible) target following the participant's response. Responses by the participant and avatar were either completed within- or between-hand, thereby varying hand modality correspondence. Results indicated 1) a clear response-effect compatibility effect showing that participants adapted the avatar's perspective, 2) perspective taking was observed for all participant and avatar hand combinations, and 3) response-effect compatibility effects were significantly larger when participant responses were made within-hand versus between-hand. We discuss how response effects may play a greater role in response selection and perspective taking when participant response options are less distinct from one another.

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6:00–7:30 PM (3195)

Time-Based Expectancy for Auditory Stimulation. ALEJANDRA RODRIGUEZ-VELASQUEZ, *Albert-Ludwigs-Universität Freiburg*, ROLAND THOMASCHKE, *Albert-Ludwigs-Universität Freiburg* — When a particular stimulus appears more frequently after a certain time interval than after another, participants adapt to such regularity by responding faster to frequent interval-stimulus combinations than to infrequent ones. This phenomenon is known as time-based expectancy (TBE; Thomaschke et al., 2015). Most studies on TBE have primarily focused on the visual domain using modified versions of the time-event correlation paradigm (Wagener & Hoffmann, 2010). However, the question whether such expectancies can also be formed in the auditory domain is not yet clear. In two experiments, we investigated whether time mechanisms for auditory stimulation were able to build time-based expectancies. Participants responded to high and low-pitched tones that were correlated with predictive short or long intervals with 90% validity. Our results are consistent with the literature on TBE and show that participants adapted to the temporal regularities present in the experiments by responding faster and more accurately to frequent combinations of time interval and pitch than to infrequent ones. We discuss these findings and their implications for understanding the mechanisms underlying human timing and perception.

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6:00–7:30 PM (3196)

Differentiating the Cognitive Resource Involved in Motor Imagery and Execution: An Investigation with Dual-Task Interference. HSINPING TIEN, *Academia Sinica*, ERIK CHIHHUNG CHANG, *National Central University* — This study aimed to investigate the distinct cognitive control mechanisms involved in

motor imagery and motor execution. Prior research has mainly relied on self-report of movement duration, which is subject to confounding factors. Instead, a dual-task paradigm was utilized, with repetition priming as the primary task and visuospatial memory maintenance as a secondary task to differentially interfere with the repetition effect. Current results from repetition priming paradigm showed the significant repetition effect for motor imagery and motor execution, but not after repeated purely stimulus exposure, suggesting that the motor representation could be evaluated by the construction of short-lived stimulus-response binding. Furthermore, the data showed that the repetition effect in execution was boosted when visuospatial working memory was occupied, while the repetition effect in imagery was weakened. These findings support the motor-cognitive model, suggesting that imagery and execution involve distinct execution processes.

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6:00–7:30 PM (3197)

Modelling Publication Bias from a Random Effects Model for Standardized Mean Difference, Formulated as a Mixture Model. JUAN BOTELLA, *Universidad Autónoma de Madrid*, JUAN I. DURAN, *Universidad Autónoma de Madrid*, DESIRÉE M. BLAZQUEZ-RINCÓN, *Universidad a Distancia de Madrid*, ANAHÍ GUTKIN, *Universidad Autónoma de Madrid* — Publication bias (PB) is one of the main threats to the correct synthesis of scientific results. It refers to the effects of any factor that affects the representativeness of the results of published studies, with respect to all studies that have been carried out. If studies with statistically significant results are more likely to be published, then the accessible results give a distorted picture, usually consisting of overestimating effect sizes. In meta-analysis methodology, several techniques have been developed to detect and correct for the effects of PB. Most techniques for detecting PB assess whether the funnel plot departs from symmetry, as they assume symmetry when PB is absent. However, all those techniques assume a random effects model that has some flaws and weaknesses, already pointed out in other sources. We show that when applying a correct formulation of the random effects model to the standardized mean difference the distribution when PB is absent is not symmetrical. Rather, it shows the type of asymmetry usually interpreted as evidence for PB. It follows that the tests of asymmetry in the funnel plot should not be used as a tool for detecting PB when the effect size index is the standardized mean difference.

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6:00–7:30 PM (3198)

Plots for Depicting Multilevel Dependent Data in Meta-Analyses: Comparing Approaches that Aggregate Effect Sizes with Ones that Do Not. MADALIN MARIAN DELIU, *University of Salamanca*, JOSÉ RICARDO GARCÍA PÉREZ, *University of Salamanca*, ANDREI CIMPIAN, *New York University* — Forest, funnel, and alternative (e.g., caterpillar) plots are valuable tools for communicating meta-analytic results. However, it is currently unclear how to use them with multilevel dependent data (e.g., multiple effect sizes [ESs] from the same paper), which are common in meta-analyses; most meta-analysts simply remove the dependencies in their data (by selecting or aggregating ESs) before plotting them. Our aim was to compare previous approaches to graphing multilevel meta-analytic data, that is both classical maximum likelihood (CML) and Bayesian model-averaged (BMA) frameworks, with a recent three-level (3L) approach that plots all ESs. As a test case, we used a dataset on the correlates of growth mindsets (53 studies, 294 ESs). Our comparisons showed that 3L graphs are most accurate when representing ESs precision, revealing additional useful information about their distribution, weights, and contribution to conclusions about publication bias. In turn, graphs generated with the BMA approach were more accurate and useful than those generated with CML. The present study highlights the advantages of 3L meta-analysis graphical representations and provides concrete recommendations for generating them.

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6:00–7:30 PM (3199)

Intraindividual Item Response Prediction with Nonlinear Latent Variable Models. DENNIS L. BARBOUR, *Washington University in St. Louis*, DOM MARTICORENA, *Washington University in St. Louis*, ROBERT KASUMBA, *Washington University in St. Louis*, ALVARO GRANDE, *Washington University in St. Louis*, NATALIE MAUS, *University of Pennsylvania*, ANJA PAHOR, *University of Maribor*, IMANI GOFFNEY, *University of Maryland*, GEETHA RAMANI, *University of Maryland*, SUSANNE M. JAEGGI, *University of California, Irvine*, AARON SEITZ, *Northeastern University* — A machine learning distributional latent variable model (LVM) was developed to enhance the prediction of individual item-level observations in an executive function test battery for young adults. The LVM was trained on data from individuals completing an executive function test battery consisting of psychometric, timing, and accuracy tasks. The LVM consistently predicted simulated responses more accurately and with fewer samples than independent maximum likelihood methods, even when accommodating outliers. The application of active machine learning and informative Bayesian priors further increased data acquisition efficiency. The LVM's topology also revealed inherent nonlinearities in cohort-level trends. By offering immediate empirical validation, the model holds potential for exposing biases at time of data collection. The inclusion of prior beliefs and optimal sampling sequences enhances training efficiency. Consequently, distributional LVMs could serve as a potent alternative to conventional linear modeling methods in cognitive psychology.

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6:00–7:30 PM (3200)

High-Performance Experiments in R with the Glia Package. FELIX HENNINGER, *Ludwig-Maximilians-Universität München* — The R programming language is now widely used, and taught, for data processing in psychology and many social sciences. Despite its popularity and the widespread familiarity with R among students and researchers, when it comes to building experiments, both groups have had to pick up entirely new programming

languages and skillsets. The glia package aims to remedy this, providing an accessible toolkit for constructing and running experiments from R. However, R was not originally designed to meet the demands of low-latency interaction and fast stimulus presentation that are fundamental to laboratory research. Therefore, we investigate whether, and how, it can be adapted, to combine a familiar and accessible programming language with the needs of scientists in terms of presentation latency and response timing accuracy. We demonstrate that the glia package can achieve high-fidelity timing from R, validate its performance with regard to stimulus presentation and response time measurement, and present a general pattern for building performant experiments in environments not built for this purpose.

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6:00–7:30 PM (3201)

A Statistical Model for Reliability Generalization Formulated as a Mixture Model. DESIRÉE M. BLAZQUEZ-RINCÓN, *Universidad a Distancia de Madrid*, JUAN I. DURAN, *Universidad Autónoma de Madrid*, JUAN BOTELLA, *Universidad Autónoma de Madrid*, MANUEL SUERO, *Universidad Autónoma de Madrid* — In the type of meta-analysis known as reliability generalization (RG), the synthesized values are estimates of the reliability of a measurement tool. Traditionally, they have been analyzed using the classic random effects model, with the necessary adaptations to the specific ES index to which it refers (mainly, Cronbach's alpha coefficient of internal consistency). Some authors have pointed out that the classical random effects model incurs some defects and weaknesses, especially when the variance of the estimator is not independent of the ES index itself. The most notable case is the standardized mean difference, but the same circumstance occurs in some normalizing transformations of Cronbach's alpha. Suero et al. (2023) have proposed an alternative formulation of the meta-analytical random-effects model, based on the mixture models framework, which shows promising results. We use this alternative formulation and its derived formulas to reanalyze data from some RG studies. The results show that the formulas derived from the formulation as a mixture model is also promising for RG studies. Some simulation studies also show the suitability of the model.

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6:00–7:30 PM (3202)

Samply: A Web and Smartphone Application for Conducting Experience Sampling Studies. YURY SHEVCHENKO, *University of Konstanz*, ULF-DIETRICH REIPS, *University of Konstanz* — Conducting an experience-sampling study on smartphones can be a complex undertaking. To help researchers set up and manage their studies without programming a mobile application, we developed Samply software. Samply includes a website for researchers to design studies, schedule notifications, and monitor participant responses, as well as the Samply Research mobile application, which is available to participants on Google Play or the App Store. The app provides interval- or signal-dependent types of scheduled notifications and allows randomization between participants. The content of the notifications is fully customizable and can include links to studies created with other services, such as Qualtrics, Google Forms, WEXTOR, or lab.js. Samply also supports event-based notifications triggered by participant geolocation or custom events specified by researchers. Potential applications for Samply include longitudinal studies, clinical trials, and human-computer interaction studies. The project has open-source code and is available at https://samply.js.org.

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6:00–7:30 PM (3203)

Unified Test Procedures for Probing Negligible Interaction Effects in Factorial Designs. GWOWEN SHIEH, *National Yang Ming Chiao Tung University,* SHOW-LI JAN, *Chung Yuan Christian University* — A vital problem in factorial analysis of variance is testing for interactions. Traditional procedures mainly aim to establish the existence of substantial effects. However, the interaction effects may be so small that they should be considered clinically or practically unimportant. Note that the current method is only applicable to the two-way interaction of balanced designs. This paper presents test procedures to ascertain the negligibility of interactions in multifactor studies. A unified approach is conducted for appraising the lack of interaction that applies not only to higher order factorial designs but also to unbalanced schemes. In addition, viable procedures are also described when the homogeneous variances assumption is untenable. To facilitate planning factorial design, the corresponding sample size procedures and accompany computer algorithms are also developed. Numerical example and simulation study are utilized to explicate the usefulness and accuracy of the proposed procedures for assessing interactions in factorial studies.

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Poster Session IV

Saturday, November 18, 2023, 12:00–1:30 PM US PST, Grand Ballroom

12:00–1:30 PM (4001)

Delayed Attention During the Attentional Blink Influences Errors Differently Depending on Target Defining Feature. MATTHEW JUNKER, *Southern Illinois University*, ELLIOTT GRAY, *Southern Illinois University Carbondale*, REZA HABIB, N/A, *Southern Illinois University Carbondale* (Sponsored by Reza Habib) — Our previous research demonstrated different patterns of intrusion errors during a two-target rapid serial visual presentation task depending on whether targets were defined by rings around letter stimuli (spatially displaced cues) or color of the letters (features of the stimuli). A lack of masking in the ring condition was ruled out as an explanation of the differences. In the present studies, we explored how the previously observed patterns of errors differ depending on the size of the ring (cue distance from stimulus stream) and the presentation rate. Although increasing both the size of the ring and presentation rate produced a stronger post-target pattern, spatial displacement cannot solely account for the differences; a substantially greater post-target pattern was found even for the smallest ring compared to the color-defined target. These results suggest that

attentional delay influences intrusions errors differently depending on target features.

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12:00-1:30 PM (4002)

The Contribution of Difficulty of an Irrelevant Task to Task Conflict. RONEN HERSHMAN, *University of Innsbruck*, AYELET SAPIR, *Bangor University*, MICHAEL WAGNER, *Ariel University*, ELISABETH M. WEISS, *University of Innsbruck*, AVISHAI HENIK, *Ben-Gurion University of the Negev* — In the standard color-word Stroop task, participants are presented with color words and required to respond to their color while ignoring their meaning. In the present study, participants were presented with colored segments that, by using Gestalt principles, could be perceived as color words. Participants successfully perceived the color words, which led to involuntary reading, and resulted in slower responses for incongruent trials compared to congruent trials. In addition, reversed facilitation was found so that neutral trials (i.e., trials that cannot be perceived as color words) were faster than congruent trials (as well as incongruent trials). The presence of both interference from the incongruent trials and reverse facilitation suggests that involuntary reading might also occur in cases requiring cognitive effort.

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12:00-1:30 PM (4003)

The Reversed Stroop Effect Can Be Triggered by the Human and Animal Gaze But Not the Robot Gaze. KENTA ISHIKAWA, *Senshu University*, TAKATO OYAMA, *Senshu University*, YOSHIHIKO TANAKA, *Senshu University*, MATIA OKUBO, *Senshu University* — Perceiving the intention or concern of others plays an important role in producing specific attentional processes in response to gaze stimuli. The present study investigates the attentional process triggered by various types of gaze stimuli. Fifty-five university students performed a spatial Stroop task, in which four types of gaze stimuli were presented as a target (i.e., human, cat, koala, robot gaze). Participants were asked to judge the direction of the target (indicating left or right), irrespective of the location of the target (left or right). The result showed that the human, the cat, and the koala targets produced a reversed spatial Stroop effect while the robot target did not. Animals have intentions and concerns, while robots do not. Perceiving intentions or concerns may contribute to the reversed spatial Stroop effect observed in the present study.

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12:00-1:30 PM (4004)

Domain-Specific Effect of Memory Load on Updating Performance within Verbal and Visuospatial Representations. SZU-HUNG LIN, *Soochow University* — This study probes deeper into an established understanding of the effect of memory load on updating performance, considering the independent-resource nature of memory storage which manages both verbal and visuospatial representations independently. It investigates if this load effect exclusively manifests when both processes are operated in the same domain. For this investigation, number symbols (verbal domain) were used in a memory storage task, complemented by memory updating tasks employing representations within the identical domain (letters for Experiments 1 and 2) or in separate domains (non-verbalized symbols for Experiment 1 and location symbols for Experiment 2). Findings reveal a domain-specific effect of memory load on updating performance, manifesting exclusively when both task representations operated within an identical domain. Future studies should explore whether this domain-specific effect also applies to other facets of attentional control, such as switching and response control.

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12:00-1:30 PM (4005)

A Less Vigilant Mind Over Time? A Test of the Resource-Control Account of Sustained Attention. MATTHEW WELHAF, *Washington University in St. Louis*, MICHAEL J. KANE, *University of North Carolina at Greensboro*, MATT E. MEIER, *Appalachian State University* — The "resource-control" theory of sustained attention (Thomson et al. 2014) proposes a strong relationship between within-person increases in mind-wandering and decreases in performance (i.e., a vigilance decrement) with time-on-task. That is, one reason for decreased performance with time-on-task is because of attention shifting toward task-unrelated thoughts (TUTs). However, there is limited empirical work testing this critical hypothesis. We, therefore, reanalyzed data from 14 studies where participants completed a sustained attention task divided into 4–5 blocks and periodically responded to thought probes to assess TUT rates within each block. Using mixed-effect models, we estimated vigilance (block) effects for performance measures and TUT rates and correlated these block-wise slopes. A meta-analysis of the correlations suggested a weak positive correlation between the performance and TUT-rate vigilance effects, suggesting that within-person worsening in performance is related to within-person increases in mind-wandering. We discuss the implication of these results for the resource-control theory.

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12:00-1:30 PM (4006)

The Cute, the Bad, and the Neutral: Emotional Stimuli Can Compensate for the Task-Switching Effect on Subsequent Memory Performance. MICHÈLE CHRISTINE MUHMENTHALER, *University of Bern*, BEAT MEIER, *University of Bern* — The present study tested whether emotional stimuli can compensate for the detrimental memory effects of exhausted cognitive control. Toward this goal, we used a task-switching procedure in which we induced negatively or positively connoted emotional and neutral stimuli. The emotional stimuli were placed on switch trials and the neutral stimuli on repeat trials, or vice versa. In two experiments, the participants performed an animacy and an even/odd classification task on compound stimuli consisting of a picture and a number in the center. Afterwards, the participants completed a surprise recognition memory task for the pictures. The results indicated that emotional stimuli on switch trials can improve memory, but only when they are negatively connoted. In two further experiments with the same stimulus materials, participants had to switch between two different number

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tasks (even/odd, bigger/smaller than 5), the pictures were presented in the background. Again, the results showed that emotional stimuli can compensate for the detrimental effects of task switching on memory. Thus, emotions can boost memory in situations of exhausted cognitive control.

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12:00-1:30 PM (4007)

The Role of Attention Control in Inspection Time Tasks. JASON TSUKAHARA, *Georgia Institute of Technology*, CODY A. MASHBURN, *Georgia Institute of Technology*, RANDALL W. ENGLE, *Georgia Institute of Technology* — The inspection time task measures how quickly one can accurately discriminate the difference in length between two vertical lines. It has been considered a pure measure of the "speed of information uptake," and the moderate correlation between intelligence and inspection time task performance might support the "mental speed" theory of intelligence. The role of attention in the inspection time task has, however, been largely overlooked. Given that there is also a strong relationship between the control of attention and intelligence, inspection time might correlate with intelligence because of shared demands on the ability to control attention. We investigated the relationships among inspection time, attention control, processing speed, and fluid intelligence in a large sample, N = 304. Across multiple analyses, we found that inspection time is more closely associated with measures of attention control than to other processing speed measures, and that attention control can explain the inspection time – fluid intelligence relationship. These findings challenge the interpretation of inspection time tasks as pure measures of processing speed and expand theorizing about attention control beyond inhibition and interference control.

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12:00-1:30 PM (4008)

Does a Wandering Mind Lose (Cognitive) Control?. MATTHEW WELHAF, *Washington University in St. Louis*, NATHANIEL DIEDE, JULIE BUGG, *Washington University in St. Louis* — The Sustained Attention to Response Task is commonly used to assess mind-wandering because it promotes habitual, "mindless" responding. This type of responding manifests in faster and more variable performance before mind-wandering reports. "Mindless" responding also occurs in other tasks, like mostly congruent Stroop lists where the habitual response of word reading is reinforced by the high frequency of congruent trials. Here we asked whether manipulations (list-wide proportion congruency [LWPC], pre-cueing) that encourage more versus less habitual responding change how attention is engaged on a moment-to-moment basis, as indexed by thought-probes assessing mind-wandering. We replicated LWPC and pre-cueing effects on Stroop performance, but these manipulations did not affect mind-wandering rates. However, within-subject analyses indicated that trials leading up to, and following, mind-wandering reports were slower and more variable compared to on-task reports. The results suggest that behavioral correlates of mind-wandering may differ based on the cognitive control demands of the task.

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12:00-1:30 PM (4009)

From Task to Thought: Exploring the Dynamic Relationship between Cognitive Flexibility and Attentional Shifts through Hidden Markov Models in a Task-Switching Paradigm. MANA FAZEL, *University of Amsterdam*, INGMAR VISSER, *University of Amsterdam*, ESMÉE VERWIJK, *University of Amsterdam,*, FILIP VAN OPSTAL, *University of Amsterdam* — Attention dynamically shifts between task-related and task-unrelated thoughts. This study investigated the relation between these shifts and cognitive flexibility by using a task-switching task (the Number-Letter Task) and hidden Markov models (HMMs). Attentional shifting was measured by fitting an HMM on the response time coefficient of variability (RTCV), which is taken as an objective measure of attentional shifts. Results showed a strong correlation between an individual's cognitive flexibility and attentional shifting: a high switch cost correlated with a high RTCV. However, while a switch cost was observed in both reaction time and accuracy, it remained consistent regardless of whether participants were engaged in task-related or task-unrelated thoughts. In conclusion, this study revealed a strong correlation between cognitive flexibility and attentional shifting, indicating that individuals with higher cognitive flexibility exhibit fewer shifts in attention, possibly through a shared cognitive process.

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12:00-1:30 PM (4010)

Evidence of Task-Triggered Retrieval of the Previous Response: A Binding Perspective on Response-Repetition Benefits in Task Switching. ELENA BENINI, *Rheinisch-Westfälische Technische Hochschule Aachen University*, MALTE MÖLLER, *University of Passau*, IRING KOCH, *Rheinisch-Westfälische Technische Hochschule Aachen University*, ANDREA M. PHILIPP, *Rheinisch-Westfälische Technische Hochschule Aachen University*, RUYI QIU, *University of Passau*, SUSANNE MAYR, *University of Passau* — In task switching, response repetitions (RR) usually yield performance benefits compared to response switches, but only when the task repeats. When the task switches, RR benefits vanish or even turn into costs, yielding an interaction between repeating versus switching the task and the response. Several theoretical accounts were proposed to explain this interaction. In this study, we tested a prediction derived from binding and retrieval accounts which assumes that task and response are bound in each trial N. Moreover, when the task repeats, it retrieves the task-response binding formed in the N−1 trial. We ran two (N = 46, N = 107) task-switching experiments with three response options that allows to differentiate error types. In task repetitions, the most frequent error was a response-repetition error, i.e., erroneously repeating the N−1 response when it should be switched. In task switches, this was not the case. This supports that a repeating task retrieves the N−1 response, in line with binding and retrieval accounts. The competing accounts instead do not predict N−1 response retrieval when the response should be switched. Thus, task-response binding may be an important mechanism underlying RR benefits in task repetitions.

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12:00–1:30 PM (4011)

Effects of Age and Fixation Location on Face Identification. M. ERIC CUI, *University of Toronto & Baycrest Health Sciences*, ALLISON SEKULER, *Rotman Research Institute, Baycrest*, BJORN HERRMANN, *Rotman Research Institute, Baycrest*, EUGENIE ROUDAIA, *Rotman Research Institute, Baycrest*, FARHAN ABDUL VAHEED, *McMaster University* — Face identification declines with age as older adults (OA) make less use of information around the eyes, which is key to face identification accuracy. The forced initial fixation approach in younger adults (YA) showed that face identification could be modulated by initial fixation. The current study used such approach to investigate whether fixating towards the eye and eyebrow region could improve face identification. In Study 1 (42 YA, M = 26; 63 OA, M = 61), the initial fixations were located at the mid-line of faces. Study 2 (24 YA, M = 26; 19 OA, M = 60) added a Control condition, in which the initial fixations were located at the corners of faces. Although OA exhibited worse face identification performance than YA, they showed better performance when fixations were near the eyes and nose. The interaction between age group and fixation condition revealed that OA showed greater improvement when the initial forced fixation moved towards the eye or nose regions. These results suggest that altering initial fixations and/or attentional focus to more informative regions of the face may provide a mechanism to enhance face perception in OA.

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12:00–1:30 PM (4012)

Jumping the Hoops: Depth Limitation to the Benefit of Object-based Attention in Virtual Reality. KAROLINA KRZYS, *Queen's University*, TYLER YAN, *Queen's University*, MONICA S. CASTELHANO, *Queen's University* — Same-object advantage refers to a phenomenon where attention spreads over an object facilitating detection of changes within its boundaries. Using projections of 3D shapes, past research has shown that object-based attention can eliminate the cost of switching attention in depth. However, because depth can only be inferred from cues available in 2D displays, here we examine how spatial and object-based attention interact in 3D space presented stereoscopically. Across two experiments we manipulated the orientation of two rectangular prisms so that they either extended in depth or aligned along separate depth planes. We found that the detection of a target was faster on a cued prism regardless of its orientation. Notably, the cost of switching within a depth plane was significantly reduced when the prism was aligned along the depth plane. The findings suggest that object prioritization is limited by depth.

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12:00–1:30 PM (4013)

The Disparity in Humans' and Deep Convolutional Networks' Performance on Directional Visual Reasoning. PACHAYA SAILAMUL, *Brown University*, LESLIE WELCH, *Brown University*, THOMAS SERRE, *Brown University* — Visual reasoning involves the ability to recognize relationships among objects in a scene. This study investigates the performance of humans and deep convolutional neural networks (DCNs) in solving a class of visual reasoning tasks, directional visual relations (DVR), where the relations depend on the scene's composition. Specifically, the task is to determine the relationship, e.g., above or below, between the target and the reference object among distractors. We consider two ways of referring to objects in DVR tasks: based on their location (spatial attention) or their identity (semantic attention). Our experiments show that humans performed well on DVR tasks with either spatial or semantic attention. However, DCNs could only utilize spatial attention to solve DVR tasks but failed to do so using semantic attention. These findings highlight the disparity between human and machine performance in DVR tasks on semantic attention.

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12:00–1:30 PM (4014)

Evidence for Complex Attentional Templates During Temporal Search of a Continuously Changing Multivalent Stimulus. KEITH RACIOPPO, *University of Houston*, BENJAMIN J. TAMBER-ROSENAU, *University of Houston* — It is debated whether attention can be guided by complex templates spanning multiple potential target values and feature dimensions, or if such templates are merely simulated by cycling through simpler templates. We previously asked participants to simultaneously search continuously changing multivalent stimuli for targets defined in either of two feature dimensions. With two stimulus locations, we observed costs when targets switched vs. repeated dimensions, which supported the simple template account because switch costs imply that some targets occurred when they did not match the current template. However, we may have inadvertently incentivized simple template cycling by using two locations, which could have required serial search. Consistent with this concern, a single-location experiment showed invariance for dimension switch vs repeat, i.e., evidence for complex templates. In the present research, we replicated the single-location study with more data per participant, allowing analysis to be contingent on correct report of the previous target. This contingent analysis again revealed invariant performance for dimension switch vs repeat targets, consistent with complex attentional templates—at least in single-location search.

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12:00–1:30 PM (4015)

Motion Perception and Attentional Selection: Self-Prioritization Effects Underlying Decisional and Perceptual Mechanisms. ASHLEIGH VELLA, *University of Queensland*, DRAGAN RANGELOV, *Queensland Brain Institute*, DAVID K. SEWELL, *University of Queensland*, TIMOTHY BALLARD, *University of Queensland*, ADA KRITIKOS, *University of Queensland* — The self-prioritization effect (SPE) is a decision benefit afforded to self-relevant information, attributed to an attentional enhancement. We speculate, if self-information is enhanced, it will act as a highly salient distractor when selective attention is directed to other-targets, but when attention is directed to self-information, other-distractors will show minimal interference. We investigated selective attention's effectiveness to self-information in the presence of other-information,

and vice versa. In Experiment One, participants associated a direction of motion (left, right) with themselves, and a stranger and then identified whether a Kinematograms coherent movement direction matched or mismatched the presented label (YOU, OTHER). In Experiment Two, participants associated a colour (pink, blue) with themselves and an other-referent, participants identified the movement direction of the coloured Kinematogram associated with the label (ignoring the distractor coloured Kinematogram). Faster responses and a larger drift-rate occurred for self-, than other-relevant targets. This suggests people can selectively attend to self-targets when distractors are present and enhanced visual processing underpins the SPE.

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12:00-1:30 PM (4016)

Using Generated Object Reconstructions to Study Object-Based Attention. SEOYOUNG AHN, *Stony Brook University*, HOSSEIN ADELI, *Stony Brook University*, GREGORY ZELINSKY, *Stony Brook University* (Sponsored by Hossein Adeli) — Behavioral and neural evidence suggest that the fundamental unit of attention selection for humans is a complete object representation. However, the mechanism underlying object-based attention remains poorly understood. One open question about object-based attention is how high-level object representations are able to effectively guide bottom-up processing of low-level visual features. Here, we propose a generative mechanism to model object-based attention, which we refer to as "object reconstruction-guided attention" (ORA). Our hypothesis is that the brain exhibits an object-based selection bias as it iteratively attempts to explain the input and selectively routes object features to minimize the error in reconstructing an object. We implemented the ORA mechanism in an artificial neural network, using an autoencoder-like architecture that incorporated object-centric representations. This model exhibits high generalizability across different tasks, such as object recognition, grouping, and visual search, despite not being specifically trained for them. Our results suggest that the object reconstruction process can serve as a potential neural mechanism underlying robust human object-based perception and attention.

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12:00-1:30 PM (4017)

Attentional Modulation of Outlier Processing. AHU GOKCE, *Kadir Has University*, BUGAY YILDIRIM, *Koç University*, AYSECAN BODUROGLU, *Koç University* — Previously it has been shown that ensemble perception facilitates outlier detection and precision. We investigated whether spatial attentional cues would further moderate the localization of outliers. In two experiments we asked participants to localize the outlier which deviated from the ensemble formed by heterogeneously sized circles; outlier localization error was measured. In Experiment 1, spatial cue was (in)valid or uninformative and was presented either before (pre) or after (post) the display. We demonstrated that localization error was reduced only when valid pre-cues were presented. In Experiment 2, to simultaneously compare the effect of spatial cueing and top-down attention control mechanisms on outlier detection, target and distractor outliers were presented along an ensemble. Target was identical in all trials and participants were informed about its identity. Localization error was again reduced in the valid compared to invalid cue trials. Overall, the results indicate that cue-driven processes, but not top-down attentional guidance, facilitate outlier representation.

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12:00-1:30 PM (4018)

Predicting Reading Comprehension with Novel Attentional Control Squared Tasks. BROOKE CHARBONNEAU, *Montana State University*, FRANCISCO JAVIER GONZÁLEZ-ESPINAR, *University of Almería*, ALEXANDER P. BURGOYNE, *Georgia Institute of Technology*, JASON TSUKAHARA, *Georgia Institute of Technology*, CODY A. MASHBURN, *Georgia Institute of Technology*, RANDALL W. ENGLE, *Georgia Institute of Technology*, KEITH A. HUTCHISON, *Montana State University* — Recent research has aimed to develop better attentional control measures because commonly used conflict tasks fail to reliably predict attentional control at the latent level (Draheim et al., 2021). Stroop, flanker, and Simon tasks have recently been "squared" to produce interference from both stimuli and responses, resulting in more variability in individuals' performance and allowing single accuracy-based scores to avoid reliability issues that arise from using difference scores (Burgoyne et al., 2023; Draheim et al., 2021). To determine test-retest reliability and validate whether they capture real-world performance, these tasks were administered to undergraduate students both before and after reading and answering comprehension questions from three SAT passages. While reading the passages, participants were also asked to answer occasional thought probes to assess mind wandering. The squared tasks and the latent variable for attentional control showed high test-retest reliability. Also, the latent construct of attentional control predicted reading comprehension above and beyond any single task alone and predicted much more variance in reading comprehension than participants' self-reported mind wandering.

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12:00-1:30 PM (4019)

Deafness-Induced Neuroplasticity Enhances Disengagement from Singleton Distractors. VAISHNAVI MOHITE, *University of Hyderabad*, GAURI SHANKAR PATIL, *Ali Yavar Jung National Institute of Speech and Hearing Disabilities*, RAMESH MISHRA, *University of Hyderabad* — Loss of hearing induces changes in pathways responsible for vision. Selective attention is enhanced in congenitally deaf individuals compared to normal hearing individuals. Since selection is a result of both target enhancement and distractor suppression, we explored the question whether deafness enhances only target selection or distractor suppression or both processes. Using a singleton search task, first developed by Theeuwes et al. (1992), a search array was presented at central or peripheral location from fixation. Results from the normal hearing group found faster RTs on singleton distractor absent trials than on singleton distractor present trials as is typical of singleton search but deaf subjects displayed the opposite pattern of RT, indexing singleton suppression. Response compatibility analysis found greater accuracy

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on compatible responses than incompatible response trials, suggesting the faster RTs in the presence of singleton were a result of fast disengagement. RT distribution analysis revealed that disengagement from the singleton was only possible for slower RTs, suggesting a controlled goal-directed avoidance of singleton distractors in the deaf.

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12:00–1:30 PM (4020)

Task Sequencing Does Not Systematically Affect the Factor Structure of Cognitive Abilities. XAVIER CELAYA, *Arizona State University*, MATTHEW K. ROBISON, *The University of Texas at Arlington*, HUNTER BALL, *The University of Texas at Arlington*, GENE BREWER, *Arizona State University* — Latent variable analyses are crucial in cognitive psychology for testing theories on human cognition. These analyses involve fitting models to observed variance-covariance structures and comparing the model fit to evaluate competing theories. However, the specific sequence in which tasks are presented to participants is often overlooked. We conducted an empirical study to investigate whether task sequences have a systematic impact on the observed factor structure. A large sample of 587 individuals completed a battery of 12 cognitive tasks that assessed working memory, long-term memory, attention control, and fluid intelligence. Participants were assigned to one of three conditions: fixed sequences grouped by construct, fixed sequences interleaved across constructs, or random sequences. We formulated two hypotheses: (1) grouping tasks by construct would increase factor loadings and (2) grouping tasks by construct would decrease interfactor correlations. However, neither hypothesis received support from the data. The measurement models showed strong invariance across the three conditions, indicating that latent variable analyses are resilient to subtle methodological differences like task sequencing.

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12:00–1:30 PM (4021)

Seeing the Forest for the Trees: Local Preference Modulates N1 and P3 ERPs for Local and Global Stimuli. RICHARD KRUK, *University of Manitoba*, MEISHA MONSIGNEUR, *University of Manitoba*, AMY S. DESROCHES, *The University of Winnipeg* — We used ERPs to examine stimulus-evoked global and local processing for Navon stimuli with a focus on individual preferences for local or global levels in visual target identification. Participants with a preference for the local level (faster responses to local vs. global level targets) showed more negative N1s to local and more positive P3s to global stimuli. In contrast, those with global-level preferences showed no differences in ERPs to global vs. local stimuli. These findings suggest that people with a local preference show differences in early attention alerting and post-perceptual attention to local vs. to global stimuli, while people with a global preference do not. The directions of the amplitude differences for the local-preference group were opposite to our expectations based on congruence between preference and stimulus precedence, which may index greater sensitivity and effort in distinguishing local and global stimuli by individuals with a local preference.

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12:00–1:30 PM (4022)

Precise Individual Estimates of the Congruency Effect: Introducing the EPIC Dataset. HYEJIN J. LEE, *Florida State University*, DEREK M. SMITH, *Johns Hopkins University School of Medicine*, ALLY DWORTETSKY, *Florida State University*, BRIAN T. KRAUS, *Northwestern University*, HAUENSTEIN E. CLIFFORD, *Johns Hopkins University School of Medicine*, MEGAN DORN, *Northwestern University*, DEREK EVAN NEE, *Florida State University*, CATERINA GRATTON, *Florida State University* — The congruency effect (CE) measures the extent of interference resulting from failing to inhibit distractions. Despite its extensive use and high replicability in experimental research, correlational research has reported poor reliability. We asked whether CEs can become precise individual estimates with an extensively sampled dataset of more than five thousand trials per participant from three congruency tasks: flanker, prime-probe, and Stroop tasks. We describe this EPIC (Extended Psychophysics of Inhibitory Control) dataset of eight highly sampled participants and the findings as guidelines for measurement precision. Substantially higher numbers of trials are required to achieve high reliability than are collected in many common tools (e.g., NIH Toolbox). Large within-subject variance from insufficient sampling inflates between-subject variance and distorts observations from factor analysis and drift-diffusion modeling, questioning previous high-profile studies with insufficient trials. We demonstrate sufficient sampling is critical to reliably use CE as an avenue for characterizing commonalities and differences in inhibitory control.

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12:00–1:30 PM (4023)

Psychological Motives Underlying Decisions to Reduce Meat in the Diet. DOMINIKA MAISON, *University of Warsaw* (Sponsored by Dominika Maison) — Meat reduction is an important area of research not only for nutritionists, but also for psychologists. The aim of the study was to segment consumers based on attitudes toward meat consumption and reduction and openness to meat and dairy substitutes in order to understand the psychological factors underlying consumer decisions in this area. A two-stage study was conducted: (a) a quantitative (nationally representative survey, n = 1,024) and (b) a qualitative (36 individual in-home individual interviews [ethnography]). Based on factor and cluster analyses, six segments of consumers differ in motives underlying meet consumption or reduction were extracted: (1) Sensitive Vegans (11%); (2) Open to Novelty (18%); (3) Traditional Retirees (19%); (4) Younger Conservatists (13%); (5) Meat Loving Mucho (23%); (6) Lost Indifferent (15%). The second study, based on ethnographic individual interviews, served to gain an in-depth understanding of each segment and explore their openness and psychological barriers to meat reduction.

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12:00–1:30 PM (4024)

Natural Environments and Attention Restoration: Moderating Effect of Sensory Processing Sensitivity. ANNALISA SETTI, *University College Cork & The Irish Longitudinal*

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Study on Ageing, EIMER CADOGAN, *Health Research Board*, MIKE MURPHY, *University College Cork* — Attention Restoration Theory posits that attention and executive functions can be restored by exposure to natural environments. In the present work, we tested whether cognitive functions are restored by virtual exposure to nature as opposed to an urban environment, and we assessed the moderating role of individual differences, i.e., sensory processing sensitivity. One hundred forty-seven participants (53.1% female; M age=48.07) completed the Highly Sensitive Person Scale (Aron & Aron, 1997) and were randomly assigned to two conditions (watching a nature or urban video). Before and after the videos, they completed online the Stroop task and measures of affect and rumination. Rumination and affect changed post-intervention, while no difference was found in the Stroop task. The level of sensory processing sensitivity modulated the effect of the intervention on positive affect. Results support a positive role of virtual nature on rumination and affect, while inhibitory capacity was unchanged.

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12:00-1:30 PM (4025)

Testing Improves Learning Outcomes Across Individuals with Varying ADHD Symptomatology. HYMNJYOT KAUR, *Toronto Metropolitan University*, KARL SZPUNAR, *Toronto Metropolitan University* — Online learning is developing rapidly and testing has been shown to decrease mind wandering and improve learning. Research has yet to explore whether this strategy is viable for students who may be more prone to mind wandering. We investigated if testing can improve learning for individuals with varying ADHD symptomatology. Participants watched a statistics lecture which included mind wandering probes. After each segment, participants either answered test questions or reviewed the same information (i.e., restudy condition). Both groups completed a test following the last segment, a final cumulative test and responded to the Adult ADHD Self-Report Scale. Multiple linear regression analyses were conducted to determine if condition or ADHD symptomatology predicted segment 4 test performance and participant attentiveness. Findings indicate that participants with higher ADHD symptomatology reported lower on-task thoughts and higher off-task mind wandering. Interestingly, irrespective of participants' ADHD symptomatology, participants in the tested group had higher segment 4 test scores compared to those in the re-study group.

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12:00-1:30 PM (4026)

Listening Fast and Slow: Investigating Neurocognitive Mechanisms of Verbal Statistical Learning. JOSHUA BUFFINGTON, *University of Illinois Chicago*, KARA MORGAN-SHORT, *University of Illinois Chicago* — Statistical learning has been claimed to be a key process by which language learners extract words and patterns from linguistic input. Here, we investigated two potential mechanisms of statistical learning— prediction and attention (Conway, 2020)—by testing hypotheses from the declarative/procedural model of language (Ullman et al., 2020). Specifically, we examined the hypothesis that speech rate impacts the engagement of these two mechanisms, with faster speech engaging prediction and slower speech enabling greater attention. During a verbal statistical learning task (following Orpella et al., 2021), participants monitored for the presence of a pseudoword (e.g., mogi) that occurred in an adjacent dependency (e.g., baki always preceded mogi). Contrary to our hypotheses, we did not find evidence of either prediction or attention at faster speech rates, and slower speech rates seemed to engage prediction instead of attention. We discuss implications of these data for theories of statistical learning of language.

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12:00-1:30 PM (4027)

Decoding Bilingualism: A Network Psychometrics Perspective on Cognition and Culture. WILLIAM RAYO, *Oregon State University*, PERLA NIETO, *Oregon State University*, IVAN CARBAJAL, *Oregon State University* (Sponsored by Ivan Carbajal) — Recent work has suggested that the cognitive effects of bilingualism depend on the unique contextual demands of an individuals sociolinguistic and cultural environment. Research has long noted the difficulty in distinguishing between the effects of managing multiple languages and multiple cultures. As a result, little is known regarding the interplay between environmental sociolinguistic demands, identity management, and its effects on cognition. We used a network psychometrics approach to investigate how the contextual nature of one's sociolinguistic demands over time can shape the development of language, identity, and cognition. Preliminary results indicate that sociolinguistic and cultural, variables such as language entropy and multicultural identity style moderated performance on measures indexing attentional control. Data such as these highlight the emergent nature of bilingualism and support the use of network psychometrics in modeling dynamic and complex phenomena such as the impact of individual differences in linguistic and sociocultural variables on cognition.

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12:00-1:30 PM (4028)

Latent Modeling and Bilingualism: An Integrative Approach to Bilingual Subtypes. SAM MCGEE, *Arizona State University*, TAMIKO AZUMA, *Arizona State University*, JOHN A E ANDERSON, *Carleton University*, ELLEN BIALYSTOK, *York University* — Bilingualism is a complex multivariate construct, yet researchers often classify bilinguals into dichotomies and distinct categories. Although many aspects of bilingual experience are measured, definitions can lack consistency across studies, and classifications can share overlapping features. Even when variables have similar operational definitions (e.g., language proficiency, language use), combinations of these variables vary widely across studies. Latent profile analysis (LPA) has previously been applied to describe multivariate, heterogeneous populations, including language ability groups (Kapantzoglou, Restrepo, Gray, & Thompson, 2015). The present study used LPA to identify bilingual subtypes using the Language and Social Background Questionnaire (LSBQ; Anderson, Mak, Chahi, & Bialystok, 2018) across two samples (n = 208, n = 408). Results suggest latent models can characterize bilingual subtypes within studies,

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improving the descriptive accuracy of bilingual samples, and can facilitate comparisons of samples between studies, providing richly informative data about identified subtypes.

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12:00-1:30 PM (4029)

More Than Words: Comparing Bilingual Mother-Child Nonverbal Communication Across Languages. SIRADA ROCHANAVIBHATA, *Northwestern University*, JESSICA YUNG-CHIEH CHUANG, *Northwestern University*, VIORICA MARIAN, PHD, *Northwestern University* — Gesture and speech function as an integrated communicative system. Characterizing bilinguals' gesture use in their two languages can provide insight into children's cognitive development and adults' scaffolding. Gestural patterns of Thai-English bilingual mothers and their four-year-old children were examined in three communicative tasks (prompted reminiscing, book sharing, and toy play) during two sessions (Thai and English). Mother-child interactions were coded for beat, conventional, deictic, and representational gestures. Linear mixed effects models were run by type of gesture and speaker, with fixed effects of language and task and a random effect of participant. Results revealed that bilingual mothers and children gesticulate differently (p's < .05) in their two languages (e.g., more beat gestures in English than in Thai) and across communicative tasks (e.g., more representational gestures during prompted reminiscing compared to other tasks). These findings suggest that bilinguals utilize nonverbal communication in language-specific ways and modify their gestures according to task demands. This work contributes to understanding the interplay between gesture and speech in linguistically diverse groups.

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12:00-1:30 PM (4030)

Investigating the Long-Term Effects of Reading Ability Growth During L2 Instruction on Subsequent Reading Skill: a Longitudinal Eye-Tracking Study. DANIEL SCHMIDTKE, *McMaster University*, GWENYTH LU, *McMaster University*, ANNA MORO, *McMaster University* — Reading ability in the language of instruction is a critical predictor of academic outcomes of students who use English as an additional language (EALs) in English-medium universities. The aim of this longitudinal study was to quantify the long-term impact of reading development that occurred during pre-sessional English language instruction on the future second language (L2) reading ability of EALs. We tracked 299 EAL students from a Canadian university over the duration of pre-sessional language instruction (Phase 1; 8 months) and conducted a follow-up on a sub-sample of 50 students in their final year of undergraduate study (44 months later). Eye-movement measures of passage reading fluency were examined, in addition to reading comprehension, vocabulary knowledge, and phonological processing. The results showed that intra-individual growth in skills during Phase 1, including change in oculomotor measures of reading fluency, uniquely contributed to those same skill outcomes at follow-up. Greater improvements predicted higher skill at end of undergraduate study over and above baseline ability. We discuss the implications of these results for educational practice and for theoretical models of second language reading development.

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12:00-1:30 PM (4031)

Relationship Between Bilingual Experiences and Social Biases: The Moderating Role of Motivation to Respond Without Prejudice. SOFÍA CASTRO, *Jagiellonian University Institute of Psychology*, PATRYCJA KAŁAMAŁA, *Institute of Philosophy, Jagiellonian University & Beckman Institute for Advanced Science and Technology, University of Illinois Urbana-Champaign*, MARCIN BUKOWSKI, *Jagiellonian University Institute of Psychology*, ZOFIA WODNIECKA, *Jagiellonian University Institute of Psychology* — Previous studies have reported fewer social biases in bilinguals compared to monolinguals. However, given the multidimensional nature of bilingualism, it is unclear which aspects of bilingualism drive this tendency. This study investigates the connections between various dimensions of bilingual experience and the expression of explicit social biases, taking into account individual differences in self-reported executive control and motivation. To this end, we analysed the responses of 389 bilinguals to a battery of questionnaires on bilingual and multicultural experiences, explicit bias, motivation to respond without prejudice and executive control. The results showed that more diverse experiences related to language-use practices, multiculturalism, and lifelong language learning were associated with less explicit bias among bilinguals with lower internal motivation to respond without prejudice. This is the first study that shows the relevance of bilingual experiences in bias expression in adults, highlighting the importance of bilingualism in social cognition.

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12:00-1:30 PM (4032)

The Role of Language of Test on Bilingual Working Memory Performance. YE LI, *Arizona State University*, VALERIE A. WANG, *Arizona State University*, VIRIDIANA L. BENITEZ, *Arizona State University* — Speaking multiple languages may benefit bilinguals' executive functions due to attention management across languages. However, a bilingual advantage in working memory (WM) invites mixed findings (Lowe et al., 2021). Conflicting findings may result from that verbal WM tasks are predominantly administered in monolinguals' language, not considering bilinguals' language dominance. How do English-speaking monolingual and bilingual adults perform on non-verbal and verbal WM tasks administered in English (Experiment 1) or bilinguals' dominant language (Experiment 2)? For verbal WM tasks, results suggested that 66 bilinguals did not differ from 62 monolinguals when both tested in English (Experiment 1 Listening Span, p =.352), but 33 bilinguals tested in dominant language outperformed 36 monolinguals (Experiment 2 Digit Span, p<.001). For non-verbal WM tasks bilinguals outperformed monolinguals across experiments (Symmetry Span, p < .008). We support a robust bilingual effect in non-verbal WM, but a conditional effect in verbal WM sensitive to language of test. We highlight the importance of bilinguals' language dominance (e.g. lexical

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retrieval) in bilingual cognitive research.

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12:00-1:30 PM (4033)

Cognitive Variables in Second Language Acquisition. KIRSTEN HUMMEL, *Laval University* — This study examines the roles of working memory (WM), i.e., central executive (CE) and phonological short-term memory (PSTM), and language aptitude in various second language (L2) skills in advanced francophone learners of English. Some studies have reported WM (CE) links with L2 learning (Li et al, 2019), while others (e.g., Grey et al., 2015) have not. PSTM appears to play an important role in L2 vocabulary acquisition (Verhagen & Leseman, 2016), primarily at lower proficiency levels (e.g., Serafini & Sanz, 2016). Traditional aptitude measures are strong predictors of ultimate language learning (e.g., Li, 2015, 2016). All variables were assessed through multiple tasks: composite complex and backward digit span (WM); nonword repetition and serial recognition (PSTM), and Modern Language Aptitude Test (MLAT) subtests (language aptitude). Initial results revealed PSTM predicted overall L2 proficiency while WM span correlated only with reading comprehension. Results from entire cohort on all variables will be reported.

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12:00-1:30 PM (4034)

A Later Learned Language May Be Less Resilient to Alzheimer's Disease: Evidence from Picture Naming. ANNE NEVEU, *University of California, San Diego*, DAVID P. SALMON, *University of California, San Diego*, TAMAR H. GOLLAN, *University of California, San Diego* — Psycholinguistic models predict that bilinguals with Alzheimer's disease (AD) should either exhibit parallel decline of both languages through damage to shared semantic representations or greater decline of the nondominant language, which may require executive control to suppress dominant language competition. Only two previous studies examined decline longitudinally. One showed parallel decline, and the other showed greater decline of the nondominant language. We examined decline over 2-7 years (3.9 on average) in English-dominant Spanish-English bilinguals who learned both languages early in life (n = 12) and Spanish-dominant bilinguals who learned English later in life (n = 11). Multiple approaches to analysis showed greater decline of the nondominant language over time (logistic regression including item difficulty, linear regression on percent decline, and sign tests). However, the asymmetrical decline pattern was driven primarily by late bilinguals. Picture naming in a later learned language may require more executive control, which declines more rapidly in AD than semantic representations.

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12:00-1:30 PM (4035)

Speaking Multiple Languages Changes Memory of Visual Scenes. MATIAS FERNANDEZ-DUQUE, *Northwestern University*, VIORICA MARIAN, PHD, *Northwestern University*, SAYURI HAYAKAWA, *Oklahoma State University* — Language can have a powerful effect on how people experience events. Here, we examine how the languages people speak guide attention and influence what they remember from a visual scene. When hearing a spoken word, listeners activate other similar-sounding words before settling on the correct target. We tested whether this linguistic co-activation during a visual search task changes memory for objects. Bilinguals and monolinguals remembered English competitors that overlapped phonologically with a spoken English target better than control objects without name overlap. High Spanish proficiency also enhanced memory for Spanish competitors that overlapped across languages. These findings suggest that knowing multiple languages influences not only how people see their current environment, but also what they remember long term. We conclude that linguistic diversity partly accounts for differences in higher cognitive functions like memory, with speakers of different languages providing a fertile ground for studying the interaction between language and cognition.

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12:00-1:30 PM (4036)

False Memories in Bilinguals: Integration of Information Across Languages. BIANCA GURROLA, *University of Texas at El Paso*, WENDY S. FRANCIS, *The University of Texas at El Paso* — \We investigated false memories in bilinguals using a DRM procedure. Spanish-English bilinguals (N = 96) studied lists of words associated with non-presented critical lure words. These lists were in English, Spanish, or alternating English and Spanish. Each list was followed by an immediate free-recall task in English or Spanish and a final recognition test. Veridical recall and recognition were more accurate when study and test were in the same language. Recall and recognition of critical lures occurred at a higher rate when the studied list and the recall/recognition language differed, as in previous research. In a novel condition where the lists alternated languages, the false memory effect was similar to the between-language condition for recall and similar to the within-language condition for recognition, which indicates that bilinguals integrate information across languages at encoding to form false memories. Language proficiency was not associated with the recall or recognition of critical lures.

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12:00-1:30 PM (4037)

Unveiling Cognitive Mechanisms of Error Correction in Second Language Vocabulary Learning. JAJAIRA L. REYNAGA, *University of California, Santa Cruz*, LIV J. HOVERSTEN, *University of California, Santa Cruz* — Effective second language acquisition relies on understanding the cognitive processes involved in overcoming linguistic barriers. Unstable L2 representations and L1 interference hinder error monitoring, but repeated feedback stabilizes L2 representations, enabling internal error detection after training (Bultena et al., 2017). In this study, 30 English-speaking participants learned Dutch cognates, false cognates, and non-cognates. In a guessing block, participants completed three rounds of guessing English translations followed by feedback for each word. In a reading block, the same participants studied new translation pairs without guessing or feedback. Results showed that cognates were easier to learn in both guessing and reading blocks due to shared linguistic features between

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L1 and L2. False cognates benefited from the absence of feedback in the reading block, reducing L1 interference. However, non-cognates were easier to learn in the guessing block, implying that error correction and feedback are particularly beneficial for overcoming L1 interference. These findings shed light on the interplay between L1 and L2 interference and the impact of error monitoring and feedback on second language acquisition.

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12:00-1:30 PM (4038)

Second Language Learning with ADHD: The Role of Memory Systems. MARYNA RIDCHENKO, *University of Illinois Chicago*, VICTOR A. HERNANDEZ, *University of Illinois Chicago*, KARA MORGAN-SHORT, *University of Illinois Chicago* — Research suggests that individual differences in memory systems influence second language (L2) learning in adults with neurotypical cognition. The current study investigates how ADHD affects the role of memory in L2 learning. Participants received L2 training on an artificial language with analogical and affixation rules, completed a forced-choice test at the end of the L2 training, and completed cognitive assessments of working, declarative, and procedural memory learning ability. They also responded to ADHD and depression questionnaires. The preliminary results (N = 40; data collection ongoing) revealed learning effects for the affixation but not analogical rules. Also, a significant interaction between declarative memory and ADHD symptoms was found for the affixation rules, in which higher ADHD symptoms were associated with (a) high L2 accuracy when declarative memory was low but (b) low L2 accuracy when declarative memory was high. Interpretations of the results and their implications to theory and practice will be discussed.

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12:00-1:30 PM (4039)

Simultaneous Versus Sequential Second Language Acquisition: Empirically Testing Timing Effects. SANDRA SOBUS, *The University of Wisconsin-Madison*, EMMA LIBERSKY, *University of Wisconsin-Madison*, MARGARITA KAUSHANSKAYA, *University of Wisconsin-Madison* — Current literature suggests that acquiring two languages at the same time is easier than acquiring them sequentially but fails to isolate the timing of acquisition effects from confounding variables such as SES and quantity of input. The present study experimentally tested timing of acquisition effects in word learning by randomly assigning 94 monolingual English-speaking adults (18-40 years) to learn Polish and German words simultaneously or sequentially. During training, participants heard the Polish or the German word, and its English translation was shown on the screen. The sequential group learned either Polish or German first. The simultaneous group learned intermixed German and Polish words. Both groups were tested via a forced-choice translation matching task. Results revealed better performance in the simultaneous condition. This finding, beyond its theoretical significance for theories of bilingualism and second language acquisition, has implications for how to choose the language of instruction in education and intervention practices.

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12:00-1:30 PM (4040)

The Foreign Language Effect in Anchoring. EMILIA EZRIN, *The Graduate Center, The City University of New York* — Bilinguals sometimes show less biased and less emotional reasoning in their second language—the foreign language effect (FLE). Does the FLE operate in anchoring estimates? Monolinguals, English-dominant bilinguals, and non-English-dominant bilinguals compared a certain quantity (e.g., bars in NYC) after exposure to a high or low numeric anchor, provided a numeric estimate, and rated their confidence (Tversky & Kahneman, 1974). Estimates transformed to percentile ranks were compared across the three groups. A mixed effects model showed that estimates were lower following the low anchor and higher following the high anchor (typical anchoring effect) and that the estimates' assimilation to the anchor decreased as the confidence increased. However, there was no language group effect, and therefore no evidence of the FLE. Using English fluency instead of language group yielded a significant anchor x fluency x confidence interaction, suggesting that fluency in English, rather than bilingualism, affects anchoring judgments.

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12:00-1:30 PM (4041)

Understanding Biased National Population Estimates. NORMAN R. BROWN, *University of Alberta*, ÖYKÜ EKINCI, *University of Alberta* — Participants (a) estimated the current populations of the 160 nations that had at least 1 million people in 2022. They also (b) rated their knowledge and (c) indicated the degree to which they held a favorable or unfavorable opinion of each. Consistent with prior research, these data produced (a) a primary bias (countries with small populations tended to be overestimated; those with large populations tended to be underestimated) and (b) a strong availability bias (holding actual population constant, estimates were larger for well-known countries than for obscure ones). In addition, there was (c) clear evidence for the use of an inference from lack of knowledge—for small countries, estimates were more accurate when participants did not recognize a country than when they did. Finally, (d) holding country knowledge constant, there was no effect of favorability on estimated population. This latter finding rules out symbolic threat as a source of biased national population estimates.

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12:00-1:30 PM (4042)

Age Differences in the Discounting of Delayed Losses that are Preceded by Immediate Gains: Evidence of a 'Complexity Effect'. KE NING, *Washington University in St. Louis*, LEONARD GREEN, *Washington University in St. Louis*, JOEL MYERSON, *Washington University in St. Louis*, SANDRA HALE, *Washington University in St. Louis*, MICHAEL J. STRUBE, *Washington University in St. Louis* — Research on discounting has focused on simple choices like those between smaller, immediate and larger, delayed rewards. Many everyday choices, however, involve more

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complicated situations that may include combinations of gains and losses. Accordingly, we had younger (35-50) and older (65-80) participants discount simple delayed losses as well as losses preceded by immediate gains. Exploratory factor analysis revealed two factors, one loading on conditions involving simple losses, the other loading on conditions with the combination outcome. The older adults tended to discount more shallowly than the younger adults in all conditions but, importantly, there was a "complexity effect"—age differences were greater in conditions with combination outcomes. Surprisingly, the combination conditions also showed an amount effect, a result that, except for Estle et al. (2023), has not been observed previously with delayed losses but is almost always observed with delayed gains. Delayed losses pose iconic self-control problems, and thus the present findings suggest that older adults have greater "self-control."

