

## Early Social Interaction: Infant & Toddler Intervention

Sally Fuhrmeister, M.S. CCC-SLP & Kimberly Resua, M.T.



Summer Symposium 2015



## Objectives

- Learners will be introduced to the evolution of early intervention for infants and toddlers at-risk for autism spectrum disorder (ASD) and the ethical imperatives for improvement of these services.
- Learners will gain knowledge of the core components of naturalistic developmental behavioral interventions (NDBIs), including the Early Social Interaction (ESI) Project.



## Challenges of Autism Spectrum Disorder

- Intervention has the greatest impact on autism if **it begins before 3 years of age**.
- 80% of children who need early intervention are missed.

(CDC, 2009; Filipek, Accardo, Baranek et al., 1999; NRC, 2001; USDOE 2011)



Marcus Autism Center

## Challenges of Autism Spectrum Disorder

- 61% of children under the age of five are in regular childcare, with the remaining percentage of children primarily being cared for at home by parents or caregivers.
- Therefore, **parents and childcare providers** are the most community viable agents of change at the front line of both detecting and providing appropriate supports and services for young children at risk for ASD.

(U.S. Department of Health and Human Services, U.S. Department of Education, 2014)

Marcus Autism Center

## Historical Perspective

### Intervention for Autism Spectrum Disorder



Marcus Autism Center

## Historical Perspective

- Prior to the 60s, many believed that children with ASD could not learn.
- 1960s and 1970s: Use of operant conditioning became increasingly popular.
- Ferster and DeMyer (1961)
  - Demonstrated that children with autism could learn via an operant discrimination paradigm.



Marcus Autism Center

## Historical Perspective

- Lovaas (1987) clinical trial caused paradigm shift.
  - Discrete Trial Training (DTT)
  - Intense early intervention with ASD
  - Reported 48% achieved “normal” functioning
  - Parents began advocating for this treatment for their children



Marcus Autism Center

## DTT Limitations

- Failure to generalize newly learned skills across environments and circumstances
- Avoidance and escape challenging behaviors
- Lack of spontaneity and dependence on prompts
- Can be unsuitable for very young children

(Schreibman et al., 2015)



Marcus Autism Center

## Improvement and Expansion of Autism Interventions

- During the 1980s and 1990s, intervention research in the area of ABA combined with research on infant and child development:
  - Led to new understanding of core social and communication deficits of autism
  - Led to emphasis on incorporating developmental principles and sequences into early autism intervention
    - Discrepancies between highly structured DTT and principles

(Schreibman et al., 2015)



Marcus Autism Center

## Limitations of Behavioral Intervention

- Many states with mandated autism intervention required ABA based in operant conditioning
- Cost of ABA is \$30,000-\$60,000/year per child
- Shortage of trained ABA professionals
- Behavioral research largely focused on language and cognition as primary outcomes
- DSM-5 emphasis on **social impairment**
  - Needed focus on social reciprocity in intervention

(Solomon et al., 2014)

Marcus Autism Center

## Naturalistic Developmental Behavioral Interventions (NDBIs)

- Theoretical underpinnings
  - Piaget (1952), Bruner (1978), Vygotsky (1962), Snow (1977), Gibson (1973), and others
- Constructivist approach
  - Strategically designed learning experiences in order to: engage child’s attention, help connect new experiences to previous knowledge, teach developmental sequences, systematically increase complexity of learning experiences
- Emphasis on affectively engaged social exchanges for learning

(Schreibman et al., 2015)

Marcus Autism Center

## NDBIs

- Implemented in natural settings
- Involve shared control between child and therapist/caregiver
- Utilize natural contingencies
- Utilize a variety of behavioral strategies to teach developmentally appropriate and prerequisite skills

(Schreibman et al., 2015)



Marcus Autism Center

## National Research Council (2001)



Children with ASD should receive **25 hours per week** of active engagement in systematically planned, developmentally appropriate educational activities.

Marcus Autism Center

## Everyday Activities



Marcus Autism Center

## Parent-Mediated Interventions

- Several controlled, single-subject and quasi-experimental studies and more recent randomized clinical trials suggest that including a parent-coaching component accelerates developmental progress in ASD
- Typically less costly and more easily implemented
- Focused on social reciprocity
- NRC (2001) recommends that intervention include a family component

(Wong et. al, 2013; Lord, Luyster, Guthrie & Pickles, 2012; Anderson, Oti, Lord & Welch, 2009)

Marcus Autism Center

## Parent-Mediated NDBIs

- ESDM (Early Start Denver Model)
- Project IMPACT (Improving Parents as Communication Teachers)
- EMT (Enhanced Milieu Teaching)
- PRT (Pivotal Response Training)
- JASPER (Joint Attention Symbolic Play Engagement Regulation)
- ESI (Early Social Interaction)

(Schreibman et al., 2015)