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12:00-1:30 PM (4043)

Loss Aversion with Nonmonetary Consequences: The Case of Time. SEBASTIAN S. HORN, *University of Zurich* — The concept of loss aversion (i.e., the notion that "losses loom larger than gains") is often seen as a key contribution of psychology to the social sciences. In this study, we investigated a situation in which people arguably experience gains and losses of equivalent magnitude each year: Changes to and from daylight savings time. Longitudinal data from over 600 participants (47% female; age 18-84 years) in countries from the northern and southern hemisphere suggest that people perceive advancing of the clock as a loss and turning it back as a gain in time (measured with analogue slider scales). A comparison of individual loss/gain ratios within the year 2022 showed credibly larger ratios than 1, indicating a relatively larger impact of perceived losses than gains in time.

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12:00-1:30 PM (4044)

Exploring the Value of Denial. KUNINORI NAKAMURA, *Seijo University* — It is well known that verbal probability phrases such as "possible" or "never" have directionality that indicates the communicator's intention regarding the occurrence or non-occurrence of the event referred to by the verbal probability. Although many studies have demonstrated the effect of the directionality on decision making, the ways of determining directionalities of the verbal probabilities have not been fully explored. Taking into consideration the linguistic features of verbal probability expressions, this study aimed to examine how negations such as "not" or "im-" would affect the probability and reward judgments of gambles where the winning probabilities were expressed using verbal probability phrases. To accomplish this, participants were required to estimate both the values of probabilities and the magnitudes of outcomes indicated by the verbal probability expressions. The results demonstrated that both the prefix and the lexical negations significantly affected both the probability and reward judgments and the effect of the negation systematically varied in accordance with the directionality of the verbal probability phrases.

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12:00-1:30 PM (4045)

Selection History Modulates the Effect of Automation Accuracy and Task Difficulty on Aided Decision-Making. CHENG-TA YANG, *Taipei Medical University Graduate Institute of Mind, Brain and Consciousness & National Cheng Kung University*, CHENG-YOU CHENG, *National Cheng Kung University*, SHANG-SHU HUANG, *National Cheng Kung University*, MING-HUI CHENG, *National Cheng Kung University*, PENG-FEI ZHU, *National Cheng Kung University*, HAO-LUN FU, *National Cheng Kung University* — We examined the impact of automation accuracy and task difficulty on human decision-making. We hypothesized that highly accurate aids would improve performance under difficult conditions, and this effect would be influenced by individual selection history. Using a categorization task, we manipulated automation accuracy and task difficulty with three types of aids presented in separate blocks or randomly intermixed to 36 participants. We used a capacity measure based on the single-target self-terminating rule to assess decision efficiency. Results showed that high-accuracy aids reduced accuracy and increased RT compared to unaided decisions, regardless of automation accuracy and task difficulty. Notably, high-accuracy aids provided incorrect answers under difficult conditions, leading to a significant decline in performance. However, the STST capacity results showed that high-accuracy aids had supercapacity processing under difficult conditions in the block design, but not in the mixed design. These findings suggest that effective top-down control is essential to utilize high-accuracy aids to improve decision efficiency when the task is relatively difficult.

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12:00-1:30 PM (4046)

Are Americans More Utilitarian than Chinese? Music and Morality—Cross-Cultural Study. KATARZYNA PYPNO, *University of Silesia in Katowice*, MARIOLA PARUZEL-CZACHURA, *University of Pennsylvania*, TUOMAS EEROLA, *University of Durham* — Past research showed that music significantly changes people's moods and how they experience emotions (Eerola & Vuoskoski, 2012). It is also known that emotions (i.e., fear and disgust) can influence utilitarian moral decisions (Carmona-Perera et al., 2013). Unfortunately, each presented study was conducted on the WEIRD sample (Henrich et al., 2010b), so the results cannot be generalized to all people (Henrich et al., 2010a). Eastern cultures are more socially oriented in their moral values, whereas Western cultures are more individualistic (Jia & Krettenauer, 2017; Vauclair et al., 2014). This is why we examined Americans versus Chinese (after Hofstede's cultural dimensions, Hofstede, 2019). In the current poster, we will present data from the experimental study conducted in the USA and China (total N = 528), where participants were listening to a song that had equal importance for both cultures—the national anthem. We will show similarities and differences between countries and their moral preferences after listening to the music regarding political background.

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12:00–1:30 PM (4047)

Misinformation in Context: An Investigation of Shifting Criteria. JACOB STANLEY, *University of South Carolina*, DOUGLAS WEDELL, *University of South Carolina* — A study conducted on Mechanical Turk (n = 557) explored the psychological mechanisms that influence people's beliefs in misinformation and their decisions to share it on social media. We studied how exposure to true or false headlines impacts perceptions of new headlines and sharing intentions. In an exposure phase, participants were either shown mostly true (4:1 true-to-false) or mostly false headlines (1:4 true-to-false) while they either only viewed, liked or disliked, or rated the truthfulness of the headlines. In a testing phase, we examined two competing theories on a common set of target headlines: probability matching, which predicts increased endorsement of false statements as false with greater exposure to them, and range-frequency theory predicting the opposite bias. We found that while misinformation base rates did not significantly influence target ratings, truth discernment and sharing behavior were moderated by mode of engagement, political affiliation, and cognitive reflection scores.

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12:00–1:30 PM (4048)

The Effect of Emotion Regulation on Decision Making under Arousal. AALIM MAKANI, *Toronto Metropolitan University*, RACHEL HOLM, *Toronto Metropolitan University*, JULIA SPANIOL, *Toronto Metropolitan University* — Acute emotional arousal can reduce attention to probabilistic information, thereby lowering the quality of risky decisions (Pachur et al., 2013). The current study examined whether emotion regulation strategies can mitigate the effects of arousal on decision quality. Participants (N = 99) were presented with a series of binary decisions between risky financial options. At the start of each trial, participants were instructed to either passively "listen" or to "regulate". Phasic arousal was manipulated trial-by-trial with neutral and negative-arousing sound clips presented before each financial choice. High arousal, compared with low arousal, reduced decision quality on '"listen" trials, but not on "regulate" trials. This finding suggests that emotion regulation strategies may boost decision quality in real-world decision-making under stress and arousal.

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12:00–1:30 PM (4049)

Literal Thinking in Autism is Associated with Reduced Standard Framing: A Fuzzy-Trace Theory Approach. JORDAN ROUE, *Cornell University*, VALERIE F. REYNA, *Cornell University*, SARAH EDELSON, *Cornell University*, ALAN LIU, *Cornell University*, TERESA WOOD, *Cornell University* — Fuzzy-trace theory (FTT) distinguishes verbatim-based (literal) and gist-based (bottom-line meaning) processing. Gist processing produces framing effects (shifting choices for gain-loss decisions despite literal equivalence). FTT also predicts that autism is associated with deficits in gist processing, reducing framing. We developed a Literal Thinking Scale (LTS) measuring self-reported literal thinking, with separate verbatim and gist subscales; 325 students were administered the Autism Spectrum Quotient (AQ), LTS, and 108 decision questions. Individuals higher on overall AQ scored higher on the LTS, consistent with predictions. We focused on the AQ subscale most reflective of extracting non-literal meaning. As predicted, this subscale was associated with reduced standard framing overall and in a condition encouraging gist processing. Higher AQ subscale scores were associated with lower LTS-gist scores but had no association with LTS-verbatim scores. Results suggest that autistic information processing in decision-making is not driven by increased verbatim thinking, but rather deficits in gist processing.

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12:00–1:30 PM (4050)

Reducing Confusion about Conditional Probabilities of Genetic Cancer Risk with a Fuzzy-Trace Theory Tailored Intervention. AADYA SINGH, MPHIL, UNIVERSITY OF CAMBRIDGE, *Cornell University*, SARAH EDELSON, *Cornell University*, VALERIE F. REYNA, *Cornell University*, JULIA FAN, *Cornell University*, JORDAN ROUE, *Cornell University* — Fuzzy-trace theory (FTT) predicts that difficulty grasping conditional probabilities is due to processing interference caused by overlapping classes, creating denominator neglect. Testing for BRCA mutations requires grasping two key probabilities: (1) most persons with a mutation develop breast/ovarian cancer, (2) most persons with such cancers have no mutation. While the first probability is well known, the second is not. A 2x2 table is predicted to reduce such class confusions. We predicted that these tables, grounded in FTT's gist-learning principles, tailored to race/ethnicity group-specific risk magnitudes, would reduce class confusion effects and enhance risk assessment. Race/ethnicity-specific 2x2 table videos about genetic risk were developed and administered to four groups (N = 188) in a pretest/posttest design. Qualitative and quantitative assessment of the first probability remained high across tests and groups, as expected. In all groups, the interventions significantly improved participants' gist and quantitative assessments of the second probability. The interventions' success provides a critical test of FTT's processing interference predictions and the effectiveness of gist-learning in tackling class inclusion biases.

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12:00–1:30 PM (4051)

Socioeconomic Status and Inhibition in Preschool Children: A Diffusion Model Analysis. DOROTEJA RUBEZ, *Case Western Reserve University*, KYLE LAFOLLETTE, *Case Western Reserve University*, ELIZABETH SHORT, *Case Western Reserve University* — Inhibitory control is a determinant of academic success in children. Socioeconomic status (SES) is a key moderator of this relationship. One reason for this moderating effect may be that environments with scarce resources prime children for impulsivity as presented opportunities may not be available shortly thereafter. Inhibition in children has traditionally been evaluated by models that fail to account for nuanced cognitive mechanisms responsible for choices and response times on the flanker task, such as response caution and processes of evidence accumulation. The developmental trajectory of these mechanisms in young children (under 5) is particularly poorly

understood. We examine the relationship between inhibition and SES in 104 preschool children by fitting a modified racing diffusion model to their choice accuracy and response time. Children belonging to higher SES tended to recognize the correct responses more quickly, and respond more cautiously on incongruent trials, compared to their less affluent peers.

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12:00-1:30 PM (4052)

Development and Validation of a Novel Auditory AX-CPT in Children and Adults. LAUREN SCHIRO, *Louisiana State University*, EMILY ELLIOTT, *Louisiana State University*, CANDICE C. MOREY, *Cardiff University* — The Dual Mechanisms of Cognitive Control framework posits that cognitive control is directed through two different modes: proactive and reactive. Proactive control involves the maintenance and manipulation of information in preparation of a response while reactive control involves little to no preparation until after a response prompt. The AX-Continuous Performance Task (AX-CPT) is often utilized in studies looking at proactive and reactive control. The current study tested the validity of a novel auditory AX-CPT, in which animal sounds replaced visual letter stimuli as the cues and probes. We collected data on reaction time, accuracy, and pupillometry. Preliminary results indicated that adults' pupil size increased more rapidly following the cue in AX and AY trials than in BX and BY trials. The pupil response was not differentiated by trial type in a pilot sample of young children, suggesting that this task can be used in a purely auditory fashion. Current research continues to investigate how modality affects young children's use of proactive and reactive control.

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12:00-1:30 PM (4053)

Examination of How Long-Term Memory Recall for Locations Develops the Across Adulthood. GREGORY DEGIROLAMO, *Saint Xavier University* — Various factors influence whether information is held in working memory and transferred to long-term memory. These include processing speed, attention, processing strategy, mental imagery abilities, and other executive functions. The present study examined how the ability to learn locations in various spatial layouts, store them in long-term memory, and recall them changes across adulthood. Previous research found that younger adults use a coordinate processing strategy to encode spatial information while older adults use a categorical processing strategy and struggle on coordinate processing tasks. Prior research has also found that some sub-components of mental imagery abilities change with age while others due not. In the present study, younger and older adult participants completed a task in which they had to learn seven different spatial layouts, each consisting of three objects. Participants then completed a distractor task. Finally, participants completed a long-term memory task in which they had to recall each layout. This presentation discusses possible explanations for why both groups performed equally well on the learning task, but younger adults outperformed older adults on the long-term memory task.

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12:00-1:30 PM (4054)

Sampling from Daylong Audio Recordings for Annotation and Analysis. ZEYNEP MARASLI, *University of Illinois Urbana-Champaign*, JESSICA L. MONTAG, *University of Illinois Urbana-Champaign* (Sponsored by Jessica Montag) — While daylong audio recordings provide a rich dataset of children's auditory environments, it also presents various methodological challenges. Hand annotation is labor intensive and automated annotation methods are still in their early phases. Using three fully transcribed daylong recordings, we implement a random sampling algorithm to understand how smaller subsets can be hand annotated and extrapolated to yield estimates of word counts or other features of interest that are maximally accurate through minimal human effort. Our analyses show that smaller sampling interval sizes increase estimate accuracy. These results also quantify tradeoffs between total time sampled and estimate accuracy, and how those tradeoffs may be different for different sampling intervals. While follow-up analyses are needed to further elucidate the tradeoff between human effort and accuracy, these primary exploratory findings highlight sampling choices that optimize sampling from the full distribution of the day and potential tradeoffs between human effort and estimate accuracy.

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12:00-1:30 PM (4055)

A Novel Corpus of Naturalistic Picture Book Reading with 2- to 3-Year-Old Children. ANASTASIA STOOPS, *University of Illinois Urbana-Champaign*, MENGQIAN WU, *University of Pennsylvania*, IN-HO TED JUNG, *Hyundai Capital America*, JESSICA L. MONTAG, *University of Illinois Urbana-Champaign* — Substantial literature suggests reading to children is positively associated with language outcomes, yet the causal pathways are less well understood. One possibility is that reading to children promotes language input that is particularly useful for some aspects of language learning. To better evaluate the language produced during picture book reading, we built a corpus (10 hours) of caregiver-toddler (24-37 mo) interactions during shared book reading recorded in homes. Books varied in the language they generated, some promoted more conversational turns and extra-textual language, while others promoted more overall words, unique words, and longer utterances. Relative to other conversational contexts, only some books generated overall more words, more lexically diverse talk, and longer utterances. We see different profiles of language generated during book reading that are all plausibly linked with language skills. A possible causal pathway between reading and language may be that reading provides a varied range of linguistic experiences.

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12:00-1:30 PM (4056)

The Role of Post-Learning Sleep on Negative and Positive Memory Bias from Middle Age to Late Adulthood: a Well-Powered Online Study. XINRAN NIU, *University of Notre Dame*, MIA UTAYDE, *University of Notre Dame,* KRISTIN SANDERS, *University of Notre Dame*, JESSICA PAYNE, *University of Notre Dame* — Sleep is a critical stage where emotionally

salient information is selectively consolidated. However, most prior research examined negative memories, and evidence is generally lacking for positive memories (e.g., when exactly the shift to positivity bias takes place in a lifetime). A total of 279 healthy early middle-aged (35-49), late middle-aged (50-64), and older adults (>65) encoded negative, positive, and neutral scenes. After 12 h of wakefulness (n = 140) or sleep (n = 139), participants indicated whether a scene component was old or new. Compared to early middle-aged adults, late middle-aged adults rated positive scenes as more positive ($t(184) = 2.73$, $p = .007$, $d = 0.40$), and older adults rated positive scenes as less arousing ($t(180) = 2.50$, $p = .014$, $d = 0.40$). Older adults remembered negative scenes significantly worse compared to both positive ($t(173) = 2.73$, $p = .007$, $d = 0.21$) and neutral scenes ($t(173) = 2.76$, $p = .006$, $d = 0.21$), and had better memory for neutral scenes compared to both early middle-aged ($t(364) = 2.28$, $p = .023$, $d = 0.24$), and late middle-aged adults ($t(364) = 3.54$, $p < .001$, $d = 0.40$). There were no sleep-related effects on emotional memory. Our results demonstrate the presence of age-related positive memory bias.

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12:00-1:30 PM (4057)

Perception of Authenticity in Audiovisual Facial Expressions. SEWON OH, *University of South Carolina*, SVETLANA SHINKAREVA, *University of South Carolina* — In social situations, facial expressions are one of the main non-verbal sources of communication. The ability to discern the genuineness of others' emotions is fundamental for establishing and maintaining social relationships. Manipulating authenticity experimentally is challenging because it is a genuine feeling of oneself, thus authenticity is often studied from a perceiver perspective. In this work we created a set of authentic and inauthentic audiovisual expressions conveying happiness or sadness. Eight non-professional actors and eight professional actors were recruited to record responses to written scenarios. The scenarios were created to convey genuine or fake happy or sad emotions by manipulating the congruence of social context and described emotions in each scenario. Seventy-five participants rated stimuli generated by professional actors across two experiments and 183 participants rated stimuli generated by non-professional actors across four experiments on valence, arousal, authenticity, and emotion intensity of the facial expressions. Based on authenticity ratings, a set of authentic and inauthentic audiovisual expressions was selected (eight per condition each for actors and non-actors).

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12:00-1:30 PM (4058)

The Neural Patterns of Fearful Face Processing under Different Visual Awareness Conditions: from ERPs to MVPA. ZEGUO QIU, *University of Queensland*, ALAN J. PEGNA, *University of Queensland* — To examine the conscious and nonconscious processing of fearful faces, we used event-related potentials (ERPs) investigations and multivariate pattern analysis (MVPA) on electroencephalography data from three backward masking experiments. Three groups of participants were shown pairs of face images either for very briefly (for 16 ms) or for sufficiently longer (for 266 ms), and completed tasks where the faces were relevant to the experimental task (Experiment 1) or not (Experiments 2 and 3). ERPs associated with visual awareness (the visual awareness negativity and enhanced P300) were found across all three experiments. The MVPA additionally showed that neural patterns for awareness found in an early time window were generalised to the activity at a later stage. Further, we found that the spatial location of a fearful face was processed only when the faces were consciously seen and task-relevant. However, the mere presence of a fearful face was processed nonconsciously.

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12:00-1:30 PM (4059)

A Two-Phase Procedure to Investigate the 'Photo Truthiness' Effect. BENNETT KING-NYBERG, *University of Victoria*, KAITLYN FALLOW, *University of Victoria*, HARTMUT BLANK, *University of Portsmouth*, ERYN NEWMAN, *The Australian National University*, D. STEPHEN LINDSAY, *University of Victoria* — In previous studies, presenting related but non-probative photos alongside obscure claims increased participants' rated belief in the claims. This "photo truthiness" effect is replicable, but it's tiny. Here, we used a two-phase procedure designed to make the source of the truthiness effect less salient by separating exposure to photos from truth judgments. We thought that might increase the size of the effect. Participants were shown claims with and without related photos. Later, they judged the truth of the claims. Results were compared to the standard one-phase procedure in which truth judgments were made to claims presented with and without photos. Four pre-registered studies provided little if any support for our speculation that the photo-truthiness effect would be larger in the Two-phase procedure than in the 1-phase procedure. However, belief ratings were substantially higher in the two-phase procedure than in the one-phase procedure (regardless of the presence/absence of a photo).

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12:00-1:30 PM (4060)

The Effect of Language Dominance on Emotions: A Behavioral and EEG Study with an Emotional Stroop Task. NICOLE A. VARGAS FUENTES, *University of California, Irvine*, JUDITH F. KROLL, *University of California, Irvine*, JULIO TORRES, *University of California, Irvine* — Although research on bilingualism and emotion suggests that the native or first language is typically processed more emotionally than a second language, recent studies have shown that heritage bilinguals who have experienced a shift of dominance from their home language to the societal language, also exhibit strong emotion in the societal language. However, less is known about whether these effects persist at the neural level and how the shift in language dominance affects the home language. Does the dominant language inherit all features of emotion processing associated with the home language? In the present study, Mandarin-English heritage bilinguals completed a Face-Word Emotional Stroop task in both languages while their brain activity was recorded with EEG. This allowed us to compare behavioral and neural signatures of emotion processing in both the home and societal language. The study in progress will provide insight into the cognitive mechanisms that

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support emotion processing following a shift of language dominance. It will also enable us to test the hypothesis that even when emotional processing is present for both languages, its form and temporal properties may change dynamically as language dominance shifts.

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12:00-1:30 PM (4061)

Emotion Labels Facilitate Categorical Perception of Facial Expressions: In the Case of Facial Expressions with the Same Label and Facial Expressions with Different Labels. HYEONBO YANG, *Pusan National University*, DONGHOON LEE, *Pusan National University* — It is debated whether the phenomenon of categorical perception (CP) of facial expressions is due to a biologically endowed ability to perceive emotions or due to emotion labels such as "anger," "disgust," and "fear" assigned to such expressions. In this experiment, we examined the effect of emotion labels on facial expressions CP using basic emotional faces of surprise and fear which are equally labeled "surprise" in Korean laypeople, and basic emotional faces of anger and sadness which are labeled differently. Participants in the label group that differently assigned the emotion labels "fear", "surprise", "anger", and "sadness" for each expression and participants in the no-label group that did not assign the labels completed the X-AB discrimination task. As a result of the experiment, CP of the anger-sadness continuum, which does not share labels, was observed in both groups regardless of labeling. On the other hand, CP of surprise-fear continuum, which share label, occurred only in participants who were differently assigned the emotion labels "surprise" and "fear" compared to the no-label group. Our results support the claim of the theory of constructed emotion that emotion labels play an important role in emotion perception.

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12:00-1:30 PM (4062)

Nostalgic Reflection and the Perception of Time. KACIE ARMSTRONG, *Bowdoin College* — Nostalgic reflection is linked to a number of psychological benefits, including improved mood, a greater sense of meaning in life, and enhanced social belongingness—but its effects on everyday cognition are less clear. Given that nostalgia is a complex emotion linking the past to the present, this project seeks to explore its effects on time perception. In a between-groups study, participants are asked to reflect on either a nostalgic memory or an ordinary autobiographical memory, complete a series of scales measuring subjective lifespan, and estimate the duration of various in-lab tasks. Preliminary evidence suggests that nostalgic reflection (compared to ordinary autobiographical reflection) expands the perceived span of one's life and slows down perceived passage of time in the present. As such, this study contributes to emerging conversations surrounding the use of nostalgia as a therapeutic tool. Specifically, its effects on the subjective flow of time may be relevant to mindfulness and stress reduction techniques. Additionally, nostalgic reflection may be beneficial to those living with disorders known to alter time perception, such as ADHD and schizophrenia.

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12:00-1:30 PM (4063)

Feeling it Differently: Emotional Causality of Verbs Across Languages. HALSZKA K. BĄK, *Adam Mickiewicz University*, JEANETTE ALTARRIBA, PHD, *University at Albany, SUNY* — Previous research has demonstrated strong and language-specific part-of-speech effects in emotion verbs. We investigated perceived causality of emotions expressed as verbs in English and in Polish by having participants classify the verbs as: Primarily experienced in the self; Primarily inflicted upon others; Both experienced and inflicted upon others. The results indicate that in English, all basic emotions expressed as verbs are mostly seen as being both experienced in the self and inflicted upon others. In Polish, anger, fear, sadness and joy are perceived as mostly experienced in the self, while disgust and surprise are seen as primarily inflicted upon others. We also found that emotion verbs yield the most varied associations of all parts of speech, and those scoring low on affective (valence, arousal, dominance) and cognitive measures (concreteness, imageability, context availability) are associated with higher levels of uncertainty regarding emotion causality. The implications of these results for the future of cross-linguistic research on emotions are discussed.

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12:00-1:30 PM (4064)

Truth Sensitivity and Partisan Bias in Responses to Misinformation. BERTRAM GAWRONSKI, *The University of Texas at Austin*, NYX NG, LEA NAHON, DILLON LUKE — Misinformation represents one of the greatest challenges for the functioning of societies in the information age. The current talk draws on Signal Detection Theory to identify two distinct factors in misinformation susceptibility: truth sensitivity, conceptualized as accurate discrimination between true and false information, and partisan bias, conceptualized as lower acceptance threshold for ideology-congruent information compared to ideology-incongruent information. Results of seven preregistered experiments (N = 2177) are presented that investigated the extent to which acceptance of false information as true is predicted by truth sensitivity and partisan bias, respectively. Although truth sensitivity and partisan bias were both associated with acceptance of false information, partisan bias was a stronger and more reliable predictor across all seven experiments. Implications for research on misinformation susceptibility are discussed.

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12:00-1:30 PM (4065)

Social Truth Queries: Testing a New User-Driven Intervention for Countering Online Misinformation. MADELINE JALBERT, *University of Washington*, MORGAN WACK, *University of Washington*, PRAGYA ARGYA, *University of Southern California*, LUKE WILLIAMS, *Pomona College* — In three studies (total N = 1500), we tested the potential effectiveness of social "truth queries"—user replies that draw attention to truth (e.g., "How do you know this is true?", "Where did you learn this?", "Do you have an example?")—as a novel intervention for reducing the impact of false information shared on online. In each study, participants judged the truth of or their likelihood of sharing Tweets containing false

information. Tweets appeared either with a user reply containing a truth query, a reply unrelated to truth, or no reply. We consistently found that truth queries reduce belief in and reported intent to share Tweets containing false information compared to no replies or replies unrelated to truth. The findings suggest the usefulness of truth queries as a simple, flexible, user-driven approach to addressing online misinformation. Planned follow-ups will further investigate the effectiveness of truth queries in addressing polarized political misinformation shared online.

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12:00-1:30 PM (4066)

Climate Endgame? (How) Do People Understand Projections about Future Climate Change?. ALICE MASON, *University of Warwick*, BEN NEWELL, *University of New South Wales* — Recent calls have urged the scientific community to face the challenge of improving communication about worst-case scenarios for climate change. Such scenarios are informed by climate projections which are often presented as a numerical range—for example, by 2100, global surface temperatures will increase by between 4 and 7.2 degrees. Built into these projections are assumptions about how long-term climate responses, will be affected by different actions on greenhouse-gas emissions and associated socio-economic activity. Across 4 experiments, (N = 798) we examine how people interpret the uncertainty associated with the likelihood of different scenarios (e.g., Best vs. Worst Case) and how this interacts with assumptions about the distributions underlying projected ranges (e.g., uniform, normal, skewed). We find evidence for an apparent optimism bias and/or judgments that are anchored on participants' prior beliefs about temperature increases. Specifically, we see that many participants think higher temperatures will be more likely under best-case scenarios , but that lower ones will dominate worst-case scenarios. We discuss the implications of these results for climate communication and prudent climate-risk management.

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12:00-1:30 PM (4067)

Sequential Collaboration: Enhancing Judgment Aggregation through Experts' Incremental Contributions. MAREN MAYER, *Leibniz-Insitut für Wissensmedien (IWM)*, DANIEL W. HECK, *University of Marburg* — Over the past decades, the Internet has become a popular source for gathering information, especially in online collaborative projects like Wikipedia. There, collaboration resembles a sequential chain that starts with the creation of an entry followed by a sequence of contributors deciding to adjust or maintain the presented information. We adapted this process, termed sequential collaboration, to judgment aggregation. In three experiments, comparing aggregation of numeric judgments with sequential collaboration and unweighted averaging of independent judgments (wisdom of crowds), we found that judgment accuracy increases over a sequential chain ultimately leading to more accurate estimates than obtained with unweighted averaging. By allowing contributors to opt-out of providing a judgment, sequential collaboration fosters an implicit weighting of judgments by expertise. In three experiments measuring and manipulating contributors' expertise, we showed that experts improve judgments more than novices resulting in stronger improvement of judgments and more accurate estimates the more and later experts enter sequential chains. These results yield first insights into sequential collaboration as a mechanism of judgment aggregation.

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12:00-1:30 PM (4068)

Novel Insights Into the Wisdom of Crowds by Process-Consistent Modeling. TOBIAS R. REBHOLZ, *University of Tübingen*, MARCO BIELLA, *University of Tübingen*, MANDY HÜTTER, *University of Tübingen* — Research on advice taking is dominated by deterministic weighting indices to measure how strongly peoples' judgments are influenced by external information. As an alternative, we propose to explicitly differentiate between components of endogenous nature (i.e., potentially updated judgments) and exogenous nature (e.g., initial judgments and advice) by relying on accordingly specified multilevel models. Corresponding mixed-effects regression coefficients of various exogenous sources of information hence also reflect individual weighting but are based on a conceptually consistent representation of the endogenous judgment process. Crucially, the new modeling approach resolves critical paradigmatic constraints, such as the requirement to make independent initial judgments before receiving a single piece of advice, both of which are necessary for the applicability of the traditional approach. Without these restrictions, we find no evidence for systematic order effects in sequential collaboration and document recency effects in the weighting of sequentially sampled advice. Process-consistent modeling thus enables more innovative research, including on related cognitive phenomena such as anchoring effects or hindsight.

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12:00-1:30 PM (4069)

Considering Evidence: Effects of Scientific Evidence Presentation Formats on Belief Updating. MARCEL R. SCHREINER, *Julius-Maximilians-Universität Würzburg*, JULIAN QUEVEDO PÜTTER, *University of Mannheim*, TOBIAS R. REBHOLZ, *University of Tübingen*, ASHELEY R. LANDRUM, *Texas Tech University* — When communicating scientific evidence, researchers want people to adjust their beliefs towards the evidence. Here we investigated the impact of different kinds of evidence presentation formats and predictors on laypeople's belief updating regarding psychological effects. Participants (N = 930) were presented a series of fictitious hypotheses. For each hypothesis we assessed participants' prior beliefs regarding its validity and their subjective expertise regarding the topic. We then presented fictitious study outcomes and manipulated their presentation format and order before assessing participants' posterior beliefs. Participants exhibited more belief updating given simultaneous compared to sequential presentation of study outcomes. The higher participants' prior beliefs, the more they updated their beliefs when confirmatory evidence was presented after disconfirmatory evidence, compared to a reversed or alternating order. We further found a negative effect of subjective expertise and positive effects of trust in psychological science and science

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intelligence. These results provide practical implications for science communication.

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12:00–1:30 PM (4070)

Updating, Evidence Evaluation, and Operator Availability: A Framework for Understanding Belief. JOSEPH SOMMER, *Rutgers University*, JULIEN MUSOLINO, *Rutgers University*, PERNILLE HEMMER, *Rutgers University* — Decades of findings in psychology appear to suggest that human belief is thoroughly irrational. Here, we propose a nuanced view of belief which divides cognitive belief processes into two Levels. At Level 1, belief updating, narrowly construed, is suggested to be a rational process that is uniquely sensitive to evidence and cognitively impenetrable to desires or incentives. Before updating can occur, however, a series of processes mediate between information in the world and subjectively compelling evidence. We distinguish between updating and Level 2 evidence evaluation processes, including evidence search, hypothesis specification, and reasoning. These latter processes are penetrable to desires and may be the true locus of irrationality. Finally, we review a set of relatively invariant characteristics, including emotions, goals, and individual differences, which influence how evidence evaluation processes operate. We integrate updating, evidence evaluation processes, and relatively invariant characteristics into a framework which contextualizes research on belief. Our framework offers a nuanced understanding of belief, a granular localization of irrationality, and may help reconcile debates in the literature.

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12:00–1:30 PM (4071)

Neural Correlates of Eye-Gaze Perception as a Function of Autism Trait Severity in Adults. SHADI BAGHERZADEH AZBARI, *Humboldt-Universität zu Berlin*, CHANGSONG ZHOU, *Hong Kong Baptist University*, GILBERT KA BO LAU, *Hong Kong Baptist University*, ANDREA HILDEBRANDT, *Carl von Ossietzky Universität Oldenburg*, WERNER SOMMER, *Humboldt-Universität zu Berlin*, MING ANN LUI, *Hong Kong Baptist University* — Humans as social species intensely use facial expressions and eye gaze for transmitting social signals. Individuals with Autism Spectrum Disorder (ASD) exhibit atypical face processing, including atypical attention to eye gaze and emotional expression identification. We investigated how gaze and expression perception, assessed by event-related brain potentials (ERPs) depends on autism trait severity. ERPs were recorded from 46 EEG channels in 150 young adults diagnosed with the autism spectrum to the presentation of pictures of adult faces with emotional expressions, which had to be judged for gaze changes. Midway through the trial portraits could change gaze direction (but not emotional expression); participants detected occasional non-change trials. The mean age of the participants was 21.27 years (SD: 3.23, Range [19:23], and 58% of them were female. In line with previous studies, N170 amplitudes were larger to averted than to direct gaze. The early posterior negativity (EPN) was also interpreted as a signal of enhanced attention to angry emotion relative to neutral facial expressions. The study suggests decreased sensitivity in the eye contact detection system for individuals with high autism traits.

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12:00–1:30 PM (4072)

HD-tDCS to the Dorsolateral Prefrontal Cortex Enhances Creativity. LAURA CACCIAMANI, *California Polytechnic State University*, QUINN COTTER, *California Polytechnic State University*, GABRIELLA BENCOMO, *California Polytechnic State University*, MARY GRACE MYLOD-VARGAS, *California Polytechnic State University*, AARON SELCOV, *California Polytechnic State University* — Neuroentrepreneurship is a unique subset of neuroscience that explores behaviors important for entrepreneurial success—such as creativity and innovativeness—and their neural underpinnings. Prior work shows that the dorsolateral prefrontal cortex (DLPFC) is involved in creative thinking, problem solving, and therefore innovation. The present study examined whether high-definition transcranial direct current stimulation (HD-tDCS) to the DLPFC can enhance creativity and innovativeness. Participants received 20 minutes of anodal (or sham) HD-tDCS to the left DLPFC while completing two behavioral tasks: the Alternative Uses Task (AUT), assessing divergent thinking, and the Business Idea Generation (BIG) task, assessing innovativeness of business ideas. The results showed that anodal stimulation (vs. sham) produced a significantly higher flexibility score in the AUT, supporting that creativity was increased. Innovativeness of business ideas also trended higher for anodal vs. sham participants. Together, these results suggest that HD-tDCS to the DLPFC could be beneficial for enhancing creativity and innovativeness in entrepreneurship.

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12:00–1:30 PM (4073)

Coactivity and the Same-Different Task. BRADLEY HARDING, *Université de Moncton*, MARC-ANDRÉ GOULET, *Social Sciences and Humanities Research Council of Canada*, SÉBASTIEN LAUZON, *Université d'Ottawa*, DENIS COUSINEAU, *University of Ottawa* — The Same-Different task is a cognitive task in which pairs of stimuli are presented to participants who must decide as rapidly and accurately as possible if they are the "Same" or "Different." While simple, the task has been shrouded in uncertainty and debate for over five decades due to a major unresolved theoretical issue: what decision-making architecture underlies both "Same" and "Different" decisions? One architecture that has yet to be addressed is coactive in which relevant redundant information contributes to a decision jointly rather than independently. In this presentation, we will show how the coactive architecture could explain the Same-Different results by analysing two variants of the classic task; one for which we can apply the Race Model Inequality to detect redundancy gains in the "Different" response times, and one in which we examine redundant "Same" response times where decision threshold variation was limited. Results indicate that both "Same" and "Different" responses show redundancy gains expected from a supercapacity process and thus, coactivity might be the unifying architecture that underlies both decisions. A model of the task that can address the results of

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these task variants will also be presented.

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12:00-1:30 PM (4074)

Changes in Neural Excitability Modulate Enumeration Performance Inside and Outside the Subitizing Range. ANTHONY M. HARRIS, *Queensland Brain Institute & The University of Queensland*, JESSICA A. ELLIOTT, *Queensland Brain Institute & The University of Queensland*, JASON B. MATTINGLEY, *Queensland Brain Institute & The University of Queensland*, JOSHUA O. EAYRS, *Ghent University* — The human capacity to rapidly enumerate small numbers of items, termed "subitizing," is typically assumed to be static and trait-like. However, the neural systems that underpin visual cognition are dynamic. Fluctuations in neural excitation and inhibition may impact the efficiency of the cognitive processes they subserve. Successful enumeration requires the coordinated performance of several neural/cognitive processes, but the influence of fluctuating neural excitation/inhibition on enumeration sub-processes has not been characterised. We used EEG to measure several correlates of neural excitability (alpha oscillation frequency, power and phase, and aperiodic slope) and characterise their relationship to enumeration performance, within and between participants (N=60). Aperiodic slope correlated positively with subitizing capacity and counting rate across individuals. Alpha oscillations were associated with within-participant fluctuations in reaction time for the lowest set size and with subitizing capacity. These findings point to two sources of excitation/inhibition that are each associated with distinct sources of variability in enumeration performance.

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12:00-1:30 PM (4075)

The Effects of TDCS on Frontal Alpha Asymmetry and Indices of Inhibitory Control in Reward Contexts, Main and Exploratory Results. ATAKAN AKIL, *Eötvös Loránd University (ELTE)*, RENATA CSERJESI, *Eötvös Loránd University (ELTE)*, DEZSO NEMETH, *Université Claude Bernard Lyon 1, Eötvös Loránd University (ELTE), & Hungarian Academy of Sciences*, TAMAS NAGY, *ELTE Eötvös Loránd University*, ZSOLT DEMETROVICS, *University of Gibraltar Centre of Excellence in Responsible Gaming & Eötvös Loránd University (ELTE)*, ALEXANDER LOGEMANN, *Eötvös Loránd University (ELTE)* — It is unknown whether effects of tDCS on inhibitory control are mediated by the lateralization of frontal brain activity indexed by frontal alpha asymmetry (FAA). To address this question, we utilized a sham-controlled design and recruited 65 participants (46 female, between 18 - 58 years old (M = 24, SD = 6)). Electrophysiological (EEG) activity was recorded continuously, and participants performed a stop signal task with a neutral and reward context before and after a tDCS session for 20 min. (2mA anodal stimulation of F4 relative to cathodal F3) or sham intervention. Main results show that inhibitory brain activity increased from pre- to post assessment, specifically in the reward condition. However, tDCS did not affect FAA and any of the outcome measures. Lastly, we will present results on the effect of tDCS on inhibitory control as a function of baseline inhibitory control (indexed by the stop signal reaction time).

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12:00-1:30 PM (4076)

The Role of Domain General Working Memory in Predictive Sentence Processing. YASEMIN GOKCEN, *University of California, Merced*, DAVID NOELLE, *University of California, Merced*, RACHEL RYSKIN, *University of California, Merced* — Humans tend to make predictions about the next word someone will say. When listeners hear a word that is not predictable from context, the N400 ERP component tends to be more negative (Kutas & Federmeier, 2011). The predictability of a word can be estimated using surprisal (Levy, 2008). How do we maintain the linguistic context? Working memory (WM) mechanisms associated with prefrontal cortex (PFC) have been modeled with gating units which learn when to maintain and update important information (Servan-Schreiber & Cohen, 1992). Yet, past fMRI work suggests that prefrontal regions associated with non-linguistic WM are not meaningfully engaged during listening comprehension tasks (Blank et al., 2017). To shed light on this, we are collecting EEG data from a story listening task, using the Natural Stories corpus (Futrell et al., 2020). N400s will be extracted for each story word and compared to surprisal values from multiple neural language models. Long-short term memory networks include these PFC-like gating mechanisms while recurrent neural networks do not. By comparing how well model surprisal fit the human ERP response across the models, we can explore the contributions of PFC-like WM gating mechanisms to linguistic prediction.

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12:00-1:30 PM (4077)

Context Matters: 'Left Digit Effects' Aren't Really Left Digit Effects. ERIN KIM, *Wesleyan University*, SHANTHI SOANS, *Wesleyan University*, MOLLY FUNG, *Wesleyan University*, EMILY HAUSER, *Wesleyan University*, JINJIA HU, *Wesleyan University*, ELLIE PAN, *Wesleyan University*, JESSICA PORDY, *Wesleyan University*, SUCHITA SRIDHARA, *Wesleyan University*, ABBY WOLK, *Wesleyan University*, ANDREA L. PATALANO, *Wesleyan University*, HILARY BARTH, *Wesleyan University* — In number line estimation, placements are strongly affected by the leftmost digits of target numerals: e.g., 899 and 901 are placed far apart on a 0-1000 line despite having nearly identical magnitudes. A previous study showed that this "left digit effect" also arises for the hundreds-place digits when a leading zero is added: a leftmost digit that doesn't alter meaning (0899 and 0901). We show that a "left digit effect" can also arise for hundreds-place digits embedded in larger numbers; specifically, when the leftmost digits convey meaning about magnitude but don't vary in the context of the task (10899 and 10901 on a 10000-11000 line). Left digit effects appear in a wide range of settings. For number line estimation, the "left digit effect" is context-dependent and isn't strictly a leftmost digit effect; further work is needed to determine whether similar context dependence applies more broadly.

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12:00–1:30 PM (4078)

Exploring the Effects of Language Proficiency and Language of Presentation on Bilingual Reasoning. OMAR GARCIA, *Texas A&M International University*, CALLAN JOHNSON, *Texas A&M International University*, JYOTSNA VAID, *Texas A&M University* — A recent meta-analysis of behavioral studies of bilinguals' speeded number judgments found a first language advantage, particularly among bilinguals with low or medium L2 proficiency, those who received schooling in their L1, and those with a stated L1 preference for mental arithmetic (Garcia, Faghihi, Raola & Vaid, 2021). How might bilinguals perform on higher order numerical reasoning tasks? Although there is a growing literature on this issue, examining a variety of such tasks, the findings have been mixed. To explore the role of proficiency and task demands more systematically, the present study tested a sample of adult Spanish-English bilinguals with varying proficiency profiles on two different tasks: a traditional moral reasoning (from Keysar et al., 2012) and a novel offline calculation task. Differences as a function of language of presentation were associated with bilingual subtype and task type. We discuss theoretical and practical implications of these findings.

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12:00–1:30 PM (4079)

Influence of Labeled Versus Unlabeled Benchmarks on the Left Digit Effect in Number Line Estimation. NICHOLAS ALIA, *Wesleyan University*, KELSEY KAYTON, *Ohio University*, PRAKRITI MITTAL, *Wesleyan University*, HILARY BARTH, *Wesleyan University*, ANDREA L. PATALANO, *Wesleyan University* — A left digit effect arises in number line estimation, whereby a numeral's leftmost digit has a disproportionate influence on its placement (e.g., 298 is placed farther to the left of 302 than is warranted). In a past experiment, unlabeled benchmarks reduced the left digit effect when they were present, but not after they were removed. Here, we expanded the intervention to include labeled benchmarks. Participants (N = 219 adults) completed three blocks of 60 trials of a 0-1000 bounded number line task, where the second block displayed labeled, unlabeled, or no benchmarks. Similar to the earlier finding, the left digit effect was reduced only when benchmarks were present. The pattern was the same for labeled and unlabeled benchmarks. Mathematical modeling suggested participants used a more sophisticated placement strategy in the presence of benchmarks that might have led to a reduced left digit effect. Further work is needed to assess whether there are modifications of the benchmark interventions that might produce more sustained change.

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12:00–1:30 PM (4080)

Groupitizing Abilities In Kindergarteners. CÉLINE POLETTI, *University of Lausanne*, CATHERINE THEVENOT, *University of Lausanne* — Eighty-two children aged between 5½ and 6 years were tested twice on their groupitizing abilities during their last year of kindergarten. More precisely, they were asked to determine the number of dots represented on paper cards. Six, 8, or 10 dots were presented following different configurations and prompting different strategies. A multiplication-based strategy was prompted when the dots were presented in repeated identical clusters (e.g., for six: three identical clusters of two dots). An addition-based strategy was prompted when the dots were presented in several clusters of different numerosities (e.g., for six: one isolated point, a cluster of two dots and a cluster of three dots). A one-by-one counting strategy was prompted when the dots were not divided into subgroups. Children were videotaped during the task, which allows the precise description of the strategies they used and their evolution for each type of configurations. Children's strategies were related to their arithmetical skills and especially their finger-counting behavior.

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12:00–1:30 PM (4081)

Effects of ADHD on Processing of Numerical Ensembles. EMILY ANDREWS, *University of Central Arkansas*, CAROLINE DANFORTH, *Vanderbilt University*, KENITH V. SOBEL, AMRITA M. PURI, *University of Central Arkansas* (Sponsored by Amrita Puri) — Ensemble perception involves rapid extraction of perceptual information from cluttered scenes without attention to individual items, and may occur automatically for perceptually grouped subsets. We investigated whether performance on numerical ensemble tasks and digit search tasks (dependent on selective attention) relates to severity of ADHD symptoms. In the ensemble tasks, cues to report the numerical average of a colored digit subset occurred either before or after a digit display. In the search tasks, target digits were congruent or incongruent in terms of numerical and physical size. Unlike for low-level features (e.g., circle size), estimates of the average value of digit subsets were less accurate for post- versus pre-cued displays, suggesting that numerical ensemble representations may require attention to specific subsets. Although ADHD subscores were not related to ensemble task performance, sluggish cognitive tempo subscores were positively correlated with the reaction time delays associated with incongruent search targets.

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12:00–1:30 PM (4082)

Judgment and Decision-Making Based on Numerical Precision. MADISON ADKINS, *University of Michigan*, PRITI SHAH, *University of Michigan* — People often rely on numerical data to inform their judgment and decision-making in situations ranging from determining if a person has a fever, deciding which student to admit to a program based on standardized test scores, or deciding whether to ticket a speeding driver. Oftentimes, these decisions are based on arbitrary numerical cutoffs (e.g., a fever is 100.4 degrees), and sometimes choosing between two options is difficult when numerical differences are negligible (e.g., SAT score of 1450 and 1460). One unexplored heuristic in judgment and decision-making is the reliance (or overreliance) on numerical cutoffs or differences, and failure to consider measurement error, effect size, and other contextual clues. Use of this heuristic has important real-life implications, for example, deciding what products we purchase and the diagnoses given by medical practitioners. In a set of experiments using online samples we examine whether there are systematic individual differences in use of this heuristic, whether people make thinking errors by

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relying on numerical precision, and what individual difference variables predict reliance on numerical cutoffs.

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12:00-1:30 PM (4083)

Exploring the Debiasing Effect: Evidence from Native French Speakers. NINA FRANIATTE, *LaPsyDÉ (UMR CNRS 8240) & Université Paris Cité*, ESTHER BOISSIN, *LaPsyDÉ (UMR CNRS 8240) & Université Paris Cité*, ALEXANDRA DELMAS, *Onepoint*, WIM DE NEYS, *Université Paris Cité, LaPsyDÉ, & Centre National de Recherche Scientifique (CNRS)* — Popular dual-process theories often attribute unwarranted heuristic responses to the intuitive system (System 1). However, recent debiasing studies have shown that a plain-English explanation about the correct solution strategy to a reasoning task can help people to reason more accurately, as early as the intuitive stage. Recently, concerns have arisen regarding the generalizability of these findings. Although many decision-making traits are known to be influenced by cultural factors, these studies predominantly relied on English speakers. In this work, we explore whether key findings of previous debiasing studies can be extended to native French speakers. We used a battery of three reasoning tasks (base-rate, conjunction fallacy, and bat-and-ball), and tested it on 147 participants. We used the two-response paradigm in which reasoners have to give two consecutive responses in each trial, one intuitive and the other deliberate. Results showed that the training significantly improved both intuitive and deliberate reasoning performance. These findings support the fact that simple interventions can be employed to boost sound reasoning and confirm the suitability of French debiasing training for future studies.

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12:00-1:30 PM (4084)

Mental Fixation and Symptoms Associated with ADHD. MERCEDES T. OLIVA, *University of California, Santa Cruz*, BENJAMIN C. STORM, *University of California, Santa Cruz* — Mental fixation can be defined as the counterproductive focus on unhelpful information. It can be induced by the activation of prior knowledge or exposure to incorrect or contextually-inappropriate information. Two experiments using the Remote Associates Test (Experiment 1, n = 195) and a word-fragment completion task (Experiment 2, n = 209) examined if individual differences in inattention and hyperactivity-impulsivity (characteristic of ADHD) predict the extent to which people are affected by mental fixation. Neither experiment found a significant relationship between inattention and hyperactivity-impulsivity and the extent to which participants were affected by exposure to potentially fixating information. Taken together, the two experiments failed to provide evidence that individuals who experience symptoms characteristic of ADHD are differently affected by mental fixation than those who do not.

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12:00-1:30 PM (4085)

Metacognitive Cues, Working Memory, and Math Anxiety: The Regulated Attention in Mathematical Problem Solving (RAMPS) Framework. DANIEL A. SCHEIBE, *Kent State University*, CHRISTOPHER A. WAS, *Kent State University*, JOHN DUNLOSKY, *Kent State University*, CLARISSA A. THOMPSON, *Kent State University* — What cues do people use when solving math problems? Mathematical problem solving involves metacognitive (e.g., evaluating progress and strategy selection during the task), cognitive (e.g., working memory), and affective (e.g., math anxiety) factors. We analyzed themes from open-ended questions asking participants what situations elicit math anxiety (n = 673) and situated these themes into existing literature to develop a new framework for Regulated Attention in Mathematical Problem Solving (RAMPS). The RAMPS framework focuses on relations among metacognitive judgments during problem solving, working memory, and the role of math anxiety. Considering the relations between these factors helps elucidate the processes involved in successful problem solving and explain the potential places that errors occur (e.g., missing the correct answer due to not checking one's work because of an anxious reaction). We are also collecting new experimental data to assess components of the theoretical framework. The data and theoretical framework presented here provide a mechanistic lens to help inform future work on metacognition, math cognition, and working memory research.

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12:00-1:30 PM (4086)

Interaction Between Recency Effect and Strategy Preferences in Problem Solving. XINYU XIE, *Mississippi State University*, JARROD MOSS, *Mississippi State University* — Do people tend to use the strategies they just used? Previous research has shown that the recency of strategy use, rather than overall experience or history of success, can influence strategy choices. However, this recency effect has not been explored extensively in prior research, and current strategy selection theories do not take recency into account. This study aims to investigate the impact of recency of strategy use on strategy selection. By controlling the base rates of success for each of two possible task strategies and the salient features of the task, there is limited information for people to use in strategy selection other than recency of successful strategy use. Results showed that recency interacted with participants' initial strategy preferences. When the more recent strategy was the initially preferred strategy, there was no recency effect. When the more recent strategy was not the initially preferred strategy, the recency effect offset participants' initial preferences so that they were more likely to select the more recent strategy.

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12:00-1:30 PM (4087)

Politicization Induces Zero-Sum Thinking in Problem Solving. STEVEN SLOMAN, *Brown University*, ALMOS MOLNAR, *Brown University* (Sponsored by Steven Sloman) — Zero-sum bias refers to the tendency to believe that anything gained by one side is lost by the other side when in fact win-win outcomes are available. Prior research has documented the bias in many different

domains but little is known about what triggers it. Because politics is a hotbed of zero-sum beliefs, we hypothesized that cuing social and economic issues that are viewed in zero-sum terms by a political group might serve as a situational trigger for members of the group. Across three experiments, we show that politicizing a non-zero-sum problem can induce zero-sum thinking about it, thereby making it less likely that solutions that are win-win or that involve losing less are detected in the problem-solving process. Using two different economic games, we demonstrate that liberals find less effective solutions than conservatives when a problem is framed in terms of corporate tax cuts and that they find more effective solutions when the formally identical problem is framed in terms of pro-immigration policies. The two groups perform equally well when the problem is framed non-politically. We also show that political frames interfere with problem solving rather than rendering some solutions inadmissible.

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12:00–1:30 PM (4089)

Are Influencers' Tweets Better Remembered?. EZGI BILGIN, *Cornell University*, QI WANG, *Cornell University* — Social endorsement cues facilitate information processing, comprehension, and memory, In the context of social media, social endorsement cues (e.g., likes, shares) have been shown to influence users' evaluation of information credibility, trustworthiness, and validity. For instance, people believe posted misinformation more when the post received more likes. We investigate the mnemonic consequence of one particular online social endorsement cue: the number of followers. Participants viewed autobiographical events tweeted by users with large or small numbers of followers, and their memory for the events was tested later. We predict that the influencers' tweets will be better remembered.

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12:00–1:30 PM (4090)

The Need For Speed: Examining The Relationship Between Video Playback Speed and Learning Comprehension. CARLOS A. COUZIN, JR., *California State University, Northridge*, ELENI R. BENCHEK, *California State University, Northridge*, BRIAN R. BURR, *California State University, Northridge*, JUSTIN A. GLUCK, *California State University, Northridge*, STEFANIE A. DREW, *California State University, Northridge* — Prior studies found students spend a large portion of their time watching recorded lectures, though the role of playback speed on comprehension is unclear. This study sought to investigate the influence of playback speed on comprehension of lecture videos, and then to consider this relationship in the context of working memory capacity (WMC). Participants first completed a WMC assessment. They then calculated a standard deviation before watching a recorded statistics lecture played at either 1.0x, 1.5x, or 2.0x playback speed and the correct number of calculation steps recorded. Afterwards, they completed a second calculation, which was compared to pre-test results. We anticipated no difference in the performance between the three playback conditions. When controlling for WMC, we expected no differences in learning outcomes between the conditions, as suggested by the literature. A mixed ANOVA revealed participants in each condition performed equally well on the posttest, with a significant effect of time where participants performed better in the post-video compared to pre-video condition. However, when WMC was included as a covariate, a mixed ANCOVA revealed no significant effects. Implications will be discussed further.

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12:00–1:30 PM (4091)

Impact of Individual Traits and Gist Intervention on Automated System Interpretability, Explainability, and Decisions. LYDIA GLEAVES, *The George Washington University*, DAVID BRONIATOWSKI, *The George Washington University* — Automated systems are becoming increasingly opaque, challenging users' abilities to explain and interpret them. Fuzzy-trace theory suggests that interpretations (what the output means) and explanations (how the system works) may be distinct mental representations. Specifically, gist interpretations are theorized to be significantly associated with measures of data science expertise, numeracy, and need for cognition. Providing a gist interpretation is expected to positively impact user decision-making. We measured participants' ratings of system utility, and tested the relationship between self-reported interpretability and explainability ratings and relevant skills and traits. We found evidence that interpretability and explainability were distinct, and that self-reported interpretability ratings were associated with numeracy and its interaction with mathematical self-confidence. We next conducted an experiment to evaluate the impact of gist interventions on decision outcomes using a system designed to track misinformation online. Participants provided with a gist system tutorial were better able to identify online misinformation campaigns compared to those given verbatim information.

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12:00–1:30 PM (4092)

Can Individuals Benefit from Partnering with a Metacognitively Sophisticated Nonhuman Agent? A Test in Recognition Memory. MEGAN O. KELLY, *University of Waterloo*, EVAN F. RISKO, *University of Waterloo*, AARON BENJAMIN, *University of Illinois Urbana-Champaign* — Metacognitive information about accuracy is central to effective teamwork. We explore whether individuals can benefit from partnering with a metacognitively sophisticated agent teammate during a recognition memory test. Participants studied to-be-remembered words and then, for each item at test, were given an agent's response and associated confidence. Some participants worked with a calibrated agent (positive confidence-accuracy relation) and some with an uncalibrated agent; both agents provided equally accurate information. Participants responded to each test item on the recognition test before and after seeing the agent response. Participants working with a calibrated agent showed greater benefit to memory performance, higher integration of agent responses, and an integration that was dependent on agent confidence level. These participants were also indifferent when fitting to a human-biased vs. an agent-biased response policy, whereas those working with a noncalibrated agent fit better to a human-biased

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response policy. Results support the idea that the extent and success of interaction with agents is determined in part by the metacognitive information provided by agents.

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12:00–1:30 PM (4093)

Impact of an Audio-Narrating Pedagogical Agent on Learning, Motivation, and Cognitive Load: Examination of Deictic Gestures, Visual Presence, and Arrows. REGANNE M. MILLER, *Georgia Institute of Technology*, RICHARD CATRAMBONE, *Georgia Institute of Technology* — A pedagogical agent (PA) is a virtual, anthropomorphic character designed to enhance learning outcomes in online environments. This study investigated the impact of an audio-narrating PA on learning, attention, and cognitive load. We explored the effectiveness of the PA's deictic gestures (pointing to relevant content), visual presence, and use relative to non-anthropomorphic arrows. Employing a 6x4 mixed design, six PA conditions (gesturing PA, non-gesturing PA, no PA/audio-only, arrows, condensed text, and full text) were used across four lesson topics (two math and two art). Data collection is ongoing; initial data suggest that while the gesturing PA reduces mental demand and effort, it increases perceived frustration and diminishes perceived relevance and satisfaction.

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12:00–1:30 PM (4094)

Perceived Time in Virtual Reality: Underestimation in Big Environments and Overestimation in Small Environments. GRAYSON MULLEN, *The University of British Columbia*, ALAN KINGSTONE, *The University of British Columbia* — Virtual reality developers have suggested that "time passes differently" in VR: that an hour spent in VR can feel like 15 minutes. This claim appeals to a common intuition that time flies during fun or absorbing tasks, but empirical tests for an effect of VR on time perception are sparse and inconclusive. In a 2021 study we reported the first evidence that people to underestimate time in VR in comparison with a matched non-VR condition. Participants played a game either in VR or on a conventional monitor, and were instructed to play for 5 minutes without access to a clock. Participants in VR played significantly longer before reporting that they thought 5 minutes had passed. But in attempting to replicate and extend that finding, our first experiment found the opposite result: people overestimated time in VR. Subsequent experiments show that our divergent results may be explained in part by changes to the size of the virtual camera, which inversely determines the apparent size of the virtual environment. Our findings indicate that VR can flexibly cause people to underestimate time in large environments and overestimate time in small environments.

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12:00–1:30 PM (4095)

Beyond the Screen: Exploring the Impact of Virtual Reality on Hiring Decisions. PALOMA M. SANTOS, *Visual Information Sciences and Neuroscience (VISN) Lab*, DEVERE A. VIDAMUERTE, *California State University, Northridge*, ARIANNA ROBY, *California State University, Northridge*, JOSELUZ S. SOSA, *California State University, Northridge*, RUBY LYN LUCIN, *California State University, Northridge*, STEFANIE A. DREW, *California State University, Northridge* — Virtual reality (VR) facilitates the study of interview decision-making through an immersive experience, offering consistency untenable with live actors. This study explores immersivity and social presence's influence on hiring decisions. Participants were randomly assigned to view interviews in VR or via computer screen. Participants then completed surveys assessing hiring desirability and perceived competence of candidates and participants' own social presence, immersive presence, and motivation to complete the task. We anticipated that, compared to participants in the traditional video presentation, VR participants would report greater desire to hire the candidate, higher perceived competence of the candidate, greater social presence, greater immersive presence, and greater motivation to complete the task. Independent t-tests revealed greater candidate desirability for hire when participants viewed a non-binary candidate in VR. Participants ratings were similar in terms of competence and reported comparable levels of presence, immersion, and motivation as computer-viewing participants. Furthermore, immersion was not related to desire to hire nor motivation while social presence moderately related to both desire and motivation.

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12:00–1:30 PM (4096)

How Well Do Students Recognize and Relate to Animated Pedagogical Agents of Varying Ethnic/Racial and Gender Categories?. FANGZHENG ZHAO, *University of California, Santa Barbara*, RICHARD E. MAYER, *University of California, Santa Barbara* — This study investigated how well people can recognize and relate to animated pedagogical agents with varying ethnicities/races and genders. Participants viewed 3-second clips featuring onscreen agents from different ethnic/racial categories (Asian, Black, Hispanic, Indian, White) and genders (male, female), identified the agent's ethnicity/race and gender, and rated their human-like appearance and likability. Study 1 featured more realistic onscreen agents, while Study 2 used cartoonish agents. Results from both studies, involving different participants and agents, revealed: (1) high accuracy in perceiving race (Asian, Black, White) but lower accuracy in perceiving ethnicity (Hispanic, Indian); (2) high accuracy in perceiving male and female agents; (3) moderate ratings for human-like appearance across all agents; (4) lower likability ratings for White males. The consistent pattern of results across independent studies suggests the findings are not specific to a particular set of agents. These results support the media equation hypothesis and contribute to the design of likable onscreen agents.

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12:00–1:30 PM (4097)

Characteristics of a Good Teammate. LESLIE BLAHA, *Air Force Office of Scientific Research*, MEGAN MORRIS, *Air Force Research Laboratory*, COREY FALLON, *Pacific Northwest National Laboratory*, BETH HARTZLER, *CAE USA* — We seek to identify characteristics perceived as important for smart technology

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to be a good teammate. Prior research has proposed numerous design recommendations for building effective human-machine teams. But to establish a broadly usable design framework, we must consolidate these into a single, prioritized set of critical dimensions. In this study, routine smart technology users, while thinking about a teaming situation, rated the importance of 116 possible traits for a familiar smart device counterpart to be considered a good teammate. On average, performance traits were rated more important than prosocial behaviors. Factor analyses extracted seven factors for smart device and five factors for human teammates. The first three factors for smart devices and humans were directly comparable, indicating substantial similarities in the desired traits for both autonomous and human teammates. These findings offer potential design guidelines for building autonomous technologies with high likelihood of being an effective teammate to humans.

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12:00–1:30 PM (4098)

Information to Collective Memories: How Do Voters Process Information about Political Candidates Over Time?. ELIF SOZER, *The New School*, WILLIAM HIRST, *The New School for Social Research* — This project focuses on a recent election that involved two African-American men with extremely different positions on structural inequalities: the U.S. Senate election pitting Raphael Warnock against Herschel Walker. We asses how the selective presentation of information can reshape the memories people in Georgia have about the candidates, focusing on the extent to which these selective presentations can promote forgetting of related but unpracticed information and exploring the extent to which such forgetting may be moderated by political ideology, knowledge about the outcome of the election, and race. What this project adds to the existing literature is a dynamic understanding of the formation of collective memory both in the political content of the information to be processed and the historical context where two African-American men from opposing parties compete for a Senate chair.

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12:00–1:30 PM (4099)

Attitudes toward the Past, Present, and Future: Examining Implicit Biases across Diverse Racial, Ethnic, and Socioeconomic Groups. JAYLENE VÁZQUEZ, *Case Western Reserve University*, DOROTEJA RUBEZ, *Case Western Reserve University*, KYLE LAFOLLETTE, *Case Western Reserve University* — Individuals that are raised in environments that are abundant in resources exhibit positive future oriented thinking, whereby they can confidently expect that those resources will be available to them in the future. In contrast, individuals with low-socioeconomic status (SES) backgrounds often develop a scarcity mindset in response to an inadequate supply of necessary resources. This mindset can influence attitudes toward the past, present, and future and may explain heightened delay discounting. Although positive future thinking is considered a strategy to mitigate delay discounting, the research supporting this claim is largely limited to White participants with high SES. It is unclear how these attitudes may vary within Hispanic and POC populations with varied SES. To address this, we examined responses from nine implicit association tests of attitudes toward the past, present, and future across 34,743 participants. We found that attitudes varied as a function of race, ethnicity, and income.

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12:00–1:30 PM (4100)

145 Years of Truth in Congress: Computational Analysis of Speeches from 1879 to 2022 Reveals Changing Notions of Truth. SEGUN TAOFEEK AROYEHUN, *University of Konstanz*, ALMOG SIMCHON, *University of Bristol*, FABIO CARRELLA, *University of Bristol*, JANA LASSER, *Graz University of Technology*, STEPHAN LEWANDOWSKY, *University of Bristol*, DAVID GARCIA, *University of Konstanz* — Facts and well-supported analyses are essential for democratic deliberation. We propose that there are two distinct notions of "truth" in politics: one that is based on evidence and truth-seeking, and another based on authenticity and belief-speaking. We develop and validate a computational method to measure the relative salience of truth-seeking vs. belief-speaking in political discourse using word embeddings and dictionaries. We apply our method to the historical record of speeches made on the floor of the US Congress from 1879 to 2022, as well as to tweets of members of Congress from 2011 to 2022. We find that the trend in the use of evidence-based language was on the increase in Congress until the 1970s when it reached a peak. Since then, the use of evidence-based language has been declining and is now lower than it has been for nearly 150 years.

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12:00–1:30 PM (4101)

Inoculation Interventions Reduce Continued Influence Effects on Political Misinformation. MICHAEL COHEN, *University of Chicago*, JEAN DECETY, *University of Chicago* — Continued influence effects (CIEs) are the tendency for false information to impact judgments and decisions even after being corrected. Inoculation interventions can train people to recognize emotional manipulation techniques. We applied an inoculation intervention before participants read accusations of misconduct against mock political candidates, some of which were factually refuted. Of the 27 candidates, a third have corrected (refuted) accusations, a third have uncorrected accusations, and a third have no accusation. CIEs are measured as the decline in mean feeling thermometer ratings for candidates with a corrected accusation relative those with no accusation. An inoculation video intervention (Roozenbeek et al., 2022) leads to reduced CIEs relative to a control video, while also reducing effects of uncorrected accusations. Self-reported use of intuition, associated with larger CIEs in the control condition and in prior work, is uncorrelated with CIEs in the intervention condition. Inoculation interventions thus help people override negative subjective impressions from derogatory information

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12:00–1:30 PM (4102)

Does Ethno-Racial Context Diversity Relate to Implicit Mental Associations to Sexual Orientation?. MEHRGOL TIV, *US Census Bureau*, CODY SPENCE, *US Census Bureau* — Features of the social environment relate to individual-level psychological outcomes. For instance, people residing in ethno-racially diverse areas demonstrate less ethno-racial implicit bias than those in homogenous environments. We tested whether the relationship between contextual ethno-racial diversity and implicit bias cognitively transfers to other social categories (e.g., sexual orientation). Leveraging internal US Census Bureau microdata, we computed county-level metrics of ethno-racial diversity and segregation, which were linked to Project Implicit's sexual orientation Implicit Association Task data. Multilevel models, controlling for several individual and county-level factors, detected a negative relationship between context racial diversity and stereotypic associations to sexual orientation, particularly in areas with high segregation. Models were recomputed with nationally representative demographic weights, revealing a robust effect of context diversity but no interaction with segregation. These results indicate social experiences in one domain may relate to those in another domain, and they bolster the need for socially contextualized research on human cognition.

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12:00–1:30 PM (4103)

The Impact of Memory and Future Thinking on Collective Anxiety. MEYMUNE N. TOPCU, *Washington University in St. Louis*, AYSECAN BODUROGLU, *Koç University* — The present research explores the role of collective memory and future thinking in structuring collective anxiety. We aimed to see whether and how various reconstructions of the collective past inform and influence people's experience of anxiety for their group's future. To address this question, we conducted an experimental study with two factors. The data was collected in Turkey 1 month before the presidential elections in May 2023. Participants were instructed to imagine one of the two alternative scenarios for the election night in which one or the other candidate wins the election. Next, they wrote about the main issue that they are anxious about for their country's future. Participants were then assigned to either the collective or personal memory group, after which they provided appraisals of collective anxiety. Analyses revealed that remembering collective events influence people's appraisals of collective anxiety, which is moderated by sociopolitical identity.

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12:00–1:30 PM (4104)

The Role of Social Inference in the 'Cheerleader Effect'. XIAOFAN SHI, *University of California, San Diego*, AKHIL VASANTH, *University of California, San Diego*, DREW WALKER, *University of California, San Diego* — Past research has demonstrated a "cheerleader effect," whereby faces in a group are judged more attractive than alone. Walker and Vul (2014) proposed that this phenomenon occurs due to hierarchical encoding in the visual system: objects in a scene are biased toward an ensemble average and since averaged faces are attractive, faces in a group are biased toward this more attractive average. The cheerleader effect is a robust phenomenon (e.g., Carragher et al., 2019), but there is no consensus on the precise mechanisms that cause it. Recent work has shown that judgments of facial qualities can be influenced by subtle context cues. Oh, Shafir, & Todorov (2022) found that individuals wearing "richer" clothing were judged to have more competent faces, presumably because subtle economic cues cause implicit status inferences. In the current study, we test if a cheerleader effect may arise because individuals in a group are inferred to be socially desirable, and in turn, their faces are rated as more attractive. Observers rated faces alone as well as in a group of others whose faces were obscured; we found no evidence that this subtle social desirability cue confound the ensemble coding explanation of the cheerleader effect.

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12:00–1:30 PM (4105)

The Relationship Between Self-Related Advantages in Memory and Attention. KYUNGMI KIM, *Wesleyan University*, LILLI LIU, *Wesleyan University*, ANDREA CHIAPPETTI, *Wesleyan University*, WILLIAM LI, *Wesleyan University* — The incidental self-reference effect (iSRE) refers to a memory advantage for an item co-presented with a self- vs. other-relevant cue (e.g., one's own name vs. another name) that arises when there is no task demand to evaluate the item's self/other-relevance. The iSRE has been suggested to occur due to automatic preferential attention to self-relevant information, but this suggestion is yet to be empirically tested. In addition, it remains to be clarified which attentional networks (i.e., alerting, orienting, executive control) are related to the iSRE. Rectifying these limitations, in the present study, we utilized self- and other-relevant cues and administered both the iSRE task and Attention Network Test (ANT). In the iSRE task, we found better memory for items presented with a self- vs. other-relevant cue, replicating the typical iSRE. In the ANT, we found a self-advantage in orienting, but not in alerting or executive control. Critically, the magnitude of the iSRE was positively correlated with the magnitude of the self-advantage in attentional orienting. Our findings suggest that the iSRE may be underpinned by preferential attentional orienting toward self- vs. other-relevant cues in the environment.

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12:00–1:30 PM (4106)

Hands in Motion: The Role of Gestures and Self-Adaptors in Emotional Storytelling. MARÍA JOSE NAJAS, *Pomona College*, AYSHA GSIBAT, *Pomona College*, KATHERINE K. WHITE, *Rhodes College*, LISE ABRAMS, *Pomona College* — Speech fluency can be disrupted when describing emotional, especially negative, content. Independent of emotion, gestures can offset speech production difficulties by facilitating lexical retrieval. Furthermore, self-adaptors are self-soothing motions often used when stressed or anxious. The present experiment examined the influence of pictures' valence and arousal on gestures, self-adaptors, and speech fluency when telling stories about emotional pictures. Over Zoom, 30 young adults saw and told stories about pictures that varied in valence (positive, negative) and arousal (low, high). Negative valence affected

both gesturing and disfluencies such that stories about negative pictures had fewer gestures and more unfilled pauses. High arousal also increased unfilled pauses, which were negatively correlated with gesturing regardless of valence. In contrast, self-adaptors were unaffected by valence and arousal and were unrelated to fluency. Although gesturing can offset disfluencies to some degree, one interpretation of the findings is that negative valence and high arousal increase cognitive effort necessary to regulate emotions, which in turn disrupts speech fluency and gesture production.

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12:00–1:30 PM (4107)

Harmony of Words: Exploring the Dynamic Interplay of Text Registers and Linguistic Complexity. EBONY PEARSON, *Vanderbilt University*, MICHELLE PERDOMO, *Vanderbilt University*, TESSA WARREN, *University of Pittsburgh*, JENNA DISTEFANO, *University of California, Davis*, EMILY PHILLIPS GALLOWAY, *Vanderbilt University*, ARIEL JAMES, *Macalester College*, DUANE WATSON, *Vanderbilt University* — Written academic language is characterized by different linguistic features than spoken language. Knowledge of these registers and their variation across texts helps learners to efficiently process language and clearly convey their intended messages. We examined comprehension accuracy (N = 127) for texts in two conditions, one with characteristics of spoken discourse registers and one with characteristics of academic writing registers. The content of the texts varied between excerpts of factual information and a segmented narrative story. Participants read one condition of each text followed by comprehension questions to gauge accuracy. Results indicated that register influences the difficulty of comprehending a text, and the extent to which texts have matching syntactic features with their intended register influence comprehension accuracy. Beyond this, we explore the relationship between internet reading habits, register familiarity, and comprehension accuracy.

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12:00–1:30 PM (4108)

How Does Personality Affect Language Comprehension?. ASHLEY PIEPER, *Florida State University*, MICHAEL KASCHAK, *Florida State University* — Personality traits have been associated with outcomes involving both language comprehension and language production (e.g., Oberlander and Gill, 2004; Van den Brink et al., 2012). Much of the work in this area has involved offline measures of language performance, leaving the question of how personality might affect online processing largely unaddressed. In a recent series of studies, Hubert-Lyall and Järvikivi examined the possible relationship between personality and online language comprehension using pupillometry (Hubert and Järvikivi, 2019; Hubert-Lyall, 2020; Hubert-Lyall and Järvikivi, 2021). Among their many findings, they report an increase in cognitive effort for participants lower in openness when comprehending morpho-syntactic errors. Participants lower in agreeableness and extroversion were found to have an increased cognitive load in response to semantic anomalies. Finally, for participants high in neuroticism or low in extroversion, they found a larger cognitive load. We report a replication of these experiments. Our results were mixed, with some of our findings matching those of the Hubert-Lyall and Järvikivi studies and others not. We discuss the implications of these findings.

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12:00–1:30 PM (4109)

Measurement of Subjective Word Frequency Using Paired Comparison. MYONG SEOK SHIN, *Jeonbuk National University*, CHANGHO PARK, *Jeonbuk National University* — A method of measuring subjective word frequency (SWF) was developed by applying Elo rating. Two hundred sixty Korean words were arranged into five tiers, and word pairs in each tier were distributed among nine raters asked to choose subjectively more frequent word between the two. Fifty-four college students participated through six comparison sessions. After each session word rankings were adjusted using Elo rating, where the chosen word wins more points as it wins against higher rank words, then tier construction and word pairs were updated. SWF, estimated as the mean of six consecutive rankings, correlated highly (r = .730) with objective word frequency (OWF) of Sejong Hangul database. SWF also explained a large amount of variance (R^2=.635) of lexical decision time in Korean Lexicon Project database and showed significant increase in explained variance (ΔR^2=.316) after OWF was first put in regression analysis. SWF could be a good replacement of OWF costly and easily outdated.

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12:00–1:30 PM (4110)

Exploring the Impact of Motivation and Working Memory on Second Language Sentence Processing: An ERP Study. NICHOLAS SULIER, *University of California, Irvine*, JUDITH F. KROLL, *University of California, Irvine*, JULIO TORRES, *University of California, Irvine* — Individual differences in motivation and working memory significantly contribute to variation in second language (L2) learning outcomes. However, it remains unclear whether these factors can account for variation in the electrophysiological correlates of L2 sentence processing. In the current study, EEG was recorded while English-speaking learners of Spanish completed a sentence reading task. A battery of individual measures was administered to assess motivation and working memory and to take into account variation in language experience. The question was whether these factors would help explain differential reliance on lexical/semantic (N400) or repair/reanalysis (P600) mechanisms during L2 semantic and grammar processing. Further, the study examined whether these factors impacted ERP effect magnitudes. We predict that: higher levels of motivation will be related to a reliance on repair/reanalysis (P600) mechanisms during grammar processing and lexical/semantic (N400) mechanisms during semantic processing. Higher levels of working memory are predicted to be related to higher N400 and P600 magnitudes, but unrelated to a singular reliance on one mechanism across the semantic and grammar conditions.

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12:00-1:30 PM (4111)

Does Co-Activating Familiar Words Improve Word Learning?. DAPHNE WEISS, *Basque Center on Cognition, Brain and Language (BCBL)*, ARTHUR SAMUEL, *Stony Brook University, Basque Center on Cognition, Brain and Language (BCBL), & Ikerbasque*, EFTHYMIA KAPNOULA, *Basque Center on Cognition, Brain and Language (BCBL) & Ikerbasque* — Learning a new word involves establishing a new word form (configuration) and linking it to other words in the lexicon (engagement). According to the complementary learning systems account, full lexical integration (configuration+engagement) requires the consolidation of early hippocampal memory traces into stable neocortical representations. The co-activation of previous and new knowledge likely supports this transition. We test this in an auditory word-learning experiment. Participants learned twelve words across two training conditions. In the lexical condition, during training, novel words were interleaved with familiar words, while in the non-lexical condition, novel words were interleaved with tones. After training, we assessed the new words' lexical engagement using a lexical decision task (LDT) and recognition automaticity using a visual world paradigm (VWP) test. If lexical interleaving promotes integration, words learned in the lexical condition should show higher lexical engagement (i.e., faster LDT responses) and greater automaticity (i.e., faster looks to the target in the VWP).

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12:00-1:30 PM (4112)

Individual Differences Drive Half of Observed Variability in Self-Paced Reading Response Times. VAN RYNALD LICERALDE, *Vanderbilt University*, DUANE WATSON, *Vanderbilt University* — This project sought to estimate how much of the observed variability in self-paced reading (SPR) response times (RTs) from sentence processing research is driven by individual differences. We analyzed RTs from 3000+ sentences in openly available SPR datasets and found that on average 50% of the variability in RTs in a sentence (SD = 15%) is driven by between-person variability. Across datasets, the percentage attributed to individual differences is higher when participants were recruited from online platforms or the general community and lower when participants were undergraduates. Across sentence types, this percentage is higher in filler sentences and sentences from observational corpora and lower in experimental sentences. Moreover, the amount of between-person variability in RTs is similar across sentences with different syntactic manipulations. These results highlight the role of recruitment and stimulus choices in designing studies that can reliably measure and explain systematic individual differences in sentence processing.

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12:00-1:30 PM (4113)

Domain General Cognitive Control in the Processing of Lexical Ambiguity. TAL NESS, *University of Maryland, College Park*, VALERIE J. LANGLOIS, *University of Colorado Boulder*, JARED M. NOVICK, *University of Maryland, College Park*, ALBERT E. KIM, *University of Colorado Boulder* — We tested whether cognitive control (CC) plays a role in lexical ambiguity resolution. Participants listened to spoken sentences where an ambiguous word appeared in a context supporting its subordinate sense (e.g., She heard the loud ring). They then performed a lexical decision on visually presented probe words related or unrelated to the dominant sense of the ambiguity (e.g., diamond vs. curtain). Lexical decision times measured the activation level of the contextually irrelevant dominant meaning. Probes either coincided with the offset of the spoken word (to measure whether the dominant sense is active initially), or appeared 150 ms later (to measure whether the dominant sense has deactivated, consistent with context). Participants' level of cognitive control engagement was manipulated by interleaving Stroop trials between the sentence trials. Crucially, sense selection was modulated by the engagement of CC: After incongruent Stroop trials, which upregulated CC, the irrelevant dominant meaning showed reduced activity, but only at the later probe time. This suggests that CC assists in the context-dependent selection of a single sense for lexically ambiguous words, but only after the conflict between competing meanings has arisen.

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12:00-1:30 PM (4114)

Man or Machine: Evaluations of Human and Machine-Generated Movie Reviews. EYAL SAGI, *University of St. Francis*, HADAR JABOTINSKY, *Zefat Academic College* — Recent advances in generative language models, such as ChatGPT, have demonstrated an uncanny ability to produce texts that appear to be comparable to those produced by humans. Nevertheless, machine generated texts differ from those produced by humans in important aspects, such as routinely including references to nonexistent sources. In this paper, we use both psycholinguistic measurements and participant responses to compare texts generated by machine with equivalent texts generated by humans. Our analysis demonstrates some of the ways in which machine-generated texts differ from human-generated ones in both style (e.g., increased use of positive connectives) and content (e.g., increased confidence). We also note multiple ways in which texts generated by these models are similar to those generated by humans (e.g., their use of emotion words). We believe this research provides insights that can be useful to understanding how language is generated by both humans and machines.

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12:00-1:30 PM (4115)

Noun Modifiers Benefit Memory Recognition for Older and Younger Adults. JADEN ZINN, *Mississippi State University*, HOSSEIN KARIMI, *Mississippi State University* — Modified noun phrases (black bear) have been shown to be retrieved more easily from memory compared to unmodified noun phrases (bear) within sentences such as "It was the (black) bear that the hunters chased", where chased (a retrieval trigger for bear) is read faster when bear is modified. However, there has been little research on how the modification benefit 1) interacts with cognitive aging, and 2) affects long-term memory. Utilizing a self-paced reading paradigm and a subsequent surprise recognition memory task, we found that older adults (ages 60-85) and younger adults (ages 18-35) were significantly more likely

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to correctly recognize a previously read modified noun. Also, older adults falsely recognized semantic distractors significantly more often than younger adults did. These findings suggest that the modification benefit is resilient to cognitive decline and support theories maintaining that recognition memory in the aging brain is particularly susceptible to semantic distractors.

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12:00–1:30 PM (4116)

Inhibitory Mechanism During Sentence Processing in Aging. JINA KIM, *University of Iowa*, SI ON YOON, *New York University*, JAN WESSEL, *University of Iowa*, KRISTI HENDRICKSON, *University of Iowa* — Language comprehension involves aspects of prediction, but limited research has focused on investigating the processing mechanisms in relation to prediction violation. Recent studies investigating prediction violations in young adults have shown that comprehenders adopt inhibitory processing when their predictions are violated. Less known is how inhibitory processing plays a role in the older population, whose inhibitory control declines across multiple domains, and whether that inhibitory processing is domain-general. In a cross-modal lexical priming experiment, we examined inhibitory processing for predicted words upon hearing a semantically plausible, but unpredicted word. Participants also completed the stop-signal task to measure domain-general inhibition. Preliminary results provided evidence that predicted words based on sentence context were inhibited when the predictions were violated. However, we did not observe any evidence suggesting that domain-general inhibition modulates inhibitory processing specifically within the language domain.

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12:00–1:30 PM (4117)

To Boldly Go Where No Text Has Gone Before: The Effects of Boldface Letters on Eye Movements in Reading. ABIGAIL I. SPEAR, *University of South Florida*, REBECCA L. JOHNSON, *Skidmore College*, JANE ASHBY, *Mount St. Joseph University*, ABIGAIL KLEINSMITH, *Skidmore College* — Over the years, numerous speed-reading technologies have proposed ways for people to improve their reading speed and efficiency. The current study empirically tested Bionic Reading's claims that bolding the first half of words provides an optimal location for the eyes to land and is enough to process the entire word. Participants read paragraphs in five bolding conditions to see how reading patterns and eye-movements were impacted. Bionic Reading's claims were not supported by this study, as bolding the first half of every word did not facilitate reading and was not better than bolding the middle half or last half of every word. Additionally, visual access to only a few letters was not enough to recognize whole words. The effects of bolding were not any more beneficial for any specific population, although higher scores on offline reading measures led to greater benefits when the last half of each word was intact.

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12:00–1:30 PM (4118)

Idiom Structure Influences Parafoveal Processing of Multi-Constituent Units in Reading. SIMON P. LIVERSEDGE, *University of Central Lancashire*, YING FU, *Tianjin Normal University*, XUEJUN BAI, *Tianjin Normal University*, GUOLI YAN, *Tianjin Normal University*, CHUANLI ZANG, *University of Central Lancashire* — Frequently occurring multi-constituent units (MCUs, see Zang et al., 2021, 2023), that is, linguistic units comprising more than a word, are represented lexically in reading. Using the boundary paradigm (Rayner, 1975), in Experiment 1 we examined how readers process Chinese idioms with a 1-character modifier and a 2-character noun ('1+2' MN) structure compared with matched phrases, and the preview of each constituent was manipulated to be an identity or pseudocharacter. In Experiment 2, we investigated whether the structure of idioms might modulate how they are processed, and therefore, preview of the second constituent of MN idioms and VO idioms ("1+2" verb and object) was manipulated. The results showed greater preview benefit for the second constituent for idioms than matched phrases. Furthermore, the preview effects were more pronounced for the MN than VO idioms, demonstrating that idiom structure does influence how idioms are parafoveally processed during sentence reading.

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12:00–1:30 PM (4119)

Prospectus for Bilingual Early Reading Instruction. ROMAN TARABAN, *Texas Tech University*, ISABEL MEZA, *Texas Tech University* — Two-thirds of 10-year-olds across low-, middle-, and high-income countries worldwide are unable to read and comprehend a simple story. We propose a bilingual and multimodal model for decoding instruction to function within and across national borders. The prospects of the model are supported by a highly successful web platform, the Ethical Engineer (https://EthicalEngineer.ttu.edu), with code readily transferable to the new reading platform. The primary link in the reading model is between native language speech and second-language (L2) decoding, with a goal to draw on children's oral vocabulary knowledge in L1 in order to build meaningful connections to printed words in L2. Spoken feedback for children's decoding attempts in L2 can be automated, as can other elements of feedback, like encouragement. Visual images, as additional supports, are optional. There is also an option to instruct decoding in the child's native language. Comments, suggestions, and collaborators are welcome.

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12:00–1:30 PM (4120)

Neurophysiological components Difference in Positional Statistical Learning Between Alphabetic and Logographic Readers. ANDHIKA RENALDI, *National Central University*, DENISE WU, *National Central University* — The study investigated the temporal and spatial positional statistical learning (PSL) abilities of alphabetic and logographic readers, motivated by the different mapping characteristics between orthography and phonology of these scripts. Participants were presented with a shape in a fixed temporal

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and spatial position in consecutive and simultaneous pairs in a PSL test, and event-related potentials were recorded in response to standard and deviant pairs. The N400 and MMN effect was found in the temporal PSL test in the posterior area in logographic readers, followed by N400 effect in the mid central area of alphabetic readers, for learners with above-chance behavioral accuracy. On the other hand, learners' performance of the spatial PSL test was associated with an MMN effect in the right parietal area in logographic readers and a frontal-right P600 effect in alphabetic readers. The findings suggest that logographic and alphabetic readers use distinct mechanisms to extract temporal and spatial regularities in the PSL tests, potentially due to differences in long-term reading experience.

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12:00–1:30 PM (4121)

Individual Differences in Holistic Word Processing Among Adult Skilled Readers. ELIZABETH HIRSHORN, *SUNY New Paltz*, EMMA REILLY, *SUNY New Paltz*, ALISON ROBERT-LOUCHE, *SUNY New Paltz*, CODY WOJSZYNSKI, *SUNY New Paltz* — Recent research demonstrates individual differences in skilled native English readers using a behavioral marker of holistic visual word processing (orientation sensitivity). A more holistic word reading profile is associated with less reliance on phonological decoding for word identification. The current study aimed to further assess the underlying distribution of orientation sensitivity and to understand the role of phonological decoding in reading comprehension as a function of orientation sensitivity. A group of 137 undergraduates completed an orientation sensitivity test to assess the overarching distribution. A subset of 55 undergraduates completed additional reading-related tests. Results found that the distribution of orientation sensitivity was not normal and skews to the right, but is not bimodal. Those with relatively greater orientation sensitivity had a weaker relationship between phonological decoding and reading comprehension. These results help refine our understanding of orientation sensitive readers and potential alternative route to successful reading found in the general population.

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12:00–1:30 PM (4122)

Exploring Direct and Indirect Influences of Reading Motivation on Reading Comprehension Among American College Students. HITOMI KAMBARA, *The University of Texas at Rio Grande Valley*, YU-CHENG LIN, *The University of Texas Rio Grande Valley*, HUNG-CHU LIN, *University of Louisiana at Lafayette* — To date, very limited studies examined the direct and indirect (via reading motivation) effects of reading motivation on reading comprehension, particularly among college students. It remains unknown whether these mechanisms are universal across different ethnic groups or whether there is a specific racial effect on some relations. In this study, we explored the direct and indirect effects of the Expectancy-Value-Cost (EVC) on reading comprehension of college students across three ethnic groups (White, African American, and Hispanic) in the United States. Our results showed that there are some similarities and differences in indirect and direct influences of reading motivation on reading comprehension among the three groups. Based on our results, we assume that different ethnic backgrounds might play a significant role in modulating the association between reading motivation and reading comprehension.

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12:00–1:30 PM (4123)

Characterising Children's Eye Movement Control During Reading in English: A Corpus Study. SARA V. MILLEDGE, *University of Central Lancashire*, CHUANLI ZANG, *University of Central Lancashire*, HAZEL I. BLYTHE, *Northumbria University*, SIMON P. LIVERSEDGE, *University of Central Lancashire* — Past research examining beginner child English readers' eye movement behaviour has primarily compared when, rather than where, the eyes are moved relative to skilled adult readers. We used an English eye movement corpus to characterise where typically developing 8- to 9-year-old child readers target their eyes during silent sentence reading. Our analyses assessed differences in initial landing position (ILP) dependent on word length, launch site, and word frequency. The results show that, in contrast to adult readers, children's saccadic targeting is not interactively constrained by launch site and length of word. Also, when word length and launch site are controlled, word frequency affects the ILP: as word frequency increases, readers land further into a given word. Overall, the results suggest that there is developmental change in the saccadic targeting system, for which no current model of eye movement control during reading can account.

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12:00–1:30 PM (4124)

Does Contextual Diversity Influence the Orthographic Parafoveal Processing of Novel Words?. ASCENSIÓN PAGÁN, *University of Leicester*, MEYREM TOMPSON, *University of Leicester*, OLIWIA KUS, *University of Leicester* — Pagán and Nation (2019) showed that words learnt in different contexts are acquired slowly during learning but have a larger learning advantage at post-test, suggesting that contextual diversity contributes to context-independent semantic representations. Here, we examined whether contextual diversity during word learning modulated orthographic parafoveal processing. Adults read novel words embedded in sentences and their eye movements measured. In the learning phase, novel words were presented in the same sentence repeated four times or in four different sentences. In the pre- and post-learning phases, novel words were embedded in neutral sentences, and the invisible boundary paradigm used (Rayner, 1975). For each novel word (e.g., faddle), a valid (e.g., faddle) and an invalid (e.g., hobbta) preview were created. We are completing data collection and will present eye-movement data for 70 adults. We predicted a replication of the contextual diversity effect (Pagán & Nation, 2019), and that the orthographic preview benefit will be greater after learning. Findings will be relevant to the debate over whether contextual diversity benefits word-learning and will provide novel insights into the link between word-learning and memory.

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SATURDAY

12:00–1:30 PM (4125)

The Influence of Sentence Context on Letter Position Coding During Reading. AARON VELDRE, *Macquarie University*, LILI YU, *Macquarie University*, ROSLYN WONG, *Macquarie University*, ERIK D. REICHLE, *Macquarie University* — There is clear evidence of flexibility in the coding of letter order within written words. However, virtually all of this evidence comes from studies of isolated word identification and eye-movement experiments in which the sentence materials are carefully constructed to be non-constraining. The current study used the gaze-contingent boundary paradigm to assess sensitivity to letter order in the parafovea during the reading of sentences that varied in contextual constraint. Critical target words (5-7 letters) were embedded in sentences that either constrained towards the target or were non-constraining. Prior to the reader fixating on the target word, the parafoveal preview of the target was manipulated such that it was valid (identical), a nonword created by transposing two internal letters, or a matched substituted-letter nonword control. Linear mixed-effects models assessed whether sentence context modulated preview benefits of correct letter identity and letter order across the time-course of lexical and postlexical processing. The results will inform the development of a computational model of the entire reading process.

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12:00–1:30 PM (4126)

Cognitive Effects and Correlates of Reading Fiction: Two Preregistered Multi-Level Meta-Analyses. LENA WIMMER, *Albert-Ludwigs-Universität Freiburg*, GREGORY CURRIE, *University of York*, STACIE FRIEND, *Birkbeck, University of London*, JÖRG WITTWER, *Albert-Ludwigs-Universität Freiburg*, HEATHER FERGUSON, *University of Kent* — Despite the ubiquity of reading fiction, the psychological effects of this activity have been debated. We present two preregistered meta-analyses synthesizing cognitive effects and correlates of reading fiction. In meta-analysis 1 (368 effect sizes/69 experiments), reading fiction led to significant small-sized cognitive benefits, g = 0.14, 95% CI [0.07, 0.21], p = .0003. Comparison group (watching fiction/reading nothing > reading nonfiction), outcome variable (positive effects emerged for empathy and mentalizing only), and publication status (published > unpublished) were significant moderators. In meta-analysis 2 (551 effect sizes/111 correlational studies), lifetime exposure to print fiction was linked with significant small-sized cognitive benefits, r = .17, 95% CI [0.13, 0.20], p < .001. Outcome variable (verbal abilities > general cognitive abilities > remaining outcomes), fictionality of the print material (fiction > nonfiction), publication status (published > unpublished), and further variables (to be presented) significantly moderated this effect. Together, this preregistered set of meta-analyses provides robust evidence for a weak positive relationship between reading fiction and cognition.

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12:00–1:30 PM (4127)

Parafoveal Processing of Popular Internet Phrases Supports the Multi-Constituent Unit (MCU) Hypothesis. CHUANLI ZANG, *University of Central Lancashire*, NUO YI, *Tianjin Normal University*, XUEJUN BAI, *Tianjin Normal University*, GUOLI YAN, *Tianjin Normal University*, SIMON P. LIVERSEDGE, *University of Central Lancashire* — Every year a considerable number of internet phrases (e.g., 暖男, warm guy, man with a caring personality) emerge, and when they become common, widespread and well understood, they may be lexically represented and parafoveally processed as multi-constituent units (MCUs, see Zang et al., 2021, 2023) during reading. Using the boundary paradigm (Rayner, 1975), in Experiment 1 we manipulated the preview of each constituent in popular two-character internet phrases and found preview effects for the second constituent when the first was present rather than absent in the parafovea, indicating that the presence of the first constituent licenses parafoveal processing of the second. In Experiment 2, phrasal familiarity was further manipulated to assess whether it modulated how phrases are processed. The results showed more pronounced preview effects for the more familiar phrases, suggesting that more familiar internet phrases are more likely to be processed as MCUs during sentence reading.

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12:00–1:30 PM (4128)

Reliability and Generalization of Change Detection Measures of Color, Orientation, and Form Visual Working Memory. BENJAMIN J. TAMBER-ROSENAU, *University of Houston*, RILEY WILAND, *University of Houston*, MINH KHUE NGUYEN, *University of Houston*, PAULINA A. KULESZ, *University of Houston* — Change detection measures of visual working memory (VWM) capacity are widely used to explain individual differences in cognition. While the reliability of color change detection has been characterized, little research has examined reliability of change detection for other feature dimensions. We examined VWM for color, orientation, and form (Kanji) using otherwise-identical tasks (N = 30, 200 trials/dimension). While we observed high split-half reliabilities (.86-.91, depending on use of accuracy, Pashler's K, or d-prime) for color and orientation, form performance was less reliable (.59-.72). Application of the Spearman-Brown prophecy formula revealed that split-half reliability of .8 is expected with 76-127 trials for color and 88-135 trials for orientation (depending on measure), but requires 317-566 trials for form. Moreover, while nearly all pairwise correlations between dimensions (.31-.62; most ~.5) were statistically significant (p < .05 2-tailed), these correlations were well below the obtained reliabilities. Thus, task parameters needed to reliably measure VWM capacity vary across feature dimension, and VWM capacity cannot be assumed to fully generalize across dimensions.

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12:00–1:30 PM (4129)

Memory-Based Biases in the Attentional Blink: Within and Across Trial Interactions. BUGAY YILDIRIM, *Koç University*, YELDA SEMIZER, *New Jersey Institute of Technology*, AYSECAN BODUROGLU, *Koç University* — The current study investigated the attentional modulation of within- and across-trial biases in target representations in the attentional blink (AB). Two target displays (T1 and T2) consisting of single orientation Gabors were presented in rapid serial visual presentation stream. Target orientations were sampled from two non-overlapping skewed normal distributions, one below and one above 90 degrees (counterbalanced). Targets were separated by two lags: either 3 or 8, corresponding to stimulus onset asynchronies (SOA) of 300 and 800 ms. We found that the reported target orientations in the AB were contracted toward the other target available within the same trial as well as the distributional characteristics of the targets from previous trials. These biases were stronger when a given representation was noisy, especially T2 representations in the 300 ms SOA condition (i.e., the blink condition). The current set of results adds to the limited evidence for within-trial target integration effects in the AB. To our knowledge, the current study is the first to show an across-trial bias in the AB. We are implementing serial order-based models to identify the mechanisms leading to these biases.

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12:00–1:30 PM (4130)

Can Processing Speed Training-Induced Changes in Visual Working Memory Be Explained by a Single Model?. SHUANGKE JIANG, *University of Sheffield*, ALICE REINHARTZ, *Medical School Hamburg*, ELEANOR R. A HYDE, *University of Sheffield*, JEFF FERRERI, *Institut Universitaire de Gériatrie de Montréal*, FANNI TOUSIGNANT, *Institut Universitaire de Gériatrie de Montréal*, SYLVIE BELLEVILLE, *University of Montreal & Institut Universitaire de Gériatrie de Montréal*, TILO STROBACH, *Medical School Hamburg*, CLAUDIA VON BASTIAN, *University of Sheffield* — Four popular visual working memory (VWM) models —the Standard Mixture Model (SMM, Zhang & Luck, 2008), Swap Model (Bays et al., 2009), Target Confusability Competition Model (TCC, Schurgin et al., 2020), and Signal Discrimination Model (Oberauer et al., 2021)—were previously compared in a VWM training study (N = 46). Our previous findings suggested that SMM best fitted changes in a trained VWM task from pretest to posttest, while TCC came close second. Using the same VWM paradigm but as a transfer task, the present study aims to replicate the previous pattern by comparing these models with a large sample (N = 408) completing a processing speed training intervention across the adult lifespan. Overall, the preliminary results from N = 154 showed that only TCC provided the best fit to the current data set, suggesting different measurement models are required to fully account for dynamic performance changes induced by different training interventions.

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12:00–1:30 PM (4131)

Working Memory Capacity Negatively Predicts Visual Imagery Ability. KATHERINE C. MOEN, *University of Nebraska at Kearney*, SETH LONG, *University of Nebraska at Kearney*, JOSEPH MCCAFFREY, *University of Nebraska at Omaha*, MICHAEL D. DODD, *University of Nebraska at Lincoln* — Many mental tasks are thought to rely on the ability to form mental images, but relatively little is known about how this process occurs, and how some individuals function normally without the ability to use visual imagery. The goal of the current study was to determine which cognitive tasks predict visual imagery ability. It is possible that individual differences in reading, writing, memory, or attention could explain differences in visualization ability. Participants completed a battery of tasks to measure attention during reading and writing, and to assess working memory, long-term memory, and visual imagery ability. Eye-movements were measured during the reading and writing tasks. Eye-tracking data from the writing and reading tasks suggest that participants pay attention to different elements when texts encourage visual imagery, compared to more literal texts. Overall, working memory performance was the strongest predictor of visual imagery ability, in that individuals with higher n-back accuracy had lower visual imagery ability. These results suggest that visual imagery may be a coping mechanism for individuals with low working memory capacity.

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12:00–1:30 PM (4132)

Dissociating Spatial and Temporal Interference in Spatial Working Memory. DANIELLE E. CLARK, *Florida State University*, DEREK EVAN NEE, *Florida State University* (Sponsored by Derek Nee) — Lingering information is known to disrupt processing in working memory (WM). However, the influence of information persistence in spatial WM, and its distinction from other forms of interference is not well characterized. Here, subjects made recognition responses to spatial locations held in WM. Focusing on probes not matching the memory set (lures), we manipulated the physical distance (spatial similarity), and recency (temporal similarity) of lures to the memory set. Across two experiments (total n = 178), we observed strong effects of spatial similarity. Temporal similarity effects were substantially weaker and present only when spatial similarity was high. To understand these effects, we adapted the Target Confusability Competition Model, which describes WM as a function of psychophysical similarity of stimuli and memory strength (Schurgin et al., 2020). Adding a parameter reflecting persistence of prior memories, the modified model reproduced error rate patterns in our data. The model indicated that temporal interference was only detectable within the range of the psychophysical similarity function. These results suggest spatial and temporal similarity arise from independent mechanisms but jointly manifest in behavior.

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SATURDAY

12:00–1:30 PM (4133)

Color- and Semantic-Sharing Bonuses in Visual Working Memory: The Deeper the Processing, the Greater the Benefits for Real-World Objects. HANANE RAMZAOUI, *Louisiana State University*, FABIEN MATHY, *Université Côte d'Azur*, CANDICE C. MOREY, *Cardiff University* — Consistent semantic relations among real-world objects can boost visual working memory. However, previous studies have only used objects in greyscale. We sought to study whether and how there are bonuses of color- and semantic-sharing between objects. Participants viewed scenes including either one semantically-related and/or perceptually-similar object pair plus four unrelated singleton objects, or six singletons. Perceptually-similar pairs shared color, while semantically-related pairs included naturally co-occurring objects. In Experiment 1, where the encoding time was 2sec and the retention time was 1sec, we observed a redundancy gain (memory for related vs. singleton objects) for scenes with a perceptually-similar pair. In Experiment 2 we increased retention time to 3sec and again observed a redundancy gain for scenes with a pair of perceptually-similar objects, including those that were perceptually- and semantically-related. In Experiment 3, where encoding time and retention time were increased to 3sec, redundancy gain was present for all pair types. In conclusion, conditions that allowed time for 'deeper' semantic processing resulted in semantic-sharing bonuses by facilitating access to knowledge.

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12:00–1:30 PM (4134)

Sustained Attention Required for Effective Dimension-Based Retro-Cue Benefit in Visual Working Memory. CHAOXIONG YE, *University of Jyvaskyla*, RUYI LIU, *Sichuan Normal University*, LIJING GUO, *University of Jyvaskyla*, NOAH BRITT, *McMaster University*, HONG-JIN SUN, *McMaster University* — In visual working memory (VWM) tasks, dimension-based retro-cues improve participants' performance by directing internal attention to prioritize a specific dimension (e.g., color or orientation) of VWM representations. This study investigates the role of sustained attention in the dimension-based retro-cue benefit (RCB). We introduced interference or interruption between the retro-cue and the test array to distract attention and examined its effects on the dimension-based RCB. Perceptual interference (Experiments 1 and 2 with masks) or cognitive interruption (Experiments 3 and 4 with an odd-even task) occurred during the maintenance or deployment stages of prioritized information. Results demonstrate that both perceptual interference and cognitive interruption attenuate the dimension-based RCB. These findings suggest that sustained attention is necessary for effectively prioritizing a specific dimension of VWM representations. This study enhances our understanding of attentional processes in VWM tasks.

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12:00–1:30 PM (4135)

Restricting Eye Movements Affects Perceiving and Overall Change Detection. ANI ABOVIAN, *University of California, Davis*, MICHELLE RAMEY, *University of Arkansas*, ANDREW YONELINAS, *University of California, Davis*, JOHN M. HENDERSON, *University of California, Davis* — Different types of change detection are associated with distinct functional and neural processes, but their related attentional mechanisms remain largely unexplored. Detecting visual changes can be based on perceiving or sensing. Prior work indicates that resampling and dispersion in eye movements are important for change detection. How is change detection impacted by restricting eye movements? In the current global change detection task, participants either freely viewed scenes or fixated at their center. They entered their responses on a confidence scale that isolates perceiving and sensing. When eye movements were restricted, perceiving ability and overall change detection decreased. Sensing ability also decreased, though this difference was not significant. These results suggest that eye movements are important, but not necessary, for perceiving-based and overall change detection. This shows the role of overt eye movements in working memory and demonstrates that visual attention can be modified to covertly detect some global differences.

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12:00–1:30 PM (4136)

Spatial Information and Recollective Experience Influence Dating Autobiographical Memories. MADELINE R. VALDEZ, *Washington University in St. Louis*, SAMANTHA A. DEFFLER, *York College of Pennsylvania*, SHARDA UMANATH, *Claremont McKenna College* — Spatial information, including the scene layout, is associated with key phenomenological properties of autobiographical memory, and is used to estimate when an event occurred. Importantly, the recollective experience of memory varies between individuals, influencing the quantity and quality of remembered details. Here, we build on prior work by exploring how individual differences in the recollective experience influence the strategies used to date autobiographical memories. Our results replicate Deffler et al. (2021), showing that spatial information predicts confidence in date estimations and is used as an estimation strategy. Surprisingly, results from exploratory analyses show that individual differences in the recollective experience (measured by the ART, Berntsen et al., 2019) do not predict the use of spatial information when estimating dates. These results demonstrate the unique role that spatial information plays in dating autobiographical memories; future work should explore how individual differences influence date estimation of autobiographical memory.

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12:00–1:30 PM (4137)

The Role of Emotion on Autobiographical Memory in a Foreign Language: A Systematic Review. FRANCIA ARRIAGADA-MÖDINGER, *Universidad Católica del Maule*, ROBERTO A. FERREIRA, *Universidad Católica del Maule* — The effect of emotionality on autobiographical memory has been well established in the native language, with emotion favouring the reconstruction of memories. However, there has been little discussion on the role of emotion in retrieving personal events in a foreign language. This systematic review aims to summarize the results of studies that have

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explored how emotion affects autobiographical memory in a foreign language. Following the PRISMA guidelines, this review evaluates seven studies found on Scopus and Web of Science, which utilized quantitative or mixed methods and included bilingual participants. The main findings revealed that emotional intensity decreases when emotional autobiographical memories are reactivated in a second language. Additionally, when retelling experiences in a second language, more emotion words may be used, possibly due to emotional distance. However, emotional intensity appears to increase when the encoding and retrieval language coincides. Overall, we conclude that there are mixed findings about the factors impacting bilingual autobiographical memory recall.

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12:00–1:30 PM (4138)

Using Memories of Fictional Events to Simulate New Experiences. JOYCE PARK, *Duke University*, BRENDA YANG, *Duke University*, ELIZABETH J. MARSH, *Duke University* — Memories of events from fictional sources (e.g., movies, novels) share many properties with memories of lived experiences (Yang et al., 2021). Here we explore whether memories of fiction and lived experiences serve similar functions (i.e., preparing us for situations that we have not experienced directly). Across two pre-registered studies, participants imagined themselves in various scenarios (e.g., on a deserted island, in a global pandemic), then identified sources used to generate their simulations and rated phenomenological aspects of each simulation (e.g., visual properties). Study 1 (N = 208) compared responses for the pandemic item before and after March 10, 2020 and found that participants relied more on fictional sources prior to having personal experience with a pandemic and drew on their own lived experiences after lockdown began. Study 2 (N = 248) replicated the results of Study 1 on a diverse set of scenarios (e.g., stuck elevator, jury duty) that participants varied in their past experience with. Similar to autobiographical memories, fictional memories perform a directive function, helping to guide future action. These findings suggest that fictional memories are relied upon in the absence of lived experience.

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12:00–1:30 PM (4139)

Memory Is Better for Dynamic than Static Scenes in Immersive Virtual Reality. ANNA ROMERO, *University of Alberta*, MILAN KALRA, *University of Alberta*, PEGGY L. ST. JACQUES, *University of Alberta* — According to the dynamic superiority effect, recognition memory is better for dynamic than for static stimuli. Previous studies have reported a dynamic superiority effect for objects and 2D videos, however, everyday events are formed in an immersive 360-degree setting. Here we investigated the dynamic superiority effect in 360-degree 3D immersive virtual reality videos. Participants experienced 48 immersive video events while wearing an immersive virtual reality headset. Half of the video events included a dynamic object in the scene, whereas the other half included a static version of that object. A recognition memory test followed, in which participants were cued by objects and asked to indicate whether it was taken from the video events or not. "Old" responses were followed by additional memory questions assessing the setting, object location, and recall of two additional objects from the scene. Our findings indicated a dynamic superiority effect, such that, dynamic videos led to a stronger sense of presence within each event and were also associated with better recognition memory. We will discuss additional findings regarding the role of dynamism on the integrity of scene memory.

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12:00–1:30 PM (4140)

Mnemonic Emotion Regulation: The Role of Visual Perspective and Emotion Type. SEZIN ÖNER, *Kadir Has University*, EMINE SEYMA CAGLAR KURTULMUS, *Kadir Has University*, MERVE NUR ALTUNDAL, *Özyeğin University* — The present study examined mnemonic emotion regulation, based on emotion type and visual perspective. Participants (N = 280) reported anger or shame memories from either a field or observer perspective for mood induction. Then they recalled any specific memory that came to their mind and rated the phenomenology of their memories. More positive memories were reported regardless of group, but those recalling anger from field perspective and shame from an observer perspective reported more reliving and imagery for these memories. Results demonstrated the role of phenomenology in mnemonic emotion regulation and will be discussed with a focus on the function of remembering.

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12:00–1:30 PM (4141)

Do Students Believe Multiple-Choice and Cued-Recall Practice Tests Have Different Utility?. SABRINA BADALI, *Kent State University*, KATHERINE A. RAWSON, *Kent State University* — Both multiple-choice (MC) and cued-recall (CR) practice tests are beneficial for learning, but how do students choose to use each format of practice question? In the current project, some student participants had access to both MC and CR optional practice questions and could complete either or both formats as many times as they wanted. Across two experiments, most participants preferred completing MC questions and used these practice tests until they got each question correct about one time. However, about one-third of participants used both MC and CR questions for all material, and continued practice until they got all questions correct more than one time with each format. Thus, most students preferred MC practice, but other students thought each format was uniquely beneficial and used both types of practice questions. These differences in choices resulted in small, but consistent, differences in retention of material on delayed tests.

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12:00–1:30 PM (4142)

The Role of Cognitive Flexibility in Learning with Games. QIYANG LIN, *Michigan State University*, FANGZHENG ZHAO, *University of California, Santa Barbara*, RICHARD E. MAYER, *University of California, Santa Barbara* — Although some media comparison research compares learning from educational games and traditional instruction, few studies investigate the effects of cognitive

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traits on learning outcomes with different media. This study examined how individual differences in cognitive flexibility play a role in learning outcomes with two different media. A sample of 142 undergraduate students learned about epidemiology in 1.5 hours. Students were randomly assigned to one of two instructional groups: an educational game, Crystal Island, involving non-linear learning or a slideshow involving linear learning with the same content. A Cognitive Flexibility Inventory assessed students' level of cognitive flexibility and a post-test measured their learning outcomes. The result showed that (1) students with high cognitive flexibility performed better on transfer tests than those with low cognitive flexibility, and (2) students who learned from a slideshow performed better on transfer tests than those who learned from a game. Theoretical and practical implications are discussed.

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12:00–1:30 PM (4143)

Lessening the Gap: Worked Examples, Self-Explanation, and Metacognition Across Levels of Expertise in Math Learning. MELANIE PRIETO, *University of California, Santa Cruz*, HANNAH HAUSMAN, *University of California, Santa Cruz* — In STEM, experts focus on the conceptual structure of problems, whereas novices focus on superficial, irrelevant, features. I aimed to improve college students' statistics learning. Participants watched a lesson on conditional probability, practiced problems through one of three methods, predicted their test performance, and took a transfer test. Worked example (WE) practice entailed studying problems' step-by-step solutions. Self-explanation (SE) involved explanations of each WE solution. Structured SE (SSE) practice required explanations about key WE solution steps. I predict that SSE practice will lead to the highest test performance and most accurate test predictions by shifting attention to deep problem structure.

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12:00–1:30 PM (4144)

When Does Retrieval Practice Impact Learning of Complex Categories?. ADDISON L. BABINEAU, *Texas Christian University*, KENNADI COOK, *Texas Christian University*, S. UMA TAUBER, *Texas Christian University* — Retrieval practice benefits category learning in some cases (Jacoby et al., 2013); however, other studies have not found a retrieval practice benefit for complex categories (Babineau et al., 2022). To explore such differences and establish when retrieval practice will benefit category learning, we evaluated the possibility that two key factors during learning reduce the need for retrieval when completing practice test trials: self-regulated study and the number of to-be-learned categories. In multiple experiments, students classified categories of organic chemistry compounds (e.g., organochloride) by completing study or test trials. The study order was experimenter-controlled or self-regulated, and participants learned a set of six or three categories. As expected, test trials and the number of to-be-learned categories impacted final classification performance. Further, students performed well when the study order was experimenter-controlled and when self-regulating their learning. These findings have significant implications for category learning as well as for self-regulated learning.

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12:00–1:30 PM (4145)

Learning by Imitation in a Sensorimotor Model based on Circular Reactions and Reference-Frame Transformations. ZIANG ZHOU, *The University of Sydney*, DONGCHENG HE, *University of California, Berkeley*, HALUK OGMEN, *University of Denver* (Sponsored by Dongcheng He) — Imitation plays a vital role in human learning and cognitive development. According to the ideomotor theory, imitation occurs by translating the observed actions and consequences into the imitator's own goal-directed actions. The associative sequence learning (ASL) theory proposes that imitation is achieved by mapping the sensory input to the imitator's motor representations. Both theories highlight the importance of experience. In the present work, we analyzed, in the context of ideomotor and ASL theories, a sensorimotor model that combines circular reactions and reference-frame transformations. In this model, the observed exocentric spatial changes and velocities of the imitated body-parts are transformed to an egocentric reference-frame and then mapped for execution via a neural network replicating multiple properties of mirror neurons. To simulate, a humanoid arm was built in Unity3D. Endogenously generated arm movements were used for self-organization of the neural network via circular reactions. Next, the model was tested by imitating multiple arm actions captured from human subjects and showed promising performance in these tasks. Our results suggest that ideomotor and ASL strategies can share idential neural correlates.

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12:00–1:30 PM (4146)

Effects of Self-Explanation and Explanatory Retrieval Practice on Immediate Test Performance. SCOTT HINZE, *Middle Georgia State University*, KATHRYN MCCARTHY, *Georgia State University* — This study explores if explanation prompts both during and after reading can enhance the quality of retrieval practice attempts and immediate test performance. Participants (n = 215) read a text about cell division. During reading, they were prompted to produce constructed responses requiring them to either think-aloud (TA) or self-explain (SE). After reading, participants reread the text or were asked to engage in retrieval practice—either to "recall as much as you can" (recall) or to "explain the process" (explanatory retrieval). After a distractor task, participants completed a short answer comprehension test. Results showed a benefit of self-explanation. Participants in the SE condition 1) produced constructed responses and retrievals that were more related to the source text as evidenced by LSA overlap and 2) performed better on the comprehension test. In contrast, there were no positive or negative effects of the free recall or explanatory retrieval prompts, compared to rereading. Additional analyses will be presented to further explore the quality of the free recall and explanatory retrieval, and potential interactions with prior knowledge.