Marcus Autism Center

## NDBI “Secret Sauce”

- Three part contingency
- Manualized practice
- Fidelity of implementation criteria
- Individualized treatment goals
- Ongoing measurement of progress

(Schreibman et al., 2015)



Marcus Autism Center

## NDBI “Secret Sauce”

- Following the child’s lead and interests
- Environmental arrangement
- Natural reinforcement
- Use of prompts and prompt fading
- Balanced turns within object or social play routines
- Modeling
- Contingent imitation
- Broadening attentional focus of the child

(Schreibman et al., 2015)

Marcus Autism Center



- An approach for toddlers (under the age of 3) who are at risk or have a diagnosis of ASD and their families
- Originally developed as a model demonstration project funded by the Office of Special Education Programs of the U.S. Department of Education (2002-2006)



(Wetherby & Woods, 2006)

Marcus Autism Center

PAGE 3

### Parent-Implemented Social Intervention for Toddlers With Autism: An RCT

**AUTHORS:** Amy D. Wetherby, PhD;1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100,101,102,103,104,105,106,107,108,109,110,111,112,113,114,115,116,117,118,119,120,121,122,123,124,125,126,127,128,129,130,131,132,133,134,135,136,137,138,139,140,141,142,143,144,145,146,147,148,149,150,151,152,153,154,155,156,157,158,159,160,161,162,163,164,165,166,167,168,169,170,171,172,173,174,175,176,177,178,179,180,181,182,183,184,185,186,187,188,189,190,191,192,193,194,195,196,197,198,199,200,201,202,203,204,205,206,207,208,209,210,211,212,213,214,215,216,217,218,219,220,221,222,223,224,225,226,227,228,229,230,231,232,233,234,235,236,237,238,239,240,241,242,243,244,245,246,247,248,249,250,251,252,253,254,255,256,257,258,259,260,261,262,263,264,265,266,267,268,269,270,271,272,273,274,275,276,277,278,279,280,281,282,283,284,285,286,287,288,289,290,291,292,293,294,295,296,297,298,299,300,301,302,303,304,305,306,307,308,309,310,311,312,313,314,315,316,317,318,319,320,321,322,323,324,325,326,327,328,329,330,331,332,333,334,335,336,337,338,339,340,341,342,343,344,345,346,347,348,349,350,351,352,353,354,355,356,357,358,359,360,361,362,363,364,365,366,367,368,369,370,371,372,373,374,375,376,377,378,379,380,381,382,383,384,385,386,387,388,389,390,391,392,393,394,395,396,397,398,399,400,401,402,403,404,405,406,407,408,409,410,411,412,413,414,415,416,417,418,419,420,421,422,423,424,425,426,427,428,429,430,431,432,433,434,435,436,437,438,439,440,441,442,443,444,445,446,447,448,449,450,451,452,453,454,455,456,457,458,459,460,461,462,463,464,465,466,467,468,469,470,471,472,473,474,475,476,477,478,479,480,481,482,483,484,485,486,487,488,489,490,491,492,493,494,495,496,497,498,499,500,501,502,503,504,505,506,507,508,509,510,511,512,513,514,515,516,517,518,519,520,521,522,523,524,525,526,527,528,529,530,531,532,533,534,535,536,537,538,539,540,541,542,543,544,545,546,547,548,549,550,551,552,553,554,555,556,557,558,559,560,561,562,563,564,565,566,567,568,569,570,571,572,573,574,575,576,577,578,579,580,581,582,583,584,585,586,587,588,589,590,591,592,593,594,595,596,597,598,599,600,601,602,603,604,605,606,607,608,609,610,611,612,613,614,615,616,617,618,619,620,621,622,623,624,625,626,627,628,629,630,631,632,633,634,635,636,637,638,639,640,641,642,643,644,645,646,647,648,649,650,651,652,653,654,655,656,657,658,659,660,661,662,663,664,665,666,667,668,669,670,671,672,673,674,675,676,677,678,679,680,681,682,683,684,685,686,687,688,689,690,691,692,693,694,695,696,697,698,699,700,701,702,703,704,705,706,707,708,709,710,711,712,713,714,715,716,717,718,719,720,721,722,723,724,725,726,727,728,729,730,731,732,733,734,735,736,737,738,739,740,741,742,743,744,745,746,747,748,749,750,751,752,753,754,755,756,757,758,759,760,761,762,763,764,765,766,767,768,769,770,771,772,773,774,775,776,777,778,779,780,781,782,783,784,785,786,787,788,789,790,791,792,793,794,795,796,797,798,799,800,801,802,803,804,805,806,807,808,809,810,811,812,813,814,815,816,817,818,819,820,821,822,823,824,825,826,827,828,829,830,831,832,833,834,835,836,837,838,839,840,841,842,843,844,845,846,847,848,849,850,851,852,853,854,855,856,857,858,859,860,861,862,863,864,865,866,867,868,869,870,871,872,873,874,875,876,877,878,879,880,881,882,883,884,885,886,887,888,889,890,891,892,893,894,895,896,897,898,899,900,901,902,903,904,905,906,907,908,909,910,911,912,913,914,915,916,917,918,919,920,921,922,923,924,925,926,927,928,929,930,931,932,933,934,935,936,937,938,939,940,941,942,943,944,945,946,947,948,949,950,951,952,953,954,955,956,957,958,959,960,961,962,963,964,965,966,967,968,969,970,971,972,973,974,975,976,977,978,979,980,981,982,983,984,985,986,987,988,989,990,991,992,993,994,995,996,997,998,999,1000.