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12:00–1:30 PM (4147)

Instructional Visuals Harm Metacognitive Accuracy for Judgments of Drawing. ALLISON J. JAEGER, *Mississippi State University*, BERNA ALTUNISIK, *Mississippi State University*, LOGAN FIORELLA, *University of Georgia* — This study explored how the presence of instructional visuals affects students' monitoring accuracy and cue use for different types of metacognitive judgments. Undergraduate participants (n = 62) read four texts on chemistry topics, made three types of judgments (test, explain, and draw) for each text, and completed comprehension tests. Students received either text only or texts with supporting instructional visualizations. Results indicated that the presence of visuals did not affect comprehension performance. However, the presence of visuals did hinder relative and absolute monitoring accuracy, specifically for judgments of drawing. There was no difference in self-reported cue use between the image and no-image conditions. Interestingly, students reported using visual information or cues to make their draw judgments, but not their test or explain judgments. Data from an additional follow-up study that included a final drawing test will also be discussed.

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12:00–1:30 PM (4148)

Should Students Handwrite or Type Their Notes? From an Encoding Perspective, It Does Not Matter. GUY LACROIX, *Carleton University*, LINDSAY RICHARDSON, *Carleton University* — Muller and Oppenheimer (2014) showed that students who handwrite notes perform better on tests. They argued that this effect stemmed from enhanced encoding, which naturally emerges when students handwrite notes in their own words rather than type them verbatim. However, subsequent research has yielded mixed results with some supporting laptop use for notetaking. This experiment re-examined the effect of notetaking modality (handwriting vs. typing) and method (verbatim vs. paraphrasing) on memory. Participants took notes during a realistic 20-minute lecture, and completed a comprehension test after 24 hours. While working memory and note quantity predicted performance, modality and method did not. Both handwritten and typed notes generated similar amounts of transcription and paraphrasing whether participants were asked to transcribe the lecture or put it into their own words. These results strongly suggest that no notetaking method is superior and that students should focus on taking complete notes for effective test preparation.

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12:00–1:30 PM (4149)

The Memory Benefits of Self-Performed Written Production in Elementary School Children. STACY LIPOWSKI, *High Point University*, HANNAH TAMELING, *High Point University*, ETHAN MUCKERHEIDE, *High Point University* — Information is remembered better when it is produced at encoding than when it is studied silently (i.e., production effect). There is evidence that this effect is robust and holds throughout the lifespan; however, the benefits of written production can change with age and depending on the type of test (Lipowski et al., 2022). Research has also shown that the benefits of production can depend on whether the production is self-performed. MacLeod (2011) found that hearing a word in your own voice is better for memory than hearing a word produced in another person's voice. The goal of the current study was to examine the importance of self-performance when producing items in a written form. Ninety elementary-aged children studied 15 images using three encoding strategies: looking silently, saying aloud, and writing. Self-production in the writing condition was manipulated by asking the children to spell the word, trace it in their own handwriting, or trace it in another student's handwriting. After a 3-minute delay, children completed final recall and recognition tests. Results will be discussed as they relate to type of encoding and the distinctiveness of self-performed production.

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12:00–1:30 PM (4150)

The Role of Offloading Intentions on Future-Oriented Thinking. CONNOR DUPRE, *University of Texas at Arlington*, HUNTER BALL, *The University of Texas at Arlington* (Sponsored by B. Hunter Ball) — Offloading (e.g., using Google calendar reminders) has been shown to improve prospective memory (PM). One unstudied aspect of PM offloading is whether having reminders reduces our internal thinking (e.g., spontaneous retrieval) of future PM intentions in contexts in which the intention cannot be fulfilled. In the current study, participants were given an ongoing lexical decision task split into two distinct blocks and instructed to make a special response to PM targets only in Block 2. Participants in the reminder condition were given a reminder for their PM intention in Block 2, whereas those in the no-reminder condition were not. Results showed that reminders improved PM performance in Block 2 but did not reduce lure interference (Experiment 1) or future-oriented mind wandering reports (Experiments 2 and 3) in Block 1. These findings suggest reminders do not change the frequency of future-oriented thinking outside of contexts in which intentions can be fulfilled.

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12:00–1:30 PM (4151)

The Role of Visual Imagery in Prospective Memory. JOSEPH ABEL, *University of Hull*, STEPHEN DEWHURST, *University of Hull* (Sponsored by Stephen Dewhurst) — Two experiments investigated the role of visual imagery on prospective memory (PM). In experiment 1, participants completed a general knowledge quiz with the PM task of writing a letter X next to any questions that referred to space. Participants either visualised themselves performing this task, formed an implementation intention about the task, did both, or did neither. PM performance was enhanced in the conditions involving visual imagery but not by implementation intentions alone. In experiment 2, participants imagined themselves writing a letter X next to questions about space, or in a bizarre imagery condition imagined themselves drawing an alien next to the questions. Visual imagery again enhanced PM performance relative to a control condition, but the bizarre imagery condition did not lead to further enhancement.

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SATURDAY

12:00–1:30 PM (4152)

Exploring The Influence of Motivation on Prospective Memory via Pupillometry. ANDREW KELLY, *Georgia State University*, ULYANA SIMAKOVA, *Georgia State University*, ASHBY BOLAND, *Georgia State University*, JONATHAN AGUILAR, *Georgia State University*, CHRISTINA GILKES, *Georgia State University*, MICHAEL J. BERAN, *Georgia State University* — Investigations into the influence of motivation in laboratory-based prospective memory (PM) tasks have yielded mixed results. The current project aimed to contribute to this literature by exploring how both external motivation (i.e., monetary incentives), as well as internal motivation (i.e., PM targets were worth different values) impacted performance. Beyond traditional behavioral measures, we also explored pupil changes associated with PM performance and monitoring. A large sample of college-aged students was tested under varying conditions. Behaviorally, the influence of both extrinsic and intrinsic motivation was small, consistent with previous research. Pupils dilated more during successful PM retrievals as compared to misses, but this did not change as a function of motivation condition. In terms of monitoring for targets, there was a substantial amount of individual differences, but on average, pupil size immediately preceding PM target events did not predict successful PM retrieval.

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12:00–1:30 PM (4153)

The Relationship Between the Intentional Status of Everyday Delayed Intentions and Time Until Intention Execution. TAISUKE MORITA, *Tokyo University of Science* — The purpose of this study was to examine how the intentional status of everyday delayed intentions relates to time until the intention is executed and whether this relationship varies with age. Participants in three age groups (younger, middle aged, and older) were asked to recall plans they intended for the next week and to report the nature and timing of these intentions. They were also asked to rate the intensity of their intentional status. Results from correlation analysis showed that, in the younger group, the shorter the time until execution, the higher the intensity of the intentional status. In contrast, no such relationship was observed in the middle-aged or older groups. Based on these results, age-related changes in the nature of the representation of the intentional status of delayed intentions are discussed.

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12:00–1:30 PM (4154)

The Ecological Validity of Prospective Memory Experimentation. ANNA PUSSER, *Auburn University*, JILL SHELTON, *University of Tennessee at Chattanooga*, ERIN PRINCE, *University of Tennessee at Chattanooga*, BRETT ESCHMAN, *University of Tennessee at Chattanooga*, CHRIS NUÑO, *University of Tennessee at Chattanooga*, JULIE MADDEN, *University of Tennessee at Chattanooga* — Prospective memory (PM) is the ability to remember and fulfill future intentions, a crucial ability in everyday life. Discrepancies between performance in standard laboratory tasks versus naturalistic tasks has led to translational concerns to everyday life. Validity concerns surrounding laboratory PM tasks have been raised due to the lack of relationship between PM performance and measures of strategic monitoring, which is believed to be how much attention participants dedicate to the PM task. The present study (N = 82) compares an eye tracking task, a standard laboratory task, and a naturalistic task. The findings support previous research indicating that performance in laboratory PM tasks is not a good predictor of performance in everyday life. Notably, both the eye tracking and standard laboratory tasks demonstrate a correlation between strategic monitoring and PM accuracy. Finally, participants were better at predicting their PM performance on each laboratory task but were overconfident in the naturalistic task.

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12:00–1:30 PM (4155)

EEG Gamma Waves During Encoding Reflect Multiple Components of Attention. JACQUELINE S. KIM, *Cornell University*, ADAM W. BROITMAN, *Cornell University*, KHENA M. SWALLOW, *Cornell University* — The initial items in a list are most likely to be successfully encoded, and this may reflect heightened task-oriented attentional states at the beginning of lists, indexed by increased gamma-band power (Sederberg et al., 2006). We asked how divided and phasic attention modulate these effects. In a scalp EEG study, participants performed free recall on word lists either under full attention or while performing a target-detection task. We found that gamma activity was more strongly associated with successful encoding under divided attention than under full attention. However, gamma activity at the beginning of the list predicted encoding success only for target trials. For distractor trials, gamma activity negatively predicted encoding success at the end of the list. Hence, the effects of heightened states of task-oriented attention (indexed by gamma-band power) on successful encoding wane as the list progresses and interact with phasic attention to behaviorally relevant stimuli.

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12:00–1:30 PM (4156)

Using Virtual Reality to Unpack How Context Reinstatement Aids Memory. GRIFFIN KOCH, *University of Pittsburgh*, MARC N. COUTANCHE, *University of Pittsburgh* — How does our environment impact what we will later remember? Early work in real-world environments suggested that a matching encoding / retrieval context improves memory. However, some laboratory-based studies have not replicated this advantageous context-dependent memory effect. Using virtual reality methods, we find support for context-dependent memory effects: participants (N = 240) remembered more when placed in the same context as encoding. This advantage has a tradeoff of falsely "recognizing" similar lures, however. Experimentally manipulating the objects and environments revealed that a consistent object-environment schema aids recall, whereas schema-inconsistency helps recognition. Lastly, we find that the presence of dynamic background components differentially elicits context-dependent memory. These findings further our understanding of when and how context affects our memory through a naturalistic approach to studying such effects.

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12:00–1:30 PM (4157)

Individual Differences in Memory: Cued Recall Versus Free Recall. ERIC MAH, *University of Victoria*, D. STEPHEN LINDSAY, *University of Victoria* — Two common memory tasks are free recall (study a list of words and later attempt to recall as many as possible) and cued recall (study a list of randomly or meaningfully paired cue and target words and later attempt to recall targets given cues). For which task do you think individual differences are greater? Intuitively, one might expect individuals to vary more on free recall given the lack of explicit retrieval support and freedom to adopt a variety of strategies. However, in an initial experiment, we found that individuals differed more from one another on a cued recall task than a free recall task. In six follow-up experiments, we replicated this variability difference and ruled out several possible explanations for the effect. Finally, using the Search of Associative Memory model of memory (SAM, Raaijmakers & Shiffrin, 1981), we investigated potential underlying theoretical mechanisms that might explain the variability difference.

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12:00–1:30 PM (4158)

Memory Performance and Sleep Quality in Aging Adults. ASHLEY MANLEY, *Northeastern University*, QUYN THERESA DO, *University of California, Irvine*, BRYCE MANDER, *University of California, Irvine*, SUSANNE M. JAEGGI, *University of California, Irvine*, JACKY AU, *University of California, Irvine* — Age-related decline in episodic memory function might be driven by increased sleep disturbances as we age. Our study aims to examine whether and how sleep disturbances, measured through self-reports, are related to episodic memory recall. Cognitively healthy individuals aged 65-85 encoded three different Wechsler Memory Scale IV stories, one every week across 3 weeks. They were asked to recall each story immediately after encoding, 20 minutes later, 24 hours later, and 1 week later. Participants completed self-report questionnaires on their sleep quality. In contrast to our hypothesis, preliminary results indicate that self-reported sleep measures did not predict memory recall on immediate recall. The impact of self-perceived sleep quality on episodic memory recall may be less substantial than previously indicated by research and may be less sensitive to objective measures.

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12:00–1:30 PM (4159)

Drawing Demonstrates Retrieval-Induced Forgetting of Pictures. EMMA MEGLA, *University of Chicago*, LAUREN RADOMSKI, *Vanderbilt University*, LEXI VON DER LIETH, *Vanderbilt University*, ASHLEIGH MAXCEY, *Vanderbilt University* — A central and well-studied phenomenon in memory is retrieval-induced forgetting, in which recalling an item from memory induces the forgetting of other related items in memory. However, due to the difficult nature of measuring the recall of pictures, retrieval-induced forgetting has primarily been studied with verbal stimuli. Indeed, induced forgetting of pictures has only utilized recognition, not recall, to induce forgetting (termed recognition-induced forgetting). However, recent drawing methods have provided a pathway to quantify the recall of visual stimuli objectively and accurately. Here, we tested whether recalling real-world pictures of objects induces the forgetting of related pictures for the first time. In a novel manipulation of the induced forgetting paradigm, participants drew a subset of encoded pictures before being tested on their memory for all pictures in a final recognition memory task. Despite evidence in the field for differences between recall and recognition, we found the first evidence of recall-induced forgetting of real-world pictures, with worse final memory for objects in the same categories as drawn objects—but that were never drawn themselves—than for objects in categories that were never drawn.

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12:00–1:30 PM (4160)

Recall Performance is Characterized by Mixing Complexity in Mixed-Pure List Design. ANNE OLSEN, *University of South Florida* — Does trace interference in mixed lists from strong words on the retrieval of weak words always occur? In word lists, strong words often interfere or outcompete the recall of weak words by providing a stronger match to the retrieval cue. When testing the interaction between memory strengths, a classic mixed-pure list paradigm is used. In this paradigm, mixed lists are blocked by word strength in order to combat the possibility of rehearsal borrowing, or strategically directing study time from stronger to weaker words. Yet, Ratcliff, Clark, and Shiffrin (1990) tested this rehearsal borrowing assumption with a randomly mixed list of pairs and found little indication of such strategy use. Our lab tested a mixed-pure list experimental design with both traditionally blocked mixed lists as well as intramixed lists and found distinct pattern differences in recall for word strength in a design where a rehearsal borrowing strategy was unlikely to occur. Explanations for these differences in recall outcomes will be explored.

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12:00–1:30 PM (4161)

Self-Paced Encoding and Emojis: Online Browsing Styles and Memory for Tweets and News Headlines. TORI PEÑA, *Stony Brook University*, MELISSA CHEN, *Stony Brook University*, SUPARNA RAJARAM, *Stony Brook University* — The voluminous flow of information on the internet raises questions about its impact on the way we engage with information. For example, self-paced encoding while browsing or the common practice of reacting to online information with emojis may lead to more shallow encoding compared to standard laboratory procedures. Across two online experiments, we compared the influences of these online encoding conditions with more standard, laboratory encoding conditions (fixed pace and deep processing) on memory for Tweets and news headlines. Results were consistent across experiments. Recall performance revealed significantly better memory for Tweets than headlines (Peña et al., in press). Similarly, across encoding conditions, participants exhibited better recognition memory and higher confidence in recognition for tweets compared to news headlines. While the encoding manipulations did not impact memory, the more naturalistic encoding (self-paced study and emoji prompts) produced marginally higher confidence ratings in

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recognition memory for both Tweets and headlines compared to standard encoding. Together, these findings show that the robustness of the mnemonic advantage for microblogs extends to more naturalistic encoding conditions.

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12:00–1:30 PM (4162)

A Powerful Remedy to the 'Measurement Crisis' in Recognition Memory: Explorations of the Power of Da and Other Accuracy Measures in Empirical Data. ADVA LEVI, *Tel Aviv University*, CAREN ROTELLO, *University of Massachusetts Amherst*, YONATAN GOSHEN-GOTTSTEIN, *Tel Aviv University* — Concerns regarding a possible measurement crisis in recognition memory (Brady et al., 2023) can be addressed by the use of da. Like d', da is also a signal detection measure of sensitivity. Unlike d', it is not premised on an equal-variance assumption of the data-generating model. Previous simulations and empirical data we presented demonstrated that Type I error rates are approximately 5% when comparing iso-sensitive conditions that differed in bias. This supported the validity of da as a measure of sensitivity in yes-no recognition tasks. Still, the power of da to detect differences in sensitivity needs to be established. Here, we manipulated sensitivity using long and short lists of words, and compared Type II error rates (or rather, Power) in detecting sensitivity in uniso-sensitive conditions for different measures and different sample sizes. We found da demonstrated equal levels of statistical power as d', H-F and A', for all levels of sample size. We promote using da as a measure of sensitivity in recognition.

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12:00–1:30 PM (4163)

The Influence of Prediction Error Strength on Reconsolidation. KEVIN MOHAWK, *University of Nevada, Las Vegas*, COLLEEN M. PARKS, N/A, *University of Nevada, Las Vegas* — Prediction error (PE) is a common way to trigger the reconsolidation process. We aimed to determine if the strength of PE differentially strengthens or weakens a memory. Participants were presented with triplets of images on Day 1. The first two images created a predictable context for the following target image. The context and target images repeated together either 4 times (high PE), 1 time (low PE), or not at all (no PE). On Day 2, PE was introduced in a reactivation group by replacing the expected Day 1 targets with novel targets. A control group was presented with completely novel images to avoid introducing PE. Recognition memory for Day 1 targets was tested on Day 3. The reactivation group showed significantly worse memory for items in both PE conditions compared to the no PE condition. There was no difference in memory performance between the reactivation and control group.

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12:00–1:30 PM (4164)

Effects of Valence and Memorability on Visual Statistical Learning. MEITAL FRIEDMAN-OSKAR, *University of Haifa*, TOMER SAHAR, *The Open University of Israel & University of Haifa*, TAL MAKOVSKI, *The Open University of Israel*, HADAS OKON-SINGER, *University of Haifa* — Previous research showed that negative valence images benefit memory tasks as well as visual statistical learning (VSL) tasks. Recent studies stressed another factor that strongly drives memory performance; Image memorability—an inherent property of the image regarding its likelihood to be remembered across observers. Here we asked whether memorability affects VSL and whether it can account for the benefit of negative valence images in VSL. Participants were exposed to streams composed of triplets of images, varying in their valence (neutral, negative) and memorability (high, low) scores. Exp. 1 revealed that only the item's memorability improved triplet memory, and there was no interaction between valence and memorability. However, when the item's memorability was kept fixed (Exp. 2), we found that negative stimuli were learned more effectively than neutral stimuli. Similarly, when the item's valence was kept fixed, high memorability images yielded stronger VSL than low memorability images, only when neutral stimuli were used (Exp. 3). These results suggest that the items' memorability has a strong impact on VSL, but it does not seem to explain the effect of negative valence on VSL and the two effects are partly independent.

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12:00–1:30 PM (4165)

The Impact of Veracity on Memory and Confidence in Remembering Event Sentences. NICOLE ANTES, *Leibniz-Insitut für Wissensmedien (IWM)*, STEPHAN SCHWAN, *Leibniz-Insitut für Wissensmedien (IWM)*, MARKUS HUFF, *University of Tübingen & Leibniz-Insitut für Wissensmedien (IWM)* — Often events are described with a mixture of true and false information, e.g. in questionings, interviews, and media reports, such as when describing conflict events. To understand what happens when true and false information are difficult to distinguish, we conducted two pre-registered experiments (N = 198; N = 248). We tested participants' memory and confidence in remembering sentences and their veracity from an event description. We assume that memory becomes less accurate with increasing indistinguishability (Study 1) and that high discriminability will lead to more sentences being correctly attributed to their source (Study 2). We used easily or hardly distinguishable font colors to realize the discriminability between true and false information. Results showed that the presence of veracity information decreased participants' memory of false information (Study 1), and high discriminability between true and false sentences increased correct classification of information (Study 2). In both studies, confidence served as a predictor of correct recognition and source classification. We discuss these findings in relation to research areas such as the study of misinformation.

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12:00–1:30 PM (4166)

Modelling Sequential Dependencies in Recognition Memory: Using MINERVA 2 to Investigate Recognition Decisions. MICHELLE A. DOLLOIS, *University of Guelph*, RANDALL K. JAMIESON, *University of Manitoba*, CHRIS M. FIACCONI, *University of Guelph* — It is well established that

extraneous information, unrelated to prior exposure, impacts recognition memory judgments. One source of irrelevant, but influential, information is the previous trial during a recognition test. Though limited, research has consistently found sequential dependencies at test, such that judgments (i.e., "old" or "new") tend to repeat across consecutive trials. Our lab has expanded this finding to consider whether trial content also carries across trials to sway responding. More specifically, we have found that similar items occurring sequentially at test increase the probability of an "old" response. To better understand these sequential dependencies and whether they may occur through the same mechanism, we here attempt to model these effects using a MINVERA 2 framework. We present several potential mechanisms through which sequential dependencies during recognition memory may occur, granting insight into whether responses and content cross trials through the same means.

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12:00–1:30 PM (4167)

Relating Perception and Memory for a Novel Set of Reconfigurable Auditory Stimuli: A Noisy Exemplar Approach. NATHAN GILLESPIE, *University at Albany, SUNY*, GREGORY E. COX, *University at Albany, SUNY* — While many real-life events are complex and temporally extended, most memory research employs discrete, static stimuli. We begin to bridge this gap by developing a set of novel auditory stimuli constructed by adjusting the distribution of power across upper frequency bands. Across three studies, participants rated similarity between pairs of sounds and engaged in a recognition memory task in which two sounds were played followed by a probe. Recognition false alarms increased with subjective similarity between the probe and the first memory item but not the second, suggesting that the most recent sound was represented in a form that is less susceptible to incidental similarity. We also observed a list homogeneity effect: hits and false alarms decreased with similarity between studied sounds. Building on these results, we discuss implications for the development of an integrative theory of perceptual similarity and recognition memory for dynamic events in the auditory domain using a computational approach that extends on elements from the exemplar-based random walk (EBRW, Nosofsky & Palmeri, 1997b) model. Model fits to behavioral data from the similarity rating and recognition tasks provide preliminary evidence for this theory.

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12:00–1:30 PM (4168)

Are Eye Movements Unconsciously Guided in Visual Search?. DARYL YU HENG LEE, *University College London*, DAVID SHANKS, *University College London* — In a recent eye-tracking experiment, Ramey, Yonelinas, and Henderson (2019) recorded eye-movement efficiency (scanpath ratio) and recognition judgments when participants searched for targets in repeated and new scenes. Amongst trials judged new with high confidence, scanpath ratio was lower for old scenes than novel scenes. Ramey et al. attributed this result to unconscious memory guiding eye movements. In a re-assessment of Ramey et al.'s data, we demonstrate that their findings can be accounted for by a single-system computational model in which eye movements and recognition judgments are underpinned by a common latent source. Crucially, we show that the scanpath ratio difference between high-confidence misses and correct rejections is an artifact of regression to the mean. Two preregistered experiments confirm a novel prediction of the alternative single-system model. The current work provides a parsimonious account of Ramey et al.'s findings without recourse to unconscious guidance of eye movements.

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12:00–1:30 PM (4169)

The Effect of Valence on Memory for Prosocial Behavior. PAULINE URBAN LEVY, *University of Illinois Chicago*, ANDREA FRANKENSTEIN, *University of Illinois Chicago*, ALLISON SKLENAR, *University of Illinois Chicago*, ERIC LESHIKAR, *University of Illinois Chicago* — Prior work has found a memory advantage for certain kind of behaviors important to social interactions in our daily lives, such as prosocial behaviors. However, it is possible that the positive valence of prosocial behaviors may be impacting the memory advantage of prosocial behaviors shown in prior studies. This study examines the effect of behavior valence on the prosocial memory advantage. In this study participants were asked to form impressions of a social target based on a photo and a behavior. The behaviors paired with social targets were either prosocial, non-prosocial positively valenced, or non-prosocial neutral. We predicted that prosocial behaviors would be more memorable than the non-prosocial positive and non-prosocial neutral behaviors. Surprisingly, participants remembered the non-prosocial neutral behaviors significantly more often than the non-prosocial positive behaviors. This finding is contrary to prior findings of the prosocial memory advantage as well as findings that have shown valenced stimuli tends to be more memorable than neutral stimuli.

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12:00–1:30 PM (4170)

Do Typical Effects Found on Recollection and Familiarity Generalize to Naturalistic Stimuli?. RHIANNON N. SORIANO SMITH, *University of Nevada, Las Vegas*, JACKSON PELZNER, *University of Nevada, Las Vegas*, COLLEEN M. PARKS, N/A, *University of Nevada, Las Vegas* — Do we find the same standard effects on recognition memory when we use naturalistic as opposed to sparse stimuli? To explore this question, we examined the effects of divided attention on recollection and familiarity using naturalistic stimuli (news posts on Facebook) and more-typical stimuli (labeled pictures). Participants encoded both stimulus types, in different study-test blocks, under either full or divided attention. Each study phase was followed by a 20-minute filled delay and recognition test, in which only the label or headline of the associated picture or Facebook post was presented. Preliminary results suggest that headlines were better recognized than pictures, and that divided attention affected recollection and familiarity in both stimulus conditions. The divided attention effect on recollection appears to be greater for pictures than headlines, but appears to be approximately the same for

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familiarity of the two types of stimuli.

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12:00-1:30 PM (4171)

The Effects of Self-Reference on Learning and Knowledge Application. ROBERT ARIEL, *Virginia Wesleyan University*, KIMBERLY KOSCINSKI, *Virginia Wesleyan University*, MORGAN D. SHUMAKER, *Texas Christian University*, S. UMA TAUBER, *Texas Christian University* (Sponsored by Robert Ariel) — Self-referential processing can enhance memory, but limited research has examined the educational benefits of self-reference on student learning. The current experiment contrasted the educational benefits of self-referential retrieval practice to restudy and standard retrieval practice. Students learned key term definitions and examples of cognitive principles by either (1) restudying definitions and examples, (2) completing practice tests of only definitions, (3) completing practice tests of only examples, or (4) attempting to recall examples from their life where they personally experienced each cognitive principle (i.e., self-referential retrieval practice). Contrary to expectations, self-reference did not improve comprehension or application of knowledge more than restudy. Retrieval practice enhanced learning for definitions but only improved students' ability to apply their knowledge when students practiced retrieving examples they studied. If educators want students to both remember and apply knowledge, the best strategy may be to have students practice retrieving examples of key concepts from memory.

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12:00-1:30 PM (4172)

Examining the Effects of Retrieval Practice on Memory for Temporal-Contextual Information. ANDY L. FORDYCE, *Purdue University*, THOMAS S. REDICK, *Purdue University* — Numerous studies have shown retrieval practice to be an effective strategy for improving memory. One account proposed to explain this benefit is the episodic context account (Karpicke et al., 2014). This account proposes that contextual information is reinstated and updated when an item is retrieved. Examining memory for contextual information may provide additional insight into retrieval practice and what contextual cues are relevant to retrieval. The current study examined memory for temporal-contextual information at 2 different grain sizes: memory for which list a word occurred in, and memory for when an item occurred within a list. In both experiments, participants studied multiple lists of words and either engaged in a word stem completion cued recall task or restudied the words. We found no difference in performance between the retrieval practice and restudy groups when assessed on a final list discrimination test. However, performance was worse for the retrieval practice group relative to restudy when assessed on a final order reconstruction task. Overall, our results suggest that certain retrieval practice tasks may differentially affect memory for various grain sizes of temporal-context.

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12:00-1:30 PM (4173)

Replicating Slamecka and Graf's (1978) Findings on the Generation Effect: A Delineation of Past Research. MICHAELA RITCHIE, *University of New Brunswick Saint John*, JONATHAN WILBIKS, *University of New Brunswick Saint John* — Studies in psychology are crucial as unsuccessful attempts to replicate have caused a crisis of credibility. The present study aimed to replicate Experiment 1 from Slamecka and Graf's (1978) original study on the generation effect. The study followed pre-registered hypotheses and analyses and used similar materials. The study included 64 participants and applied correction for items generated correctly during the study. In a between-subjects design, participants either read or generated incomplete word pairs under one of five encoding rules (synonym, opposite, rhyme, category, associate). Recognition tests presented participants with target words and lures. Results replicated with better performance for generated versus read words. Limitations included between-subjects design and the use of grading proportion denominators. The study confirms that self-generation improves recognition and also contributes towards cognitive science by addressing research gaps and identifying credibility issues. The limitations and implications of this research will also be discussed.

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12:00-1:30 PM (4174)

Investigating Resource Depletion Accounts of Test-Potentiated New Learning. SHAUN BOUSTANI, *University College London*, HILARY DON, *University College London*, DAVID SHANKS, *University College London* — Testing can potentiate new learning of subsequently presented materials (TPNL). When using integrated expository texts, research has indicated that learning following testing is greater than initial learning (Wissman, Rawson, & Pyc, 2011). This finding is important to resource theories of TPNL which argue that retrieval practice sustains initial levels of cognitive resources across trials, whereas restudy expends those resources. However, the use of expository materials limits the generalisability of Wissman et al.'s results as they would naturally benefit from increased initial learning facilitating integration of information across sections. The current study aimed to conceptually replicate this research and examine the degree of initial and new learning using lists of unrelated words. In two experiments we found that testing maintained performance at initial levels and that restudy tasks negatively impacted new learning. A third study replicated these results using related and unrelated texts. Implications of the results for resource theories are discussed.

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12:00-1:30 PM (4175)

Cognitive Architecture of Retrieval Practice and Errorless Learning: A Case Series Approach. YINGXUE TIAN, *Moss Rehabilitation Research Institute*, DANIEL MIRMAN, *University of Edinburgh*, ERICA MIDDLETON, *Moss Rehabilitation Research Institute* — Retrieval practice (RP) facilitates performance, including in treatment of naming impairment in people with aphasia (PWA) where practice naming objects (RP) produces greater benefits

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compared to repeating words in the presence of objects (errorless learning), which eschews retrieval practice. However, little is known about individual differences in RP effects and the relationship to other cognitive processes. Using a treatment case series approach, we investigated how individual differences in naming performance gains from RP and EL relate to participants' cognitive-linguistic profiles. Both training approaches were applied to different sets of errorful naming items for each participant, and one-day post-treatment performance was tested. Reliable improvement in naming was found with both approaches, and we further examined whether they were moderated by the capacities for input and output phonological processing, semantic processing, word production, verbal short-term memory, and executive function. The findings will improve our understanding of the cognitive architecture of learning mechanisms.

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12:00–1:30 PM (4176)

Are Prompts More Effective When Used for Guided Notes Versus Retrieval Practice?. KALIF VAUGHN, *Northern Kentucky University*, VINCETTA KAHMANN, *Cincinnati Children's Hospital* — Across two experiments, we evaluated whether prompts were more effective as (a) guided-note prompts or (b) retrieval-practice prompts. Participants watched a video on cellular respiration and either took guided notes (specific prompts were provided during the video), took unguided notes (no specific prompts were provided), engaged in retrieval practice (specific prompts were provided after the video), or received no additional practice (control group). Critically, the same prompts were provided to both the guided-notes group and retrieval-practice group, with the only difference being whether the prompts accompanied the video or occurred after the video, respectively. In Experiment 1, we utilized global prompts (e.g., ATP) for both the guided-notes and retrieval-practice group, whereas in Experiment 2 we utilized targeted prompts (FITB questions). Final test performance did not vary between the guided-notes group versus the retrieval-practice group, regardless of question type (true / false versus multiple choice) or prompt type (global versus targeted).

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12:00–1:30 PM (4177)

Memory Interference and Effort During Retrieval Practice. J. IMANI BUNN, *Emory University*, BENNETT R. LEVINE, *Emory University*, SOLANA S. RIVERA, *Emory University*, ANDREW T.J. CAWLEY-BENNETT, *Emory University*, JOSEPH R. MANNS, *Emory University* — The retrieval practice effect describes the phenomenon in which tested information is better subsequently remembered compared to restudied information. One account of this effect is that memory retrieval is more effortful than restudying and that this potentially productive struggle with the to-be-remembered information improves later memory strength. Here, we tested this account of retrieval practice by manipulating proactive interference, which classically impairs memory. Specifically, participants studied English word pairs in either an A–B → A–D (high interference) or A–B → C–D (low interference) condition. Half of the word pairs in both conditions were presented in a retrieval practice format (e.g., A-??) or in a restudy control format (e.g., A-D). The influence of interference and retrieval practice on subsequent memory was assessed 24 hrs later. Preliminary results suggested that, in some cases, memory interference during retrieval practice benefitted subsequent memory relative to restudy control.

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12:00–1:30 PM (4178)

Retrieval Practice Versus Mnemonic Generation. DI ZHANG, *University of Arizona*, JONATHAN TULLIS, *University of Arizona* — Retrieval practice has generally been shown to be an effective study strategy. The benefits of retrieval practice, however, have largely been compared to restudying, a passive and ineffective study strategy. Here, we compared the memory and metamemory effects of practicing retrieval with generating mnemonics, an active and effective study strategy. Participants practiced retrieval of, generated mnemonics for, or restudied chemistry concepts. Participants rated how well they remembered the concepts after using the study strategies and ultimately took cued recall tests. Practicing retrieval and generating mnemonics produced better memory than restudying but did not yield different memory from each other. Creating mnemonics, however, took twice as long as practicing retrieval. Learners' JOLs increased when generating mnemonics but decreased when practicing retrieval. Consequently, retrieval practice yielded the most accurate calibration. Further, learners rated retrieval practice as the least effective strategy overall. Retrieval practice proved to be an effective and efficient study strategy, even for complex concepts; yet, learners failed to recognize its mnemonic and metamnemonic benefits.

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12:00–1:30 PM (4180)

How Self-Efficacy is Impacted by Massed Versus Distributed Retrieval Practice. ANDREA FRANKENSTEIN, *University of Illinois Chicago*, ALLISON SKLENAR, *University of Illinois Chicago*, PAULINE URBAN LEVY, *University of Illinois Chicago*, ERIC LESHIKAR, *University of Illinois Chicago* — Prior research has shown that distributed studying leads to better long-term memory outcomes when compared to massed studying, and these findings extend to memory strategies such as retrieval practice. Our prior work found that changes in self-efficacy under some retrieval practice conditions affect memory. The current study seeks to build on previous work by varying the type of retrieval practice (RP) participants engage in during learning: distributed or massed. The distributed RP group completed four learning blocks, each of which included watching a lecture video, completing a distractor task, and completing six RP items based on the lecture. The massed RP group completed the same procedure, but all RP items were completed in the fourth learning block. Self-efficacy was measured at baseline, as well as after the second and fourth learning blocks. Participants completed a final test 48 hours later. There were no differences in self-efficacy change under distributed versus massed RP. Further analysis will investigate memory differences between groups and whether self-efficacy predicts memory for both groups. This study provides additional insight

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into how self-efficacy, learning strategies, and memory relate to each other.

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12:00-1:30 PM (4181)

Successful Metacognition for Knowledge-Related Retrieval Failures in Younger and Older Adults Using Phenomenology. KATHRINE M. WHITMAN, *Claremont McKenna College*, AICHATOU DIAW, *Claremont McKenna College*, JEN H. COANE, *Colby College*, SHARDA UMANATH, *Claremont McKenna College* — We sought to behaviorally validate four phenomenological experiences of retrieval failure for capturing degrees of knowledge accessibility. These four experiences—"It's on the tip of my tongue (TOT)," "It's in there somewhere," "I knew this information but forgot," and "I have never known or seen this information"—were subjectively validated in a prior study. The two middle categories represent marginal knowledge that fluctuates in accessibility. Younger and older adults answered 100 short-answer general knowledge questions and selected a retrieval failure type when unable to answer. All experiences were endorsed at similar rates between older and younger adults. Critically, on a final multiple-choice test (Experiment 1) and a final short-answer test (Experiment 2), both age groups answered significantly more previous-TOTs correctly than 'It's in there somewhere,' which were answered correctly more often than 'I used to know this'. Correct responses were lowest for 'I have never known or seen this information'. These findings indicate successful metacognition linking phenomenological experiences of retrieval failures with behavioral memory performance for both age groups.

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12:00-1:30 PM (4182)

The Effects of Lie Generation on Memory and Metamemory from a Value Directed Remembering Perspective. SAMET KAYA, *Bilkent University*, MIRI BESKEN, *Bilkent University* — In five experiments, we investigated the effects of lying versus truth-telling on memory and metamemory through a value-directed-remembering (VDR) paradigm. During encoding, participants received 40 general knowledge questions assigned to high or low-value conditions. Participants told the truth or generated a plausible lie from the same category for each question, followed by judgments of learning (JOLs) for each response. Following a distractor task, they received a free-recall test. Results revealed consistently higher JOLs for truth than lie trials, although lies produced higher free-recall performance than the truth. High-value trials mostly led to higher JOLs than low-value trials; however, the value manipulation had no effect on recall in any of the experiments. The results imply that people can integrate multiple cues while predicting their memory and that some cues may be more dominant than others. The study also shows that this lie fabrication manipulation may override the effects of VDR under certain circumstances.

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12:00-1:30 PM (4183)

What Mediates the Emotional Salience Effect on Judgments of Learning: Beliefs and/or Fluency?. PINAR KURDOGLU-ERSOY, *Ege University*, AYCAN KAPUCU, *Ege University* — It has been consistently shown that negative and positive stimuli receive higher JOLs than neutral ones. However, the influence of theory-based (a priori beliefs) and experience-based factors (processing fluency) on this emotional salience effect has not been directly examined yet. In two studies, we explored whether beliefs and/or fluency mediated the effects of negative and positive emotions on JOLs. Participants completed belief questionnaires, studied 60 word pairs (Study 1) or individual words (Study 2) with negative, neutral, or positive valence, and provided immediate-JOLs for each. Both studies replicated the emotional salience effect on JOLs, with greater overconfidence observed for negative than for neutral stimuli. Importantly, in Study 1, beliefs mediated the effect of negative valence on JOLs, while the effect of positive valence was mediated by encoding fluency measured by study times of the pairs. In Study 2, perceptual fluency was measured by word identification latencies, and both beliefs and perceptual fluency mediated the effects of negative and positive valence on JOLs. The results emphasize the task-dependent importance of both factors and are discussed in relation to Koriat's (1997) cue utilization approach.

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12:00-1:30 PM (4184)

On the Stability of our Metamemory Beliefs. XINYI LU, *University of Waterloo*, EVAN F. RISKO, *University of Waterloo* — Participants appear to rely on beliefs about memory when predicting their future memory performance (e.g., that words presented twice will be better recalled than words presented once). While different individuals can clearly hold idiosyncratic beliefs, we know little as to what degree metamemory beliefs might be stable within an individual over time. Here we investigate this question by presenting participants with vignettes of hypothetical experiments at Time 1 and Time 2 (with a varied delay interval of up to 12 weeks). Four separate vignettes were each designed to probe participants' predictions of memory under two different experimental conditions (e.g., predicting recall for words presented twice vs. once). Two vignettes featured metacognitive illusions, where participants' aggregate beliefs tend not to align with memory performance (e.g., whether larger fonts increase recall), while two featured phenomena for which aggregate beliefs do tend to align with memory performance (e.g., whether repetition increases recall). Participants' beliefs were significantly correlated across Time 1 and Time 2, suggesting that metamemory beliefs are stable within an individual over time; this was true for all the beliefs that we examined.

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12:00-1:30 PM (4185)

Are Conscientious Learners Better? Personality and Decisions to Stop Learning. KLAUDIA MALIK, *University of Notre Dame*, ALEKSANDRA KROGULSKA, *University of Warwick*, JOSHUA COX, *University of Warwick*, DAISY MORRISON,

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University of Warwick, GABRIEL RADVANSKY, *University of Notre Dame*, ELIZABETH A. MAYLOR, *Warwick University* — People often terminate learning too early, which decreases memory performance. We tested whether personality influences this premature stopping of learning. In Experiment 1, during the presentation of a long list of words, participants could stop learning at any point if they believed this would increase the number of words they would recall later. In Experiment 2, participants only read a description of Experiment 1, with their task being to decide whether they would stop learning and to predict their recall performance. All participants completed Big Five personality questionnaires. Experiment 1 revealed no effects of personality, but participants tended to believe that learning termination could increase their memory performance. In Experiment 2, there were significant influences of both conscientiousness and neuroticism on stopping decisions (fewer and more, respectively). Therefore, although personality predicts learning termination in a hypothetical scenario, it does not impact actual performance.

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12:00-1:30 PM (4186)

Context Effects on Judgments of Learning in Younger and Older Adults. OLIWIA ZABOROWSKA, *SWPS University*, BEATRICE G. KUHLMANN, *University of Mannheim*, KATARZYNA ZAWADZKA, *SWPS University*, MACIEJ HANCZAKOWSKI, *Adam Mickiewicz University* — Judgments of learning (JOLs) are metacognitive assessments of future memory performance. Previous studies conducted with younger adults have shown that these judgments depend on the context of learning. JOLs rendered on the second cycle of learning are inflated if the context of the first cycle of learning is reinstated, presumably due to reinstated context reminding participants of a previous study opportunity. This effect of context on JOLs is specific to item-to-context associations as increased memorability of the context itself does not affect JOLs. Here we assessed whether the same patterns of context effects on JOLs are present for older adults. While the patterns of context-dependency of JOLs for young adults were replicated, older adults' JOLs failed to reveal any effects of context. We argue that this reflects a deficient process of spontaneous reminding due to context reinstatement, presumably stemming from older adults' impaired ability to create item-context associations at study.

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12:00-1:30 PM (4187)

Effects of Vocal Demands (Speaking) on Pupil Dilation and Blink Rate. LYNN HUESTEGGE, *Julius-Maximilians-Universität Würzburg*, MAREIKE BRYCH, *Julius-Maximilians-Universität Würzburg*, ALEKS PIECZYKOLAN, *Rheinische Fachhochschule Köln (RHF) University of Applied Sciences*, BARBARA HAENDEL, *Julius-Maximilians-Universität Würzburg* — Pupil dilation is affected by a variety of psychological factors (e.g., working memory demands, stimulus/response competition). Here, we tested whether basic vocal demands (speaking) affect pupil dilation and blink rate. In Experiment 1, we systematically investigated effects of vocal responses (on pupil dilation and blinking) compared to mere jaw/lip movement and button press responses. Conditions changed on a trial-by-trial basis while participants were instructed to keep fixating a central cross on a screen throughout. In Experiment 2, we replicated the setup but added a "no blink" instruction. The results showed that speaking caused the pupils to dilate strongest, followed by non-vocal (jaw/lip) movements and finally a baseline condition without any vocal (or vocal-related muscular) demands. An additional analysis of blink rates in Experiment 1 showed no difference in blink frequency between vocal and baseline conditions, but different blink dynamics. Electromyographic data indicated that muscle activity may contribute to some (but not all) aspects of the observed effects on pupil size. The results are discussed in the context of other recent research on perceived (instead of executed) vocal action on pupil dynamics.

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12:00-1:30 PM (4188)

Depleting Cognitive Resources Reduces Mouse Control Abilities During a Drag-and-Drop Task: A Pilot Study. SYLVIA GUILLORY, *Naval Submarine Medical Research Laboratory*, JEFFREY BOLKHOVSKY, *Naval Submarine Medical Research Laboratory* — It is challenging to establish a consistent and objective method for assessing worker readiness that is sensitive to performance deficits from prolonged cognitive effort. Fatigue can impact professions from medicine to military. Given that reaction time exhibits a gradual slowing with extended time-on-task, it is possible that aspects of mouse control (e.g., moving, fine-positioning, and dragging) could be used to detect cognitive fatigue. To address this possibility, 11 participants, recruited and tested online, were evaluated on their performance using drag-and-drop mouse actions administered at the start and end of the experimental session to compare the effects of a working memory dual task that incurs significant cognitive load. Reaction time (RT) during the dual task increased across four blocks ($p < .05$). This change in RT correlated with mouse control measures of increased path deviations ($p = .013$). Our results confirm the need to develop fatigue monitoring systems based on many sources of information, including mouse control. These measurements of task engagement could improve performance if interventions are used to mitigate cognitive fatigue at the appropriate time based upon measures of fatigue.

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12:00-1:30 PM (4189)

The Role of Personality Traits in the Daily Fluctuations of the Spontaneous Motor Tempo. MASAHIRO KAWASAKI, *University of Tsukuba*, ERI MIYAUCHI, *University of Tsukuba* — The spontaneous motor tempo (SMT) shows the individual differences on its central frequency and fluctuation. The SMT is reported to be not fixed at a constant and fluctuate daily. Studies have suggested that individuals with attention-deficit/hyperactivity disorder (ADHD) have deficits in timing functions and our previous study suggest that the SMT correlates with the ADHD tendency. Here, we aimed to investigate whether the ADHD tendency is one of the factors of daily fluctuation of the SMT. Using the finger tapping paradigm in an online experiment ($N = 273$), we measured the tapping time-intervals

over seven consecutive days and calculated the intra-individual variability. Our findings show that the ADHD tendency was significantly correlated with the intra-individual variability and suggest the ADHD tendency as a factor of daily fluctuation of the SMT.

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12:00–1:30 PM (4190)

Construction and Deconstruction of Dual Actions: Evidence from Switching Between Basic Single and Dual Actions. JENS KÜRTEN, *Julius-Maximilians-Universität Würzburg*, TIM RAETTIG, *Julius-Maximilians-Universität Würzburg*, LYNN HUESTEGGE, *Julius-Maximilians-Universität Würzburg* — The same basic action can be performed on its own (single-action context) or together with another action (dual-action context). We investigated how single actions are combined into dual actions and how dual actions are decomposed into their constituent parts by analyzing transitional response times (RTs) in a paradigm requiring random switches between single and dual actions. Participants responded to a color stimulus with a single action A (left-hand key press), another single action B (right-hand key press), or their combination A+B. Transitional RT analyses revealed that response repetitions within the same context were fastest (e.g., A → A; A+B → A+B). Responses in the single-action context were performed faster when preceded by the alternative single response than when preceded by a dual-action (e.g., B → A < A+B → A). In contrast, in the dual-action context, responses were performed with comparable speed when preceded by the same or a different single action (e.g., A → A+B == B → A+B). These results demonstrate the relative ease of incorporating an action into a complex motor plan and the relative difficulty of removing the same action from a previously established plan.

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12:00–1:30 PM (4191)

The Effect of Acute Aerobic Exercise on Measures of Inflammation and Cognition in Young, Healthy Individuals. JAIME L. TARTAR, *Nova Southeastern University*, JULIEN C. TARTAR, *Cooper City High School*, HANNAH C. MURPHY, *Nova Southeastern University*, CASSANDRA EVANS, *Nova Southeastern University*, JONATHAN BANKS, *Nova Southeastern University*, ANTHONY RICCI, *Nova Southeastern University* — Previous work has shown beneficial effects of aerobic exercise on older, vulnerable, and athlete populations. A relatively small amount of research has been done on the effects of acute, aerobic exercise on inflammation and cognition in young, healthy individuals. To address this gap in the literature, the current study used a randomized crossover design to test the effects of acute aerobic exercise vs. a control condition on measures of stress and inflammation at three timepoints (baseline, +1 min post-exercise, +45 min post-exercise). Participants also completed a battery of cognitive tasks after the control and exercise conditions. Results showed a significant, but time-dependent, increase in markers of norepinephrine and inflammation after exercise. In addition, multiple measures of cognitive performance following exercise showed a positive correlation with the level of perceived exertion during the exercise condition. These findings highlight the acute protective effects of exercise in those who are young, healthy individuals.

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12:00–1:30 PM (4192)

Distraction and Avoidance Behaviors in Math Anxious Individuals During Testing. MARIEL BARNETT, *Case Western Reserve University*, KYLE LAFOLLETTE, *Case Western Reserve University*, BROOKE N. MACNAMRA, *Case Western Reserve University* — Math anxiety, or negative feelings toward math, is a pervasive issue in education that can lead to poorer performance outcomes. Two mechanisms of the effect of math anxiety on math performance have been hypothesized: 1) avoidance of math activities, and 2) distractions stemming from worries during math activities. We report the results of a choose-and-solve math task (N = 130) in which we test these mechanisms simultaneously. We explored 1) avoidance behavior for difficult math problems and 2) the prevalence and degree of distracting thoughts while solving math problems. Avoidance and distraction related to math increased with math anxiety. Understanding the mechanisms underlying the relationship between math anxiety and math performance is critical for developing interventions to mitigate math anxiety's hypothesized influence on performance.

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12:00–1:30 PM (4193)

Does a Motion Platform Contribute to Skill Acquisition on a Simulated Excavator?. ASHLEY D. WARREN, *Purdue University*, ROBERT W. PROCTOR, *Purdue University*, PHILLIP S. DUNSTON, *Purdue University* — Heavy construction-equipment companies offer training simulators. An optional motion-platform can make the experience more realistic. We examined whether a motion-platform provides a benefit for training to operate an excavator simulator. We previously found no evidence that whether practice was with the motion-platform mattered in a test session without the platform. This experiment was similar but with the motion-platform used in the test session. Sixty novices at excavator operation performed a truck-loading task for a baseline-session 1 and test-session 4 with the motion-platform. Half performed the second and third sessions with the platform and half without it. Results showed no influence of whether the motion-platform was on or off during those sessions. Across experiments, all conditions show improved performance with practice but no influence of the motion-platform. This raises questions about why motion feedback played no role and whether simulator training without motion will transfer effectively to the physical equipment.

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12:00–1:30 PM (4194)

Spatial Attention Influences the Processing of Orientation Ensembles. KRISTINA KNOX, *University of Toronto*, JONATHAN S. CANT, *University of Toronto Scarborough*, JAY PRATT, *University of Toronto* — Ensemble perception is our visual system's ability to summarize information from multiple objects in the visual

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field. We investigated the role of attention in creating an ensemble representation using a spatial attentional cueing paradigm to investigate if covert spatial attention, under various temporal constraints, influences the processing of average orientation. On each trial, participants saw two empty circles to the left and right of a fixation cross. Next, an arrow appeared at fixation, cueing participants to covertly shift their attention to the spatial location specified by the direction of the arrow. On valid trials, the arrow pointed to the circle where an ensemble appeared, while on invalid trials the arrow pointed to the circle where an ensemble would not appear. The ensemble was displayed for 50 ms in Experiment 1 and 150 ms in Experiment 2. In both experiments, participants' average reports were significantly more accurate on valid trials compared to invalid trials. These results indicate the processing of orientation ensembles is affected by spatial attention.

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12:00–1:30 PM (4195)

Interpretation of Bent Pointing Gestures. LISA-MARIE KRAUSE, *Julius-Maximilians-Universität Würzburg*, OLIVER HERBORT, *Julius-Maximilians-Universität Würzburg* — People often point with a straight arm and index finger. However, in some situations—for example when pointing around an object between pointer and referent—people point with bent arm and finger. We examined how such bent pointing gestures are interpreted. More specifically, we tested how the relative orientation of the arm influences interpretations—either as assimilation or contrast effect. In an online study, participants marked the pointed-at location for various gestures produced by independently manipulated arm and finger orientation. Additionally, three distances towards the target were integrated. As expected, the finger orientation was most decisive, but interpretations were higher the lower the arm was oriented, indicating a contrast effect. Judgements were not linear over distance. This non-linear pattern was less pronounced for interpretations of straight gestures. A second study replicated the findings and precluded the assumptions that those more linear interpretations result from a local assimilation effect or a larger stimulus size when arm, hand, and finger form a straight line.

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12:00–1:30 PM (4196)

Temporal Sampling as a Predictor of ADHD. PÉNÉLOPE PELLAND-GOULET, *Université de Montréal*, MARTIN ARGUIN, *Université de Montréal*, NATHALIE GOSSELIN, *Université de Montréal*, HÉLÈNE BRISEBOIS, *Collège Montmorency* — We studied the temporal features of visual processing in 50 adults with or without ADHD. We assume that these temporal features originate from the oscillatory aspect of brain activity, which shows abnormalities in ADHD. Participants recognized visual words over which white noise was superimposed. The signal/noise ratio (SNR) oscillated randomly throughout exposure. Classification images based on response accuracy revealed the temporal features of processing efficiency. A machine learning algorithm was then submitted subsets of features of the classification images of individual participants with the task of deciding whether they had ADHD or not. Its accuracy was 94% correct using only 0.3% of the available features. These features reflect processing efficiency fluctuations in the 10, 30-35, and 50-55 Hz frequency bands for SNR oscillations of 40 or 55 Hz. Conclusions: ADHD is accompanied by salient abnormalities in the temporal features of visual processing which likely rest upon abnormal oscillatory brain activity.

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12:00–1:30 PM (4197)

Defining and Measuring the Four Factors of Visual Hypersensitivity. ALICE PRICE, *Cardiff University*, PETROC SUMNER, *Cardiff University*, REBECCA OATES, *Cardiff University*, GEORGINA POWELL, *Cardiff University* — Several clinical conditions (e.g., migraine, synaesthesia, autism, anxiety) are associated with increased subjective sensitivity to visual stimuli, such as bright lights and repeating patterns. Visual hypersensitivity also varies within the general population. Qualitative data suggest that there are individual differences in the types of visual stimuli people are sensitive to (e.g., patterns vs lights). We developed a novel questionnaire measure—the Cardiff Hypersensitivity Scale (CHYPS)—to better define and measure visual sensitivity. Across three samples (n's > 350), we find four replicable factors of visual hypersensitivity, supported by bifactor modelling. These were: brightness (e.g., sunlight), repeating patterns (e.g., stripes), strobing (e.g., light flashes), and intense visual environments (e.g., supermarkets). The CHYPS shows sound psychometric properties, with ongoing analyses confirming this factor structure in a large community sample (n > 2000). Further to identifying the factor structure of visual hypersensitivity, the CHYPS can be used to help investigate whether differences in cognition, neural architecture, or cortical response might relate to these factors.

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12:00–1:30 PM (4198)

Contributions of Early Visual Cortex to Duration Perception. MONTANA WILSON, *University of California, Santa Cruz*, JASON SAMAHA, *University of California, Santa Cruz*, SARA SOLDANO, *University of California, Santa Cruz*, AUDREY MORROW, *University of California, Santa Cruz*, ELISE TURKOVICH, *University of California, Santa Cruz*, SOORYA SANKARAN, *University of California, Santa Cruz*, APRIL PILIPENKO, *University of California, Santa Cruz* — Many brain areas have been implicated in time perception however the involvement of visual cortex is controversial. Our study aims to corroborate whether repetition suppression of low-level visual features affects duration perception. Participants were shown three consecutive Gabor patches (a prime, target, and comparison), and reported whether the target or the comparison was longer. The orientation and vertical distance of the prime relative to the target was varied so as to activate similar or different early visual neurons. We hypothesize that target-prime similarity will result in greater repetition suppression and lead to shorter apparent duration. We measured the point of subjective equality (PSE) at which the prime and target were perceived as equal in duration. Results

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replicate prior work: spatial overlap (but not orientation) significantly changed PSE such that the target was perceived as shorter when the prime was in the same location. An ongoing experiment is exploring the null orientation effect in more detail and better controlling for the effects of spatial attention in the original paradigm.

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12:00-1:30 PM (4199)

Inferring Perceptual Switches During Bistable Structure-from-Motion Without Report. BOBICHENG ZHANG, *Michigan State University*, JAN BRASCAMP, *Michigan State University* — Keypresses are a convenient way of reporting perceptual switches that occur during visual bistability, but they complicate the interpretation of other switch-related measurements, such as pupil size, because it becomes unclear whether those measurements reflect the occurrence of switches or the act of attending to, and reporting the switches. To avoid this issue, past work has relied on optokinetic nystagmus (OKN), a type of reflexive eye movement, to infer switch moments without report during binocular rivalry between moving monocular patterns. Here we assessed whether a similar OKN-based approach can be applied during bistable structure-from-motion. Success would allow more separated and thus more interpretable measurements of switch-related signals for more high-level forms of bistability. We compared the estimated rate and timing of OKN-based perceptual switches and keypress-based ones, and found reasonable correspondence between the two, but also strong dependence on individual observers' switch dynamics and eye movement patterns.

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12:00-1:30 PM (4200)

Forging a Head: How External Visual Elements Influence the Perception of a Shape's Facing Direction. JIANGXUE VALENTINA NING, *The New School*, BEN VAN BUREN, *The New School* (Sponsored by Ben van Buren) — We spontaneously see certain shapes as having a facing direction—and this has important downstream effects, such as orienting spatial attention, and driving impressions of others' intentions. Here we show that an external element strongly influences a shape's perceived facing direction, but that its effect depends on its alignment with the shape's hidden medial axis structure. In Study 1 subjects saw a series of ovals, and used a dial to report the direction they saw each as facing. A dot was always drawn near the oval, aligned with either its long or short symmetry axis. We found that observers tended strongly to see the oval as facing the dot, but that the dot's influence was much greater when aligned with the oval's long axis, compared to its short axis. How irresistible is this association between long-axis-alignment and towardness? In Study 2 subjects made speeded keypresses to report whether an oval's long vs. short axis was aligned with a dot. They were faster when using an anterior key to report long-axis alignment and a posterior key to short-axis alignment, compared to the reverse mapping. We conclude that external elements interact with internal symmetry axes to determine the perception of a shape's facing direction.

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12:00-1:30 PM (4201)

Mixture Models as a Framework for Random-Effects Models in Meta-Analysis. MANUEL SUERO, *Universidad Autónoma de Madrid*, JUAN BOTELLA, *Universidad Autónoma de Madrid*, JUAN I. DURAN, *Universidad Autónoma de Madrid* — In meta-analysis the effect size (ES) values are usually modeled through a well-known formulation of a random effects model. That formulation has a number of weakness, especially when applied to the standardized mean difference. Besides a fundamental flaw in the definition of the model itself, it is assumed that the sampling variance is known instead of estimated and that the variance is stochastically independent of the ES. In this communication we discuss an alternative formulation, within the framework of mixture models. The alternative formulation does not include the fundamental flaw of the classical model, and it acknowledges that the sampling variance is unknown and not independent of the ES. Simulation studies show that the formulas derived from that reformulation work very well and provide good estimates of the specific variance.

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12:00-1:30 PM (4202)

Using Item Response Theory Trees to Estimate the Relationship Between Response Style and Numeracy. JARED BLOCK, *University of California, Los Angeles*, AMANDA MONTOYA, *University of California, Los Angeles*, PAR BJALKEBRING, *University of Gothenburg*, ZACHARY LORAN, *University of California, Los Angeles* — Self-report Likert data is widespread throughout the social sciences. However, psychologists interested in decision making have found that individual differences in response style, patterns of responding that are independent of question content, may impact the reliability of a scale by moving individuals away from their true ability level. In our research we apply a novel form of item response theory modeling, the IR-Tree, to personality trait data to parse response style out of Likert scale questions. We hypothesize that numeracy, which refers to an individual's understanding and proficiency in numerical concepts, interacts with response style, potentially exacerbating the distortion of true ability. This relationship is especially pertinent when measuring psychological constructs which are intertwined with an individual's numerical ability. An example of this is the subjective numeracy scale which measures numeracy with a Likert scale. Consequently, we aim to investigate whether this scale effectively measures numeracy or if scores are being erroneously skewed towards extreme ends due to the influence of numeracy's relationship with response style.

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12:00-1:30 PM (4203)

A Suite of R Code for Visualizing and Exploring High-Dimensional Similarity Data. EBEN DAGGETT, *New Mexico State University*, MICHAEL HOUT, *New Mexico State University* — It is often useful to model the similarity between stimuli utilized in experimentation to better understand the impact that it has on behavior. Similarity data is collected in numerous ways, but results are often high-dimensional models that are difficult to interpret. Techniques

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such as multidimensional scaling transform similarity data into Euclidean distances and allow dimensionality reduction for intuitive visualization, but even 2D plots of similarity can be challenging to interpret. We developed a suite of algorithms to facilitate the systematic exploration of high-dimensional similarity data. Incorporating concepts from graph theory, the algorithms provide metrics such as measures of centrality and uniqueness for each item, and also produce hierarchies of potentially overlapping clusters of items that reflect the characteristics of consequential regions in psychological space. This systematic dissection of psychological space results in more interpretable datasets whereby experimenters can easily intuit the ranked importance of dimensions and rating strategies that produced the resulting output. All of this is achieved without the need for dimensionality reduction, resulting in minimal or no distortion of the original data.

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12:00–1:30 PM (4204)

Does 'Think Aloud' Change the Phenomenology of Thought Qualities as Compared to Silent Mind Wandering?. ANUSHA GARG, *University of California, Santa Barbara*, MADELEINE GROSS, *University of California, Santa Barbara*, PAUL SELI, *Duke University*, JONATHAN SMALLWOOD, *Queen's University*, JONATHAN SCHOOLER, *University of California, Santa Barbara* — The Ericsson and Simon (1980) Think Aloud protocol is widely used to assess concurrent thought processes, but its reactivity during spontaneous thought remains understudied. The current study compares reactivity in thought qualities during mind wandering between Think Aloud and Silent Mind Wandering (i.e., silent thinking). Participants engaged in Think Aloud and Silent Mind Wandering and were both intermittently probed while thinking regarding topic shifting, and retrospectively asked afterwards about various aspect of their experiences during the tasks. Participants exhibited a higher rate of topic shifting (as revealed by both concurrent and retrospective measures) during Silent Mind Wandering compared to Think Aloud. Interestingly, participants retrospectively reported more distress and difficulty, but also showed an increase in productive thoughts and positive affect in Think Aloud compared to Silent Mind Wandering. Overall, these findings contribute to our understanding of the reactivity of Think Aloud during mind wandering.

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12:00–1:30 PM (4205)

Measurement Invariance of Gratitude Questionnaires Between Religious/Spiritual and Non-Religious/Spiritual Individuals. JOLINE GUITARD, *Université de Moncton*, MÉLANIE PERRON, *Laurentian University*, DENIS LAJOIE, *Université de Moncton*, JOËL DICKINSON, *Mount Saint Vincent University* — The current study tested measurement invariance of four gratitude questionnaires between religious/spiritual and non-religious/spiritual individuals. A sample of 251 participants (mean age = 29.96 years old; SD = 12.64) completed the Gratitude Questionnaire 6 (GQ-6), the Existential Gratitude Scale (EGS), the Transpersonal Gratitude Scale (TGS) and the Gratitude, Appreciation and Resentment Test (GRAT-RS). Participants also indicated whether they were religious/spiritual (n = 119; 47.4%) or not (n = 132; 52.6%). Results showed that the GQ-6 and the GRAT-RS meet scalar invariance, whereas the EGS and the TGS only meet metric invariance, according to Cheung and Rensvold (2002) criteria of $\Delta CFI < .01$. Overall, results suggest that the EGS and TGS are less invariant than the GQ-6 and the GRAT-RS to the question of religiosity/spirituality. We discuss how the former two questionnaires may therefore be biased when used in the assessment of non-religious/spiritual individuals' gratitude.

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12:00–1:30 PM (4206)

Behavioral Lab 3.0: Towards the Next Generation of Online Behavioral Research. ANDREW GORDON, *Prolific*, DAVID ROTHSCHILD, *Microsoft Research*, EYAL PE'ER, *The Hebrew University of Jerusalem* — Behavioral researchers have gradually moved from using student samples to the more cost-effective and flexible audiences afforded by online sampling, first to convenience samples and then to more sophisticated markets like Mechanical Turk. Now, advanced platforms (e.g., CloudResearch and Prolific) promise researchers higher data quality using ex-ante vetting and controls on their participant pool. We systematically examined the advantages of these ex-ante controls, and their effects on various measures of data quality, and compared them to standard ex-post approaches of attention checks. We found that ex-ante controls outperformed ex-post checks on process measures of attention, honesty, and reliability, as well as on outcome measures of representation and replicability. Additionally, while samples from platforms with ex-ante controls showed key differences in representation from the general population, they are still more representative than a major university lab pool. These data hold significant implications for researchers, reviewers and editors of research papers, and policymakers who aim to regulate efficient spending of research funds.

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Poster Session V

Saturday, November 18, 2023, 6:00–7:30 PM US PST, Grand Ballroom

6:00–7:30 PM (5001)

Something 'Eerie' Going On! How Our Visual Attention Interacts with Faces in the Uncanny Valley. JAY PRATT, *University of Toronto*, ECE YUCER, *University of Toronto* — Currently, there is a rapid increase in the use of artificial faces and deepfakes, and it is critical for us to differentiate between humans and artificial beings. Prior work has consistently shown that as a face goes from clearly artificial to clearly human, the observer's ratings of affinity (i.e., pleasantness) will increase until the face is nearly human; then the ratings will suddenly drop and quickly rebound, demonstrating the uncanny valley (UV). Given faces in the UV invoke specific responses from observers, we wanted to see whether or not UV faces receive any special treatment in visual processing by capturing visual attention in humans. To answer this question, we conducted a series of cueless temporal order judgment experiments where observers were

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presented with two face stimuli—fully human vs fully cartoon (Exp. 1); UV face vs fully human (Exp. 2); UV face vs fully cartoon (Exp. 3)—separated by small temporal intervals and were asked to report which one appeared first. Responses were fit into logistic regression models to calculate the points of subjective simultaneity. Overall, we found that UV faces receive attentional prioritization over the fully human but not the fully cartoon.

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6:00-7:30 PM (5002)

'Breadth Without Depth': Gaze Cues Generalize to Side of Space But May Not Be Sensitive to Depth. TIMOTHY WELSH, *University of Toronto*, APRIL KARLINSKY, *California State University, San Bernardino* — The direction of another person's gaze can be used as a cue to intuit the objects that are prioritized by that person. Studies of these "gaze cues" typically present participants with a centrally-located head whose gaze shifts towards a potential target location aligned in a single plane. The present study was designed to determine whether or not gaze cues alter the prioritization of target locations in different planes (i.e., are gaze cues plane-specific or insensitive to depth?). Participants (n = 30) were presented with the head of a person who was positioned within a box. The gaze direction of the person was initially directed towards the participant and then suddenly changed to be directed to one of four potential target locations (one positioned on each upper corner of the box). Targets were randomly presented at the gazed-at location or at one of the other locations. Although reaction times for targets presented on the same side as the gazed-at location were shorter than for targets on the opposite side, there was no influence of depth on this gaze cue effect. These findings suggest that the gaze cuing system may be sensitive to the side of space of the gaze, but not the depth of the gaze cue.

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6:00-7:30 PM (5003)

Disgust Is Different: Investigating Early Attention for Discrete Emotion Words Using a Modified Dot Probe Paradigm. MARY C. AVERY, *University at Albany, SUNY*, MICHAEL T. SPENCER, *Baruch College CUNY*, JEANETTE ALTARRIBA, PHD, *University at Albany, SUNY* — Studies of emotion word processing have reported faster reaction times (i.e., vigilance) for negatively valenced items (Sutton & Altarriba, 2011). This finding occurred in the dot probe paradigm (masked and unmasked) targeting early attention. However, research also suggests that discrete emotion category (e.g., fear or anger) causes behavioral differences even when valence is equated, though later in word processing using a lexical decision task (Briesemeister et al., 2011; 2014). The current study investigated whether discrete emotion effects also occur in early attention. Participants completed a modified dot probe task with happy-, anger-, fear-, or disgust-related words, with those in the negative category matched on valence. Results from a 4 (word category: happiness, anger, fear, disgust) X 2 (probe location: emotion, neutral) repeated measures ANOVA on mean RTs and errors revealed a significant interaction in both analyses. Specifically, probes under disgust-related words prompted faster responses compared to happy-related words and fewer errors compared to all other categories. Findings are discussed in the context of evolutionary theories related to automatic attention for negative stimuli (Pratto & John, 1991).

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6:00-7:30 PM (5004)

Using a Computational Model of Visual Attention to Understand the Cognitive Consequences of Aided Target Recognition. CHLOE CALLAHAN-FLINTOFT, *US.Army Research Laboratory*, GABRIELLA BRICK LARKIN, *US Army Research Laboratory* — Aided target recognition (AiTR), where an algorithm displays salient visual markers on locations of potential interest to human operators, is used in a variety of fields (e.g. military, baggage screening, radiology). Here we use a computational neural model of visual attention as a framework to ask how we can implement AiTR that guides attentional resources without overriding the natural processing of a scene. Using a visual search task with a surprise memory quiz, we test a key prediction of the model: that visual information of lower attentional priority can still win the competition for attention if presented before higher priority information. To do this, participants either searched with AiTR, without AiTR, or with AiTR where the onset of the highlights were delayed by 250 ms. We find that implementing this delay allows for a more even deployment of attention across the visual field and an improvement in situational awareness.

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6:00-7:30 PM (5005)

Exploring the Mechanisms of Salient Distractor Suppression. BRANDI LEE DRISDELLE, *University of Bristol*, ALON ZIVONY, *University of Sheffield*, MARTIN EIMER, *Birkbeck, University of London* — In the probe-capture paradigm, the suppression of salient colour singleton distractors is reflected by an impaired ability to report probe letters that are superimposed on these distractors. However, probes are only shown on a fraction of trials, decreasing statistical power. We devised a novel procedure where letter probes appear on each trial, to confirm previous findings and test new hypotheses. Participants viewed multiple successive search displays, reported the number of target shapes, and letters presented in the last display. Distractor suppression was observed even when targets were absent (Exp1) and when low-level probes requiring simple detection were used (Exp2). When target\singleton distractors colours changed randomly, suppression emerged for eight colours (Exp. 4), but not two colours (Exp. 3). Our results demonstrate the usefulness of our new procedures, and shed new light on the proactive suppression of both first-order and second-order features.

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6:00-7:30 PM (5006)

Feature-Based Attentional Control for Distractor Suppression. SUNGHYUN KIM, *Korea University*, YANG SEOK CHO, *Korea University* — It is unclear whether attentional suppression is merely a byproduct of target facilitation or a result of independent mechanisms for distractor suppression. Therefore, the present study examined whether attentional suppression takes place when

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target facilitation hardly occurs using a spatial cueing paradigm. Participants searched for target letters which were not red, negative color. On each trial, a target color was randomly chosen among 12 different colors to prevent establishing attentional control for target colors and to reduce intertrial priming for target colors. Immediately before a target display, a color cue was presented at one of possible target locations. The cue was rendered in negative color which should be ignored to detect targets or reference color which was never presented for target and non-target letters. The results showed that the negative color cue captured attention less than the reference color cue, supporting the presence of independent mechanisms for distractor suppression.

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6:00-7:30 PM (5007)

Attention Is Biased to the Self-Face in an Attention Capture Task: Investigating the Role of Social Reward. TAYLOR MARCUS, *Tulane University*, ANNA WOOD, *Tulane University*, BRIANNA HUNTER, *University of California, Davis*, JULIE MARKANT, *Tulane University* (Sponsored by Julie Markant) — Attention research often focuses on salience-driven (exogenous) and goal-driven (endogenous) mechanisms. However, one's own face captures attention even when it is neither perceptually salient nor goal relevant, suggesting that this orienting bias to the self-face is driven by its social-motivational salience. However, it remains possible that this orienting bias may instead be driven by the familiarity of the self-face. We therefore examined college students' (preliminary N= 37) attention capture to the self-face, familiar, and unfamiliar stranger faces and used fNIRS to measure cortical brain activity during passive viewing of the self and stranger faces. Preliminary behavioral results suggest differential attention capture to the self-face compared to familiar and unfamiliar stranger faces. These results suggest that the self-face orienting bias may be driven by motivational value to a greater extent than familiarity. Ongoing analyses will also relate this self-face orienting bias to the extent of activation in cortical reward regions.

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6:00-7:30 PM (5008)

Testing Individual Differences in the Preparation Effect. ROY SHOVAL, *The Open University of Israel*, KOBY LINDZEN, *The Open University of Israel*, TAL MAKOVSKI, *The Open University of Israel* — How do people prepare for distractors? According to the preparation effect, observers do not inhibit distractors before their appearance, rather they are more alert at those moments. In this large, online, pre-registered study, we tested possible individual differences in the magnitude of the preparation effect. Specifically, we examined whether the preparation effect is related to working memory capacity and/or to the ability to filter out irrelevant information. The results indicated that the magnitude of the preparation effect did not correlate with these factors. These results highlight the rigidity of the preparation effect that does not seem to be related to working memory capacity or attention abilities. Moreover, that increased preparation does not result in less (or more) interference from upcoming distractor display, indicates that the preparation effect does not influence distractor rejection and further supports a mandatory 'process-all mechanism' as the underlying mechanism of the effect.

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6:00-7:30 PM (5009)

When the Mailbox Starts Staring You Down: Face Processing Effects for Pareidolia Faces. ROBRECHT VAN DER WEL, *Rutgers University – Camden*, ANNE BOECKLER, *Julius-Maximilians-Universität Würzburg*, TIMOTHY WELSH, *University of Toronto* — It is well established that direct gaze (i.e., eyes looking towards the observer) is advantageous in capturing attention in comparison to averted gaze (i.e., eyes looking away from the observer). Previous literature demonstrates that sudden direct gaze, which occurs when the eyes abruptly shift from averted to direct gaze, has a greater effect on attention capture than static direct gaze. This effect is present in upright human faces, but absent when human faces are inverted. The current study investigated whether the sudden direct gaze effect is present in pareidolia faces (i.e., faces perceived in inanimate objects) when upright (E1) or inverted (E2). Participants identified targets presented randomly on one of four pareidolia faces; one depicting static direct gaze, one depicting static averted gaze, one depicting sudden direct gaze, and one depicting sudden averted gaze. E1 revealed that upright pareidolia faces elicited the sudden direct gaze effect, whereas inverted faces in E2 did not. Further, upright faces were rated as more "human-like", but not more "object-like" than the inverted face s. These findings are consistent with the notion that pareidolia faces invoke configural processing in a similar way as human faces do.

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6:00-7:30 PM (5010)

Objects Modulate Attentional Suppression in Target Search But Not in Distractor Inhibition. JIYOON JEONG, *Korea University*, YANG SEOK CHO, *Korea University* — Prior studies have demonstrated attentional suppression at a location where a singleton distractor is frequently presented and attentional facilitation at a location within a cued object. The current study investigated the effect of objects on attentional suppression in distractor inhibition and target search using the additional singleton paradigm. Six stimuli were displayed in each target search display. A color singleton distractor appeared more often at one of six stimulus locations, called "high-probability distractor location." Critically, three objects were presented, each pairing two adjacent stimulus locations by adding background displays (Experiment 1) or using perceptual grouping (Experiments 2 and 3). Whereas attention capture by singleton distractors was hardly affected by objects, target selection was impeded at the location in the object containing the high-probability distractor location compared to the equidistant location in a different object. These findings suggest that task-irrelevant object representations modulate attentional suppression, and that different attentional priority maps are activated for distractor inhibition and target selection.

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6:00–7:30 PM (5011)

On Preventing Capture: Still No Evidence for Greater Suppression with Greater Color Singleton Salience. CHRISTOPHER HAUCK, *Oregon State University*, DOMINICK TOLOMEO, *Oregon State University*, ERIC RUTHRUFF, *University of New Mexico*, MEI-CHING LIEN, *Oregon State University* — One popular theory of capture, known as the salient-based suppression, asserts that especially salient stimuli trigger especially strong suppression. Alternatively, the distractor-based suppression view argues that suppression occurs in response to visual features consistently associated with being distractors. On this view, proactive suppression has nothing to do with high salience. The present study tested this view. Using a well-established capture-probe paradigm for studying proactive suppression, Experiment 1 demonstrated that features that were low- or high-salient during a feature visual search showed similar amounts of suppression on probe trials. Experiment 2 then altered the frequency at which individuals were exposed to distractor features. Consistent with distractor-based suppression, high-frequency features received greater proactive suppression, but there was again no effect of salience and no interaction. We argued that suppression of color singleton distractors emerged not because of their salience but rather because they contained a feature consistently associated with being a distractor.

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6:00–7:30 PM (5012)

Primary Punishments Facilitate a Proactive Mode of Cognitive Control. RACHEL E. BROUGH, *University of Denver*, CHASE SPURBECK, *University of Denver*, KIMBERLY S. CHIEW, *University of Denver* — Both high-arousal negative affect states and punishments in the form of monetary loss have been shown to facilitate a shift towards a reactive mode of cognitive control. However, the influence of primary punishments on proactive vs. reactive control has not yet been well-characterized. We investigated whether the threat of mild electric shock, contingent upon or independent of task performance, would differentially influence relative reliance on proactive vs. reactive cognitive control in an AX Continuous Performance Task. We found that relative to a baseline condition with no threat of shock present, both contingent and non-contingent punishments increased reliance on proactive control. Individual differences in reported threat and arousal also modulated the proactive-reactive control balance. Punishment-related increases in proactive control were greater for the contingent punishment condition, suggesting that primary punishment motivators increase proactive control regardless of task contingency, but that this increase is greater when shock avoidance is contingent on performance.

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6:00–7:30 PM (5013)

Exploring the Effects of Acute Aerobic Exercise on Executive Functioning in Young Adults. MICHAEL CERVANTES, *University of Illinois Chicago*, LAMOREJ ROBERTS, *University of Illinois Chicago*, JENNIFER WILEY, *University of Illinois Chicago* — Exercise has been linked to changes in executive functioning (EF), however results from studies using different EF tasks and different designs do not always show improvements from acute bouts of aerobic exercise in young adults. While some studies offer evidence that exercise may affect inhibitory control, there is less evidence whether updating is also enhanced. The current study examined whether acute bouts of aerobic exercise effected performance on a range of inhibitory control and updating tasks in young adults, using a pre-post, exercise-no exercise design. Participants completed EF tasks before and after exercise or no-exercise control. Although expected correlations were seen for scores on inhibitory control and updating tasks, preliminary results suggest that improvements in EF due to exercise are inconsistent across measures.

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6:00–7:30 PM (5014)

Task Switch Costs Show How Response Locations Affect Task Representations. KALYANI DATTA, *The University of Iowa*, ELIOT HAZELTINE, *University of Iowa* — To understand how response properties, in particular response locations, influence the way we represent tasks, we designed a cued task-switching paradigm where participants responded to either the color or shape of a stimulus with non-overlapping response sets. For the separate group, the response locations for the color task were contiguous and spatially separate from response locations for the shape task. For the interleaved group, color and shape response keys alternated on the keyboard. The interleaved group showed smaller switch costs than the separate group. Thus, the interleaved response locations may have led the color and shape tasks to be encoded with more similar representations, thereby reducing switch costs. Exploratory analyses revealed that responses physically closer to the responses for the other task showed reduced switch costs compared to responses farther from those of the other task. The results emphasize the importance of response properties in task representation.

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6:00–7:30 PM (5015)

The Impact of Cell Phone Presence on Attentional Control. MORGAN EIBNER, *Towson University*, JARED J. MCGINLEY, *Towson University*, BLAIRE J. WEIDLER, *Towson University* — Research has shown that the presence of a cell phone influences attentional control—the ability to focus on goals while ignoring irrelevant distractions. A feature of attentional control is its flexibility—specifically, in higher conflict environments, attentional control can be enhanced. Flexibility can be modulated by whether conflict is associated with positive or negative contexts. There is yet no research investigating how cell phone presence can affect the flexibility of attentional control (presumably through its positive associations). To examine this question, participants completed two blocks of a Stroop task—one with a high conflict context (75% incongruent trials; 25% congruent trials) and one with a low conflict context, where the proportions were reversed. During one block, participants' phones were in view as they received three text messages. The flexibility of control did not differ depending on whether a participants' phone was

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associated with high or low conflict.

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6:00-7:30 PM (5016)

Slower Response Speed Moves Us from Exploitation to Exploration. DOMINIK GRAETZ, *University of Oregon*, ULRICH MAYR, *University of Oregon* — It is commonly thought that being distracted slows us down. However, it is also possible that a slower response speed leads to greater distractibility. This prediction is derived from a simple model that assumes (a) that people weigh the costs/benefits of exploitation (focusing on current goals) versus exploration (checking the environment for useful information) and (b) that slowing usually affects goal-directed action more than checking the environment. Participants tried to maximize financially incentivized, correct responses to one of two tasks that switched with a specified probability (e. g., p = .1). Subjects had to occasionally check on-screen cues to ensure correct responses. Importantly, we manipulated response speed across three experiments by increasing perceptual difficulty, response difficulty, or the inter-trial-interval. Consistent with predictions, the cue-checking rate increased as response speed decreased. These results suggest that greater reliance on the environment can be a rational response to an overall slower response speed.

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6:00-7:30 PM (5017)

Task-Related Interference in Older Adults: Behavioural and Electrophysiological Correlates of On- and Off-Task Thoughts. SARAH HENDERSON, *Brock University*, DAWN RYAN, *Brock University*, LUKE ATACK, *McGill University*, KAREN L. CAMPBELL, *Brock University* — Mind wandering is typically characterized as a failure of attentional control, yet despite age-related executive function deficits, older adults typically report less mind wandering than younger adults during cognitive tasks. Research employing working memory tasks suggests that older adults report fewer task-unrelated-thoughts, and more task-related-interference (e.g., strategy/performance concerns), possibly due to age-differences in task demands or motivation. The present study examined mind-wandering using a less demanding sustained attention task (to reduce performance concerns in older adults) and assessed emotional and motivational influences on attention. Behavioural data (n = 89) shows that older adults are more intrinsically motivated and report more task evaluation and on task thoughts, while younger adults report more task-unrelated-thoughts. Previously demonstrated EEG markers of mind wandering were apparent in young but not older adults (n = 50), suggesting that older adults' metacognitive reports of mind-wandering may reflect different underlying processes. These findings suggest that the nature of extraneous thoughts during task performance differs between age groups.

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6:00-7:30 PM (5018)

Exploring the Influence of Processing Conflicts on Memory Encoding in Dual-Task Situations. SANDRA HENSEN, *Rheinisch-Westfälische Technische Hochschule Aachen University*, IRING KOCH, *Rheinisch-Westfälische Technische Hochschule Aachen University*, PATRICIA HIRSCH, *Rheinisch-Westfälische Technische Hochschule Aachen University* — The relationship between attention and memory has been studied for a long time. Usually, dual-tasks at the memory encoding stage decrease recall performance for the studied information and impair concurrent task performance. Yet, which cognitive mechanisms are underlying this dual-task interference is still an unresolved question. Hence, we investigated the influence of a concurrent task on the encoding process of auditory information in two experiments. Participants were asked to perform an auditory-verbal free recall memory task and visual-manual spatial Stroop task in single or dual-task conditions at the encoding stage of the memory task. In the second experiment, we examined the influence of processing conflicts in the concurrent task on memory encoding on a trial-level. Results showed detrimental effects on memory accuracy and concurrent task performance in the dual-task condition in both experiments. However, we could not observe an influence of processing conflicts in the concurrent task on success of memory encoding. Findings suggest that processes in both tasks share the same limited capacity and are slowed down due to parallel processing, but this is not further influenced by task-specific processing conflicts.

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6:00-7:30 PM (5019)

Concurrent Operation of Proactive and Reactive Metacontrol. MOON SUN KANG, *Purdue University*, YU-CHIN CHIU, *Purdue University* — Metacontrol is instantiated proactively in anticipation of future control demands and reactively in response to recognized demands. However, whether proactive and reactive metacontrol can be concurrently instantiated remains unclear. To address this gap, we conducted two studies utilizing a task-switching metacontrol paradigm that allows for their concurrent instantiation. In Study 1 (N = 57), we recorded EEG and successfully observed cue-locked and image-locked ERP patterns associated with proactive and reactive metacontrol, respectively. In Study 2 (N = 187), we examined the impact of an individual's working memory capacity (WMC) on the concurrent instantiation of the two metacontrol modes. Our findings revealed that as WMC increased, there was a corresponding increase in the deployment of proactive metacontrol and a decrease in reliance on reactive metacontrol. In conclusion, our findings show that concurrent proactive and reactive metacontrol is feasible, with WMC influencing their engagement. Higher WMC promotes proactive metacontrol utilization while decreasing reliance on reactive metacontrol. These findings advance our understanding of metacontrol processes and the role of WMC in their deployment.

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6:00–7:30 PM (5020)

The Role of Conflict Type in the Congruency Sequence Effect. SEOKMIN KANG, *Korea University*, YANG SEOK CHO, *Korea University* — It is unclear whether sharing the type of conflict is one of the determinants of implementing the same cognitive control process between two conflict tasks. The present study was conducted to examine whether the presence of stimulus-response conflict (S-R conflict) in an arrow spatial Stroop task has an impact on the cross-task congruency sequence effect (CSE) with a Simon task. In Experiments 1 and 2, a horizontal Simon task and a vertical spatial arrow Stroop task were presented alternatively on every trial. Importantly, participants were asked to make a left or right keypress response to the vertical spatial Stroop task in Experiment 1, resulting in no S-R conflict, and a up or down response to it in Experiment 2, resulting in S-R conflict. In the results, a CSE was obtained between the two tasks only in Experiment 2, which had the same type of conflict. In addition, Experiment 3 showed that the same cognitive control process was implemented between two color Stroop tasks which had only stimulus-stimulus conflict, even when they used a horizontal response array. These results indicate that sharing the same type of conflict is important to share a cognitive control process across different tasks.

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6:00–7:30 PM (5021)

Is the AX-CPT the New Task to Measure Attentional Control? Reliability and Convergent Validity of AX-CPT Measures. NIELS KEMPKENS, *UniDistance Suisse*, NICOLAS ROTHEN, *UniDistance Suisse*, ALODIE REY-MERMET, *UniDistance Suisse* — Attentional control (AC) is the ability to maintain a goal and goal-relevant information despite distractions. Besides reliability issues, recent research has emphasized the missing convergent validity of AC tasks by showing low correlations. This may result from the diversity of the AC tasks. The aim of the present study was to reduce this diversity by examining the convergent validity for one task—the AX-CPT—but across different stimulus materials and indices. We asked 420 participants to give a target response if the letter A was followed by the letter X, and a non-target response in all other cases. In addition to letters, we used dots, matrices, pictures, and words as materials. We computed different indices: d' context (= d' proactive), d' reactive, proactive behavioral index (PBI), BX probe interference, and A-cue bias. Preliminary results showed good reliability for d' context, d' reactive, and PBI for all materials ($r > .67$). Each of these indices was moderately correlated across materials (median $r = .53$). However, the correlations across the indices were lower (e.g., $r = .17$ between d' context and PBI). Overall, this challenges the convergent validity for the AX-CPT, thus questioning what is measured in the indices.

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6:00–7:30 PM (5022)

Being Mindful of Time: How Attending to Time During Meditation Influences Time Perception. MARSHALL J. MARTIN, *Capilano University*, DOUGLAS W. ALARDS-TOMALIN, *Capilano University* — Previous research looking at meditation's influence on time perception has shown mixed results, with conflicting reports of meditation leading to longer or shorter time estimates, and the perception of faster or slower passage of time, depending on the study. A new model proposed by Sedlmeier and colleagues (2020), known as the augmented Buddhist meditation model (ABMM), aims to explain these discrepancies in part through level of meditation experience, type of meditation practice, and self-reported attention to time during meditation. The current study aimed to test the predictions of the ABMM model and its accompanying self-reported "attention to time" (AtT) measure. The ABMM predicts (for our sample of beginner-level meditators practicing focused attention style meditation) that greater reported AtT would lead to slower perceived passage of time, which was replicated, and longer perceived meditation sessions (i.e., perceived duration and time estimate duration and accuracy), which was partially replicated.

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6:00–7:30 PM (5023)

Masked Prime Stimulus Awareness Assessed with Identification Accuracy and the Psychological Refractory Period. GARY D. FISK, *Georgia Southwestern State University*, STEVEN J. HAASE, *Shippensburg University* — Objective measures of masked prime stimulus awareness (e.g., prime identification accuracy) have high precision, but how these measures relate to states of consciousness lacks scientific consensus. Masked prime identification accuracy was assessed in a psychological refractory period (PRP) paradigm to test the hypothesis that identification accuracy is related to the PRP effect (a processing bottleneck). A sandwich-masked word or nonword (S1) was presented at a stimulus onset asynchrony (SOA) of 400, 200, 100, or 64 ms before a second word or nonword (S2). Participants made time-urgent word/nonword classification judgments of S1 and then S2. Lower S1 identification accuracy was associated with longer S2 response times (a PRP effect) in two experiments ($r = -.29$ in PsyToolkit and $r = -.55$ in E-Prime). The identification-PRP relationship could provide more information about masked prime stimulus awareness than identification alone.

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6:00–7:30 PM (5024)

The Influence of Emotions on Conscious and Unconscious Thought in Decision Making. JIA-XIN LONG, *National Tsing Hua University*, HSUAN-FU CHAO, *National Tsing Hua University* — Unconscious thought refers to thinking without consciousness. Dijksterhuis (2004) showed that people could make better decision making after unconscious thought than after conscious thought. In the present study, by using an autobiographical memory task to induce basic or complex, and positive or negative emotions, I investigated the impact of emotions on conscious and unconscious decision making. The results showed that emotions modulated the difference between conscious and unconscious decision making. First of all, when the participants were in the positive-basic emotional state, the quality of decision-making of conscious thinkers were as good as unconscious thinkers. Secondly, when the participants were in the positive-complex emotional state, the quality of decision-making of unconscious

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thinkers were better than conscious thinkers. Thirdly, when participants were in the negative-basic emotional state, the quality of decision- making of unconscious thinkers were better than conscious thinkers. Finally, when participants were in the negative- complex emotional state, the quality of decision-making of unconscious thinkers were better than conscious thinkers.

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6:00-7:30 PM (5025)

Testing the Construct Validity of Probed Mind-Blanking Reports. CHANDNI LAL, *The University of North Carolina at Greensboro*, MATTHEW WELHAF, *Washington University in St. Louis*, MICHAEL J. KANE, *University of North Carolina at Greensboro* — "Mind blanking" (MB) refers to momentarily experiencing a complete absence of mental content. Recent studies have measured MB during tasks with thought probes asking subjects to report on their immediately preceding thoughts. Our online study explored MB while examining the validity of probed MB reports: Do MB reports typically reflect MB experiences, or do subjects sometimes use "MB" reports to indicate low reporting confidence? Subjects (N = 450) completed a go/no-go task under one of three probing conditions, varying in whether probes: (a) included an MB-response option, (b) confidence ratings, and/or (c) an "I don't know" reporting option. We tested whether probes followed by a confidence rating would elicit lower-confidence MB reports than other forms of off-task thought, and whether probes including both MB and an "I don't know" reporting option would yield lower MB rates vs. probes without the "I don't know" option. We will discuss the implications for the construct validity of probed MB reports.

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6:00-7:30 PM (5026)

Cognitive Unconscious and Limits of Unconscious Semantic Processing: A Mouse-Tracking Study. AURORA SLOMAN-MOLL, *Texas A&M University*, TAKASHI YAMAUCHI, *Texas A&M University* — Recent studies investigating unconscious cognitive processing reveal that subliminal exposure to stimuli activates a semantically related pair of stimuli in a different domain, such as letters to numbers. We revisited Van Opstal & Rooyakkers's (2022) same-different task through mouse-tracking methods to scrutinize conditions of subliminal semantic processing. We contrasted three conditions—masked cross domain, masked no-cross domain, and unmasked cross domain. Our results for Experiment 1 showed no congruency effect across semantic domains (e.g., letters to numbers) even when priming stimuli were consciously processed (unmasked cross domain). In Experiment 2, we introduced practice with feedback and a dynamic prime exposure and did not find a congruency effect across semantic domains. Lastly, in Experiment 3, we transposed the order of prime and target stimuli (numbers-letters, letters-numbers) and matched the number of trials to Van Opstal & Rooyakkers (2022) and found a strong cross-semantic congruency effect.

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6:00-7:30 PM (5027)

Does Object-to-Scene Binding Depend on Object and Scene Consistency?. CARRICK WILLIAMS, *California State University, San Marcos*, ANDREW PLANO, *California State University, San Marcos* — Semantically inconsistent objects in scenes are fixated longer (Henderson et al., 1999) and remembered better (Hollingworth & Henderson, 2000) than semantically consistent objects. The inability to disengage from inconsistent objects potentially leaves less time to encode the rest of the scene, and thus, semantically inconsistent objects may be integrated with fewer surrounding scene details. We had participants study consistent or inconsistent target objects in scenes and then tested target object memory in either their original scene or in a different scene of the same category. Consistent with the expectation that semantically inconsistent objects would be remembered with fewer surrounding scene details, recognition of semantically consistent objects, but not inconsistent objects, was worse when placed in a different scene. Changing the scene did not disrupt recognition of semantically inconsistent objects, indicating that their memory representations may be isolated from their surrounding scene.

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6:00-7:30 PM (5028)

Deciphering Learner Engagement: Relationships between User Behavior, Mind Wandering, and Event Segmentation in Videos. GERRIT ANDERS, *Leibniz-Insitut für Wissensmedien (IWM)*, JÜRGEN BUDER, *Leibniz-Insitut für Wissensmedien (IWM)*, MARTIN MERKT, *German Institute for Adult Education*, ETIENNE EGGER, *Eberhard Karls University of Tübingen*, MARKUS HUFF, *University of Tübingen & Leibniz-Insitut für Wissensmedien (IWM)* — The importance of online videos in education has increased in recent times, especially amid the COVID-19 crisis. Consequently, it is essential to understand how to design such videos for optimal learning outcomes. This project investigates the connections between user behavior, mind wandering, and event segmentation within educational videos, using log data from a prominent German online video platform and two web-based studies. Surprisingly, a notable positive relationship was observed between pause, seek, and resume behaviors and mind wandering. Furthermore, a substantial positive correlation was also found between users pausing the video and event segmentation aligning with our hypothesis. Moreover, the study revealed a significant positive connection between perceived event boundaries and mind wandering. The integration of three data sources indicates that mind wandering coincides with both perceived event boundaries and observable logged actions (e.g., hitting pause). Given that occurrence of mind wandering also correlated with self-reported learning, event boundaries may stimulate task-related mind wandering, which could enhance learning outcomes.

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6:00–7:30 PM (5029)

Meaning Maps Predict Change Detection in Flicker Paradigm. ALAN LU, *University of California, Davis*, ADITYA UPADHYAYULA, PHD, *University of California, Davis*, JOHN M. HENDERSON, *University of California, Davis* — To efficiently process complex and noisy environments, our visual systems must decide where to attend. Cognitive guidance theory proposes that attention is guided to semantically informative regions. In support, eye movements in naturalistic scene viewing are strongly predicted by the distribution of local semantic density as captured by meaning maps. Here, we used meaning maps to investigate whether semantic information guides visual change detection in a flicker paradigm. Change detection was predicted by semantic density at the changed location when controlling for saliency and center proximity. These results further validate meaning maps as a tool to study attentional allocation in scenes and support cognitive guidance theories of scene perception.

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6:00–7:30 PM (5030)

Investigating the Impact of Spatial Certainty and Target Features on Visual Search. HANNAH LUM SMITH, *Queen's University*, KAROLINA J. KRZYŚ, *Queen's University*, LAURA SIKUN LI, *Queen's University*, CARRICK WILLIAMS, *California State University, San Marcos*, MONICA S. CASTELHANO, *Queen's University* — Searching for objects in scenes is influenced by a number of factors, including prior detailed knowledge about the target object and how it fits within the larger context. In this study, we varied the spatial certainty within the scene as well as the target template precision to examine whether search strategies differ qualitatively. Spatial certainty (SC) of objects were rated independently according to whether they are associated with a single region (i.e., chandelier is high) or with multiple regions (i.e., cat is low). Participants searched scene images for 150 targets varying in SC and target templates were established with either a word or picture cue. Unexpectedly, although both higher SC and Picture Target Cues contributed to faster search, they did so independently. These findings suggest that influence of spatial certainty and target template may not be synergistic. We will explore this question further by examining eye movements.

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6:00–7:30 PM (5031)

Is Boundary Extension a 'State' of Mind?. BANJIT SINGH, *University of Delaware*, HELENE INTRAUB, *University of Delaware* — The boundaries of scene views may be like the edges of a "window." People falsely remember seeing beyond the "window" (boundary extension; BE). If the boundaries were reinterpreted to be the finite boundaries of an object, would this eliminate (or minimize BE)? In our experiment (N = 318), to shift boundary interpretation from a "window" to an object's edges, we cut scenes into U.S. states-shapes (NY, FL, CA, TX) and presented each state-shaped scene (normal or mirror-reversed) at different tilts for 340 ms (masked). The Shape Group's primary task was to attend to object contours and indicate "normal or reversed"; their secondary task was a BE test for the scene. The primary task (normal/reversed) was demanding (69% correct) and importantly, did not differ significantly from a single-task baseline control. The Scene Group's primary task was scene classification (indoor/outdoor); their secondary task was the BE test. Results revealed BE for these novel stimuli; the Shape Group (M = -26) exhibited at least as much BE as the Scene Group (M = -.22), $F(1,192) = 1.12$, $p = .29$. Equal BE for oddly-shaped scene fragments in both conditions suggests that anticipatory representation for close-views is a fundamental aspect of memory.

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6:00–7:30 PM (5032)

Parametrically Removing Scene Semantics Affects Gaze Guidance. ALEXANDRA THEODOROU, *University of California, Davis Center for Mind and Brain*, JOHN M. HENDERSON, *University of California, Davis* — Cognitive guidance theories posit that the spatial distribution of scene semantics strongly predicts eye movements. To further investigate this relationship, we manipulated scene semantics via parametric blurring, which gradually eliminates local semantic features while maintaining global structure. Participants were eye-tracked while viewing images across five levels of blur. Scene semantics (indexed by meaning maps) outperformed saliency (indexed by Itti & Koch, 2000) at low levels of blurring. However, semantic guidance significantly decreased as blurring levels increased. These findings suggest that low-level features drive attentional allocation as semantics become inaccessible. The results support cognitive guidance theories that favor the importance of scene semantics in gaze guidance.

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6:00–7:30 PM (5033)

'Which Message Is It?': Assessing Dyslexic Drivers in VMS Recognition in Adverse Weather Circumstances. LORENA ALICIA ARNAL, *Nottingham Trent University & Autonomous University of Madrid*, DAVID CRUNDALL, *Nottingham Trent University*, EDITHA VAN LOON, *Nottingham Trent University*, JAVIER ROCA, *Universitat de València*, KATHERINE BAILEY, *Nottingham Trent University*, PILAR TEJERO GIMENO, *Universitat de València* — Developmental dyslexia is a neurological disorder that encompasses deficits in sequencing, coordination and literacy (Harrar et al., 2014). It was negatively associated with road sign situational awareness (SA) and comprehension; driving SA may have a perceptual lag for dyslexic people (Taylor, et al., 2016). While dyslexic adults find difficulties reading text messages in VMS, no such differences were found for the recognition of pictograms (Roca, et al., 2018). Driving SA seems easier to achieve for pictorial information, followed by combined information and then verbal information (Taylor, et al., 2016). However, we do not know yet if these would behave the same in adverse circumstances, such as fog. We have designed a driving simulator experiment to check if the sign format (pictogram/text/combination) and the weather conditions (fog/clear) affect dyslexic and normotypical drivers differently. We expect to find significant differences in the performance of both groups, moderated by format and weather conditions.

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SATURDAY

6:00–7:30 PM (5034)

Model-Based Exploration of Facilitatory and Inhibitory Mechanisms in Spatial Attention. SANG HO LEE, *Seoul National University*, MARK PITT, *The Ohio State University* — Results from recent studies suggest that the distribution of attention across space is non-monotonic, showing local suppression of attention at regions around the target (i.e., surround inhibition) in an otherwise graded distribution. We investigated how well a combination of facilitatory and inhibitory spreads of spatial attention can explain such a data pattern. Using a mixture of Gaussians, we constructed computational models with different configurations of the two mechanisms and tested their predictions in two spacing-flanker experiments in which manipulations were designed to induce either facilitation or inhibition. The data support models that incorporate a flexible facilitatory spread of attention, even when assuming an inflexible inhibitory spread. This suggests that attentional control flexibly modulates the spatial range of facilitation, but not the spatial range of inhibition.

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6:00–7:30 PM (5035)

The Influence of Cognitive Effort and Distractor Predictability on Early Quitting During Visual Search. REBECCA LAWRENCE, *Griffith University*, BRETT COCHRANE, *University of Aberdeen*, AMI EIDELS, *The University of Newcastle, Australia*, ZACH HOWARD, *University of Western Australia*, LISA LUI, *Griffith University*, JAY PRATT, *University of Toronto* — Distractors can cause individuals to quit visual search early. Specifically, when a salient distractor is present compared to absent among an array of less salient items, correct response times for target-absent trials are faster and error rates for target-present trials are greater (Moher, 2020). The current research tested how the predictability of these distractors (and thus, the cognitive effort associated with processing them) might influence this phenomenon. Participants completed a search task where, when present, the distractor appeared in the same location for half of the trials and had a random location for the other half of trials. Preliminary analyses suggest that although the same and random location distractors both generated early quitting, the magnitude of the target-absent speeding effect was larger for the same-location distractor. Furthermore, the magnitude of the target-present error rate effect was larger for the random location distractor. Together, these results suggest that participants might be strategically using the distractor for efficient search.

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6:00–7:30 PM (5036)

Relating Aversive Conditioning to the Strategic Control of Attention. DAVID S. LEE, *Texas A&M University*, ANDREW CLEMENT, *Millsaps College*, LAURENT GRÉGOIRE, *Texas A&M University*, BRIAN A. ANDERSON, *Texas A&M University* — Attention is biased towards aversively conditioned stimuli and this bias can persist into periods of extinction. How aversive conditioning influences the strategic control of attention, where individuals select an attentional strategy in the service of completing a search task, is unknown. In the present study, participants completed a modified version of the adaptive choice visual search task (ACVS). During an initial training phase, participants learned to associate one target color with shock and another with no shock (neutral). In a subsequent test phase in which no shocks were delivered, two targets were presented on each trial: one in the previously shock-associated color and one in the neutral color. Participants only had to report one of the two targets. We found that participants were biased against reporting a target in the previously shock-associated color, even when this came at the expense of optimal task performance. Surprisingly, however, more anxious participants tended to report the previously shock-associated target more frequently, suggesting a threat-related attentional bias that influenced voluntary search.

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6:00–7:30 PM (5037)

Using Multidimensional Scaling to Enable Continuous Complex Features in a Modified Guided Search Model. COLLIN SCARINCE, *Texas A&M University–Corpus Christi*, MICHAEL HOUT, *New Mexico State University* — Guided search (GS) has been an effective computational model for studying search involving rudimentary stimuli, such as lines of various colors and orientations. The visual qualities of such stimuli can be clearly operationalized (e.g., wavelength of light, degree of rotation) but this kind of quantification is not as straightforward for more complex visual stimuli, such as images of real-world objects. The current study investigated the use of multidimensional scaling (MDS) as a method to model similarity and serve as input into a modified GS model. Participants completed a series of visual search trials for novel objects in which the distractors were similar or dissimilar from the specified target (defined by distance in MDS space). Search was more efficient when distractors were dissimilar from the target compared to when they were similar to the target. Using a GS approach, calculated "target activations" were higher when distractors were dissimilar to the target. Differences in activation were also associated with differences in observed response times. This analysis supports the use of MDS to model similarity and indicates it may be a viable tool for extending computational uses of GS.

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6:00–7:30 PM (5038)

The Bigger the Better? The Role of Pupil Dilation in Predicting Threat-Detection. JOSHUA OLMA, *German Police University*, CHRISTINE SUTTER, *German Police University*, SHAI GABAY, *University of Haifa* — For threat-detection, visual perception proves to be an important source of information (e.g., Heusler & Sutter, 2020, 2022). Pupil dilation increases when visual targets have been detected and is dependent on the processing mode of the attentional system (Gabay et al., 2011). The main research question was whether the performance in a police-relevant visual search task can be predicted by pupil dilation. In a lab-based eye-tracking experiment, 31 students (with military experience) were shown a set of 150 randomized images, each depicting a person that either held a pistol or a non-hazardous object. The instruction was to indicate the presence/absence of the pistol as fast and accurate as possible. Our

predictor was the mean pupil size before stimulus onset. In general, we found that bigger pupil sizes correlate with shorter response times. When calculating a more sophisticated linear model, the outcome was quite the opposite: Smaller pupil sizes were more beneficial. The correctness of decision was not linked to pupil size. Despite this dissociation, our results indicate that pupil dilation predicts a person's ability to detect threats, wherefore police firearms training should devote more attention to this phenomenon.

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6:00-7:30 PM (5039)

Physiological Differences Between Those With and Without PTSD During an Immersive Visual Search Task. THOMAS ROHALY, *DCS Corporation*, HEATHER ROY, *US Army Research Laboratory*, LEAH R. ENDERS, *DCS Corporation* — A prominent area within posttraumatic stress disorder (PTSD) research focuses on understanding the associated attentional bias towards threat. Findings have indicated that those with PTSD largely direct their attention to the stimuli they perceive as the most threatening and experience difficulty disengaging from these stimuli. Physiological differences (e.g., eye gaze, skin conductance, cardiovascular variables) between those with and without PTSD have been observed when viewing negative and trauma related stimuli. Immersive virtual environments (VE) present an opportunity to explore the phenomenon while manipulating stress. We will present preliminary results comparing U.S. military individuals with and without PTSD performing a visual search task, while navigating two environment conditions (combat vs. neutral) under stress (high vs. low) manipulation. Specifically, we report findings related to differences between the groups related to pupil size, electrodermal activity, and heart rate variability when viewing combat versus neutral stimuli within high and low stress conditions.

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6:00-7:30 PM (5040)

Preparing to Attend in Pop-Out Search. BEN SCLODNICK, *McMaster University*, BRUCE MILLIKEN, *McMaster University* — We investigated the interplay between top-down preparatory control and selection history effects in pop-out search. On each trial, participants viewed a lone item (blue or orange) followed by a pop-out search display (blue target and orange distractors, or vice versa). Preparation was induced by instructing participants to respond to the lone item only if it was a particular colour, and to ignore it otherwise. For example, participants might (i) prepare to respond to the lone item only if it was blue, (ii) respond to (or ignore) the lone item, then (iii) respond to a pop-out search display that may have a blue target or blue distractors. This method allowed us to orthogonally manipulate priming of attended perceptual features (did the lone item match/mismatch the colour of the following search target?) and preparation (did preparation match/mismatch the colour of the search target?). Our results revealed only a modest effect of perceptual priming but a large effect of preparation on search RTs. Furthermore, the preparatory effect was sensitive to trial-to-trial shifts in preparation, highlighting a close interplay between top-down preparatory control and selection history effects.

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6:00-7:30 PM (5041)

Do Experts Encode Multimodal Chunks?: Expertise Effects During a Cross-Modal Visual Search Paradigm. NICOLE M. ARCO, *University at Albany, SUNY*, HEATHER SHERIDAN, *University at Albany, SUNY* — According to chunking and template theories of expertise, which were developed in the chess domain, experts process domain-specific features in terms of meaningful patterns, called chunks. To test if chunks can be multimodal, we used a music-related visual search paradigm. Specifically, experts and non-musicians were presented with search templates in a visual condition (i.e., a bar of music was displayed), or an auditory condition (i.e., a recording of the bar was played) and their eye movements were then monitored while they searched for the search template within a larger music score. The experts were more accurate at locating the search template, and this expertise advantage was larger for the auditory than the visual condition. The experts were also faster than non-musicians at fixating on the target in the auditory condition, but not in the visual condition. As evidence that the memory representations of the experts were multimodal, our results suggest that the experts were encoding the auditory templates as visual patterns to facilitate their performance during the visual search task. We interpret our results as support for the idea that chunks in the domain of music reading are multimodal.

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6:00-7:30 PM (5042)

A New Form of Contextual Cueing Effect: Learning of Association Between Multiple Targets and Multiple Contexts During Visual Search. JACKIE CHAU, *McMaster University*, CHAO WANG, *Huzhou University*, HONG-JIN SUN, *McMaster University* — The classical contextual cueing effect (CCE, Chun and Jiang, 1998) shows that visual search is faster in repeated than in novel contexts. While CCE typically emerges when a repeated context is consistently associated with a single target location, recent findings (Wang et al., *Attention, Perception, & Psychophysics*, 2020) suggest that learning can also occur when a repeated context is paired with one of multiple (2 or 4) possible targets, as long as those target locations are associated with other repeated contexts during learning. Here, we investigated whether all four target locations, randomly paired with four repeated contexts, were learned equally well. We matched the eccentricity of target locations between repeated and novel scenes, with eccentricity varying across four equidistant levels spanning from a central radius near the initial fixation to the far periphery. Scene-level analysis demonstrated comparable CCE for target locations at the three larger eccentricities, indicating successful learning of multiple context-target associations. However, CCE was negative at the smallest eccentricity suggesting learning of the target's location probability associated with repeated contexts and an attentional bias toward the periphery.

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SATURDAY

6:00-7:30 PM (5043)

Bilingual Children and Adults' Cognitive Performance: An Updated Analysis. ASLI YURTSEVER, *Iowa State University*, JOHN A E ANDERSON, *Carleton University*, JOHN G. GRUNDY, *Iowa State University* — The ongoing debate on how bilingualism affects executive functions calls for a thorough investigation into sample characteristics and the likelihood of performance differences between monolinguals and bilinguals. In this study, we conducted a Bayesian analysis of 147 studies that compared bilingual and monolingual children on executive function tasks (e.g., attention, inhibition, working memory, and shifting. Our analysis provides evidence that bilingual children consistently outperform monolinguals at a significantly higher rate than expected by chance, with extreme evidence supporting this alternative hypothesis (BF10 = 4.08 x 108). This effect is more pronounced than what has been previously reported with younger adult samples (Grundy, 2020; BF10 = 2.91 x 108). Furthermore, we examined how frequently these studies reported measures of bilingualism and sample characteristics. We uncovered a considerable amount of heterogeneity and missing information in the reported data. The most commonly reported information includes L2 proficiency, PPVT, and interactional contexts. We found that studies that reported objective measures of proficiency and sampled balanced bilinguals were more likely to demonstrate group differences.

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6:00-7:30 PM (5044)

Does Bilingualism Impact Rates of Mind Wandering? Evidence from Self-Report Measures and Reaction-Time Variability.. ALYSSA OQUENDO, *Nova Southeastern University*, JONATHAN BANKS, *Nova Southeastern University*, MERCEDES FERNANDEZ, *Nova Southeastern University* — The experience of speaking more than one language is believed to strengthen inhibitory control processes and possibly confer an executive function advantage in bilinguals. Given the role of executive function in mind wandering, it may be that bilinguals experience lower rates of mind wandering. To investigate, language groups completed six non-linguistic reaction-time tasks and were compared on rates of retrospective self-reported mind wandering based on several dimensions (occurrence of the thought, awareness, intentionality, and valence). Groups were also compared on reaction-time variability, since it has been shown to be predicted by mind wandering. Results did not reveal group differences on self-reported rates of mind wandering. However, bilinguals evidenced greater reaction-time variability, indicative of greater attention control failure, on four of the six tasks. Lastly, rates of mind wandering occurrence and awareness were positively correlated with reaction-time variability. These findings do not support the idea of a bilingual advantage in rates of mind wandering.

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6:00-7:30 PM (5045)

Reading and Executive Function Performance in Bilinguals with Mild Traumatic Brain Injury Using Novel Eye Tracking. ILEANA RATIU, *Arizona State University*, TAMIKO AZUMA, *Arizona State University* — Monolinguals with mild traumatic brain injury (mTBI) often have deficits in higher order executive functions, but less is known about bilinguals with mTBI. Researchers have argued that bilingualism offers a neuroprotective benefit against acquired neurological disorders. Others have found that bilinguals may experience greater deficits in performance than monolinguals following a mTBI. The current study examined performance on both simple and complex cognitive and reading comprehension tasks in individuals with and without a history of mTBI. Thirty-one participants with mTBI (16 monolinguals, 15 bilinguals) verified by a physician and 31 controls (15 monolinguals, 16 bilinguals) completed cognitive tasks and reading comprehension measures with auditory distraction while behavioral and eye movement measures were tracked. Group differences between bilinguals and monolinguals were not observed on the cognitive tasks; however, there was a trend showing that bilinguals with mTBI performed worse than other groups. Significant group interactions were observed for performance on the reading comprehension task particularly for eye movements suggesting that mTBI leads to subtle deficits on complex tasks.

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6:00-7:30 PM (5046)

Language Control in the Dynamic Interactional Contexts of Heritage Speakers. JASMIN HERNANDEZ SANTACRUZ, *University of California, Irvine*, JUDITH F. KROLL, *University of California, Irvine*, JULIO TORRES, *University of California, Irvine* — Bilinguals regulate the concurrent activation of their language systems by attending to social and linguistic cues, which prompt them to remain in a single language, to switch from one language to another, or to mix languages when codeswitching. Our study employs a switching paradigm to examine language production in heritage speakers (HS) of Spanish in Southern California, a group of bilinguals that has received less attention in the literature. Unlike studies that examine this process by comparing different groups of bilinguals in distinct interactional contexts, heritage speakers are unique because the same speaker may be required to manage the demands of using their home/societal languages differently within the course of a day. Although most of the bilinguals in our sample are more dominant in English, the societal language, our findings suggest that their lexical production in English and Spanish draws on proactive cognitive control in dynamic ways that are reflective of habitual language use of HS. This study serves as an opportunity to establish a baseline for future investigations that examine language switching in the presence of distinct cues for HS who live on both sides of the border.