**WHAT IS KNOWN ON THIS SUBJECT?** Randomized controlled trials (RCTs) of effective in-home parent-implemented interventions have demonstrated significant improvements in outcomes of language and play skills. However, no studies have examined the effects of parent-implemented interventions on children's social communication or parent skills, but previous trials have not demonstrated effects on children's outcomes.


**WHAT THIS STUDY ADDS:** This RCT found significantly greater improvements with individualized parent coaching on child outcome measures of social communication, play skills, and developmental level. These findings support the efficacy of a parent-implemented intervention using this individualized format, which increases parental community validity.

**OBJECTIVES:** To compare the effects of two 6-month parent-implemented interventions within the Early Social Interaction (ESI) Project. Each individual ESI offered 2 or 3 times per week at home as in the community, and group ESI offered once per week in a clinic. Taught parents how to attend strategies to support social communication through specific activities.


**DESIGN:** Participants in the randomized controlled trial included 60 children diagnosed with autism spectrum disorder or 18 to 24 months. Children were matched on pretreatment receptive communication level and parent anxiety, assigned to treatment condition. Child and parent outcome measures included Vineland Adaptive Behavior Scales, Autism Behavior Checklist, and Autism Diagnostic Interview-Revised. Child outcomes are reported from baseline to the end of the 6-month intervention.

**RESULTS:** Children in individual ESI showed differential change on a standard and parent-administered observational measure of social communication, as they improved at a faster rate than children in group ESI. Individual ESI also showed differential effects on parent report measures of communication, play skills, and social skills, as they showed improvement in ability, whereas group ESI did not demonstrate any significant effects on these skills. Family individual ESI showed differential change on parent-administered measures of receptive language skills, as children in individual ESI improved significantly, whereas group ESI showed no change.

**CONCLUSIONS:** These findings support the efficacy of individual ESI compared with group ESI on child outcomes, suggesting the importance of individualized parent coaching in natural environments. The efficacy of a parent-implemented intervention using this professional time has potential for community validity, which is particularly important in light of the lack of main effects on child outcomes of most other autism-implemented interventions. *Keywords:* ASD, RCT



Promoting social communication, interaction and play skills.



## ESI Project at Marcus

Currently, funded under the ACE grant at the Marcus Autism Center to be implemented with infant siblings beginning at 12 months of age and their families.

Marcus Autism Center

## ESI Project

- Provides in-home and community-based services through two parent intervention approaches:
  - **Parent-implemented in-home support**  
(Two 75-minute sessions per week)
  - **Parent-implemented playgroup**  
(One 75-minute session per week)
- Targets active engagement skills & transactional supports within everyday activities
- Utilizes a continuum of parent-clinician collaborative supports for coaching

Marcus Autism Center

## Shared Agenda


Active Engagement:	Transactional Supports:
<ol style="list-style-type: none"> <li>1) Well regulated</li> <li>2) Productive</li> <li>3) Socially connected</li> </ol>	<ol style="list-style-type: none"> <li>1) Motivating activity</li> <li>2) Productive roles</li> <li>3) Predictability</li> <li>4) Positioning</li> <li>5) Following child's focus</li> </ol>



Marcus Autism Center

## Social Reciprocity

Active Engagement:	Transactional Supports:
<ol style="list-style-type: none"> <li>4) Looking at faces</li> <li>5) Responding to bids for interaction</li> <li>6) Initiating directed communication</li> </ol>	<ol style="list-style-type: none"> <li>6) Promoting initiation</li> <li>7) Creating a balance of turns</li> <li>8) Using natural reinforcers</li> <li>9) Giving clear messages to ensure comprehension</li> </ol>