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6:00-7:30 PM (5047)

Sustainability: A Dynamic Metalinguistic Judgment. GUADALUPE A. MENDOZA, *University of California, Irvine*, EVE HIGBY, *California State University, East Bay*, SAMANTHA RAMOS GOMEZ, *University of California, Riverside*, TAOMEI GUO, *Beijing Normal University*, JUDITH F. KROLL, *University of California, Irvine*, DAVID A. ROSENBAUM, *University of California, Riverside* — Bilinguals are frequently asked to assess their proficiency in each of the languages they speak. Although traditional metalinguistic self-rated assessments may capture some features of

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language proficiency, they do not capture the highly dynamic nature of bilingual speech planning. Here we take a novel approach to borrow a task from the domain of physical action planning to ask how bilinguals judge their ability to speak each language. Mandarin-English bilinguals, dominant in Mandarin as the L1, completed lexical production tasks in both languages and made judgments asking how well they could sustain each language. Picture naming was slower in L1 when it followed L2, a result that has been hypothesized to reflect the regulation of the dominant language. Sustainability judgments about which language they preferred to speak first and which is easier, reflected preferences for the L1, but were affected by the order of picture naming, suggesting that they tap into the dynamic planning processes in which bilinguals engage when they plan speech. The relationship between language production and sustainability judgments suggest that bilinguals draw on domain general cognitive resources that are shared across action and speech planning.

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6:00-7:30 PM (5048)

Effects of Emotional Valence on Foreign Language Learning Performance in Monolinguals and Bilinguals. KAIAH N. SOTEBEER, *Iowa State University*, ASLI YURTSEVER, *Iowa State University*, JOHN G. GRUNDY, *Iowa State University* — Emotional language tends to be remembered better than neutral language, which can aid both monolinguals and bilinguals in language acquisition. However, studies investigating the impact of emotional valence on novel word learning among bilinguals and monolinguals have yielded mixed results. Bilinguals may demonstrate superior language learning abilities due to their experience managing two languages and suppressing irrelevant information. The current study examined the performance of 57 monolinguals and 23 bilinguals (data collection ongoing, aiming for 100 per group) on a Turkish language learning task involving novel emotional and neutral Turkish words. Based on the present pilot data, we anticipate that bilinguals will outperform monolinguals on novel word learning and that emotion-label stimuli will be recalled more accurately than neutral stimuli. Critically, we also expect that diverse bilingual experiences, including unique language backgrounds and proficiency levels, will help to explain inconsistencies in learning outcomes in the literature.

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6:00-7:30 PM (5049)

Influence of Brief Second Language Training on Executive Function in Rural Primary Students In China. ADAM JOHN PRIVITERA, *Nanyang Technological University Centre for Research and Development in Learning,* LIHUA XIA, *Huazhong University of Science and Technology* — Executive functions significantly impact on a range of life outcomes. It is generally accepted that different experiences can modulate the development of executive functions. One such experience that has gained considerable attention is bilingualism, the use of two or more languages. We investigated the association between the amount of language experience and executive functions in low-income rural primary students in China. Participants (n = 93) completed a two-week summer program, receiving either 10 (Low Experience condition) or 20 sessions (High Experience condition) of English training. Conditions showed no pre-test differences across all measures. Results revealed that participants in the High Experience condition exhibited faster overall reaction times on the attention network task and number stroop task compared to the Low Experience condition. These findings indicate that even short periods of language training can enhance executive functions in primary school students at the initial stage of second language learning.

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6:00-7:30 PM (5050)

Risky Decision-Making and Alzheimer's Disease Descendants. HEAVEN CAUBLE, *The University of Alabama*, SHEILA BLACK, *The University of Alabama* — Decision-making capacity (DMC) is one of the most severe impairments of Alzheimer's disease (AD). It can affect daily functioning in every aspect of life and oftentimes has extreme consequences. However, unlike other impairments of AD (e.g., memory and executive function), DMC has not been extensively researched as an early symptom. By studying people who are genetically at-risk of developing AD via family, researchers may be able to detect early differences in DMC as a possible result of genetic predisposition of AD. Thus, 60 middle-aged adults will be recruited into groups based on family medical history of AD and complete the Game of Dice Task, a gambling task that measures risky decision-making. We expect to find that family medical history of AD will contribute to variances between scores, indicating that having an increased genetic predisposition to AD is associated with risky decision-making in mid-adulthood for those individuals. This research could support looking at decision-making capacity as a possible early symptom of AD, thus allowing for earlier intervention.

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6:00-7:30 PM (5051)

The Effects of Acoustic Challenge on Context Use in Older Adults: Evidence from Event-Related Brain Potentials. ALLYSON COPELAND, *University of Utah*, KAREN BENNETT, *University of Utah*, JACK SILCOX, *University of Utah*, BRENNAN PAYNE, *University of Utah* — In speech comprehension, older adults (OAs) face challenges from factors such as noisy environments and hearing loss. In this study, we test how acoustic challenge impacts context processing using event-related potentials (ERPs) in OAs (N = 48). OAs listened to highly-constraining sentences ending in an expected or unexpected word or weakly constraining sentences. Sentences were presented in quiet or with modest background noise (+ 3 dB SNR). We observed a reduced and delayed N400 expectancy effect in noise relative to quiet, suggesting impaired semantic retrieval. We also observed a late left-lateralized frontal expectancy effect in quiet, an effect that has been previously associated with high-level comprehension processes (e.g., message building, ambiguity resolution). However, this frontal response was significantly reduced and delayed in noise. Collectively, these findings suggest that older adults can and do rely on context to facilitate sentence processing, but even modest acoustic challenge can substantially impair those benefits.

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SATURDAY

6:00–7:30 PM (5052)

Is the Aha! Experience Ageless? Exploring Insight Versus Analytical Problem Solving in Older Adults. FEBE DEMEYER, *KU Leuven*, HANS STUYCK, *KU Leuven*, CELINE R. GILLEBERT, *KU Leuven*, EVA VAN DEN BUSSCHE, *KU Leuven* — Challenges in the 21st century include keeping a growing population of older adults active on the work floor, where problem solving is vital. Typically, analytical step-by-step problem solving strategies, which rely on executive functions, decline with age (Thornton et al., 2013). However, we can also solve problems using insight, often accompanied by the Aha! experience. Insight is the sudden appearance of the solution after being stuck solving a problem (Bowden et al., 2005). As insight is expected to be less reliant on executive functions due to its more implicit nature, it might remain intact or even enhance in aging. To study this, we compared insight and analytical problem solving between young and older adults using the compound Remote Associates test (Bowden & Jung-Beeman, 2003). Participants received word puzzles that can be solved both with insight and analytical problem solving. First results indeed indicate that whereas older adults perform worse when solving problems analytically, they solve more problems with insight compared to young adults. If insight problem solving proves to be enhanced in older adults, then stimulating insight, for example at the workplace, could benefit older adults' problem solving skills.

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6:00–7:30 PM (5053)

Prediction Error: When Events Violate our Expectation. YOUNES ELBISHARI, *Kansas State University*, MAVERICK E. SMITH, *Washington University in St. Louis*, HEATHER BAILEY, *Kansas State University*, ELLIE WARNES, *Kansas State University*, TRACE MCQUEEN, *Kansas State University*, MORGAN SKINNER, *Kansas State University* — Our perceptual system constantly makes predictions about the near future. In the current study, we evaluated whether prior knowledge and age influence one's ability to make predictions during complex, dynamic events. In Experiment 1, 140 participants (aged 18-75 years) watched and segmented movies with or without context. In Experiment 2, 30 young and 30 older adults watched the same movies with the same context manipulation; however, the movie was paused several times and the participant was asked to make predictions about what would happen 5 sec later. In Experiment 1, we found that context did not influence event segmentation ability. In Experiment 2, we will compare young and older adults' predictions within the same events and across different events as well as predictions when context was and was not provided. Older adult data collection is still ongoing. We expect to find age-related deficits in prediction accuracy, but this deficit may be alleviated with context. Such results would indicate that prior knowledge helps older adults understand ongoing activity and make predictions about future events.

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6:00–7:30 PM (5054)

The Effects of Exploration on Map Learnings: Examining the Accuracy of Map Drawing in Older- and Younger Adults. HARUKA IWANE, *University of Tsukuba*, ETSUKO T. HARADA, *University of Tsukuba* — Map memory is distorted by semantic relatedness among landmarks, but this effect was shown to be smaller with aging (Thomas et al., 2012). It is believed to be because older adults, who have difficulty memorizing maps, focus on encoding the location information and are not influenced by semantic information. However, the previous research used the method of explicit memory, not the incidental learning method (i.e., learning maps through exploratory behavior). In this study, we conducted an experiment in which participants explored multiple targets on a map presented on a screen, and then compared the posterior map-drawing performance between age groups, as well as the landmark-distance evaluation tasks. As a result, older adults showed lower memory accuracy in map drawing than younger adults and only older adults showed distortion by semantic relatedness with the semantically non-organized map. Implications that older adults used semantic information to compensate for their poor spatial memory will be discussed.

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6:00–7:30 PM (5055)

Objective Cognition and Physical Activity in Older Adults with Insomnia: It is Time to Consider Chronotype. MADISON MUSICH, *University of Missouri*, CHRISTINA MCCRAE, *University of South Florida*, DAVID BEVERSDORF, *University of Missouri*, ASHLEY F. CURTIS, *University of South Florida* — Despite independent associations between chronotype, physical activity (PA), and cognition, the interactive association in older adults with sleep complaints is unclear. We examined whether chronotype impacts the association between PA and cognition in older adults with sleep complaints. Participants (N = 39) aged 60 years and older completed chronotype (Morningness-Eveningness Questionnaire: morning [M-] or evening [E-] types), PA (International Physical Activity Questionnaire), and cognition (National Institutes of Health Toolbox Cognition Battery) measures. Moderated regressions determined independent and interactive (with chronotype) associations between cognition and PA. In E-types, worse processing speed was associated with greater total ($b = -.01$, $p < .01$), vigorous ($b = -.01$, $p < .01$), moderate ($b = -.02$, $p = .03$), and walking ($b = -.01$, $p < .01$) PA. Preliminary findings suggest in E-type older adults with sleep complaints, greater PA levels are associated with worse lower-level cognitive functioning. Future prospective studies should examine potential mechanisms underlying evening chronotype's impact on the PA and cognition relationship (e.g., circadian dysfunction and endocrine system interactions; shared hyperarousal mechanisms) in aging populations.

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6:00–7:30 PM (5056)

Crossmodal Attention Switching: Impact of Aging on Selective Attention Within Task-Switching Paradigm. LUDIVINE SCHILS, *Rheinisch-Westfälische Technische Hochschule Aachen University*, IRING KOCH, *Rheinisch-Westfälische*

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Technische Hochschule Aachen University, PI-CHUN HUANG, *National Cheng Kung University*, SHULAN HSIEH, *National Cheng Kung University*, DENISE NADINE STEPHAN, *Rheinisch-Westfälische Technische Hochschule Aachen University* — In line with the well-known visual dominance effect, experiments in attention switching using visual and auditory modalities showed performances asymmetry. Age-related impairments regarding this effect were observed in working memory tasks. However, age-related differences in crossmodal attention switching have not been studied extensively yet. In two experiments, we used a task-switching paradigm and exposed young and older participants to unimodal central cues and bimodal lateralized stimuli. Participants answered manually depending on the location of the target in the relevant modality. Results showed typical modality switch costs, age-related larger mixing costs, and a decrease of performance in incongruent trials depending on the target modality (visual dominance effect); but the latter was not modulated by age. In the second experiment, we added a CTI variation to investigate the influence of task-preparation. We replicated the previous results, but no consistent effect of task-preparation could be found, preventing us to draw conclusions at this level. Altogether, results suggest that older adults do not suffer from an age-related impairment in suppressing visual distractors in spatial, crossmodal attention-switching tasks.

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6:00–7:30 PM (5057)

Positivity Perception Towards Personal and National Past and Future amidst the Pandemic Among Young and Older Canadians. ANGELA XIANG, *Toronto Metropolitan University*, MARIAH LECOMPTE, *Toronto Metropolitan University*, LIXIA YANG, *Toronto Metropolitan University* — People typically hold a more positive view of personal than national past and future events (Liu & Szpunar, 2023). In light of a reduced focus on negative aspects with aging (Daley et al., 2023), the current study examines age differences in positive perception of personal vs. national past and future amidst a negative public event; the COVID-19 pandemic. A total of 123 participants (59 young and 64 older adults) rated the positivity towards their personal and national (i.e., Canada's) past (pre-pandemic) and future (post-pandemic) based on a scale of 1 (most negative) and 100 (most positive). A more positive perception was found for older than young adults, for personal over national and past over future perceptions. However, a positive personal future bias was larger in young than older adults, primarily driven by a less optimistic view of the national future.

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6:00–7:30 PM (5058)

Perspective Shifting in Films: Testing the Impact on Child and Adult Viewers' Open-Mindedness. FRANCESCA CARBONE, *University of Kent*, ABIGAIL PITT, *University of Kent*, STACIE FRIEND, *Birkbeck, University of London*, MURRAY SMITH, *University of Kent*, ANGELA NYHOUT, *University of Kent*, HEATHER FERGUSON, *University of Kent* — A common philosophical assumption is that art can open people's minds by providing new perspectives and reshaping their perception of the world. This study aimed to empirically test the impact of perspective shifts in films on various characteristics of open-mindedness. In a between-subjects design, 300 adult and child participants were randomly assigned to watch a film clip, entailing either multiple perspectives or a single perspective on the same event (film conditions) prior to completing a battery of open-mindedness tasks (assessing creativity, imaginability, cognitive flexibility, openness to new evidence), or to complete the open-mindedness tasks without having watched a film (control condition). We also measured online indicators of attention and arousal while participants watched the film (eye-tracking, heart rate, electrodermal activity) and individuals' aesthetic fluency (film expertise). Results suggest that watching a film that requires perspective shifting impacts viewers' attention and arousal, and modulates some (but not all) behavioural indicators of open-mindedness.

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6:00–7:30 PM (5059)

The Alignment of Category Ratings and Eye Gaze Patterns for Stimuli Used in a Goal-Directed Task. SETH CHIN-PARKER, *Denison University* — We assessed how goal-directed interactions impact both category-goodness ratings and attention to attributes of items. In the current study, participants' eye movements were tracked as they engaged in a same-different task with novel stimuli. Participants then completed goal-directed task trials using physical copies of the stimuli. This was followed by a second block of the same-different task. We analyzed how their attention to the goal-relevant, goal-incidental, and goal-irrelevant attributes of the items shifted from the initial block of the same-different task to the second. We compared the eye-gaze patterns to corresponding category-goodness ratings reported in a prior study (Chin-Parker, Gerlach, & Brown, under review). Like the category-goodness ratings, the gaze patterns clearly distinguished between the goal-relevant and goal-irrelevant attributes. However, there was no distinction between the goal-relevant and goal-incidental attributes in terms of the gaze patterns, but there was in terms of the category-goodness ratings. We discuss the implications of these results for understanding the role of attentional allocation in goal-directed concept acquisition.

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6:00–7:30 PM (5060)

Semantic Priming of Associative Gender Concepts and its Relationship with Explicit Gender Ratings. SARAH K. JOHNSON, *Moravian University* — Explicitly gendered concepts (male/female names, pictures) can prime associatively gendered ones, such as roles (nurse, mechanic) and traits (gossipy, macho), using a related gender categorization task (e.g., White et al., 2018). Associatively gendered words are also primed by explicitly gendered words (e.g., she, him, wife, brother) and the same words are explicitly rated as gendered on a masculinity/femininity rating scale. In the current study, I replicated these gender priming effects (N = 23) and explicit rating differences (N = 88), both of which were largely the same across male and female participants. Additionally, I directly explored the relationship between these implicit and explicit stereotyped categorizations in a subset of the same participants (N = 20). While the presence of parallel implicit and explicit effects for the same words

suggests aligned implicit and explicit gender biases, the association between these two effects was not positive, as might be expected. In fact, individuals with stronger priming effects showed smaller rating differences between explicitly female and male gendered words, raising questions about the potential filtering individuals may do when explicitly characterizing word gender.

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6:00–7:30 PM (5061)

Declarative Retrieval May Reveal Emerging Rules Under Probabilistic Feedback in Category Learning. NICOLAS MARCHANT, *Universidad Adolfo Ibáñez*, SERGIO CHAIGNEAU, *Universidad Adolfo Ibáñez* — There is an ongoing debate in category learning about the role of probabilistic feedback. While probabilistic feedback is thought to lead only to suboptimal strategies, some researchers argue that patients with motor impairments struggle to learn under unreliable training, suggesting that a procedural-like system is necessary for category learning under unreliable feedback conditions. There is no consensus on whether probabilistic category learning is better explained by multiple memory systems (declarative vs. procedural) or by a single unitary declarative system. To contribute to this debate, we used a probabilistic version of a prototype A/B distortion task in two experiments. We found that participants' learning was hindered by probabilistic feedback (perhaps due to task cognitive demands), but that they were still able to generalize in a similarity judgment transfer phase, demonstrating knowledge of the critical cues in each experimental condition. These results suggest that individuals may use rules in unreliable situations and even when cognitive demands are high.

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6:00–7:30 PM (5062)

Inter-Tasks Transferability of a Subjective Cognitive Load Classification Model. LINA-ESTELLE LINELLE LOUIS, *Centre National de Recherche Scientifique (CNRS) & Laboratoire des Sciences du Numérique de Nantes (LS2N)*, AURÈLIEN VAN LANGHENHOVE, *Centre Hospitalier Universitaire de Nantes*, VINCENT ROUALDES, *Centre Hospitalier Universitaire de Nantes*, SÉBASTIEN RAVOUX, *Onepoint*, SAÏD MOUSSAOUI, *Centrale Nantes*, ISABELLE MILLEVILLE-PENNEL, *Laboratoire des Sciences du Numérique de Nantes (LS2N) & Centre National de Recherche Scientifique (CNRS)* (Sponsored by Isabelle Milleville-Pennel) — Studying cognitive load (CL) presents several challenges, including the need for accurate and generic CL classification models. Previous studies have solely relied on physiological data to measure CL, as in Appel et al. (2021). However, what about subjective CL measure? Thus, we proposed a three-class classification model of subjective CL through five cognitive tasks: n-back, Corsi, go/no-go, WCST, and dual task (Louis et al., 2023). For this conference, we examined whether a model trained on a Task A could accurately predict the subjective CL classes of a Task B. Firstly, the results showed that Corsi was the most effective task for classifying subjective CL based only on performance and complexity levels, achieving 80% accuracy. Moreover, a classification model trained on n-back, WCST, and dual task could predict the subjective CL classes of Corsi with over 70% accuracy. This perspective would save time in setting up and training a classification model.

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6:00–7:30 PM (5063)

Interleaving Differentiates Category Representations in Medial Prefrontal Cortex to Enhance Generalization of Naturalistic Stimuli. SHARON M. NOH, *University of California, Irvine*, NEAL W. MORTON, *University of Wisconsin–Milwaukee*, ALISON PRESTON, *The University of Texas at Austin* — Much research has investigated how learning sequences (blocked vs. interleaved) impact category learning with mixed results. We used fMRI methods to understand the mechanism by which different sequences yield different learning improvements. To measure learning-related changes in neural representations as a function of learning sequence, participants were scanned during presentation of each painting before and after learning categories in a blocked and interleaved sequence. Consistent with prior work (Kornell & Bjork, 2008), we found better generalization for interleaved categories relative to blocked categories. We also found that exemplar representations in medial prefrontal cortex (mPFC) were modulated by learning schedule, with greater separation between interleaved categories than blocked categories. Furthermore, individual differences in the strength of category differentiation in mPFC correlated with the interleaving benefit in generalization performance. Our results provide neural evidence that interleaving differentiates categories, promoting formation of distinct representations in mPFC that may support successful categorization of new stimuli.

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6:00–7:30 PM (5064)

Generalization of Category Memberships Is Influenced by Category Accessibility in Early Training. LEE-XIENG YANG, *National Chengchi University*, TAI-LUN HUANG, *National Chengchi University* — We demonstrated that categorization generalization can be influenced by category accessibility. The stimuli were 15 red circular figures varying on saturation, with the lowest 5 as Category B, the highest 5 as Category A, and the middle 5 as transfer items. In Condition 1, the frequency of Category B (A) exemplars gradually decreased (increased) through training blocks, making Category B more accessible in early training. However, in Condition 2, a reversed order was adopted, making Category A more accessible. In the transfer phase, all 15 stimuli were used in 2 blocks. It was found that the middle item between the two categories tended to be classified as Category A in Condition 1 but Category B in Condition 2. The GCM could not account for these results, while the SDGCM could with adjustable weightings for different category accessibilities and the assumption that categorization is based on similarity and dissimilarity to exemplars. The best-fitting modeling results revealed that a higher accessibility was given to Category B and Category A respectively in Condition 1 and Condition 2, suggesting that the category accessibility in early training can thereafter influence category generalization.

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6:00–7:30 PM (5065)

Degrees of Functionality Affect Categorization of Artifacts. KIMBERLY ARJUNE, *Syracuse University*, JEFFREY C. ZEMLA, *Syracuse University* — We investigate how people categorize artifacts and the role of functionality on categorization judgments. Participants were shown six artifacts (such as blanket, sunglasses, and basketball) under four transformations that varied in the extent to which functionality was impaired (cosmetic change, temporarily non-functional, impaired functionality, obstructed functionality). Participants judged whether the object was still a member of its kind after the transformation. We found that non-functional artifacts were consistently judged as being less representative of their kind compared to functional artifacts that underwent a cosmetic change. In addition, temporarily non-functional artifacts and intact artifacts that were obstructed in functionality were also rated as less representative of their kind. These findings suggest a graded nature of functionality, where greater disruptions to functionality lead to lower category membership ratings.

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6:00–7:30 PM (5066)

Learning Causal Concepts as a Function of Causal Structure. JUDITH L. BURKLE, *Syracuse University*, MICAH GOLDWATER, *University of Sydney*, DANIEL CORRAL, *Syracuse University* — We report three experiments that explore the influence of causal structure on the acquisition of causal concepts. Across three experiments, subjects completed a classification task with corrective feedback. In Experiments 1 and 2, subjects read hypothetical scenarios encompassing one of five causal structures: (a) common cause, (b) common effect, (c) causal chain, (d) positive feedback loop, and (e) negative feedback loop. Experiment 1 consisted of real-world scenarios, whereas Experiment 2 comprised causal events with made up labels. In Experiment 3, positive and negative feedback loop structures were replaced with a single loop structure; the three other causal structures from Experiments 1-2 were also included. Experiment 3 depicted these structures graphically via objects and arrows, wherein the arrows indicated the causal connection(s) among the objects. Across all three experiments, subjects were best able to learn structures that instantiated causal loops, whereas common cause structures were the most challenging to learn.

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6:00–7:30 PM (5067)

The Influence of Perceived Knowledge of Severe Weather and One's Type of Home on Sheltering Decisions to Tornado Warnings. MARK A. CASTEEL, *The Pennsylvania State University, York* — Research I recently published found that individuals in the lowest quartile of objective severe weather knowledge overestimated their knowledge, while individuals in the highest quartile underestimated their knowledge, a disconnect known as the Dunning-Kruger Effect. Further, those in the lowest quartile were also those individuals most likely to make poor sheltering decisions in tornado scenarios, while those in the highest quartile were more likely to make appropriate sheltering decisions. My previous research did not, however, examine sheltering decisions as a function of type of one's home, as manufactured homes are more unsafe during tornadoes and driving away may be a reasonable decision. The current research therefore assesses sheltering decisions as a function of type of one's home. Participants first took a test of both perceived and actual severe weather knowledge. Participants then read four tornado wireless emergency alerts on a simulated smartphone screen. After each alert, participants made protective action decisions. Protective decisions were analyzed both as a function of objective knowledge quartile and type of one's home. Implications of the results will be discussed, and potential next steps will be offered.

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6:00–7:30 PM (5068)

Task Strategy Selection. MICHAEL S. GILBERT, *University of California, Riverside*, DAVID A. ROSENBAUM, *University of California, Riverside* — Learning a new strategy to complete a task is a complex process that involves explicit and implicit elements. An experiment to explore the effects of sequence perception in task stimuli on strategic choice was conducted. Participants freely clicked anywhere on a blank screen, then clicked a target that appeared, and repeated. Targets were presented in a pattern, but this was not disclosed to participants. Three variations of pattern length were utilized: 4, 6 and 8. Three strategies were identified: Reactive, that places free response clicks close to a previous target; Averaging, that places free clicks close to the center of the screen; and Predictive, that places free clicks close to the predicted location of the next target. Sequence length had a significant effect on strategy choice, with free response clicks in longer sequences being significantly closer to the previous target, a Reactive strategy marker. As predicted, the lack of detailed instructions and non-disclosure that targets appeared in a sequence boosted Reactive strategy overall. Future work will explicitly disclose that targets appear in a pattern to participants, and include additional measures to detect and categorize participant strategic choice.

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6:00–7:30 PM (5069)

The Relation between Environmental Awareness and Stock Returns. MATTHIAS HORN, *Bamberg University*, ANDREAS OEHLER, *Bamberg University*, AMAL DABBOUS, *Université Saint-Joseph de Beyrouth*, ALEXANDRE CROUTZET, *TÉLUQ University* — We assess if a measure of global environmental awareness can forecast stock returns. Further, we test if stocks of more environmentally friendly companies are expected to show higher returns than those of less environmentally friendly companies when environmental awareness among investors increases. To capture environmental awareness, we use the index of Dabbous et al. (2023) which is based on Google search volumes. Results confirm that individual stocks with a higher E-pillar score show lower returns and alphas. Second, the findings indicate that when climate change concerns rise unexpectedly, stocks with higher E-pillar score reduce the differences in returns and alphas or show even higher returns and alphas than stocks with lower E-pillar score. The results confirm that when environmental issues matter, stocks with higher environmental risks suffer more than stocks with lower environmental risks.

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SATURDAY

6:00–7:30 PM (5070)

Search Termination Decisions Are Consistent Across Varied Meta-Cognitive Self-Assessments. DAVID A. ILLINGWORTH, *California State University, Long Beach*, MICHAEL DOUGHERTY, *University of Maryland, College Park*, RICK THOMAS, *Georgia Institute of Technology* — In our previous research, we proposed a potential causal link between meta-cognitive self-assessments and decisions to terminate information search. To build upon our previous findings, we conducted a replication study where we expanded upon our experimental design, manipulating the method through which we obtained meta-cognitive self-assessments in a task involving sequential information acquisition. In doing so, we investigated whether participants were actively evaluating underlying hypotheses to support their meta-cognitive self-assessments. Our manipulation was implemented across three levels: judgment-of-knowing, judgment-of-knowing with explicit instructions to evaluate hypotheses, and retrospective-confidence-judgment after explicit instructions to evaluate hypotheses. Our findings demonstrated the robustness of the previously reported pattern of terminating information search, regardless of how we elicited meta-cognitive self-assessments. Specifically, we observed that participants engaged in more search behavior when they expressed lower confidence. Collectively, our results indicate a connection between information search behavior and a process of evaluating information based on memory.

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6:00–7:30 PM (5071)

Healthcare Professionals' Attitudes to Mandatory COVID-19 Vaccination: Data from Four European Countries. LINDA KARLSSON, *University of Turku*, AMANDA GARRISION, *Southeastern Health Regional Observatory (ORS PACA)*, LISA FRESSARD, *Southeastern Health Regional Observatory (ORS PACA)*, STEPHAN LEWANDOWSKY, *University of Bristol*, ANGELO FASCE, *University of Coimbra*, DAWN HOLFORD, *University of Bristol*, PHILIPP SCHMID, *University of Erfurt*, CORNELIA BETSCH, *University of Erfurt*, FERNANDA RODRIGUES, *University of Coimbra*, EMMA ANDERSON, *University of Bristol*, FREDERIKE TAUBERT, *University of Erfurt*, MICHELLE BARDEN, *University of Bristol*, PIERRE VERGER, *Southeastern Health Regional Observatory (ORS PACA)*, ANNA SOVERI, *University of Turku* — Mandatory vaccinations are a debated topic. As healthcare professionals (HCPs) are a common target group of vaccine mandates, and constitute the link between vaccination policies and the public, understanding their attitudes to vaccine mandates is important. In the spring of 2022, we investigated attitudes to COVID-19 vaccine mandates among 2,796 physicians in four European countries: Finland, France, Germany, and Portugal. Across all countries, 78% of the physicians supported COVID-19 vaccine mandates for HCPs, 49% supported COVID-19 vaccine mandates for the public, and 67% endorsed COVID-19 health passes. Notable differences were observed between countries, with attitudes to mandates found to be more positive in countries where the mandate, or similar mandates, were in effect. The associations between attitudes to mandates and general vaccination attitudes were mostly small and differed between countries. Nevertheless, physicians with more positive mandate attitudes perceived vaccines as more beneficial (in Finland and France) and had greater trust in medical authorities (in France and Germany). The present study contributes to the body of research that support decision-making related to potential mandate implementation.

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6:00–7:30 PM (5072)

The Role of Information Availability in Simple Decisions. DOUGLAS G. LEE, *Tel Aviv University*, KOSTANTINOS TSETSOS, *University of Bristol*, GIOVANNI PEZZULO, *National Research Council of Italy*, NITZAN SHAHAR, *Tel Aviv University*, MARIUS USHER, *Tel Aviv University* — Most models of choice are based on the idea that people process information about the options before deciding. Recent advances in computational theories have purported that people will seek to process more information about options when they are less certain about the option values. Specifically, they will allocate more (e.g., visual) attention to options with lower certainty, in an effort to increase their feeling of certainty by processing additional information. But such models assume that information is readily available, and that people can process as much as they want whenever they want. I introduce a new variable, information availability, to test what happens when people seek more information but cannot find it. I will present preliminary data from a behavioral/eye-tracking experiment, and I will discuss ideas for how to best model this additional variable.

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6:00–7:30 PM (5073)

Unifying Evidence Accumulation and Simple Heuristics: Exploring a Drift-Diffusion Model Approach to Multi-Attribute Decision-Making. LARS M. REICH, *University of Klagenfurt*, BARTOSZ GULA, *University of Klagenfurt* — Adaptive toolbox and evidence accumulation are frequently viewed as competing accounts of multi-attribute decision-making. In contrast, we here consider a unified approach, assuming that evidence accumulation can provide a computational-level and simple heuristics an algorithmic-level description of the decision-making processes. We explore the unified approach by formulating versions of the drift-diffusion model (DDM) adapted to mimic decisions based on simple heuristics. To this end, we decompose the drift rate of the DDM into strategy-specific evidence extracted from each decision trial. The models closely reflected individual decisions and decision times when participants were instructed to use the corresponding strategy. The models plausibly captured strategy-specific decision difficulty. For TTB, the model captures slower and less consistent responses with increasing search depth. For EW, slower and more inconsistent choices are predicted in trials with smaller evidence differences. We discuss how the unified account can be extended to include further heuristics and how computational-level assumptions can constrain the number of possible heuristics in the toolbox in order to prevent strategy sprawl.

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SATURDAY

6:00–7:30 PM (5074)

The Spread of Financial Unfairness: Paying Forward and Reciprocity in Consecutive Interactions. JOANNA RUDZIŃSKA-WOJCIECHOWSKA, *Kozminski University*, KATARZYNA SEKŚCIŃSKA, *University of Warsaw*, JERZY WOJCIECHOWSKI, *University of Warsaw* — Although reciprocity and paying forward are often investigated, studies usually focus on the first interaction after unfair treatment. Therefore it is unclear how persistent are the observed effects. The aim of the study was to investigate two consecutive financial decisions of people treated unfairly. We observed and compared their decisions made in interactions with people who had wronged them (reciprocity) and with uninvolved third parties (paying forward). Six hundred eighty participants (365 females, 314 males, 1 other) aged 18-65 years (M = 42.36; SD = 13.57) took part in the study. The results demonstrated that after unfair treatment, people pass fewer resources to the person who had wronged them than to the new person. However, when people are given a chance to reciprocate, in the next interaction, they treat the wrong-doer like a new person. Meanwhile, when people meet the wrong-doer in the second interaction for the first time, they still treat this person worse than a new person.

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6:00–7:30 PM (5075)

Moderation Effect of States of Power and Financial Optimism in the Relationship Between Sense of Power and Risky Financial Choices. KATARZYNA SEKŚCIŃSKA, *University of Warsaw*, DIANA JAWORSKA, *University of Warsaw*, JOANNA RUDZIŃSKA-WOJCIECHOWSKA, *Kozminski University*, AGATA TRZCIŃSKA, *University of Warsaw* — The research aimed to further develop knowledge on the mechanisms that enhance risk-taking propensities among powerful people. The experimental study on Polish working adults investigated the single and joint moderating effects of the states of financial optimism and power in explaining the positive relationship between sense of power and risky investing and gambling choices. In line with our expectations, the results of the study showed that the states of power and financial optimism jointly moderated the positive relationship between the sense of power and risky financial choices. This effect was the strongest under the state of power and optimism conditions and the weakest when lack of power and pessimism were induced; thus boundary conditions for previously observed mechanisms were identified. The results of the research shed light on the way financial optimism and state of power moderate the effect of power on financial risk-taking and thus contribute to theoretical knowledge of the consequences of power.

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6:00–7:30 PM (5076)

Who Shall Live? Cultural Similarities and Differences in Moral Judgements. VICTORIA BART, *UMIT Tirol–Private University for Health Sciences and Health Technology*, ERDENECHIMEG SHARAVDORJ, *National University of Mongolia*, ENEREL BOLDBAATAR, *National University of Medical Sciences*, DELGERJAV MUNKHNASAN, *National University of Mongolia*, MARTINA RIEGER, *UMIT Tirol–Private University for Health Sciences and Health Technology* — Differences in moral judgements (e.g., whether to sacrifice one person to save several others) can be investigated with moral judgement paradigms. We examined cross-cultural differences in the influence of instrumentality of harm (death of one person as instrument to save others or as incidental side-effect) and one's own involvement (one's own life or only the life of others is at risk) on moral judgements. Western (Austrian) and Eastern (Mongolian) participants read moral dilemmas and chose whether they would carry out an action that sacrifices one but saves several others. A lower rate of utilitarian actions (sacrificing one to save others) in instrumental than in incidental dilemmas in both cultures indicates that instrumental harm is universally deemed worse than incidental harm. However, in instrumental dilemmas, Mongolians chose more utilitarian actions than Austrians. Thus, Mongolians more likely act in favor of group welfare. Further, in instrumental dilemmas, Austrians chose more utilitarian actions when their own life was at risk than when only the life of others was at risk. Thus, Austrians are more likely to act in favor of self-interest. Taken together, culture influences moral decisions.

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6:00–7:30 PM (5077)

Improving Machine Learning Model Calibration by Training with Crowdsourced Soft Labels. GUNNAR P. EPPING, *Indiana University*, JENNIFER S. TRUEBLOOD, *Indiana University*, WILLIAM R. HOLMES, *Indiana University*, DANIEL MARTIN, *University of California, Santa Barbara*, ANDREW CAPLIN, *New York University* — Machine learning classifiers are trained to take in a stimulus and output a probability distribution describing the likelihood of the stimulus belonging to each class. In the context of classification, human-AI collaborative settings leverage the machine's predictions to assist the human decision-maker. The machine's predicted probability distribution over classes contains valuable information that informs the human decision-maker of not only the predicted classification but also the machine's confidence in that classification. Despite the importance of both aspects of the machine's predictions, improving model calibration is often viewed as a secondary aim. We investigate whether we could improve model calibration by training a neural network to classify white blood cell images using soft labels obtained through crowdsourcing. Beyond just using soft labels, we evaluate whether we could improve the quality of these labels, both by training individuals to be better calibrated using proper scoring rules and rescaling the group-level labels using several recalibration algorithms. We report the downstream effects of training on soft labels on model calibration and accuracy.

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6:00–7:30 PM (5078)

An Empirical Test of the Dual-Stage Dual-Threshold Evidence Accumulation Theory for Decision-Making, Motor Preparation, and Motor Execution. EDOUARD DENDAUW, *Université de Franche-Comté*, GORDON D. LOGAN, *Vanderbilt*

SATURDAY

University, NATHAN EVANS, *University of Queensland*, THIBAULT GAJDOS, *Aix-Marseille University*, MATHIEU SERVANT, *Université Bourgogne Franche-Comté* — We recently developed an extension of the diffusion model to jointly account for decision and motor processes in choice laboratory tasks. This extension assumes that the evidence accumulation decision variable is continuously transmitted to the motor structures that prepare the response, but is corrupted by noise during the transmission process. The motor preparation system implements a mechanism that approximates a Kalman-Bucy filter to optimally recover the original decision signal from noise. The resulting variable is transmitted to response-relevant muscles when it exceeds a threshold level of activation, corresponding to the beginning of motor execution. The transmission persists until a threshold amount of force has been produced by the muscles to issue the response. The present study aims at testing the architecture of the model by combining manipulations of response force and perceptual difficulty in a 2-choice random dot motion task. Our results challenge predictions from the model.

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6:00–7:30 PM (5079)

'Memento' Memory: Effects of Non-Linear Narrative Structures on Memory. JAMES ANTONY, *California Polytechnic State University*, ANGELO C. LOZANO, *California Polytechnic State University*, PAHUL DHOAT, *California Polytechnic State University*, KELLY A. BENNION, *California Polytechnic State University* — Free recall of word lists shows temporal contiguity, or clustering of items presented nearby in time. However, this is reduced by other forms of structure such as semantic relationships among the words. Here we asked how structure affects recall using a rich media stimulus with a non-linear causal structure between events (the movie "Memento," in which one storyline is presented in reverse). We had three groups of subjects who were asked to recall the movie in different ways: (1) freely, (2) in the narrative order (how it was presented), or (3) in chronological order. Subjects leaned on both narrative and chronological orders to guide their recall—with a modest bias towards the strategy we instructed them to use. However, chronological order was the dominant organizing characteristic in all groups. Intriguingly, whereas in list recall paradigms temporal contiguity shows a forward bias, here there was a backward bias, aligning with how the dominant "Memento" storyline progressed in reverse. Overall, we replicated findings from word list recall paradigms showing that other forms of structure predominate in recall, reducing the strength and even reversing the direction of contiguity effects from standard laboratory experiments.

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6:00–7:30 PM (5080)

Dynamic Shifts in Internal and External Hippocampal Processing During Event Perception. KAREN SASMITA, *Cornell University*, KHENA M. SWALLOW, *Cornell University* (Sponsored by Khena Swallow) — Processing everyday experience may rely on predictions made by actively held representations of ongoing experience (event models). To accurately reflect the current situation, event models need to be updated when events change at event boundaries. This suggests that brain regions involved in representing events may prioritize external sources of information at event boundaries and internal sources of information within events. Using data from 16 participants watching a 50-minute episode of Sherlock Holmes (Chen et al., 2017), this study therefore examined changes at event boundaries in functional connectivity between the hippocampus and networks associated with more internal (default mode subnetwork A) or external (visual) information processing. Dynamic functional connectivity analyses revealed shifts in hippocampal connectivity from the default mode to visual networks when one event ended and another began. Further, connectivity between all three sets of regions decreased immediately before a boundary followed by a sharp increase afterwards. The online processing of event boundaries thus involves dynamic shifts in the integration of internal and external information into event models by the hippocampus over time.

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6:00–7:30 PM (5081)

Flexing the Imagination Muscle: Equal Benefits of Three Visualisation Tasks on Goal Expectations. RACHEL ANDERSON, *University of Hull*, J. HELGI CLAYTON MCCLURE, *University of Hull*, JENNIFER BOLAND, *York St John University*, KEVIN J. RIGGS, *University of Hull*, STEPHEN DEWHURST, *University of Hull* — Previous research suggests that repeatedly engaging in positive episodic simulations of potential future events modifies one's expectations about those events, making positive events seem more vivid and likely to occur. We extended this work to explore the role of positive episodic simulation on expectations about personal goals. 175 participants generated personal goals. Vividness, controllability, likelihood and importance of goal achievement, and anticipated emotions associated with goal achievement/failure, were rated before and after one of four intervention tasks (goal-related episodic simulation, generic episodic simulation, neutral visualisation, and a non-visualisation control task). We found that, relative to the non-visualisation control task, the other three conditions led to increases in vividness and perceived controllability of goal achievement. There were some effects that were dependent on participants' level of depressive symptoms. Our findings suggest that engaging visual imagery modifies expectations and anticipated emotions about goal achievement. However, we found little evidence that episodic simulation benefits goal expectations over and above a neutral visualisation task.

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6:00–7:30 PM (5082)

The Temporal Compression of Continuous Events in Memory. NATHAN LEROY, *University of Liege*, ARNAUD D'ARGEMBEAU, *University of Liege* — Remembering the unfolding of past episodes usually takes less time than their actual duration. In this study, we evaluated whether such temporal compression emerges because of working memory capacity limit in representing continuous events. Fifty participants were asked to watch and then to mentally replay videos depicting continuous events (e.g., turning

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a car jack) lasting 3, 6, 9, 12, or 15 s. The time needed for remembering the unfolding of each event was measured and the time needed to initiate remembering (i.e., to mentally visualize the starting point of events) was estimated in another task to have a more precise measure of mental replay durations. The results showed that corrected mental replay durations were close to the actual stimuli duration for 3-s events but smaller for longer events, showing a non-linear relation between event and mental replay durations. These results suggest that working memory is limited in its capacity to represent continuous events, leading to the emergence of temporal compression when events exceed 3 s.

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6:00–7:30 PM (5083)

The Segmentation of Stories Told in American Sign Language. CHRISTOPHER KURBY, *Grand Valley State Universtiy*, PETER CRUME, *Georgia State University*, JESSICA SCOTT, *Georgia State University*, JUSTIN MALONE, *Georgia State University*, VIRGINIA TROEMEL, *Georgia State University*, HAELI PATEL, *Georgia State University*, JOSEPH MAGLIANO, *Georgia State University* — Learning a sign language as a second language is challenging for individuals whose first language is a spoken language. Although much is known about how readers process stories in written language, little is known how individuals process stories in American Sign Language (ASL). We explored situation model construction when processing stories in ASL or spoken English in individuals that are learning ASL. Participants segmented the stories into events as they comprehended them. We asked whether situational changes in the story, such as changes in goals, causality, characters, etc., predicted segmentation behavior. For the English stories, a number of story changes predicted segmentation behavior. For the ASL stories, none did. For the ASL stories, however, we found that segmentation behavior was predicted by changes in motion of the storyteller, and further, situational changes predicted segmentation when motion slowed. These results suggest that new learners of ASL are dependent upon pauses in motion in order to interpret story structure.

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6:00–7:30 PM (5084)

Temporal Order Memory in Naturalistic Events Is Influenced by Semantic Knowledge and Hierarchical Event Structure. YINING DING, *Washington University in St. Louis*, DEVON R. ALPERIN, *Washington University in St. Louis*, JEFFREY M. ZACKS, *Washington University in St. Louis* — Previous studies on temporal order memory (TOM) using discrete pictorial stimuli showed that people are sometimes better at remembering the temporal order of items occurring within the same perceptual event than items spanning across a perceptual boundary (Dubrow & Davachi, 2013, 2016), but that the opposite can also occur if supporting cues are present during recall (Wen & Egner, 2022). However, it is hard to generalize this result to naturalistic events without considering how knowledge and hierarchical event structure may support the encoding and retrieval of temporal order information. Using narrative stimuli depicting everyday events, we found that the presence of semantic order constraints determined whether across-event or within-event TOM was enhanced. In addition, when participants could not leverage semantic order constraints, they were more confident about temporal order across events than within events, independent of accuracy. These results suggested that the role event boundaries play in TOM task performance depends on people's ability to use information other than episodic memory.

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6:00–7:30 PM (5085)

Processing Time for Events in Language Scales with their Real-World Duration. WESLEY LEONG, *University of Connecticut*, GERRY TM ALTMANN, *University of Connecticut* — When we hear a sentence like "the puddle evaporated," we do not experience the unfolding of the event in real-time—rather, the event is compressed in our minds. Some studies (e.g. Anderson, Garrod, & Sanford, 1983; Zwaan, 1996; Speer & Zacks, 2005; Coll-Florit & Gennari, 2011) have looked at the effect of event duration on language processing. However, a direct link between external time and internal processing (i.e., a rate of compression) has not been established. We conducted two online experiments measuring reaction time on a sensicality judgment task for three-word sentences. Stimuli described events with real-world durations in the experiential range (experiment 1; e.g., "the puddle froze") and beyond (experiment 2; e.g., "the mountain eroded"). Both experiments showed that, after controlling for lexical-level confounds like word length and surprisal, the processing time for an event scales log-linearly with its real-world duration.

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6:00–7:30 PM (5086)

Surprising Effects of Consistency and Relevance on Memory. TAN NGUYEN, *Washington University in St. Louis*, JEFFREY M. ZACKS, *Washington University in St. Louis*, LINJIE BU, *Washington University in St. Louis* — Event schemas represent knowledge about how a type of activity typically unfolds. Events that are highly congruent or highly incongruent with a schema often are remembered better. However, these congruency effects vary across studies, suggesting additional moderating factors. We hypothesized that, in the context of a schema for an activity, the memorability of component events depends on both the consistency of the event with the activity's schema and its relevance to the activity. We generated stories from normed event schemas that manipulated the consistency and relevance of component events. In Study 1, inconsistent events were rated as leading to higher surprisal, and this effect was moderated by relevance: the more relevant an event, the stronger the effect. In Study 2, participants read the narratives and completed a yes-no recognition memory test. The more inconsistent a sentence was, the higher its hit rate, and this was mediated by surprisal.

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6:00–7:30 PM (5087)

A New Position: Does Body Position Influence Performance in Spatial Compatibility Tasks?. PIA FENSKE, *University of Hildesheim*, PAMELA BAESS, *University of Hildesheim*, CHRISTINA BERMEITINGER, *University of Hildesheim* (Sponsored by Pamela Baess) — Previous research investigated whether body position influences cognitive performance in cognitive conflict tasks. For example, participants' performance in a Stroop task was analysed during standing or sitting. Results are mixed as some studies reported facilitation during standing, whereas others showed no difference or even a decrease in performance. Although changes in the body position entail changes in spatial relations, most research neglected cognitive tasks with spatial information. In the present study, the influence of body position was investigated in two different spatial compatibility tasks, i.e. a Simon task and a spatial compatibility task prober, using a gyroscope. Across two experiments, participants performed visual spatial compatibility tasks in an upright position and tilted along the horizontal axis. Results showed body position modulated the Simon effect and differences in the general reaction time for the spatial compatibility effect proper. This influence is further modulated by the (ir)relevance of the spatial stimulus features.

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6:00–7:30 PM (5088)

AR-Classroom: How Physical and Virtual Rotation in Augmented Reality Impacts Matrix Algebra Learning. SAMANTHA D. AGUILAR, *Texas A&M University*, HEATHER BURTE, *Texas A&M University*, PHILIP B. YASSKIN, *Texas A&M University*, JEFFREY LIEW, *Texas A&M University*, SHU-HAO YEH, *Texas A&M University*, CHENGYUAN QIAN, *Texas A&M University*, UTTAMASHA MONJOREE, *Texas A&M University*, DEZHEN SONG, *Texas A&M University*, WEI YAN, *Texas A&M University* (Sponsored by Heather Burte) — STEM topics involving 3D thinking are challenging for students. We developed the AR-Classroom to teach matrix algebra for 3D transformations. The AR-Classroom uses augmented reality (AR) to superimpose a 3D coordinate system over a LEGO shuttle, so that students can physically or virtually rotate a LEGO shuttle while matrix calculations are displayed and dynamically updated. Undergraduates were assigned to complete a physical rotation, virtual rotation, or control condition. All participants completed pre- and post-tests, including Purdue Visualization of Rotations tasks and matrix algebra tests. In between the tests, participants worked through 6 rotational problems to solve for a rotation matrix. In the physical and virtual conditions, participants used the AR-Classroom to check their rotation matrices. In the control condition, participants did not use the AR-Classroom to check their work. By comparing performance changes between the conditions, we evaluate the effectiveness of physical versus virtual rotations and the AR-Classroom for teaching matrix algebra. This research provides recommendations for developing and evaluating AR technologies to make STEM topics more interactive, dynamic, and grounded in real-world scenarios.

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6:00–7:30 PM (5089)

Understanding Human Spatial Navigation in Cue Conflict Situations: An Application of the Causal Inference Model. XIAOLI CHEN, *Zhejiang University* — In everyday navigation, conflicting spatial cues pose challenges. While previous research has extensively examined the integration of spatial cues, there is a paucity of studies focusing on understanding navigation processes in cue conflict situations. We modified the causal inference model to a simple navigation task on a linear track, which necessitates a single localization response per trial. Landmark and optic flow were either dissociated, combined, or presented with varying degrees of conflict. The modified model exhibited good fit to the data from six experiments. Surprisingly, landmark instability did not impact participants' beliefs regarding the common source of spatial inputs, indicating relative insensitivity of the internal knowledge to stimulus variations. Additionally, the model performed better when assuming the prior distribution of target locations functioned similarly in single-cue and double-cue conditions, and that signal drift between navigation decision and cue conflict judgment was implicated. This work enhances our understanding of navigation processes in cue conflict situations and demonstrates the applicability of the causal inference model to spatial navigation.

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6:00–7:30 PM (5090)

The Efficiency of People's Wayfinding Behavior under Different Landmark Representations of the Mall Guide Map. XIANYUN LIU, *Tianjin Normal University* — This study explored the influence of different landmark presentations of the guide map on the wayfinding behavior. Experiment 1 compared the efficiency of wayfinding behavior and the acquisition of spatial knowledge under different landmark representations (symbols, symbols+icon, symbols+text, symbols+icon+text) of the guide map. Subjects were asked to complete the guide map reading and memory tasks, wayfinding tasks, and spatial re-cruise tasks. Experiment 2 compared the efficiency of guide map wayfinding behavior and spatial knowledge acquisition of people with high and low spatial abilities. The results showed that (1) the information presented by the guide map group of symbols+-text is detailed and not easy to identify, (2) the guide map group with text information is more effective than the guide map group with only icons in the wayfinding task, and (3) the people with high spatial ability seem to be better at using fuzzy information to complete wayfinding task.

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6:00–7:30 PM (5091)

The Role of Visual Experience on Adults' Spatial Scaling in the Haptic Domain: Insights from Blind and Sighted Individuals. MAGDALENA SZUBIELSKA, *The John Paul II Catholic University of Lublin Institute of Psychology*, MARTA SZEWCZYK, *The John Paul II Catholic University of Lublin*, PAWEŁ AUGUSTYNOWICZ, *The John Paul II Catholic University of Lublin*, WOJCIECH KĘDZIORA, *Independent researcher*, WENKE MÖHRING, *University of Education Schwäbisch Gmünd*

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— The present study investigated the role of visual experience on adults' spatial scaling in the haptic domain. To this end, we tested participants without visual experience (i.e., adults who were blind since birth or who lost sight in the first 3 years of life) and blindfolded sighted controls in a spatial scaling task (N = 66). Adults encoded an embossed graphic, including a target (i.e., a map), without time restriction. Then, they were asked to locate a target at the same spot on an empty referent space. Maps had five different sizes, whereas the referent space was constant in size, resulting in five different scaling factors (3:1, 2:1, 1:1, 1:2, 1:3). Response times and absolute errors were measured. Results indicated that neither scaling factor nor visual status influenced adults' absolute errors; however, response times were shorter in blind than in sighted participants. The scaling factor influenced response times, with a quadratic function best explaining this effect. Our findings suggest that adults with blindness and lack of visual memory may be as accurate and even quicker in spatial scaling in the haptic domain when compared with sighted adults.

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6:00–7:30 PM (5092)

Parents' Mental Rotation Abilities Predict Negations During Spatially Demanding Task. LATREESE HALL, *Florida International University*, MELANIE RENGEL, *Florida International University*, HANNAH BOWLEY, *Florida International University*, DANIELA ALVAREZ-VARGAS, *University of California, Irvine*, CARLA ABAD, *Florida International University*, DYAMOND OVERTON, *Georgia State University*, SHANNON M. PRUDEN, *Florida International University* — Research suggests parents who use more prosocial talk (e.g.,"great job building that!") use more spatial language (e.g., talk about shapes and sizes; Hall et al., 2023) and parents who use more controlling language (e.g.,"hold it, then cut") use less number talk than other parents (Clements et al., 2021). Questions remain about whether parents' mental rotation (MR) skills relate to such social behaviors. Do parents with better MR skills produce more prosocial talk and less negations (e.g.,corrections, criticisms) during 10-minute LEGO and drawing tasks with their children? Participants were 51 parents (46 mothers; 80% Hispanic) and their children (M = 5.12 years; SD =.43; 25 girls). Parents completed an MR test (Peters et al., 1995) then dyads built a LEGO house and drew a picture. Multiple regression models showed no significant associations between parents' MR scores and prosocial talk during either task, but showed significant negative associations between parents' MR scores and negations during the LEGO task, $t(48) = -2.79$, $p = .007$, $b = -0.70$, 95% CI [-1.20,-0.21]. Findings suggest parents' MR ability may play a role in negative social behaviors they produce with their children during spatially demanding tasks.

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6:00–7:30 PM (5093)

Evaluating Consistency in Path Integration Measures: Triangle Completion and Loop Closure. ALINA S. TU, *University of California, Irvine*, MICHAEL J. STARRETT AMBROSE, *University of California, Irvine*, MARIE KARPINSKA, *University of California, Santa Barbara*, MARY HEGARTY, *University of California, Santa Barbara*, ELIZABETH R. CHRASTIL, *University of California, Irvine* — Path integration, an animal's ability to update its position and orientation over time, supports successful navigation. Homing tasks like triangle completion and loop closure are commonly used to assess this ability. While triangle completion requires participants to judge the direction and distance back to the start location after walking two legs of a triangle, loop closure involves returning to the starting point after walking in a circle. Both tasks involve path integration but likely engage distinct neural systems and utilize different frames of reference (i.e., allocentric or egocentric). This investigation is the first to study the relationship between these two tasks by measuring performance from the same subjects in walking, immersive virtual reality. Over 100 healthy, young adults completed both tasks. We predicted a significant correlation between performance on these tasks and expected self-reported strategies to reveal more allocentric representations for triangle completion and egocentric representations for loop closure. By examining the shared and unique contributions of these tasks to path integration ability more generally, this study deepens our understanding of the cognitive processes that support navigation.

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6:00–7:30 PM (5094)

Are Spatial Instructions Necessary When Reading Texts Versus When Reading Comics?. MARIANNA PAGKRATIDOU, *Technological University Dublin*, ALEXIA GALATI, *University of North Carolina at Charlotte*, MARIOS AVRAAMIDES, *University of Cyprus* — Research on situation models using texts indicates that, when instructed to attend to spatial information, people foreground shifts in the spatial location of a described moving protagonist. However, it is still unknown how people foreground spatial shifts in comics, which combine linguistic information with visual. In two experiments, participants memorized the locations of objects in building layouts. Then, while reading stories about a moving protagonist, via texts or comics, they responded to probes about whether objects came from same or different rooms. In Experiment 1 (but not 2) participants were instructed to attend to spatial relations. Participants, both with texts and comics, were faster to make judgments about pairs of objects located in the room where the protagonist was at the time of the interruption compared to other rooms. Unlike previous studies with texts, with comics, participants monitored shifts even without instructions to attend to spatial relations. These findings suggest that comics can support the construction of situation models and may even be more efficient to foreground spatial shifts than texts.

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6:00–7:30 PM (5095)

Mindful, Self-Aware, and Intellectually Humble Yet Biased. DANIEL LEVINE, *The University of Texas at Arlington*, TABITHA GRIFFIN, *University of Texas at Arlington*, AGNES OTIENO, *University of Texas at Arlington*, AMANDEEP S. DHALIWAL, *The University of Texas at Arlington* — Self-awareness leads people to attend to their own attitudes, feelings, needs, and concerns which can bias information processing (Hutton & Baumeister, 1992). Being

mindful of biased thinking when processing counter attitudinal information can reduce prejudice (Lillies & Hayes, 2007). The trait of intellectual humility motivates individuals to respond without prejudice and attributional judgments (Bell, 2021). Although intellectual humility weakens prejudice towards marginalized groups (e.g., immigrants, LGBTQ+), it can lead to stronger prejudice when the target out-group is larger (e.g., religion, race; Colombo et al., 2020). This study assessed the relationship between ability for self-reflection, self-awareness, mindfulness, intellectual humility, and domain-specific attitudes toward LGBTQ+ community. Preliminary analysis partially supports the hypothesis that highly intellectually humble homosexuals with high self-awareness show greater prejudice and greater dispositional attribution toward members of the LGBTQ+ community but not toward immigrants.

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6:00–7:30 PM (5096)

The Mechanism Behind Collective Future Thinking: The Role of News Events. NAZIKE MERT, *Cornell University*, QI WANG, *Cornell University* — This study investigated the impact of perceived current country status as the result of exposure to news events on individuals' imagination of their country's future. American participants were randomly assigned to one of the three conditions: positive news events, negative news events, or a control condition. In the news events conditions, participants read about positive or negative news events in the U.S., and those in the control group read about machine learning. Afterward, all participants imagined events in their country's near and distant futures within 1 minute and rated the emotional valence of these events. Preliminary analyses revealed that participants exposed to positive news reported higher satisfaction and more positive feelings about the current state of the U.S. and consecutively envisioned a more positive future for the U.S. than those in the negative news and control conditions. These findings offer insights into the factors shaping valence in collective future thinking.

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6:00–7:30 PM (5097)

The Child-Reference Effect: Extending the Self-Reference Effect in a Western Context. HARRISON PAFF, JOSEPHINE ROSS, *University of Dundee*, NATASHA MATTHEWS, *University of Queensland*, ADA KRITIKOS, *University of Queensland* — Self-related information is remembered better than other-relevant and semantically encoded information (self-reference effect [SRE]). The SRE is produced when people evaluate the self-relevancy of to-be-remembered target stimuli, however, prior work suggests the SRE is attenuated when Chinese individuals encode self vs. close-other, relative to self vs. stranger stimuli. Conversely, the SRE remains stable when Western individuals encode self vs. close-other stimuli, suggesting culture influences SRE extension. However, prior research has only used parents and best friends as close others, thus limiting the findings' generalisability. In this study, we asked if the type of close-other relationship attenuates the SRE by investigating if the SRE extends to mothers' children in a Western context. During encoding, participants judged if trait adjectives described themselves, stranger-adult, stranger-child, own-child, or primed own-child. Preliminary findings show better source memory for words paired with one's own name vs. both stranger conditions but not for either own-child condition. The absence of a self vs. own child SRE suggests that not culture alone but also the relationship type influences close-other SRE extension.

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6:00–7:30 PM (5098)

Gender Barriers: Impact of Perceived Gender Identity on Competency and Desirability Ratings. ARIANNA ROBY, *California State University, Northridge*, PENYLOPI ZABZDYR, *California State University, Northridge*, DANTE DEL ROSARIO, *California State University, Northridge,*, ALBERTO GUERRA-LOPEZ, *California State University, Northridge*, STEFANIE A. DREW, *California State University, Northridge* — Depending on the job, employers rate applicants more favorably if their gender matches the stereotypical job expectations, considering the qualifications of the role and gender of the candidate; however, little research exists examining employment discrimination against gender-diverse individuals. We recruited four actors identifying under the umbrella of non-binary to perform as job candidates. Randomly assigned, participants reviewed one resume from they/them, she/her, he/him, or no pronouns—all with the same applicant's name. Following, participants watched a randomly assigned video of the interviewed candidate to watch in VR (stereo) or a computer (non-stereo), where pronoun and gender expression may not have matched. We hypothesized that candidates with "he/him" resumes while perceived as masculine would have higher ratings of competency and desirability to hire compared to those with "they/them" resumes and perceived as non-conforming. Masculinity significantly predicted candidate competency but not desire to hire while there was no significant difference across pronouns in competency or desire to hire, implying perceived gender identity of a candidate impacts their competence rating for certain jobs.

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6:00–7:30 PM (5099)

Gender Differences in Perceived Facial Attractiveness with Medical Masks. ANDREA DARKE, *Oregon State University*, CONNOR KUTZLER, *Oregon State University*, MARYANNE PELPOLA, *Oregon State University*, EMILY BURGESS, *Oregon State University*, MEI-CHING LIEN, *Oregon State University* — Mask wearing has become a part of daily life since the onset of the pandemic. Hies and Lewis (2020) demonstrated that male faces were perceived by female participants as more attractive when wearing medical masks than when not wearing masks. This increase in attractiveness was higher with medical masks than other types of facial covering. We examined whether this enhanced attractiveness with medical masks persists after the pandemic and whether it can be generalized across genders. Both male and female participants rated the attractiveness of males and females wearing a medical mask, cloth mask, or no mask. We found the advantage of medical masks in attractiveness only for unattractive males rated by female participants. The

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present results suggest that an occlusion effect with an advantage of medical masks for unattractive males persists post-pandemic but does not generalize across all genders.

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6:00–7:30 PM (5100)

Ownership, Agency, and Intentional Binding. JENNIFER DAY, *University of Queensland*, ALAN J. PEGNA, *University of Queensland*, ADA KRITIKOS, *University of Queensland* — Agency refers to the sense that the outcomes of our actions were due to our actions. When experiencing more agency, people report shorter perceived time between action and outcome relative to when they are not given agency. This is known as intentional binding. People also show differences in actions performed towards owned property relative to property of others. Less inhibitory control is required to act with owned property which could be thought of as a form of enhanced agency. In this study we considered intentional binding between performing action on owned property compared with a stranger's property. Results show that participants initially show no difference between these two, however eventually shift to showing greater intentional binding for the property of a stranger. Contrary to predictions, this suggests that there may be a period of inhibition followed by an enhanced sense of agency when given the capacity to use others' property.

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6:00–7:30 PM (5101)

How and When Collectivism Shapes Processing of Ambiguous Messages. AMABEL Y. JEON, *University of Southern California*, DAPHNA OYSERMAN, *University of Southern California* — Collectivists are more attentive to others' communicative intent, read between the lines, and find meaning in ambiguous statements. Prior research suggests that this is driven by a goal of seeking common ground with the communicator. What remains unclear is whether this results in deeper processing. We test the prediction that it does in two studies (undergraduates, N = 610). We used metaphor-like statements normed for high, medium, and low meaningfulness. Participants saw and rated the meaningfulness of each statement ostensibly communicated by an ingroup (their school) or an outgroup (a rival school) member, followed by a surprise memory task. In this task, students saw the old metaphors mixed with new ones, rated (old or new) and reported the source (ingroup or outgroup). Collectivism positively predicted the meaningfulness of metaphors told by ingroup members. Ingroup identifiers had better source recall (Study 1). Moreover, when randomly assigned to read for facts or meaning, source recall was higher among collectivists in the meaning condition and affected by communicator group membership (Study 2). We infer that collectivism shapes information processing in conjunction with facilitating factors.

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6:00–7:30 PM (5102)

Conversational Adjustments in Adverse Conditions: Exploring Linguistic Release from Masking in Language Production. CATHERINE T. PHAM, *The Pennsylvania State University*, NAVIN VISWANATHAN, *The Pennsylvania State University*, SUSANNE BROUWER, *Radboud University* — Everyday language use occurs in suboptimal conditions. However, few studies have investigated how adverse conditions affect language production beyond the acoustic-phonetic level, particularly in interaction. We previously found that, in the absence of noise, speakers did not modify the complexity of their productions based on the nativeness of their partner (Pham & Viswanathan, under review). In this study, we examine the effect of background speech on complexity. Pairs of participants completed a Diapix task, collaborating to identify differences between two images. We compare native and non-native interactions across different background speech conditions to explore how speakers modify the complexity of their speech as they grapple with the challenges of speaking in competing babble. We predict speakers will exhibit greater reductions in complexity when the target and masker languages are linguistically similar. Specifically, because our target language is English, English babble will elicit the greatest reduction in complexity, followed by Dutch and then Mandarin, consistent with the target-masker similarity hypothesis. Our study evaluates whether speakers' productions beyond acoustic phonetics is affected by competing speech.

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6:00–7:30 PM (5103)

Do I Sound Polite? Perception of Politeness in Voice Assistants. ELISE DUFFAU, *University of California, Santa Cruz*, JEAN E. FOX TREE, *University of California, Santa Cruz* — We compared perceptions of politeness strategies produced by a voice assistant in social (icebreaker) and nonsocial (tangram) tasks. We assessed how polite each strategy was, how appropriate each strategy was, and how much each strategy evoked feelings of cooperation and respecting autonomy. The perceived appropriateness of a strategy depended on the context in which the strategy was used. While some strategies were seen as equally polite in social and nonsocial contexts, others differed. In a social context, politeness phrases enhanced judgments of respecting autonomy compared to judgements of feelings of cooperation. That is, people expect agents to respect their autonomy more than they expect them to cooperate.

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6:00–7:30 PM (5104)

Source Use in Multiple Document Comprehension Contexts. LAUREN FLYNN, *University of Minnesota*, LAURA K. ALLEN, *University of Minnesota*, KATHRYN MCCARTHY, *Georgia State University*, JOSEPH MAGLIANO, *Georgia State University*, DANIELLE MCNAMARA, *Arizona State University* — The current study examined relations amongst individual differences, memory for source texts, and source-based essays in a multiple-document context. Participants (n = 93) completed two study sessions. In session 1, they read texts about meat consumption and wrote a

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source-based essay. In session 2, they completed cued recalls and a persuasive essay to measure writing skill. Natural language processing indices revealed insights into the relations amongst source text memory, source-based essay content, and key individual differences.

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6:00-7:30 PM (5105)

Warmth or Competence: How Do You Choose a Professor?. EMALIE HENDEL, *Université de Moncton*, KWAN KI TSOI, *Dalhousie University*, ISABELLE BERNARD, *Université de Moncton*, JOËL DICKINSON, *Mount Saint Vincent University*, ANNIE ROY-CHARLAND, *Université de Moncton* — Perceptions of women in positions of leadership are affected by their portrayal (Bligh et al., 2012). Within academia, gender biases can have an important impact on hiring decisions, salaries, and career development (Smith-Carrier et al., 2021). In this study, we created short descriptions like those found on popular professor reviewing websites. These texts were either focused on personality or ability, were either positive or negative, and pertained either to men or women professors. Results from 101 participants revealed that women with negative personality traits were rated as less warm or competent than men with the same traits. However, women with negative abilities were seen as warmer and more competent than men. Finally, participants were less likely to take a class with a woman than a man with negative personality traits, but more likely to take a class with a woman than a man with negative abilities. These results are discussed in relation to role congruity theory (Eagle & Karau, 2002) and ambivalent sexism (Daniels & Leaper, 2011; Hideg & Shen, 2019).

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6:00-7:30 PM (5106)

Revisiting the Mental Representation of Object Properties and State Change in Situation Models. JON SIDES, *Bowdoin College*, ABHILASHA A. KUMAR, *Bowdoin College* — In this work, we attempted to replicate Horchak & Garrido's (2021) findings on the mental representation of object state change, who found that object weight is represented during the comprehension of state change events (e.g., a ball being dropped on a tomato), such that both the initial (e.g., intact tomato) and final object states (e.g., smashed tomato) compete in the mental model. We also designed three extensions to examine the effects of another type of state change (slicing) and the role of other object properties (squashability and color) on response times in a sentence-picture verification task where a sentence implying state change (or no change) was followed by normal (or altered) pictures of objects. We failed to directly replicate the interaction found by Horchak and Garrido for object weight. However, a sentence-picture interaction was found, when state change was caused by slicing instead of dropping and when the squashability of the target object was manipulated instead of the weight of the object being dropped. These findings suggest that the representations of object state changes during language comprehension may critically depend on the type of change and the perceptual property.

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6:00-7:30 PM (5107)

Code-Switching: Communication Dynamics of Open-Source Software Developers in Multiple Development Communities. ALEXANDRA PAXTON, *University of Connecticut*, NELLE VAROQUAUX, *Université Grenoble Alpes, Centre National de Recherche Scientifique (CNRS), & Institut Polytechnique de Grenoble* — Free and open-source software (FOSS) drives science, government, and industry, and it is created, supported, and maintained largely by volunteers on open platforms. This high-visibility, high-impact activity provides opportunities for the basic science of real-world communication dynamics and for the applied interests of supporting critical digital infrastructure. By analyzing the communication and activity patterns in FOSS developer communities, our previous work found that different FOSS communities exhibit distinct communication patterns, consistent with a dynamical systems view of language (Paxton et al., 2022). Here, we build on that work by continuing to examine the impact of community context on communication dynamics. While most developers are part of just one community—that is, contribute their work to a single software package—a small but important group of developers contribute to multiple communities. In the present work, we focus on these multi-community developers to examine the context-specific effects of community activity on communication dynamics.

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6:00-7:30 PM (5108)

Adaptive Processing in Word Production: Repeated Naming Reduces Semantic Competition. JOERG D. JESCHENIAK, *Leipzig University*, STEFAN WÖHNER, *Leipzig University*, HERBERT SCHRIEFERS, *Radboud University* — Adaptive models of word production hold that lexical processing is shaped by recent production episodes so that competitor words which are semantically related to a selected target word (e.g., "cherry" or "grape" for target "apple") become less accessible for future retrieval. We put this assumption to a novel test in two picture-word interference experiments which looked at semantic interference (longer picture naming latencies with a semantically related distractor word than an unrelated distractor word) and its development over repeated naming. Across two times of measurement, semantically related distractor words were either identical (fixed target-distractor mapping, e.g., either "cherry" or "grape" for target "apple" on both times of measurement) or different (variable target-distractor mapping, e.g., "cherry" on first time of measurement and "grape" on second time of measurement). Semantic interference was reduced at the second time of measurement for both fixed and variable target-distractor mapping. This generalization to new target-distractor combinations provides novel support for the notion of production dependent changes in lexical accessibility as captured by adaptive models of word production.

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6:00–7:30 PM (5109)

Phonemic Similarity in Production and Preparation: Is Place of Articulation Privileged?. MO CHEN, *Lehigh University*, CHANNING E. HAMBRIC, *Lehigh University*, PADRAIG O'SEAGHDHA, *Lehigh University* — Standard accounts of phonological encoding center on phonemic segment selection, thus discounting distinctions among articulatory features. Previously we showed in a cued word order production procedure that change in place of articulation, voice/aspiration or manner, yielded an onset phonemic similarity cost when the words rhymed, but only place did so when other segments did not overlap (e.g., beach gall). To consolidate this finding, we used a modified form preparation procedure to induce preparation of onsets (e.g. three /b/ words cyclically named) and tested latency to produce occasional interloper words whose onsets differed in one phonetic feature (e.g. /gall/. As predicted, interlopers with onsets differing in place showed costs, whereas those differing in voice/aspiration did not. We also report a new cued word order experiment showing a feature-general onset similarity cost when the interacting words shared only a vowel nucleus (e.g., beak meal). The findings call for an integrated account of phonological encoding that accounts for the shifting roles of articulatory features and the primacy of place.

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6:00–7:30 PM (5110)

A Face Without a Name: How COVID-19 and Facial Characteristics Affect Name Retrieval. PATRICIA XI, *Knox College*, EMMA CONSTABLE, *Pomona College*, LISE ABRAMS, *Pomona College* — Proper names are notoriously difficult to retrieve. Known as tip-of-the-tongue (TOT) states, these instances are presumed to result from weakened connections that can be strengthened through frequent or recent use of the desired name. However, the COVID-19 pandemic limited social interactions and likely reduced name usage during that time. The current study investigated whether (1) memory difficulties such as name retrieval are related to prior COVID-19 diagnoses, and (2) characteristics of to-be-named faces are related to name retrieval failures. Using a Qualtrics survey through Prolific, participants answered questions about their COVID-19 diagnoses and frequency of everyday memory failures (EMQ), then saw celebrity faces which they rated for representativeness, distinctiveness, and familiarity after attempting to retrieve their names. Preliminary analyses indicated a trend in which EMQ scores differed based on history of COVID-19 diagnosis. Additionally, it is hypothesized that participants will experience more difficulty with name retrieval when presented with a photograph rated as unrepresentative, indistinctive, or unfamiliar. The findings offer new implications for understanding factors underlying name retrieval failures.

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6:00–7:30 PM (5111)

Multi-Utterance Event Descriptions. MADISON BARKER, *University of California, Davis*, BEVERLY COTTER, *University of California, Davis*, KARINA TACHIHARA, *University of California, Davis*, ADRIAN ZHOU, *University of California, Davis*, FERNANDA FERREIRA, *University of California, Davis* — The way speakers choose to describe a visual environment is often dictated by properties of the environment itself (e.g., entities or events). Previous work has investigated utterance form at the sentence level through visual manipulations of simple transitive events (e.g., Gleitman et al. 2007); however, little to no work has examined how speakers order multi-utterance descriptions of real-world events. We investigated the role of scene features in guiding speakers' descriptions of scenes that implied single and multiple events while eye movements and descriptions were recorded (N = 60). For both single and multiple implied events, speakers took about 1750 ms to begin their description, similar to what has been observed in other production tasks involving single sentences. For both event types, speakers made about four fixations before beginning. Overall, these results suggest considerable linguistic planning prior to articulation.

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6:00–7:30 PM (5112)

The Influence of Perspective and Goal on the Production of Subordinate-Level Referring Expressions. CASEY M. RIEDMANN, *Northwestern University*, WILLIAM S. HORTON, *Northwestern University* — In communication, speakers often overspecify—i.e., they say more than necessary. For example, in a single car context, speakers may refer to the yellow car. In this study, we investigated the overspecification of categorical type, a characteristic fundamentally different from visual properties such as color and pattern. Utilizing a direct task paradigm, we first replicated Yoon et al. (2012), showing that speakers are less likely to overspecify an object's size when making a request than when merely informing an addressee. We then extended this paradigm to gauge the frequency with which speakers produce subordinate-level labels (e.g., convertible instead of car) under similar conditions. Early findings indicate that subordinate expressions are more frequent for atypical referents but less frequent when requesting, regardless of perspective. We consider whether subordinates should be treated as a class of overspecification in the same way as other redundant modifiers when the intended referent is contextually unique.

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6:00–7:30 PM (5113)

A Comparative, Cross-Linguistic Analysis of Lexical Diversity in Orally Produced Spanish and English Speech. CECELIA STAGGS, *University of Oregon*, MELISSA BAESE-BERK, *University of Chicago* — This study aims to examine variation in lexical diversity in spontaneously produced oral speech between three different populations of speakers—L1 monolingual English speakers, English dominant Spanish heritage speakers, and L1 Spanish-L2 English speakers. Lexical diversity is often operationalized as a measurement of vocabulary size, with greater lexical diversity being interpreted as greater productive variety. To better inform research aiming to understanding heritage productive patterns, we will analyze the potential variation in English lexical diversity across all populations, and Spanish lexical diversity between Spanish heritage speakers and L1 Spanish-L2 English speakers, to determine the extent to which

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these populations exhibit comparable or variable lexical decisions in their respective languages. We expect that heritage speakers will produce similar degrees of diversity in English as the English monolingual group due to their shift in language dominance, and varying degrees of diversity in Spanish when compared with the L1 Spanish group.

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6:00-7:30 PM (5114)

Effect of Production and Similarity on New Vocabulary Learning. MEGAN WALLER, *Carnegie Mellon University*, DANIEL YUROVSKY, *Carnegie Mellon University*, NAZBANOU NOZARI, *Carnegie Mellon University* — To acquire new vocabulary, learners must associate a novel label with an object. Understanding the factors that facilitate or hinder the formation of these associations is relevant to both theories of language acquisition and educational practices. In two experiments, we examined the effect of two such factors: the mode of studying (passive exposure, comprehension, production) and similarity between learning items (semantic, phonological, unrelated). Exp. 1 packaged more items into a training episode, whereas the same number of items were distributed in a larger number of training episodes in Exp. 2. Exp. 2 also included a delayed test 48-72 h later. The results converged: across both experiments, the production condition had the poorest outcome for the comprehension of new vocabulary. Also, semantic similarity led to the poorest learning outcome compared to unrelated and phonological conditions.

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6:00-7:30 PM (5115)

Come Together in Time, Space, and Meaning: Linearization in Scene Description. KARINA TACHIHARA, *University of California, Davis*, MADISON BARKER, *University of California, Davis*, BEVERLY COTTER, *University of California, Davis*, TAYLOR R. HAYES, *University of California, Davis, Center for Mind and Brain*, JOHN M. HENDERSON, *University of California, Davis*, ADRIAN ZHOU, *University of California, Davis*, FERNANDA FERREIRA, *University of California, Davis* — Language production requires us to linearize our thoughts into an ordered form. In scene descriptions, we hypothesized that participants create meaningful clusters of objects and balance local exploitation (talking about objects within a cluster) and global exploration (talking about objects in a new cluster). In support of the idea that descriptions have clusters, we found that objects that are mentioned close together (difference in onset times of object mention is low) are close together in space (physical distance between objects is low) and meaning (semantic similarity calculated using ConceptNet is high). Additionally, we looked at how visual attention, measured using eye-tracking data, relates to verbal descriptions. We explored the guiding principles of language production in scene descriptions by examining how production is influenced by task-oriented goals, semantic memory, and the balance between exploitation and exploration.

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6:00-7:30 PM (5116)

Deaf Readers Use Leftward Information to Read More Efficiently: Evidence from Eye Tracking. CASEY STRINGER, *University of South Florida*, FRANCES G. COOLEY, *University of South Florida*, EMILY SAUNDERS, *San Diego State University*, GRACE C. SINCLAIR, *University of South Florida*, KAREN EMMOREY, *San Diego State University*, ELIZABETH R. SCHOTTER, *University of South Florida* — Reading comprehension is positively related to the size of the rightward span, but it is unclear if this relationship holds for the leftward span. Deaf readers can provide unique insight into this question because of their larger rightward span. We compared the leftward spans for reading-matched deaf and hearing adults (n = 50) using a gaze-contingent moving window paradigm with windows of 1, 4, 7, 10, and 13 characters to the left. Analysis of reading rates indicated that deaf readers had a leftward span of 10 characters, compared to 4 characters for hearing readers, and the size of the span was positively related to reading comprehension ability for deaf but not hearing readers. These findings indicate that deaf readers continue to process words after their eyes have moved past them. For deaf readers, this pattern makes reading more efficient and suggests a qualitatively different reading process than hearing readers.

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6:00-7:30 PM (5117)

A Co-Registered Eye-Tracking and Fixation-Related Potentials Investigation of Transposed-Word Effects in English. PETAR ATANASOV, *University of Central Lancashire*, FEDERICA DEGNO, *Bournemouth University*, SIMON P. LIVERSEDGE, *University of Central Lancashire* — Mirault et al. (2018) found that readers often (15%) failed to detect ungrammaticalities in sentences containing a transposed-word pair. This finding has been taken as support of the OB1 Reader model (Snell et al., 2018). The model stipulates that word position coding is noisy and readers allocate words to sentential positions based on length cues rather than on presentation or viewing order. In the present co-registered eye-tracking and fixation-related potentials (FRP) experiment we investigated the role of foveal and parafoveal vision and the neural correlates of the effects of word transpositions. We orthogonally manipulated the order of two target words in the fovea (transposed versus not transposed) and in the parafovea (transposed versus not transposed) via the boundary paradigm (Rayner, 1975). Eye-movement results show parafoveal transpositions affected processing on the first target word while foveal transpositions also affected processing on the second. FRP results will also be discussed.

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6:00-7:30 PM (5118)

Does Phonological Neighborhood Density Impact Word Learning While Reading?. MEGAN E. DEIBEL, *Kent State University*, JOCELYN R. FOLK, *Kent State University*, D LEE KNAPP, *Kent State University* — Understanding the factors that can influence word learning during silent reading is important because most vocabulary is gained while reading (Nagy & Scott, 2000). Some

factors, such as phonology and reader skill, have been shown to influence novel word learning (Deibel & Folk, 2022). One phonological manipulation is phonological neighborhood density (PND)- which is the number of words that differ from a target by a single phoneme. The current study investigated if individual differences in reader skill and PND interact when learning novel words while reading. Participants read sentences containing novel words at their own pace. The novel words either had high PND with many neighbors or low PND with few neighbors. After reading surprise meaning and spelling recognition post-tests were given to assess learning. Reader skill was assessed through spelling tests. The results will discuss how individual differences can influence phonological processing, which can in turn influence word learning.

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6:00-7:30 PM (5119)

The Effect of Phrase Frequency on Failure to Notice Word Transpositions. KUAN-JUNG HUANG, *University of Massachusetts Amherst*, ADRIAN STAUB, *University of Massachusetts Amherst* — Readers sometimes fail to notice transpositions of words (e.g., I do not see sign any of troubles, Mirault et al., 2018). A rational inference account predicts that the prior probability of the intended message should affect the prevalence of misreading (Gibson et al., 2013). We operationalize the prior as the trigram frequency of the two transposed words and the previous word (e.g., see any sign). We additionally manipulate the syntax of the string (VERB-DET-NOUN vs. PREP-DET-NOUN). We found (N = 165) that a transposition embedded in a frequent VERB-DET-NOUN string was more easily overlooked than in a less frequent string (see any sign vs. see any form, 24% vs. 13%). The effect was reduced to only marginal in PREP-DET-NOUN strings (inside his fist vs. inside his coat, 21% vs. 17%). The results contrast with a previous null effect (Huang & Staub, 2022) of the cloze probability of the second transposed word (e.g., P(sign|(I do not see any)). In conclusion, rational inference does play a critical role in failure to notice transpositions; readers use local trigram frequency in the inference process, but strength of phrasal representation might rely on not only frequency but possibly point-wise mutual information.

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6:00-7:30 PM (5120)

Age-of-Acquisition Effects on Spelling Performance and Lexical Quality: Evidence from Eye Movements. MADISON LAKS, *University at Albany, SUNY*, HEATHER SHERIDAN, *University at Albany, SUNY* — Age-of-acquisition (AoA) effects occur when processing is facilitated for words acquired early in life compared to later in life. Across two experiments, we investigated the cognitive mechanisms behind AoA effects. Early- and late-acquired target words were embedded in sentence frames after being matched for a variety of potentially confounding variables, including word frequency, length, imageability, and OLD-20 (using the stimulus set from Juhasz and Sheridan, 2020). In Study 1, participants completed an online spelling dictation task in which they were asked to correctly spell the target word, and spelling accuracy was higher for early- compared to late-acquired words. In Study 2, participants proofread sentences for spelling errors embedded in target words while their eye movements were monitored, and typo detection accuracy was higher for early- compared to late-acquired words. Participants were also faster at processing early-acquired words, as shown by longer gaze durations and increases in refixations for late-acquired words. Given that spelling ability provides an index of lexical quality (e.g., Perfetti, 2007), our results indicate that lexical representations are enhanced for early- compared to late-acquired words.

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6:00-7:30 PM (5121)

The Effect of Rime Neighbors in Early Reading. ISABEL MEZA, *Texas Tech University*, ROMAN TARABAN, *Texas Tech University* — Decoding skills are critical in reading development. We tested whether grouping words for instruction by rime endings (e.g., -ag in bag, tag, snag; blocked) would show gains in word naming compared to presenting the same corpus of words organized with mixed rime endings (interleaved). Pre-K and kindergarten students read 294 words during the learning phase and showed significant improvements in reading accuracy and speed, however, there were no significant differences between blocked and interleaved conditions. In the test phase, participants read words from the learning phase (old words) and pseudowords based on rime endings from the learning phase. Participants read the old words with significantly higher accuracy and speed compared to the pseudowords, again, with no significant differences between blocked and interleaved conditions. The absence of a rime advantage may be due to participants in the blocked condition needing explicit rime instruction or conditions being underpowered.

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6:00-7:30 PM (5122)

How Does Statistical Learning Interact with Socioeconomic Status to Influence Reading Success?. JINGLEI REN, *University of Maryland, College Park*, MIN WANG, *University of Maryland, College Park* — This study aims to unpack the relationship between socioeconomic status (SES), statistical learning (SL), and reading in 8-year-old native Chinese-speaking children in China. Specifically, we examine whether: 1) high SL helps offset the potentially deleterious effects of being raised in an impoverished social environment on reading performance; 2) the moderating role of SL is robust after accounting for other related factors, i.e., vocabulary knowledge, morphological awareness, and general cognitive ability; 3) the moderating role of SL is affected by task modality (visual vs. auditory) and domain (non-linguistic vs. linguistic). Data was collected in various schools in Yantai, China, before July 2023. Children have diverse SES backgrounds across schools. We predict that SL interacts with SES to affect children's reading skills, that is, for children demonstrating high SL, SES has a weaker effect on reading compared to children showing low SL.

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6:00–7:30 PM (5123)

Effects of Dual Language Programs in L1 and L2 Reading Processing and Comprehension of Academic texts. LAURA P. VALDERRAMA, *University of Illinois Urbana-Champaign*, KIEL CHRISTIANSON, *University of Illinois Urbana-Champaign* — Academic texts contain more abstract and logical relations than non-academic texts. These texts can be especially challenging for bilingual students who are trying to master academic language demands while also trying to learn content. Through two eye-tracking experiments, middle- and high-schoolers in Spanish-English Dual Language Programs (DLPs) will read short academic texts in their L1 and L2. Their reading will be compared to mainstream bilingual students and monolingual L1 English students. Eye movements and comprehension probes will be analyzed to compare reading times and attentional allocation to coherence devices common in academic texts, in particular nominal and conceptual anaphors. The working hypothesis is that reading performance in L2 and in L1 are yoked, and strengthening L1 reading skills positively transfers to L2. We predict bilinguals in DLPs will be better able to leverage shared L1 and L2 reading skills than bilinguals in mainstream programs. DLP bilinguals may even perform similarly to English L1 speakers.

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6:00–7:30 PM (5124)

ERP Indicators of Word-to-Text Integration (WTI) During Reading: Can Engaging Situational Comprehension Override Word Meaning Effects?. WEIQI WANG, *University of Pittsburgh*, CHARLES A. PERFETTI, *University of Pittsburgh*, ANNE HELDER, *Leiden University* — The N400 has been interpreted to indicate meaning integration during comprehension, but some studies suggest it reflects only word meaning access, with the P600 reflecting integration. We test the hypothesis that, beyond word meaning access, N400 reflects integration when readers are engaged in situational comprehension. We promoted situational comprehension by having participants (N = 35) form mental images while reading narrative texts. We compared ERPs on single nouns whose referents were congruent or incongruent with the current situation. Both cases include word-based priming relations, but only the congruent case facilitates situationally based integration. Assessments of comprehension accuracy, mental image times, and reported image contents suggest readers constructed and updated images. Congruence effects were found in centro-parietal clusters, confirmed by linear mixed-effects model results (N400: estimate incongruent = -0.16, [-0.32, -0.01], p = .042; P600: estimate incongruent = 0.25, [0.08, 0.41], p = .004). We suggest that when readers comprehend at the situational level, the N400 is an indicator of early meaning integration.

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6:00–7:30 PM (5125)

Anticipatory Prediction in Older Readers. ROSLYN WONG, *Macquarie University*, AARON VELDRE, *Macquarie University*, SALLY ANDREWS, *The University of Sydney* — Recent studies show that skilled, young adult readers rely on prediction during language comprehension, but fewer studies have investigated whether this extends to healthy, older adults. The current research assessed older readers' use of prediction by investigating whether they show processing costs for incorrect predictions. The eye movements of a sample of older adults (60-86 years old) were recorded as they read strongly and weakly constraining sentences containing either a predictable word or an unpredictable semantically related or unrelated word. To determine whether older readers' predictive strategies depend on presentation format, a separate group read the same materials in a self-paced reading task. Older adults showed similar processing benefits for expected input as a comparison sample of younger adults (17-32 yearsold) on eye-movement reading measures. Both age groups also showed processing costs for unexpected input across both tasks but only when unrelated to the best completion. The results suggest that the use of prediction remains relatively preserved with age. The implications of these findings for understanding whether predictive strategies are a fundamental component of language comprehension are discussed.

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6:00–7:30 PM (5126)

A Systematic Investigation of Expert and Novice Programmers' Ratings of Code Cohesion. JEFFREY K. BYE, *University of Minnesota*, RINA HARSCH, *University of Minnesota*, YEWON KANG, *University of Minnesota*, PRITI OLI, *University of Memphis*, RABIN BANJADE, *University of Memphis*, ANDREW TAWFIK, *University of Memphis*, VASILE RUS, *University of Memphis*, PANAYIOTA KENDEOU, *University of Minnesota* — Research in natural language comprehension suggests that text cohesion can improve learners' comprehension of that text. In another domain, programming languages, computer scientists have proposed structural models of source code readability, using code manipulations inspired by text cohesion. However, past research has not systematically manipulated code features that may affect readability or identified the contribution of each to human perceptions of readability. Thus, existing models of code readability lack the robust empirical support found for natural language. We systematically investigated code cohesion by selecting existing (e.g., natural language identifiers) and novel (e.g., argument overlap) factors purported to affect code readability, as well as their combination, and manipulated them across case examples of iterative loops. Expert and novice programmers rated cohesion and identified the purpose of the code. The results provide empirical evidence for code comprehension and inform future examinations of cohesion on students' and experts' source code comprehension.

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6:00–7:30 PM (5127)

Investigating the Task Specific Nature of Semantic Memory Activation. JON WILLITS, *University of Illinois*, LIN KHERN CHIA, *State Farm* — Despite the fact that semantic priming is one of the most studied phenomena in cognitive psychology, many questions remain about exactly when, why and under what ask conditions priming will be observed, and what types of relationships between words reliably lead to priming. In this work, we test whether some of this uncertainty can be explained in terms of the activation of

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task- or goal-specific semantic representations. We present a series of priming experiments manipulating the task (naming, category decision, and abstract/concrete decision) and stimulus modality (words vs. pictures). These experiments show that semantic priming can, at least in part, be influenced by the match of the semantic relationships to the task and modality of presentation. These results provide evidence for the context sensitive nature of the activation of semantic memory.

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6:00-7:30 PM (5128)

Investigating Semantic Memory Structure: The Impact of Visual Referent Competition in the Visual World Paradigm. ANDREW Z. FLORES, *University of Illinois Urbana Champaign*, JON WILLITS, *University of Illinois* (Sponsored by Jon Willits) — To what extent can the structure of semantic memory be investigated by manipulating visual referent competition? In the current study, we present two experiments employing the visual world paradigm, where we systematically manipulated the semantic relatedness of the distractor item when a participant was instructed to either look at (Experiment 1) or click on (Experiment 2) a target image. Both experiments yielded consistent results, indicating increased competition from the distractor image as it became more semantically related to the target. Subsequently, we modeled the reaction times in these experiments using a combination of visual feature and distributional similarity predictors. We observed graded effects, predictable by a combination of visual feature-based and linguistic distribution-based similarity. These results provide additional evidence for semantic representations that combine both types of information and shed light on how these features are utilized during semantic memory retrieval.

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6:00-7:30 PM (5129)

The Neural Response to Highly Iconic Signs in Hearing Learners and Deaf Signers. EMILY M. AKERS, *San Diego State University & University of California, San Diego*, KATHERINE J. MIDGLEY, *San Diego State University*, PHILLIP J. HOLCOMB, *San Diego State University*, KAREN EMMOREY, *San Diego State University* — Iconicity refers to the overlap between the form of a word/sign and its meaning and occurs frequently in sign languages. Previous studies have shown that ERP effects associated with iconicity are task dependent. We examined the effects of highly iconic and transparent signs (n = 50) compared to non-iconic signs (n = 50) in hearing non-signers (n = 32) before and after they learned American Sign Language (ASL) and in deaf signers (n = 20). While the task was not to put meaning to the signs (rather it was to identify an occasional grooming gesture), learners already showed strong iconicity effects before learning (larger N400-like negativity to iconic than non-iconic signs). However, after learning, non-iconic signs produced greater negativities, suggesting these newly learned signs engaged greater processing effort. For deaf signers, highly iconic signs showed larger negativities, which we deem to be due to the gesture processing demands of the task.

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6:00-7:30 PM (5130)

A New Method for Investigating the Facilitative Effects of Discourse Priming on Real-Time Word Recognition. CHARLOTTE JEPPSEN, *University of Iowa*, HANNAH L.B. FRANKE, *University of Iowa*, BOB MCMURRAY, *University of Iowa* — Semantic priming is pervasive and robust across modalities. It is often considered facilitatory, but research using the visual world paradigm (VWP) suggests that it may induce competition (e.g., fixating "lock" after hearing "key") which requires management. Developmental studies provide evidence for both interpretations. Semantic activation during word recognition appears to remain stable throughout adolescence (Jeppsen & McMurray, submitted), but reduces in adulthood (Hwang & Snedeker, 2011), indicating the presence of competition. This raises the need for new paradigms to differentiate facilitatory vs. competitive processing. We introduce a modified VWP where participants read passages followed by VWP trials. Some trials prime the target, while others prime a competing or non-presented word. Preliminary findings (N = 41) show that fixation speed on the target significantly increases following a related discourse prime ($t(112) = -3$, $p < .01$). Additionally, fixation speed is not slower when the discourse primes a competing word ($t(112) = .8$, $p = .45$). These results validate the priming paradigm and support a facilitatory interpretation.

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6:00-7:30 PM (5131)

Comparing Connectionist Distributional Models' Ability to Learn Syntagmatic and Paradigmatic Relations. JINGFENG ZHANG, *University of Illinois Urbana-Champaign*, JON WILLITS, *University of Illinois* — Distributional models of semantics have been shown to effectively model numerous phenomena related to human semantic processing and memory. Despite this, there has been a proliferation of diverse distributional models without a comprehensive theoretical understanding of their strengths and weaknesses, both in principle and in relation to modeling human semantic processing. In this study, we compare four models (SRNs, LSTMs, Word2Vec, and GPT-2) based on their ability to learn syntagmatic (co-occurring or thematic) and paradigmatic (substitutable or taxonomic) relations between words, using a carefully controlled artificial corpus. Our findings reveal that these models exhibit differing capabilities in terms of modeling these relations, with performance varying significantly depending on how those relations are extracted from the models. These results have profound implications for the feasibility of distributional language models as tools for understanding human semantic processing.

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6:00-7:30 PM (5132)

Addressing the Challenges of Compositional Generalization: A Comparative Study of Models of Language Learning and Representation. SHUFAN MAO, *University of Illinois Urbana-Champaign*, PHILIP HUEBNER, *University of Illinois Urbana-Champaign*, JON WILLITS, *University of Illinois* (Sponsored by Philip Huebner) — How do people produce or comprehend

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novel sentences containing a recombination of known words? In this research we compare models of linguistic compositional generalization on an artificial language corpus designed to specifically test these capabilities. We test the newly proposed Constituent Tree Network (CTN) model, which stores semantic information in a graphical structure built by connecting word and phrase nodes that co-occur within syntactic structures. We compare this model to the LON model (Mao, Huebner, & Willits, 2023), a graphical model unconstrained by syntactic structure, and also to two neural network language models: GPT-2 and RNNs. We found that only the CTN model performed perfectly on all compositional generalization tasks. The research helps illustrate why some models of language representation (such as neural models like GPT) have difficulty with compositional generalization, suggesting that models of human language need to constrain the representation of distributional information in a more structured way.

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6:00–7:30 PM (5133)

Stability of Life Story Memories in Young Adults. ERIN MURPHY, *University of Nevada, Las Vegas*, DAVID COPELAND, *University of Nevada, Las Vegas* — Narrative identity is the internalization of autobiographical memories to construct a life story. Narrative themes remain relatively stable; however, the events that make up a life story may show variability, especially in young adults. This study investigated the extent to which young adults change their life story memories and if participants perceived stable memories as events that have shaped who they are today. Participants recalled 10 life story memories in 2 sessions 3 weeks apart. Participants rated how central each memory was to shaping their life story and stability was measured as the number of life story memories that were repeated across sessions. Results revealed that 40% of initial memories were repeated and that these repeated memories were rated more central to their life story. This research suggests that even at a short three-week delay, the narrative stability of young adults may still be lacking.

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6:00–7:30 PM (5134)

Effects of Temporal Distance, Time Axis, and Experience Agent of Cue Events on Subjective Episodic Detail of Recalled Memory. KAZUHIRO IKEDA, *Shokei Gakuin Univeristy*, YAYOI KAWASAKI, *Waseda University*, TAKU SATO, *Meisei University*, KAZUKI NISHIURA, *Miyagi Gakuin Women's University* — We investigate the influences of temporal distance, temporal axis, and experience agent of the recalled memory of each episode on the subjective impressions. Participants were asked to think about a specific episode for 30 seconds after watching a cue word. The episodes were varied on eight patterns based on combinations of three factors: temporal distance (1 day or 6 months), temporal axis (past or future), and experience agent (self or society). They then rated the vividness, reality, self-involvement, importance, and emotional valence (1: negative, 5: positive) of each recalled event. Results showed that recent events (1 day), images of the future episodes, and self-related events were rated highly for vividness. Self-related events were rated highly for reality and self-involvement. In addition, remote events (6 months), images of the future episodes, and self-related events were highly rated for importance.

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6:00–7:30 PM (5135)

If My Memory Serves Me Well: Investigating My Memory for Diary Notes of the Past 24. GERT STORMS, *University of Leuven* — I studied my autobiographical memory for diary notes of a 24-year period, 2,691 events in total. The diary notes were written down with no intent to ever use them for a memory study. I rated the extent to which I remembered the described event and tried to date it. I rated all events for saliency, emotionality, pleasantness, intimacy, event rehearsal, and self-relatedness. I categorized the events in one of 16 different categories (my wife, my children, work, traveling, dreams, books read, etc.). I remembered slightly less than two out of three events. The retention curve decreased quadratically. Rated retention extent correlated -0.28 with accuracy of the event dating. When predicting retention, the rated variables pleasantness, event-rehearsal, self-relatedness, salience, as well as length of the diary note and time past since the event occurred contributed significantly. The same variables, except for self-relatedness, contributed significantly in predicting the accuracy of event dating. However, similar analyses performed on data of all 16 event categories separately showed substantial differences in the predictive value of the different ratings, suggesting that autobiographical memories on different topics are stored differently.

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6:00–7:30 PM (5136)

The Comparison of Autobiographical Narratives of a Negative Event in Length Between Episodic Description and Integrative Interpretive from the Perspective of Resilience. AYA HOSOKAWA, *Aino University* — Autobiographical narrative is considered the momentous self-related memory including components of episodic description, integrative interpretation, and feelings. Momentous memories are likely not only to include episodic details but also interpretative interpretations by making meanings, learning lessons and insights, and feelings. Autobiographical narrative of negative events could cause effects including overgeneralization and distortion in terms of role of autobiographical memory such as defense mechanism, self, social relations, and personality that might contribute to resilience. It is assumed that there would be a relationship between integrated interpretation and episodic descriptions that might yield differences in overall length. The purpose of the current study is to compare autobiographical narratives of a negative event including more episodic descriptions with those rich in integrative interpretation. The results found that narratives including more episodic descriptions were produced longer than those rich in integrative interpretation. The results implied further research focusing on how each component would contribute to resilience.

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6:00-7:30 PM (5137)

Age Differences in the Phenomenological Experience for Highly Emotional Public and Personal Events as a Function of New Source. CHERYL TECHENTIN, *Mount Royal University*, MALINDA DESJARLAIS, *Mount Royal University* — As typical examples of flashbulb memories (e.g., death of Princess Diana, 9-11, etc.) become more remote, it raises the question if the phenomenological experience of younger individuals' memories for highly emotional events are similar to previous generations'. This is particularly relevant given the move to social media and online sources as a conveyer of news. The present study compared the type and quality of memories across different age groups as well as where they obtain their news. Participants were asked to report a memory for both a public and personal emotional event and completed the Memory Experiences Questionnaire (MEQ) for each event. Younger adults reported higher phenomenological experiences than older participants on the MEQ for both public and personal events. A significant age difference was also found for the time elapsed since the reported event. Discussion focuses on the types and recency of events reported in both the young and older participants as well as their preferred news source and interest.

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6:00-7:30 PM (5138)

Taking a Closer Look At Official Misconduct in the National Registry of Exonerees. MAEVE C. HALDEMAN, *Roger Williams University*, KIMBERLY N. RODRIGUES, *Roger Williams University*, MEGAN R. GRISWOLD, *Roger Williams University*, MICHAEL P. TOGLIA, *Cornell University*, GARRETT BERMAN, *Roger Williams University* — Official misconduct has been identified in numerous archival databases as a cause of erroneous convictions. The National Registry of Exonerations (NRE) reports the presence of official misconduct in over half of wrongful conviction cases. The present study explores trends in NRE's 11 official misconduct tags referencing typology, responsible official, and acts of misconduct (i.e., perjury by official) involved in exoneration cases. An average of four tags were present in each official misconduct case, with police being the most frequently responsible official. Black exonerees are overrepresented in official misconduct cases at double the frequency of white exonerees. Future research is needed to examine specific representative cases of official misconduct in conjunction with other wrongful conviction causes (i.e., false confession) in order to gain insight on how multiple causes may interact in complex manners. Recommendations for reform include a more systematic way of coding cases in the database.

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6:00-7:30 PM (5139)

Interference and Memory: When Should an Eyewitness Be Burned?. LAUREN KELSO, *University of Virginia*, JESSICA GETTLEMAN, *University of Virginia*, DAVID DOBOLYI, *University of Colorado Boulder*, CHAD DODSON, *University of Virginia* — Police sometimes show eyewitnesses multiple lineups involving the same suspect. When eyewitnesses make a misidentification from an initial lineup, they are particularly susceptible to making a misidentification on a subsequent lineup (Smalarz et al., 2019). Does the eyewitness's face recognition ability and their level of confidence in their initial misidentification predict their accuracy on subsequent lineups? To answer these questions, we showed participants (n = 719) 12 target faces and then a series of lineups. Using a within-subjects design, participants viewed lineups associated with some targets just once, and other targets twice. After completing the lineups, participants completed the Cambridge Face Memory Test (CFMT) to assess their face recognition ability. For weaker face recognizers, high confidence in an initial misidentification predicted lower accuracy on subsequent lineups than did low confidence in an initial misidentification. For stronger face recognizers, all levels of confidence in an initial misidentification predicted comparable levels accuracy on subsequent lineups.

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6:00-7:30 PM (5140)

Improving Identification of Masked Individuals. RACHEL O'DONNELL, *Iowa State University*, JASON C.K. CHAN, *Iowa State University*, GARY L. WELLS, *Iowa State University*, ANDREW M. SMITH, *Iowa State University* — Everyday mask-wearing has become more common as a result of the COVID-19 pandemic. In addition, many crimes are committed by perpetrators who wear a disguise. Manley et al. (2019, 2022) demonstrated the masked-lineup superiority effect, in which identification of a masked perpetrator was improved with a masked lineup relative to an unmasked lineup. We replicated the results from Manley et al. in Experiment 1, and further examined whether having seen the unmasked lineup would affect identification during a masked lineup and vice versa. In Experiment 2, participants briefly viewed a masked lineup before making an identification in an unmasked lineup or briefly viewed an unmasked lineup before making an identification in a masked lineup. In Experiment 3, participants followed the same procedure, except that they made a decision on each lineup they saw. Viewing the unmasked lineup prior to the masked lineup led to a slight and non-significant decrease in discriminability, and viewing the masked lineup prior to the unmasked lineup led to a slight and non-significant increase in discriminability. Additionally, across both experiments, we replicated the masked lineup superiority effect.

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6:00-7:30 PM (5141)

How Stereotype Threat Affects Older Adult Eyewitness Attention and Memory. MCKINZEY TORRANCE, *Tufts University*, BRYN SIEGEL, *Tufts University*, ALIA WULFF, *Arizona State University*, AYANNA K. THOMAS, *Tufts University*, MARIE MAZEROLLE, *Université Bourgogne Franche-Comté* — Past research has looked at older adult eyewitness memory and vulnerability to stereotype threat without accounting for attentional differences. Attention plays a role in eyewitness memory given that witnesses can miss a crime or details about a crime when they are paying attention to something else (i.e., crime blindness). The present study explored the effect of crime blindness and age-based stereotype threat on older

adult eyewitness attention and memory. Stereotype threat and attention were manipulated through subtle instruction differences before watching a video. The video included a theft. After the video, participants were questioned about the video and specifically the theft. Older adults in the inattention or stereotype threat conditions were less likely to notice the crime that occurred compared to older adults in the attention condition or the no stereotype threat conditions. Further, older adults in the inattention condition had lower memory accuracy on the final memory test.

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6:00-7:30 PM (5142)

Response Bias Influences the Strength of the Confidence-Accuracy Relationship for Lineup Rejections. ANNE S. YILMAZ, *University of California, San Diego*, SHINING TU, *University of California, San Diego*, XIAOQING WANG, *University of California, San Diego*, JOHN WIXTED, *University of California, San Diego* — The confidence-accuracy (CA) relationship for positive identifications in police lineups is usually strong, but the same is not true for negative identifications (i.e., lineup rejections), and the field has yet to understand why. One determinant of the CA relationship for negative IDs may be the response bias for positive IDs. However, experimentally manipulating response bias to an appreciable degree on a lineup task is not always successful. In this study, after participants watched a video of a simulated crime, we asked them how sure they were that the perpetrator was in the lineup (rated on a scale ranging from -100 to 100) without yet asking them to identify anyone. Next, participants underwent a 6-AFC lineup procedure in which they were asked to identify the person most likely to have committed the crime (with confidence again rated on a scale ranging from -100 to 100). This allowed us to manipulate response bias after the fact based on the first rating. In agreement with signal detection simulations, the results show that shifting the decision criterion for making a positive ID significantly influences the strength of the confidence-accuracy characteristic (CAC) curve for negative IDs.

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6:00-7:30 PM (5143)

Perceptual and Inferential Accounts for the Effect of Lineup Bias on Eyewitness Identification Decisions. REBECCA C. YING, *Iowa State University*, ANDREW M. SMITH, *Iowa State University*, ALEXANDRIA GOLDSTEIN, *Iowa State University*, BRIAN S. CAHILL, *University of Florida* — Eyewitness lineups are biased when the suspect provides a better match to the witness' description of the culprit than do the lineup fillers. Biased lineups lead to more suspect IDs than fair lineups and these suspect IDs tend to be made with higher confidence. We examined whether the lineup-bias effect is better explained by a perceptual account or an inferential account. According to the perceptual account, surrounding a suspect with dissimilar fillers leads witnesses to perceive the suspect as a better match-to-memory compared to when the suspect is surrounded by fair fillers. Conversely, the inferential account proposes that the lineup-bias effect is due to higher-order reasoning ("I know it's none of the other lineup members"). Participants (N = 438) completed biased and fair lineups where they provided either confidence ratings or memory ratings ("How well does this individual match your memory for the culprit?") for each lineup member. Consistent with the perceptual account, lineup bias led to similar increases in both memory ratings and confidence ratings; however, this pattern of results could also be explained as a scaling effect. Ongoing work attempts to differentiate between perceptual and scaling accounts.

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6:00-7:30 PM (5144)

The Effect of Diurnal Changes on Memory for Environmental Sounds. JUSTYNA OLSZEWSKA, *University of Wisconsin Oshkosh*, CHRISTOPHER GROVES, *University of Wisconsin Oshkosh*, RUTGER BROWN, *University of Wisconsin Oshkosh*, NATALIE FREESE, *University of Wisconsin Oshkosh*, SARAH GILLESPIE, *University of Wisconsin Oshkosh*, KYLEIGH HUEBNER, *University of Wisconsin Oshkosh*, RAINE SUMMERS, *University of Wisconsin Oshkosh* — Folkard (1979) demonstrated that more errors to phonologically similar verbal stimuli occurred at early hours than late when immediate retention was examined and attributed this to greater reliance on maintenance processing in the morning. In the current study, we aimed at testing memory performance for acoustically similar stimuli—environmental sounds—that lacked a language component to verify whether only auditory-verbal material is sensitive to diurnal changes. Participants studied sets of acoustically similar meaningful and meaningless sounds and responded to a single probe that was either studied, unstudied but acoustically similar to previously studied or unstudied and acoustically different. More false alarms to unstudied and acoustically similar meaningful sounds occurred following evening presentations than morning and after a short delay. After a longer delay, no difference between morning and evening was reported. The results suggest that additionally to a phonological component, an acoustic aspect may play a crucial role in diurnal changes.

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6:00-7:30 PM (5145)

Time-Course of ERP Response and Behavioral Correlates Associated with False Recognition Memory in the DRM Paradigm. NIEVES PÉREZ-MATA, *Universidad Autónoma de Madrid*, JACOBO ALBERT, *Universidad Autónoma de Madrid*, LUIS CARRETIÉ, *Universidad Autónoma de Madrid*, ALBERTO SÁNCHEZ-CARMONA, *Centro Neuromottiva*, SARA LÓPEZ, *Universidad Autónoma de Madrid* — Participants (N = 25) listened to 28 DRM lists and, while completing a recognition test, time-point to time-point t-tests of ERPs were analyzed (Guthrie & Buchwald, 1991). The illusory memory phenomenon occurred as false recognition for critical lures was higher than for new words. Furthermore, an old/new effect was observed during late positive complex (LPC) time range at frontocentral and centroparietal scalp regions. Also, waveforms for hits of studied words and false recognition of critical lures differed along the LPC. Behavioral and ERP measures showed a performance benefit for presented words compared to no presented words but semantically related to perceived ones. However, correct rejections of critical lures and new words did not differ along the LPC, but

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subtle differences emerged around 200 ms, which are thought to be indicative of selective attention and beyond 1200 ms, which are proposed to reflect post-retrieval processing. Thus, under difficult conditions of discrimination (Did I really hear the critical lure?) participant may have serious problems rejecting a false event, even if this has no correlate in brain activity.

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6:00-7:30 PM (5146)

Memory for Free: Gist-Based False Memory for the Concept of Free in Advertisements. KYLIE ALBERTS, *University of California, Los Angeles*, ALAN D. CASTEL, *University of California, Los Angeles* — Some advertisers may mislead people into sharing personal information through wording in advertisements that encourages higher enrollment. These advertisements may be effective because people rely on schematic information rather than specific details when retrieving information from memory, which can lead to gist-based false memory. The present study examines how people falsely remember viewing the word "free" in an advertisement for a complimentary sample. Half of the participants viewed an ad where "free" was stated three times. The other half viewed an ad that never explicitly stated the word "free", but included synonyms (e.g., complimentary, no cost). When "free" was explicitly stated in the ad, participants reported viewing "free" more often than was stated. When "free" was not explicitly stated, participants falsely remembered viewing "free". These findings suggest people can have an inaccurate memory for detailed verbal information and may be misled by "free" offers due to gist-based memory.

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6:00-7:30 PM (5147)

Aging and Frontal Functioning Dissociate Two Memory Illusions: DRM vs. Context Illusion. NICOLE E. MILLER, *University of Chicago*, MIA C. RESA, *University of Chicago*, TESNIM ARAR, *University of Chicago*, DAVID A. GALLO, *University of Chicago* — Reinstating the contextual details of an event can be a strong retrieval cue for memory. However, recent work on object-scene pairs has established a context reinstatement illusion whereby presenting the same context (e.g., background scenes) at encoding and retrieval can distort object memory (Doss et al., 2018). Context reinstatement increased hit rates to studied objects, but also increased false recognition to highly similar lures. The present study extends this work by investigating the effects of age and frontal function on the context illusion, and comparisons to the well-established Deese-Roediger-McDermott (DRM) illusion. Replicating prior work, older adults with low frontal function were the most susceptible to the DRM illusion, potentially owing to impairments in explicit memory monitoring processes. However, age and frontal function did not increase susceptibility to the context illusion, and in contrast to DRM, low frontal older adults were the least susceptible to the context illusion. These results suggest that the context illusion is driven by implicit processes that are not explicitly monitored in the same way as the DRM illusion.

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6:00-7:30 PM (5148)

The Influence of Partner Provided Inferences on Memory. ZOE H. FISCHER, *University of Mississippi*, MATTHEW REYSEN, *University of Mississippi* — Stories accompanied by pictorial inferential information have been shown to increase participants' memory for passages not included in a narrative text (Henkel, 2012). The present study was designed to determine whether social exposure to written inferential information increases the likelihood that participants will incorporate those inferences into their own memories. Participants were randomly assigned to read and answer questions about stories either alone (control condition) or with a virtual partner (experimental condition). Participants who received partner provided inferences, were expected to remember a higher number of those inferences than the participants who completed the experiment alone. Notably, there were statistically significant differences in both the amount of inferential and correct information remembered between the experimental and control conditions. Our results suggest that viewing responses produced by a perceived peer increases participants' subsequent memories for such information, potentially as a result of source monitoring failures.

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6:00-7:30 PM (5149)

Memory Mechanisms Underlying the Generation Effect. XINYA LIU, *Cornell University*, CHARLES J. BRAINERD, *Cornell University* — This study examined memory benefit of generating to-be-learned materials from partial information over reading the intact materials. We compared memory for target words after word-fragment completion task with task requiring read and repeat the words. Through four combinations of presentation form (word lists vs. stories) and memory test (recognition test vs. free recall test), we found (a) studied words were recognized better after word-list version and story-version generation task, (b) bias rate was remarkably lower in word-list generation group, (c) for stories, bias rate was similar between generation condition and read condition, (d) generation advantage disappeared in free recall for both versions of presentation form, (e) neither false recognition nor false recall was reliably reduced by generation process, and (f) previous results found in immediate memory tests remained consistent in delayed memory tests. Analyze for memory retrieval process revealed that generation effect was mainly due to enhanced verbatim memory.