Marcus Autism Center

## Better Skills

### Active Engagement:

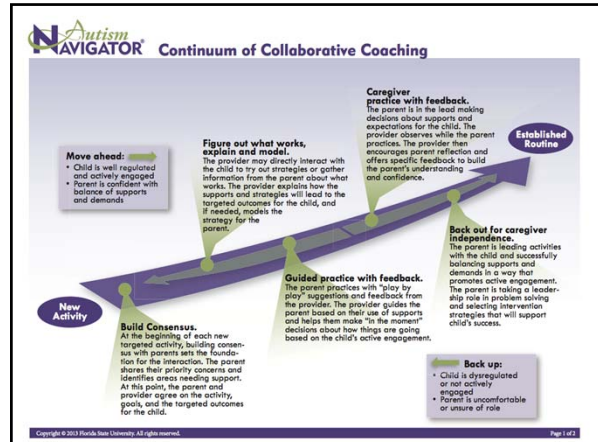
- 7) Flexible
- 8) Using generative language



### Transactional Supports:

- 10) Modeling language, play, and interaction
- 11) Extending the activity, child's roles, and transitions
- 12) Adjusting expectations and supports
- 13) Creating a balance of interaction and independence

Marcus Autism Center



## Everyday Activities

<b>Play with Toys</b> Blocks, Puzzles, Sand box, Playdough, Cars and Trucks, Ball Games, Baby Dolls	<b>Play with People</b> Social Games like Peek-a-boo, Rough and Tumble, Songs & Rhymes
<b>Meals and Snacks</b> Preparation, Eating, Cleanup	<b>Caregiving</b> Dressing, Diaper Change, Bath, Washing Hands, Brushing Teeth
<b>Book Sharing</b>	<b>Family Chores</b> Mailbox, Laundry, Care for Pets, Plants

27

Marcus Autism Center

## Books: 1 Month into Treatment

## Shared Agenda

### Active Engagement:

- 1) Well regulated
- 2) Productive
- 3) Socially connected



### Transactional Supports:

- 1) Motivating activity
- 2) Productive roles
- 3) Predictability
- 4) Positioning
- 5) Following child's focus

Marcus Autism Center

## Books: 8 Months into Treatment

Marcus Autism Center

## Social Reciprocity

---

### Active Engagement:

- 4) Looking at faces
- 5) Responding to bids for interaction
- 6) Initiating directed communication



### Transactional Supports:

- 6) Promoting initiation
- 7) Creating a balance of turns
- 8) Using natural reinforcers
- 9) Giving clear messages to ensure comprehension

Marcus Autism Center

## Diaper Change: 1 Month into Treatment

---

Marcus Autism Center

## Shared Agenda

---

### Active Engagement:

- 1) Well regulated
- 2) Productive
- 3) Socially connected



### Transactional Supports:

- 1) Motivating activity
- 2) Productive roles
- 3) Predictability
- 4) Positioning
- 5) Following child's focus

Marcus Autism Center

## Diaper Change: 7 Months into Treatment

---

Marcus Autism Center

## Social Reciprocity

---

### Active Engagement:

- 4) Looking at faces
- 5) Responding to bids for interaction
- 6) Initiating directed communication



### Transactional Supports:

- 6) Promoting initiation
- 7) Creating a balance of turns
- 8) Using natural reinforcers
- 9) Giving clear messages to ensure comprehension

Marcus Autism Center

## Directed Communication

---

Marcus Autism Center



### Emory ACE Project 3: *Changing Trajectories*

- ❑ Early Social Interaction (ESI) treatment model teaches families to use transactional supports and strategies (TS) in everyday activities in natural environments to achieve needed intensity for ASD
- ❑ ESI for Toddlers with ASD: RCT Findings
  - Collaborative experimental treatment study using an RCT with a crossover design directed by Wetherby & Lord and funded by NIMH & Autism Speaks
  - Compared effects of *Parent-Implemented Individualized* sessions (PII condition) with *Individual, Education, and Support* group sessions (IES condition) for 9 months
  - N=82 toddlers diagnosed with ASD referred from community screening, M= 19.6 months at start of treatment; PII was 3x week for 6 months & 2x for 3 months; IES was 1x for 9 months
  - Significant time by condition interaction on proximal measures of social comm (CSBS Social) and distal measures with MSEL (Receptive Language) and VABS (Comm & Daily Living) and significant time effects on other measures
  - Transactional Support (TS) used by parents was significant mediator of child change at crossover with group differences in parent TS detected by 3 months of treatment.
- ❑ Emory Ace Project 3: Changing Developmental Trajectories through Early Treatment
  - RCT design with research aims to compare ESI model using PII plus IES with IES alone for 9 months and examine mediators and moderators of treatment effects
  - N=108, recruitment from Emory ACE with red flags for ASD at 12 months beginning Aug 2013
  - Findings will determine whether changing parent TS can lead to changes in child developmental trajectories
- ❑ Findings will document the effectiveness of a parent implemented treatment to improve outcomes of young toddlers with ASD that is viable for most communities

THANK YOU!



[Sally.Fuhrmeister@choa.org](mailto:Sally.Fuhrmeister@choa.org) & [Kimberly.Resua@choa.org](mailto:Kimberly.Resua@choa.org)

Marcus Autism Center