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6:00-7:30 PM (5150)

Norms for Survival- and Forensic-False Memory Lists. I-AN SU, *Cornell University*, ALLISON L. GENDREAU, *Proactive Life Skills*, MICHAEL P. TOGLIA, *Cornell University*, CHARLES J. BRAINERD, *Cornell University* — The DRM paradigm, renowned for its simplicity and variety of list types, is a valuable tool in false memory research. However, a gap exists regarding DRM lists tailored to survival and forensic terminology, impeding our understanding of fundamental memory processes in those domains. Therefore, we designed studies to develop survival and forensic thematic normed word lists and employ them in memory experiments.

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Study 1 developed survival-related word lists (i.e., natural threats, weapons) normed for concreteness, BAS, etc., followed by a recall and recognition memory experiment. Study 2 initially compared memory for control and forensic DRM lists (guilty, thief), showing they were equal in true memory, but forensic false memory was lower in both recall and recognition. The norming of forensic word lists is currently being extended to match the survival lists. These normed word lists provide valuable resources for researchers investigating memory phenomena associated with survival and forensic questions.

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6:00–7:30 PM (5151)

Effects of Delay on Short- and Long-Term False Memories for Semantic and Phonological Lists. ECE YUKSEL, *Illinois State University*, DAWN M. MCBRIDE, *Illinois State University*, JEN H. COANE, *Colby College* — The purpose of the present study was to examine the differences in memory errors for semantic and phonological lists across delays using the DRM paradigm. Previous studies have shown that the higher rates of false memories for semantic than phonological lists typically seen at longer delays is reversed for very short delays (McBride et al., 2019). Delays from 750 ms to 3 min were included to examine the delay at which the reversal occurs. The results showed significant false memories across all delays with two exceptions: no false memories were found for semantic lists at the shortest delay (750 ms) or for phonological lists at the 90 s delay. These results suggest a crossover from short-term to long-term memory processes in this time frame.

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6:00–7:30 PM (5152)

Investigating the Effects of Interpolated Question Frequency in an Online STEM Lecture with Community College and University Students. ZOHARA ASSADIPOUR, *Iowa State University*, DAHWI AHN, *Iowa State University*, HYMNJYOT GILL, *Toronto Metropolitan University*, KARL SZPUNAR, *Toronto Metropolitan University*, JASON C.K. CHAN, *Iowa State University* — Higher education is increasingly delivered online, where students may be prone to inattention and poor learning outcomes. Recent research showed that interpolating a lecture with brief questions can potentiate new learning. Some lab studies, however, have shown that very frequent interpolated testing can impair new learning, but these studies all used triadic materials, which are uncommon in typical educational scenarios. We aimed to investigate the influence of interpolated test frequency on learners' engagement and performance in a high-powered, ecologically realistic study. Participants watched a ~20-minute STEM-based online lecture. Throughout the first ~15 minutes of the lecture, participants received test questions or saw review slides. Further, the interpolated activity occurred either individually (high frequency) or in blocks (low frequency). After the lecture concluded, all participants answered four test questions consecutively over information during the last ~5 minutes of the lecture. More than 400 university and community college students participated.

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6:00–7:30 PM (5153)

Metacognitive Effects of Comparing Learner-Generated to Instructor-Provided Visuals. LOGAN FIORELLA, *University of Georgia*, ALLISON J. JAEGER, *Mississippi State University* — This study tested the metacognitive effects of comparing self-generated visuals to instructor-provided visuals when learning from a science text. College students (n = 120) created drawings from a text about the human circulatory system and then made various judgments of their learning. Next, students either restudied the text (restudy group) or compared their drawings to instructor-provided drawings (feedback group) and then made new judgments of learning. Students who received feedback significantly reduced their self-evaluations of the quality of their drawings; however, comparison to feedback did not significantly affect relative or absolute judgment accuracy or performance on a subsequent comprehension test. Interestingly, students with higher spatial ability exhibited higher relative and absolute judgment accuracy, as well as higher comprehension test performance.

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6:00–7:30 PM (5154)

Separating Surface from Structure: Study Schedules Affect What Is Learned From Examples. CAMILA SÁNCHEZ, *University of California, Santa Cruz*, HANNAH HAUSMAN, *University of California, Santa Cruz* — Compared to blocking, interleaving examples of different concepts can improve transfer of learning to novel examples. Often, examples (statistics problems) can differ in terms of structure (concept: t-test, ANOVA, chi-square) and/or surface (storyline: number of cars, temperature). We compared transfer of statistics learning to new problems when practice problems were blocked or interleaved by storyline, but always interleaved by concept. Interleaving by concept is thought to help participants identify the key features that differentiate concepts through a process known as discriminative contrast. However, we hypothesize that interleaving the story line may increase difficulty identifying important structural differences between concepts as the surface features also differ between successive examples. Initial data supports this prediction, with blocking leading to better performance on a transfer test than interleaving by storyline. Results will be discussed in terms of structure mapping theory. Exploratory analyses of metacognition and mind wandering will also be discussed.

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6:00–7:30 PM (5155)

The Mixed List Drawing Effect Reflects Both Benefits to Drawn Items and Costs to Written Items. JACOB M. NAMIAS, *The University of Southern Mississippi*, PEYTON POE, *The University of Southern Mississippi*, MARK J. HUFF, *The University of Southern Mississippi* (Sponsored by Mark Huff) — Drawing a referent of a to-be-remembered word often improves recognition and recall of this word relative to a control task in which the word is written, a pattern dubbed the drawing effect. Although drawing is not always found in pure lists, we report two experiments in which the drawing effect emerged in both pure- and mixed-list contexts on recognition and recall tests, though the effect was larger in mixed lists. Our experiments

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then compared drawing effects on memory between pure- and mixed-list contexts to determine whether the larger mixed-list drawing effect reflected a benefit to draw items, a cost to write items, or a combination. In recognition, drawing performance was at ceiling for both list types, but a mixed-list cost to write items was found, indicating that memory was impaired for write items when presented alongside draw items. In recall, a mixed-list benefit emerged for draw items as did the same mixed-list cost to write items that occurred on recognition. Our results indicate that drawing is an effective study strategy but does not operate cost-free in a mixed-list design.

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6:00-7:30 PM (5156)

The Effects of Attention Contagion on Task-Unrelated Thought and Learning in a Virtual Lecture. MICHAEL W. MCHALE, *University of North Carolina at Greensboro*, MICHAEL J. KANE, *University of North Carolina at Greensboro* — Informed by Forrin et al. (2021) and Kalsi et al. (2022), the present study investigated attention contagion and task-unrelated thought (TUT) within virtual lectures. We tested whether the attention states of students in a virtual lecture impacted classmates' TUTs and learning in a between-subjects (N = 352) online experiment. Participants watched a simulated virtual lecture in a Zoom-like format, with six confederate viewers acting either attentively (attentive condition) or inattentively (inattentive condition) throughout the lecture. Thought probes were interspersed throughout the video lecture to measure TUTs. Participants completed a lecture pretest to gauge preexisting knowledge and a posttest to measure learning. To address our primary research questions about whether inattentive confederates would increase participants' TUT rates and reduce their learning, an independent-means sample t-test compared the mean TUT rates between the two study conditions, and a one-way ANCOVA (covariate = pretest scores) assessed postlecture test performance between conditions. We will discuss the implications of our findings for mind-wandering research and online educational contexts.

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6:00-7:30 PM (5157)

Examining Optimal Sequence for Learning as a Function of Strategy Over a 2-Week Delay. JERI L. LITTLE, *California State University, East Bay*, JEXY AN NEPANGUE, *University of California, Santa Cruz* — Mixing items from different categories (i.e., interleaving) is often more effective for learning than is grouping items by category (i.e., blocking), particularly for memorization tasks. However, when a categorization rule can be verbalized, blocking can be better than interleaving. In some situations, participants can memorize or find a rule, and their strategy affects how they classify transfer items (similarity-based or rule-based, respectively). We manipulated sequence (interleaved, blocked) and strategy (memorize, rule), examining transfer (based on strategy instructions) at the end of the first session, at a 2-week delay, and after relearning during that second session. We found an interaction between sequence and strategy that was unaffected by time interval: when memorizing, interleaving was relatively better than blocking for classifying based on similarity, but when trying to find a rule, blocking was relatively better than interleaving for classifying based on the rule. The findings have implications for optimal sequence as a function of strategy.

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6:00-7:30 PM (5158)

Interleaved and Distributed Practice: Undergraduate Students' Practices, Experiences, and Beliefs. STEVEN C. PAN, *National University of Singapore*, INEZ ZUNG, *University of California, San Diego*, ANDY TEO, *National University of Singapore*, JAMES COOKE, *University of California, San Diego*, FARIA SANA, *Athabasca University* — Do undergraduate students use interleaved practice, the strategy of alternating between a series of skills or concepts during learning, and distributed practice, the strategy of spreading out learning over time? Do they have opportunities to incorporate either strategy? What are their associated metacognitive beliefs? To uncover answers, we conducted two surveys, one in North America (n = 669) and the other in Southeast Asia (n = 424). The results, largely consistent across both surveys, revealed that students rarely utilize interleaving, whereas distributed practice is more common. Lectures tend to mix interleaved and non-interleaved methods and provide opportunities for distributed practice, whereas homework assignments are rarely interleaved but commonly involve revisiting materials. Most respondents endorsed non-interleaved methods along with the use of distributed practice. Overall, these results reveal that the potential of interleaved practice to enhance undergraduate learning and instruction remains largely untapped relative to distributed practice. That pattern is reflected in students' self-regulated learning activities, instructional experiences, and metacognitive beliefs.

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6:00-7:30 PM (5159)

Does Content Value from a Rubric Influence Students' Study Decisions?. MORGAN D. SHUMAKER, *Texas Christian University*, MICHELLE L. RIVERS, PHD, *Texas Christian University*, S. UMA TAUBER, *Texas Christian University* (Sponsored by S. Uma Tauber) — When learning material that differs in value (importance), learners tend to remember more-valuable over less-valuable information (Castel et al., 2013). Value can also impact students' self-regulated decisions for words (Middlebrooks & Castel, 2018) or word pairs (Soderstrom & McCabe, 2011). One common way for educators to communicate about value is by providing rubrics that indicate how many points each section of an assignment is worth. Access to rubrics increases students' reports of self-regulation during learning (Panadero & Romero, 2013), but the direct impact of rubrics on students' learning decisions remains unknown. To investigate this issue, undergraduate students prepared for a writing assignment about a scientific text. Each student was provided with one of the several rubric types that varied in the number of points each concept was worth. We examined how the concept value provided in the rubric influenced learners' study time allocation and decisions about which concepts to study.

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SATURDAY

6:00–7:30 PM (5160)

Optimizing Collaborative Learning: Exploring the Impact of Group Size on Learning Outcomes in an Undergraduate STEM Course. LENA HILDENBRAND, *University of Illinois Chicago*, JENNIFER WILEY, *University of Illinois Chicago* — In many courses, students are assigned to work on assignments collaboratively. However, despite this having become a popular instructional approach, results have been mixed for experimental studies that have compared the learning of students who work with peers to that of students who work alone. In this context, an important question to be answered is what size groups might be best for supporting information sharing and reasoning during course activities. Several ongoing studies are testing this question in undergraduate STEM courses by comparing learning outcomes across contexts in which individuals work on activities alone or in groups of 2s, 3s, and 4s.

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6:00–7:30 PM (5161)

The Role of Novelty in Intentional Forgetting. CHRISTOPHER STEADMAN, *University of Minnesota*, KEISHA VARMA, *University of Minnesota* — Intentional forgetting is the concept that explains the ways individuals exert control over what they forget, particularly if they deem information to be inaccurate or irrelevant. Within this area of study, there are questions about how readily non-verbal stimuli can be forgotten and what role novelty plays in intentional forgetting. Thus, this study investigated differences in intentional forgetting for novel, abstract objects and everyday objects. Using a within-subjects, item-method directed forgetting paradigm, participants were shown pictures of AI-modified novel, abstract objects and everyday objects, and then memory for these images was assessed via an old/new recognition task. Results indicate that abstract objects were more readily forgotten when compared to everyday objects, likely due to differences in how participants processed or categorized the more novel abstract stimuli. This in turn made it easier for individuals to consider these items as irrelevant after receiving the forget cue. These findings suggest that novel information may be more susceptible to forgetting effects, especially when it fails to integrate with our prior experiences.

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6:00–7:30 PM (5162)

Storage or Retrieval Underlying the Picture Superiority Effect—That Is the Question. CAROLIN STREITBERGER, *University of Mannheim*, BEATRICE G. KUHLMANN, *University of Mannheim* — The dual coding theory predicts that verbal and non-verbal information are represented in different but connected underlying systems. It predicts that memory for pictures is better than for words (picture superiority effect) because pictures are stored in and retrieved from both the non-verbal and the verbal system whereas words are coded singularly in the verbal system. In this experiment, we tested whether encoding information dually as opposed to singularly increases both storage and retrieval probabilities. Participants (N = 133) either learned words or words with corresponding pictures, that is items in one or two codes. Both groups completed recall and recognition tests in word form only. We replicated the picture superiority effect in both recall and recognition performance. With multinomial modeling, we disentangled the latent processes storage from retrieval and found that participants could both better store and better retrieve words with pictures. There was no evidence for an interaction effect, indicating that this picture superiority effect is driven by storage and retrieval to the same extent.

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6:00–7:30 PM (5163)

Repeated Semantic Search in Older and Younger Adults. REBECCA WILDER, *Syracuse University*, JEFFREY C. ZEMLA, *Syracuse University* — People commonly initiate semantic search using the same cue on multiple occasions. However, most experimental work has assessed semantic search using only a single trial, or multiple trials with distinct cues. We assessed the stability of semantic search in individuals with the repeated fluency task, a variation of the category fluency task (e.g., listing animals) where participants completed two fluency trials with the same category cue separated by a delay (1 minute or 24 hours). We compared the performance of younger adults (18-25 years) to older adults (60+ years). We found that repeated semantic search is characterized by temporal clustering, similar to episodic retrieval, and examine the effects of age and delay. Our work may help explain practice effects in the category fluency task, and also demonstrates how analytical tools used in the episodic retrieval tasks can be used to help understand semantic search.

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6:00–7:30 PM (5164)

Free Recall of Semantically Grouped Lists Lead to Greater Temporal Clustering. NANCY LINEHAN, *Syracuse University*, JEFFREY C. ZEMLA, *Syracuse University* — Recall for a list of words is greater when the list is grouped by semantic category compared to when the same words are presented in a random order (the blocked-random effect). We evaluated two different possible explanations of this effect: gist processing and efficient cueing. Participants completed a free recall task with two lists where semantic blocking was manipulated both within and between participants and replicated the blocked-random effect. The gist processing account suggests that grouped lists activate a representation superordinate category, which could lead to increased semantic intrusions (i.e., a mini-DRM effect). However, we found that semantic blocking did not increase the number of semantic intrusions. In contrast, the efficient cueing hypothesis suggests that recall is improved by strengthening the pairwise associations between adjacent words. In support of this account, we found the blocked lists showed much stronger temporal clustering than random lists.

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6:00–7:30 PM (5165)

All-or-None Retrieval of Chunks. JEREMY CAPLAN, *University of Alberta*, AMIRHOSSEIN SHAFAGHAT ARDEBILI, *University of Alberta*, LIU YANG, *University of Alberta* — Serial recall benefits when lists are subdivided. Johnson (1969) argued that

subsequences (chunks) are recalled all-or-none. But many successful models of data on chunking do not do this. We tested Johnson's prediction, reduced transitional-error probabilities within chunks, in two published letter-list datasets and two new word-list experiments. The former suggested recoding, when possible, can produce all-or-none retrieval. The latter found little all-or-none retrieval in novel word-lists, when grouping was induced via temporal pauses or instructions to subdivide. However, when subsequences were briefly pre-trained, the all-or-none characteristic emerged. The findings suggest models of novel-order once-studied lists may not need to be modified to become overtly hierarchical but should be amended to allow for recoding. It remains to be tested whether all-or-none retrieval flows naturally in existing models when pre-training of subsequences is added.

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6:00–7:30 PM (5166)

Integration of Information Across Separate Traces in Memory. GREGORY E. COX, *University at Albany, SUNY*, SUPRIYA SAMAROO, *University at Albany, SUNY*, NATHAN GILLESPIE, *University at Albany, SUNY* — Repetition may improve memory either by adding a new separate trace that affords an additional opportunity for retrieval or by strengthening an integrated trace for the repeated material. In two experiments in which participants were cued to recall the color of studied objects, we find evidence for the operation of both mechanisms. Color recall was faster for repeated objects, consistent with either mechanism. Precision of color recall was also higher for repeated objects, implying some form of integration. Joint distributions of accuracy and response time implied that recall for repeated objects was based on two traces, one representing the first encounter with the object and one representing the integration of the second encounter with the first. This conclusion, based on converging analyses from Systems Factorial Technology and quantitative comparisons between different diffusion models of retrieval dynamics, reconciles theories that assume integration across repetitions with results that imply separate memories for instances. The formation of updated integrated memory traces may be a mechanism by which repeated experience can lead to well-developed semantic knowledge.

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6:00–7:30 PM (5167)

Do More Difficult Tests Potentiate More New Learning?. RYAN HARADEN, *University of California, Santa Cruz*, VEIT KUBIK, *Julius-Maximilians-Universität Würzburg*, HANNAH HAUSMAN, *University of California, Santa Cruz* — Several studies have shown that retrieval practice is more effective than restudy or no-interim practice to enhance subsequent learning of new information. We intended to test the encoding effort hypothesis of this forward effect of testing (FET) through an empirical study analyzing the effect of question difficulty, and therefore encoding effort, on subsequent retrieval. In our study, we presented participants with educationally-relevant reading materials split up into three sections. After each of the first two sections, an interim practice on the previous section was given depending on their randomly assigned group: restudy, easy multiple choice or difficult multiple choice. After the third section, all participants were given cued recall questions. If the encoding effort hypothesis is indeed true, we expect to find a significant difference in the cued recall scores with difficult multiple choice assigned participants scoring better than easy multiple choice participants scoring better than restudy participants.

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6:00–7:30 PM (5168)

The Testing Effect: Background Knowledge as a Possible Moderator. JESSICA MACALUSO, *University of Pittsburgh*, SCOTT H. FRAUNDORF, *University of Pittsburgh* — A large body of research has established that practicing retrieval results in better long-term retention relative to restudying. Given the relevance of such effects for education, there is interest in the conditions and learner differences that may moderate the benefits of testing, like pre-existing knowledge. In two experiments, college students read texts and were tested on them one week later. We orthogonally manipulated study strategy (retrieval versus restudying) and availability of background material for a given topic. In Experiment 2 only, feedback availability was orthogonally manipulated during testing. We found that participants had significantly better retention when they studied via retrieval and received feedback (Experiment 2). Thus, feedback is beneficial with testing, at least over a one-week timespan. Without feedback, we found that participants had better retention when they received background material, regardless of which study strategy was used (Experiment 2) or performed significantly better studying via restudying (Experiment 1).

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6:00–7:30 PM (5169)

No Testing Effect for Meaningless Verbal Content. ANNA MCCARTER, *University of Massachusetts Amherst*, ROSEMARY A. COWELL, *University of Colorado, Boulder Institute for Cognitive Science*, DAVID HUBER, *University of Colorado Boulder*, JEFFREY J. STARNS, *University of Massachusetts Amherst* — The well-established testing effect shows that memory is better for information that is practiced than information that is studied. In prior work, we found no testing effect for novel, meaningless visual content and hypothesized that this may be because the testing effect relies on semantic content. To further test this idea, we created another set of stimuli that are devoid of semantic content, pairs of pronounceable non-words. After initial study of all of the pairs, half of the items were re-studied while the other half underwent practice. Practice involved presenting the participant with one of the non-words from the pair, asking them to recall the corresponding non-word, and then having them select the item that they were thinking of out of two options. Participants received feedback on if they were correct in their decision. Interestingly, on the final memory tests, participants exhibited better memory for the pairs that they learned through re-study than the pairs that they learned through practice, suggesting no evidence for a testing effect for these pronounceable non-words. This implies that the testing effect may rely on semantic content.

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SATURDAY

6:00–7:30 PM (5170)

Is a Test the Best. GIULIA R. MCDONALD, *Mississippi State University*, DEBORAH K. EAKIN, *Mississippi State University* — The test effect (Roediger & Karpicke, 2006) demonstrates that performance on a final test is better when an immediate test is taken after reading a passage rather than rereading. Although transfer appropriate processing has been suggested as a theoretical explanation, the results could be due to elaborative retrieval processes during the immediate test that are not available during restudy. We compared testing to three other strategies using elaborative retrieval—Generating Questions, Read-Recite-Review, Teaching—to determine whether they would be as beneficial as testing. Results showed that each of the alternative strategies produced final test performance equal to that of testing, suggesting not only that these strategies are as effective as testing, but also that elaborative retrieval can explain test effects. However, final test performance for testing was not better than rereading. This finding leaves unanswered questions, given that the test effect is a robust result in the literature.

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6:00–7:30 PM (5171)

Semantic Supports Don't Improve Episodic Memory After Errorful Learning Conditions. SIOBHAN C. MOHER, *University of California, Santa Cruz*, MELISSA BERNALD, *ABRITE Organization*, HANNAH HAUSMAN, *University of California, Santa Cruz* — Error correction, rather than restudying, is beneficial for learning with semantically rich material (trivia, related word pairs). We asked: is errorful better than errorless learning for remembering episodic information? We hypothesized no, unless semantic supports were provided. Participants learned grocery item-price pairs, which were reasonable or unreasonable prices through errorful (guess price then study correct price) or errorless (study correct price) conditions. On a cued-recall test, participants better remembered the reasonable than unreasonable grocery prices. Memory was not impacted by errorful vs. errorless learning conditions and there was no interaction with the reasonableness of the prices. Episodic memory is more impacted by its reasonability than by how it is learned. Results will be discussed in terms of theories of error correction. Individual differences and error correction will also be explored.

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6:00–7:30 PM (5172)

Investigating the Effect of Retrieval Practice on Transitive Inference. ANNALIISA POWERS, *University of North Carolina at Chapel Hill*, NEIL MULLIGAN, *University of North Carolina at Chapel Hill* — There is a long-standing debate as to whether the testing effect extends to more complex forms of learning such as problem solving and inference tasks. Transitive inference (TI) gives us the ability to systematically investigate how participants learn and apply that learning to solving problems under different testing conditions. The present experiments investigated the effect of retrieval practice on TI using an 8-element TI paradigm. Participants learned a set of premise pairs, then studied or retrieved those pairs. Participants later took a final test which included both the original premise pairs and pairs which required inference. In two experiments, a traditional TI paradigm was used and found no significant positive testing effect on TI. In a third experiment, the materials were modified in a way that changed the strategy participants used to solve the TI problems, producing a testing effect. These findings imply that testing may harm learning of relational materials.

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6:00–7:30 PM (5173)

Does Pretesting Impair Learning for Non-Pretested Content at Increased Video Playback Speed?. OSCAR D. RAMIREZ PEREZ, *Mississippi State University*, KELSEY K. JAMES, *University of Houston–Clear Lake*, ANNIE S. DITTA, *University of California, Riverside*, JULIA S. SOARES, *Mississippi State University* — Pretesting prior to a study session has been shown to benefit memory for pretested information compared to traditional study. While previous research has not found a detriment to non-pretested but related material, it is possible that taxing attention by increasing the playback speed of presented material could reveal such impairments. The current study (n = 239) compared multiple-choice learning from educational videos at 1x, 1.5x, and 2x speeds. Three videos (one at each speed) were presented after a pretest, for which half of the tested material was pretested, and half was not (non-pretested related). Another three videos were presented without a pretest (non-pretested). Benefits from pretesting and impairments associated with increased playback speed were observed, but no evidence of impairments to non-pretested related information were observed even at an increased playback speed. These results are inconsistent with an attentional account of the pretesting effect. Data collection for Experiment 2 is underway.

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6:00–7:30 PM (5174)

How Does Spacing Affect the Mnemonic Benefits of Variable Retrieval Practice?. RACHEL SMITH-PEIRCE, *Washington University in St. Louis*, ANDREW C. BUTLER, *Washington University in St. Louis* — Combining learning strategies of retrieval practice and variability has been shown to be effective in student learning (Butler et al., 2017; Pan & Rickard, 2018), but the structuring of the learning strategies (i.e., spacing) may benefit or hinder learning. The present study investigated how the spacing of initial practice could be structured to be favorable to performance on transfer questions. Participants watched geology videos that contained a total of 12 concepts, and then answered three questions for each concept. Each of the three questions were either presented two days apart (i.e., spaced) or in succession after the corresponding video (i.e., massed). Variable versus repeated practice was manipulated between participants. The final test consisted of 12 new application questions. Repeated practice led to greater increments in performance across initial practice sessions. In the final test, spaced practice led to greater final test performance compared to massed practice. Our study provides initial evidence that the structuring of the initial learning sessions can create favorable conditions for transfer of knowledge.

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SATURDAY

6:00–7:30 PM (5175)

Investigating How Learners Correct Mistakes: The Influence of Feedback Timing. JEXY AN NEPANGUE, *University of California, Santa Cruz*, HANNAH HAUSMAN, *University of California, Santa Cruz* — This study investigates the impact of the timing of corrective feedback on learning from mistakes. Educators and students are often afraid of making mistakes during the learning process, but mistakes are unavoidable when learning novel materials. In this research, participants learned 24 weakly related word pairs (e.g., blanket—picnic) and guessed the corresponding target before they were shown the corrective feedback immediately or at a 5-minute delay. During the final test, participants had to recall the correct target either from the cue (e.g., blanket—???) or their original guess (e.g., bed—-???), which was used to test the errors-as-mediators account, suggesting that errors lead to an additional retrieval pathway (cue→error→target) that aids learning from corrective feedback. Surprisingly, on the original guess as a cue final test condition, recall performance was similar regardless of the timing of the feedback, which is inconsistent with the errors-as-mediators account. Although the question of how people correct their mistakes while learning continues, the study concludes that immediate corrective feedback is most effective when learning from mistakes.

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6:00–7:30 PM (5176)

Simulating the Process Overlap Theory of Intelligence: A Unified Framework Bridging Psychometric and Cognitive Perspectives. HAN HAO, *New Mexico State University*, ANDREW R. A. CONWAY, *New Mexico State University*, KRISTÓF KOVÁCS, *Eötvös Loránd University (ELTE)*, JEAN-PAUL SNIJDER, *Heidelberg University* — Traditional theories of intelligence either prioritize a psychometric or a cognitive perspective, but their limitations and incompatibilities hinder a comprehensive understanding. Contemporary theories, like the process overlap theory (POT; Kovacs & Conway, 2016, 2019), aim to bridge the gap between both perspectives, by explaining inter-individual differences in intelligence through intra-individual psychological processes. This study proposed simulated dynamics of cognitive processes in human cognition based on POT, examining how they align with psychometric models. Test scores were generated from a sampling of simulated cognitive processes and fitted by latent factor models. Results showed that a standard higher-order "general intelligence" model fits the data well in the absence of a general cognitive ability. Psychometric network models and latent network models were also implemented, as they are more compatible with POT. Estimated factor scores for simulated broad abilities from the three different models are compared and discussed. This study supports POT as an alternative theoretical and statistical framework for contemporary research on human cognition, combining psychometric and cognitive theories of intelligence.

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6:00–7:30 PM (5177)

Retroactive Interference with Working Memory Consolidation Occurs at a Central Locus. BRANDON J. CARLOS, *University of Houston*, LINDSAY A. SANTACROCE, *University of Houston*, BENJAMIN J. TAMBER-ROSENAU, *University of Houston* — Working memory (WM) consolidation preserves perceptual information in WM to insulate it from distraction. A decision task following a WM sample can retroactively interfere (RI) with consolidation, but the locus of this interference is unknown. RI has been observed for letter and color WM samples paired with number parity, color, or shape decisions, i.e., both cross-modal and same modality pairings. However, the visual samples could have been susceptible to verbal recoding. Thus, it is unknown whether there is central (cross-modal) RI, or if RI can be explained by a purely verbal locus. We used a within-subjects 2×2 block design with different WM sample and decision task representational format pairings to 1) examine whether RI occurs at the central executive level, and 2) identify any additional RI attributable to modality-specific buffers. We observed RI for cross-modal pairings, with no additional RI for same-modality pairings. These results suggest a strictly central locus.

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6:00–7:30 PM (5178)

The Contributions of Recollection and Familiarity to Auditory Working Memory. CHRIS HAWKINS, *University of California, Davis*, ANDREW YONELINAS, *University of California, Davis* — Prior work has suggested that visual working memory as measured in change detection tasks can be based on recollection, whereby participants consciously identify a specific feature of a stimulus that has changed, or on assessments of familiarity, whereby participants sense that a change has occurred but are unable to consciously identify what has changed. Whether recollection and familiarity also contribute to auditory forms of working memory (aWM), and whether they can be functionally dissociated is currently unclear. The present change detection study sought to address that gap in knowledge by having participants make confidence judgments about whether pairs of speech sounds and pure tones presented through headphones were the same or different. The results of the study indicated that recollection and familiarity contribute to aWM for speech sounds and tones across a variety of conditions, and that they may be functionally dissociable.

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6:00–7:30 PM (5179)

Role of Location in Binding Features in Working Memory (WM). SUAAD S. AL-HADHRAMI, *University of Zurich*, LEA M. BARTSCH, *University of Zurich*, KLAUS OBERAUER, *University of Zurich* — The nature of multi-featured object representations in working memory remains unclear. Here, we aim to test two competing hypotheses. One is that all object features are integrated into an object file. The other is that locations are critical for maintaining the binding of features of an object. A set of multi-featured objects were presented simultaneously, followed by a retention interval in which placeholders either moved or stayed. Participants were

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then given one feature as a cue and prompted to report the other two features. Applying multinomial process tree (MPT) models to evaluate these competing accounts of the memory representations, we found that the data are better explained by the object file framework rather than the spatial binding hypothesis. The current findings suggest that motion does not disrupt memory for objects (i.e., maintenance of bindings between nonspatial features, and of these features with locations, are possible regardless of the objects' motion).

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6:00–7:30 PM (5180)

Do Children Map Order Onto Space In Working Memory? Investigating the Development of the SPoARC Effect. MORGANE FTAÏTA, *Université Côte d'Azur*, ALESSANDRO GUIDA, *Université Rennes 2*, MICHAËL FARTOUKH, *Université Côte d'Azur*, FABIEN MATHY, *Université Côte d'Azur* — When memorizing novel serial information, adults tend to map order onto space by arranging the memorandum onto a mental horizontal line. However, few studies have focused on age-related changes to determine when such spatial-positional associations develop. In the current study, one hundred participants aged 6-11 years old were requested to memorize sequences of three and four items presented sequentially in the middle of a screen. Subsequently, participants were prompted to decide whether a probe belonged to the sequence using two lateralized response keys. Results indicated a significant SPoARC effect for sequences of three items, whereas no spatialization could be detected with list length of four items. These findings suggest that spatial-positional associations can be detected in children using experimental designs similar to those implemented in adults. We discuss the relationship between spatialization, short-term capacity and reading/writing expertise in this population.

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6:00–7:30 PM (5181)

EEG Correlates of Concurrent Processing during Visuo-Spatial Maintenance in Working Memory. MAXIMILIEN LABARONNE, *Cognitive Mechanisms Research Laboratory, Université Lumière Lyon 2*, LISON FANUEL, *Cognitive Mechanisms Research Laboratory, Université Lumière Lyon 2*, BARBARA TILLMANN, *Lyon Neuroscience Research Center (CRNL), Université Claude Bernard Lyon 1*, SOPHIE PORTRAT, *Grenoble Alpes University*, ANNE CACLIN, *Lyon Neuroscience Research Center (CRNL), Université Claude Bernard Lyon 1*, GAËN PLANCHER, *Cognitive Mechanisms Research Laboratory, Université Lumière Lyon 2* — In recent years, there has been increasing interest in the role of attention in working memory maintenance. Previous studies investigated how maintenance modulates concurrent attentional processing at a behavioral level. The present study aimed to examine this question using EEG measures. We manipulated the memory load in a working memory task in which participants maintained spatial locations while performing a parity task that could be computer-paced or self-paced, or with no concurrent processing. Preliminary results indicate that we replicated the increase in oscillatory power with higher memory load in the frontal-midline theta and occipito-parietal alpha bands. Additionally, event-related potentials of the computer-paced processing task revealed three fronto-central ERPs in response to the to-be-processed digits (N180, P270, N370) whose amplitude were modulated by memory load. Ongoing analyses aim to test whether these ERPs differ between the computer-paced and self-paced processing in terms of their localization, timing, or interaction with memory load.

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6:00–7:30 PM (5182)

Content Specificity and Process Specificity of Individual Differences of Verbal Working Memory: A Meta-Analytic Confirmatory Factor Analysis. QIUSHAN LIU, *Florida State University*, NANDREA BURRELL, *Florida State University*, RACHELLE M. JOHNSON, *Florida State University*, ZAHRA MAGHAMI SHARIF, *Florida State University*, LAUREN SPRAGUE, *Florida State University*, DAVID W. BRAITHWAITE, *Florida State University* — This study investigated the factor structure of individual differences in verbal working memory to determine whether (a) numeric and purely verbal WM and (b) updating and maintenance constitute distinct dimensions of individual differences. Meta-analytic confirmatory factor analyses were conducted using 125 independent samples from 106 articles with a total of 17,298 participants. Comparison of a two factor model with separate factors for numeric and verbal WM with a one factor model that combined these favored the one factor model. Comparison of a two factor model with separate factors for complex span tasks and backward span tasks with a one factor model that combined these favored the two factor model. The findings support process-specificity but not content-specificity of individual differences in verbal working memory.

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6:00–7:30 PM (5183)

Understanding the Role of Temporal Information in Memory. JESSICA MILLER, *University of Maryland, College Park*, MICHAEL DOUGHERTY, *University of Maryland, College Park* — Although the role of temporal information in long-term memory is well established, relatively little work has examined the processing of temporal information in working memory. This project tests a new method for measuring the temporal resolution of representation maintained in working memory. Because the representation of temporal information in episodic memory is heavily dependent on how that temporal information was represented and processed in working memory, we propose that individual differences in the representation of temporal information in working memory will predict individual differences in working memory capacity and individual differences in episodic long-term memory. However, because temporal information is uniquely tied to memory, we also test individual differences in temporal resolution to predict performance on other non-memory-based executive functioning tasks. The proposed work investigates the role of individual differences in temporal information processing and its relation to cognitive tasks.

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SATURDAY

6:00–7:30 PM (5184)

Object Learning with Simultaneous Presentation in Humans and Deep Neural Networks. YINUO PENG, *University of Illinois Urbana-Champaign*, ZHEN ZHU, *University of Illinois Urbana-Champaign*, DEREK HOIEM, *University of Illinois Urbana-Champaign*, RANXIAO FRANCES WANG, *University of Illinois Urbana-Champaign* — Our previous study observed that humans who learned Greebles in successive presentations performed significantly worse than a pre-trained convolutional neural network (CNN) when learning a full set of randomized Greebles. This study examined whether this disadvantage was due to memory limitations by adopting a simultaneous presentation method to alleviate memory demand. Human participants learned novel objects (Greebles) by judging class labels and receiving feedback, while the CNN was trained with the same images with the same iterations. Testing included learned Greebles, novel Greebles with the same viewpoint, and novel Greebles with a different viewpoint. The results showed that humans were still less accurate than the CNN with simultaneous stimuli presentations, suggesting that working memory capacity is insufficient to explain the inferior human category learning relative to CNN in the full set condition.

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6:00–7:30 PM (5185)

Faster Presentation Pace Does Not Hinder Spatialization In Working Memory. MAËLISS VIVION, *Université Côte d'Azur*, ALESSANDRO GUIDA, *Université Rennes 2*, STEPHEN RAMANOËL, *Université Côte d'Azur*, FABIEN MATHY, *Université Côte d'Azur* — The SPoARC effect refers to the mental spatialization of non-spatial items when ordinal information needs to be memorized in working memory. This effect is usually detected in recognition tasks using a presentation rate of at least 1000ms per item. However, it remains unknown whether shorter presentation rates would produce the effect. Detecting the effect using a faster presentation pace would question the putative central role of verbalization. We tested 35 participants using a rapid serial visual presentation (RSVP) version of a spatialization task (i.e., 500ms per item) in order to limit verbalization. Participant had to memorize four-item sequences presented centrally and to perform a subsequent recognition task using lateralized keys. We still found a significant spatialization that was broadly comparable to previous studies. Our results indicate that verbalization might not be central to spatialization, and we suggest that future studies could run more tests by optimizing the duration of their experiments.

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6:00–7:30 PM (5186)

Dual-Task Costs in a Complex Span Task: A Storage Resilience Due to Articulatory Rehearsal. JULIE POUGEON, *Université de Fribourg*, CLÉMENT BELLETIER, *Université Clermont Auvergne*, PIERRE BARROUILLET, *University of Geneva*, VALERIE CAMOS, *Université de Fribourg* — Working memory (WM) allows two essential cognitive functions: temporary storage and processing of information. Some WM theories suggest that storage and processing share common resource. This was supported by recent findings, which showed that, in a storage and processing dual-task, when people were asked to prioritize one component of the task, their performance decreased in the other. In this study, we investigated how people coordinate these two functions in a complex span task performed at their individual span level, without any prioritization instructions. In line with the previous findings, our results showed that performance decreased in storage when processing is added, and vice versa. In a second experiment, participants performed the tasks under articulatory suppression to prevent the use of articulatory rehearsal. While the decrease in processing was similar to the previous experiment, storage performance was more impacted by introducing processing in the dual-task. These results provide new evidence on resource sharing between storage and processing in WM, and enlighten the role of articulatory rehearsal in helping the storage component to be more resilient to the introduction of a secondary task.

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6:00–7:30 PM (5187)

The Congruency Sequence Effect of the Gender Stroop Task in a Cross-Modality Context. YOON SEO LEE, *Korea University*, YANG SEOK CHO, *Korea University* (Sponsored by Yang Seok Cho) — It has been found that a single control mechanism can regulate conflicts of two different Simon tasks even when the tasks are highly distinguishable. The present study aimed to examine whether the distinction of task representations based on sensory modalities influenced the congruency sequence effect (CSE) in gender Stroop tasks. An auditory word "female" or "male" was presented in female or male voice for the auditory gender Stroop task, and a visual word "female" or "male" was presented on a female or male face for the visual gender Stroop task. The two tasks alternated in a predictable manner. Responses were measured in initiation time (IT) and movement time (MT). When participants were instructed to respond to the voice and face of gender and to ignore the word's meaning in Experiment 1, a CSE was observed between the two tasks in MT. However, when participants were to respond to the word meaning and to ignore the voice and face of gender in Experiment 2, a CSE was observed between them in IT. These findings suggest that a common control mechanism can handle conflicts in Stroop tasks with distinct representations, and the locus of conflict resolution may vary in Stroop tasks depending on specific task context

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6:00–7:30 PM (5188)

How to Disengage from a Higher-Level Dual-Task Representation?. RICO FISCHER, *University of Greifswald*, AMELIE C. JUNG, *University of Greifswald*, INGA MÖGLING, *University of Greifswald* — When performing dual tasks (DT), a higher-level task representation is established that contains not only information for each subtask, but also dual-task specific control requirements. We investigated the ease of disengagement from the higher-level task representation when Task 2 of a DT becomes irrelevant. Performance in pure Task 1 single tasking was compared with performance in Task 1 processing immediately after DT trials (fade-out

phase). In Experiment 1, performance in fade-out blocks did not immediately drop to single-task performance (fade-out cost) indicating the persistence of task-pair set representations. Between-task interference persisted throughout the entire fade-out phase. In Experiment 2, the frequency of between-task interference in DT blocks was manipulated between participants (75% vs. 25% incongruence) to establish increased/reduced Task 1 shielding. These control states determined the level of between-task interference in DT and in fade-out blocks. However, the level of shielding had no effect on dual-task disengagement.

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6:00-7:30 PM (5189)

Strategy Change in a Stroop Task with High and Low Control Demands. ROBERT GASCHLER, *FernUniversität in Hagen*, DORIT WENKE, *PFH Private University of Applied Sciences Göttingen* — We combined a Stroop task with the option for covariation-based shortcuts to investigate whether adopting a shortcut strategy after practice depends on the extent to which the initially instructed strategy demands controlled processing (cf. Shenhav et al., 2013). Participants were instructed to press an upper key [Q] whenever word color was blue or yellow and press a lower key [Y] in case of a green or brown word. During practice, two of the colors (blue and green; measurement colors) were 100% congruent with the word and were consistently positioned: Blue was always top, green always bottom. The likelihood of strategy change was targeted by a between-groups variation of color-word-congruency and position-consistency (in the inducer colors, yellow and brown). Error rates and RTs in a transfer block suggest that the key factor determining strategy change was whether the position shortcut could be applied to all colors.

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6:00-7:30 PM (5190)

Whole-Brain Structural and Functional Neuroimaging Correlates of Set-Shifting Across Different Mental Disorders: A Coordinate-Based Meta-Analysis. NICOLA MEDA, *University of Padova*, RICCARDO CAZZARO, *University of Padova*, MARCO ROMANELLI, *University of Padova*, FABIO SAMBATARO, *University of Padova* — Set-shifting skills allow individuals to switch flexibly from a behavior to a more adaptive one in the face of negative feedback from the environment. This ability is impaired in various mental disorders, but it is unclear whether the neural correlates of set-shift impairment are shared between different mental disorders. Therefore, we carried out a coordinate-based meta-analysis to determine whether this was the case. Of the 1932 publications screened, we meta-analyzed 22 functional neuroimaging studies that reported the neural activity of healthy subjects (n = 447) and people with a mental disorder (n = 467) during a set-shifting paradigm. Three brain clusters, located in the right medial frontal/anterior cingulate gyrus, the right superior parietal lobule and the left superior temporal gyrus, were more active in patients than healthy subjects during set-shifting with respect to baseline. We identified brain hubs belonging to the frontoparietal network as putative regions of altered activity in mental disorders during set-shifting. These findings suggest that patients need to hyperactivate these brain regions in the face of negative feedback from the environment, and failure to do so would lead to inflexible behavior.

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6:00-7:30 PM (5191)

Post-Error Slowing Occurs in Both Pre-Movement Planning and Movement Execution. JOE OPDENAKER, *Texas Tech University*, JARROD BLINCH, *Texas Tech University*, MIRANDA SCOLARI, *Texas Tech University* — Post-error slowing (PES) is a behavioral adjustment following an error where people slow down on a subsequent response to improve accuracy. Typically studied in speeded response time tasks, experiments designed to determine the functional significance of PES have yielded inconsistent patterns of results. A recent study extended on previous demonstrations by searching for PES in motor execution via a reach-to-grasp task. When the target consistently appeared in one location, PES was observed within pre-movement planning and the grasping component, but not in the reaching component. Here, we expanded on this prior work by including two equiprobable target locations to investigate whether and how spatial uncertainty impacts PES in movement execution. Our results (N = 22) revealed PES within pre-movement planning and in the reach but not in the grasp. This suggests that the occurrence and functionality of PES during movement execution is a flexible process that is reliant on task demands.

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6:00-7:30 PM (5192)

Could Boundary Extension Occur in the Auditory Domain?. GUILLAUME COSTILLE, *Université de Franche-Comté*, ANNABELLE GOUJON, *Université de Franche-Comté*, CYRIL THOMAS, *Université de Paris*, CLAIRE SAGET, *Université de Franche-Comté*, ANDRE DIDIERJEAN, *Université Bourgogne Franche-Comté* (Sponsored by Andre Didierjean) — When they have to memorize a picture, people usually build a memory trace including more extensive boundaries than the original picture, a phenomenon known as "boundary extension" (BE; e.g., Intraub & Richardson, 1989). Primarily studied in the visual modality, few researches investigated its generalization to the auditory modality (see Hutchinson et al., 2012). Three experiments were conducted using an auditory version of the "camera distance paradigm," in which was manipulated either the sound length or the number of sound objects composing auditory scenes. Across experiments, the results revealed an opposite effect to BE, called "boundary restriction" effect or BR. These results are discussed in the light of the multisource model of scene perception.

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6:00-7:30 PM (5193)

Repeat After Me: Exploring What Children's Speaking and Singing Reveals about their Domain-Specific Knowledge. ANNE CABILDO, *University of Toronto*, CHRISTINA VANDEN BOSCH DER NEDERLANDEN, *University of Toronto Mississauga* — Music and language are two important forms of

communication that share many similarities. While pitch is an integral part of song and the relationships between pitches denote specific melodies, this importance is not mirrored in speech. In recent developmental studies, children's categorization of speech and song reach adult-like proficiency by age 8 (Vanden Bosch der Nederlanden et al., 2022). The goal of this study is to explore whether children's pitch production follows the same developmental trajectory as their pitch perception. Adapting the methodology used in recent pitch imitation tasks with adults, we will observe how well younger children (4-year-olds) and older children (8-year-olds) spontaneously match pitch for spoken and sung utterances. We predict that younger children will have similar performance for speech and song, which may suggest that they have not yet developed or are unable to apply this domain-specific knowledge. Based on the perceptual work previously mentioned, we predict that older children will spontaneously match pitch better for song than speech which will indicate that they have acquired and are able to apply domain-specific knowledge about the nature of pitch in speech versus song.

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6:00-7:30 PM (5194)

Investigating elements of Listening Effort: Relations Among Multiple Dimensions and Peak-End Cognitive Bias. RICARDO CASTAÑEDA OLAYO, *The University of Texas at San Antonio*, JEFFREY MOCK, *The University of Texas at San Antonio*, EDWARD J. GOLOB, *The University of Texas at San Antonio* — Listening effort is the conscious experience of mental effort to support hearing, and is typically aversive. Self-reports of listening effort are retrospective, and prior research shows that memory judgments are biased by affect at the peak and end of experiences (peak-end rule). We tested the hypothesis that self-reported listening effort conforms to the peak-end rule in two experiments (n = 173 and n = 227). Participants listened for tones in background noise in groups with either decreasing or increasing noise intensity over time. Participants with lower intensity levels at the end were predicted to report less effort. Measures of workload, fatigue, and mood were measured before and after a ~12 min listening task, which was rated for listening effort. The hypothesis was supported, as subjective effort was significantly less in the decreasing intensity group ($p < 0.05$, study 1; $p < .01$, study 2). The listening task increased fatigue, and reduced energy and positive mood (both experiments p's < .001), and did not differ among groups. Findings support a role of decision making in listening effort judgments, which may account for weak relations between effort and changes in fatigue, energy, and mood.

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6:00-7:30 PM (5195)

Reset of Low-Frequency Oscillations in Auditory Integration Areas During Audiovisual Speech. LILIANA CAMARILLO RODRIGUEZ, *University of Texas Medical Branch*, PATRICK J. KARAS, *University of Texas Medical Branch* — Previous research suggests that integrating auditory and visual information can improve speech comprehension when auditory information is limited. However, how this is accomplished remains an active area of study. We aim to investigate whether audiovisual, and auditory speech resets the phase of neuronal oscillations in the superior temporal gyrus (STG) and supramarginal gyrus (SMG). We analyzed neural responses from eight participants recorded via implanted electrodes in the STG and SMG. We compared the intertrial phase coherence (ITPC) of neural responses from 2-4 Hz during the presentation of mouth-leading and voice-leading words shown during auditory and audiovisual formats. Our findings reveal lateralized ITPC strength differences. Left-sided regions showed higher ITPCs for audiovisual words, while right-sided areas showed higher ITPCs for auditory-only words. In addition, left-sided electrodes exhibited a shorter latency to the maximum peak of ITPC than right-sided electrodes. These results suggest potential lateralization of audiovisual integration in the brain, highlighting the role of specific regions in processing and integrating audiovisual information.

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6:00-7:30 PM (5196)

Multisensory Perception Among Aphantasics. JASON CHAN, *University College Cork*, ANNALISA SETTI, *University College Cork & The Irish Longitudinal Study on Ageing* — Aphantasia is the inability to form mental imagery and it affects approximately 2%-4% of the global population. It is not considered a disorder but an individual trait. The currently research has focused on visual-only or auditory-only mental imagery. Those previous studies have found that despite this lack of imagery, aphantasics' visual spatial memory is intact based on the high accuracy consistently achieved from visual spatial memory tasks. Our current research has investigated multisensory temporal and spatial integration in people with aphantasia. In a visual-haptic spatial object scene task we asked young adults with and without aphantasia to either see, feel, or see and feel a variety of objects in a scene and their task was to determine which two objects had moved. We found that people with aphantasia have an increased bias to visual information, in the multisensory spatial task, compared to non-aphantasic, who tend to combine information from both senses. We will also discuss further multisensory findings.

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6:00-7:30 PM (5197)

Is Rapid Temporal Recalibration to Audiovisual Asynchrony Modulated by Spatial Congruence?. KYUTO UNO, *Sophia University & Japan Society for the Promotion of Science*, SOUTA HIDAKA, *Sophia University* — A single adaptation to audiovisual asynchrony causes shifts in the subjective simultaneity of subsequent audiovisual inputs (rapid temporal recalibration). We examined whether spatial congruence can be a grouping cue for rapid temporal recalibration when the adapting audiovisual temporal relationship is ambiguous during exposure. Participants made a simultaneity judgment for a pair of audiovisual stimuli after adapting consecutive audiovisual stimuli in a "light—sound—light" or "sound—light—sound" order. The spatial positions of the adapting stimuli were manipulated as an audiovisual pair from the same position and the remaining stimulus from another position. The spatial congruence of the adapting stimuli did not show a modulatory

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effect on subsequent simultaneity judgments. Instead, rapid recalibration occurred according to the temporal order as the first light and sound were grouped. Our findings suggest that the perceptual systems underlying rapid temporal recalibration simply combine audiovisual inputs based on the order in which they arrive.

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6:00–7:30 PM (5198)

The Structure of Bindings for Action Slips. ANNA FOERSTER, *Trier University*, BIRTE MOELLER, *Trier University*, CHRISTIAN FRINGS, *University of Trier*, ROLAND PFISTER, *Trier University* — Even if actions go awry, they can prepare adaptive short-cuts for upcoming actions: Acted-upon stimuli are bound to actual but not executed correct responses, whereas executed erroneous responses enter bindings with effects that they produce. The repetition of stimuli or effects then triggers the retrieval of previously bound responses, thus facilitating their execution. As such, binding and retrieval steer agents toward successful actions and leverage potential action-effect contingencies. Bindings of erroneous action episodes might be organized independently, i.e., for the stimulus and the correct response for one and for the erroneous response and its effect for another. Alternatively, all features might be integrated in one event file. We examined performance depending on transitions in relevant stimuli, responses and effects between successive actions to elucidate the structure of bindings for action slips. Surprisingly, the results point to an integration of features of the stimulus, the correct response and the effect in correct and erroneous actions. The current study therefore revises our knowledge about the structure of bindings but also suggests boundary conditions for bindings of erroneous responses and their effects.

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6:00–7:30 PM (5199)

Going Full Tilt: Do People with Better Balance Experience a Weaker Body Tilt Illusion?. SOPHIA R. BAIA, *Arizona State University*, MICHAEL K. MCBEATH, *Arizona State University* — Past research indicates that participants show a bias in overestimating body tilt angle, which amplifies with limited sensory information. The current study examines how balance abilities, tilting plane, and vision may contribute to the body tilt illusion. Twenty-nine participants completed a balance assessment, body tilting trials on a gyroscope, and a demographics and exercise questionnaire. Consistent with previous research, participants exhibited a stronger body tilt illusion with their eyes closed. Participants also experienced a stronger body tilt illusion when tilted sideways along the coronal plane than the sagittal plane. Additionally, participants showed a stronger body tilt illusion when tilted backwards than forwards. A stepwise multiple regression indicates that balance does not significantly predict the body tilt illusion. However, a nonsignificant trend suggests that participants with worse balance may experience a stronger body tilt illusion. Lastly, exercise and yoga experience do not significantly influence the body tilt illusion. Further research is needed to clarify the role of balance in the body tilt illusion.

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6:00–7:30 PM (5200)

Examining Individual Differences in the Perception of Visual Illusions. MAHBOD MEHRVARZ, *University of California, Irvine*, HRITHIK POPAT, *University of California, Irvine*, JEFFREY ROUDER, *University of California, Irvine* — The aim of this study is to explore the mechanisms underlying the predisposition towards visual illusions, examining if there are shared patterns in the extent of susceptibility across varied illusions. To answer the question, we will conduct a study where participants will perform several illusion tasks through the adjustment paradigm. Following this, we will assess correlations in susceptibility to different illusions using Bayesian modeling techniques, which have been shown to be preferable methods of recovering latent variable decomposition. We anticipate three possible outcomes: (1) all illusions are correlated due to their influence on size, distance, or position perception; (2) no correlations exist due to distinct underlying mechanisms; or (3) correlations exist in specific pockets, suggesting a nuanced relationship, that is the nature of illusions (two-dimensional, three-dimensional, or contrast) will constrain these correlations. The results of this study will contribute to our understanding of individual differences in susceptibility to perceptual illusions and shed light on the underlying mechanisms.

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6:00–7:30 PM (5201)

Pacing and Pre-Crastination. HUNTER B. STURGILL, *University of California, Riverside*, DAVID A. ROSENBAUM, *University of California, Riverside* — Self-paced performance has been extensively studied in athletic events like running, cycling, and rowing. However, little has been done in the psychological domain. We had participants press a computer key as quickly as possible n = 8, 16, 32, or 64 times per trial. The n–1 inter-response interval times (IRIs) were recorded and the average IRI was provided as post-trial feedback. In addition to knowing n in advance, participants' current n was provided during their performance, alleviating the need to keep track. Mean IRIs slowed dramatically toward the end of each event, unlike hypotheses from our pre-registration. Participants were instructed to maintain tapping up to and beyond the required n. However, they slowed as they approached n. This result indicates preparation for stopping sooner than needed or premature next task preparation and new evidence for pre-crastination, the tendency to complete tasks as soon as possible.

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6:00–7:30 PM (5202)

The Simon Effect in a Virtual Reality Puzzle Task. EMILY WANG, *University of Cincinnati*, CHRISTOPHER KELLO, *University of California, Merced*, TEHRAN DAVIS, *University of Cincinnati*, KEVIN SHOCKLEY, *University of Cincinnati* — The Simon effect is a classic example of stimulus-response compatibility effects in which a response is slower when it must be made in the opposite location or direction than the stimulus. Simon effect studies typically involve single-event tasks (e.g., press a button in response to a stimulus) which are seldom representative of real-world activities involving a series of actions that collectively achieve a broader

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goal over a temporally extended period (e.g., sports, playing a video game, etc.). To address this, we used a virtual reality task in which hand-held controllers moved virtual tiles in a sliding-puzzle task. We manipulated whether a controller (e.g., left-hand) yielded corresponding (e.g., leftward) directional movement (compatible condition) or directionally opposite (e.g., rightward) movement (incompatible condition). Preliminary findings show that incompatible mappings significantly increased horizontal tile movement time compared to compatible mappings with no corresponding increase in number of moves required to solve the puzzle.

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6:00–7:30 PM (5203)

Edge Perception in Touch: Combining Multiple Frequencies. ILIYAS TURSYNBEK, *Bentley University*, THU PHAM, *Bentley University*, CLEO ZHOU, *Bentley University*, SAMANTHA LEE, *Bentley University*, SHIRA VILVOVSKY, *Bentley University*, MOUNIA ZIAT, *Bentley University* — Our daily interaction with objects, including edges, goes beyond perception thresholds. This work aims to understand the role of frequency in touch perception by pairing two frequencies using five edge shape configurations: ascending edge (LF to HF), descending edge (HF to LF), inward-curving edge (HF-LF-HF), outward-curving edge (LF-HF-LF), and a flat surface used as a control. A custom haptic device with a three-by-four vibrotactile array was used to generate the stimuli corresponding to these shapes. A pair of frequencies (LF and HF) was used to simulate the edges across the array surface with different steps (10, 25, 50, and 100 Hz) covering a range from 0 to 300 Hz. Forty participants, divided into eight groups, took part in this experiment. The initial results showed that for the ascending and descending edges, the performance accuracy followed a U-shape maximized at the lower and higher range of frequencies when one of the frequency pairs is equal to zero.

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