

# Cluttering across the lifespan: Overview of assessment and treatment

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# Agenda

- Context: WHO-ICF & ABCs
- Define: LCD
- Assessment
- Treatment
- Resources

# WHO-ICF: Serving entire person (Yaruss & Quesal, 2004)

- Impairment
  - Structure: brain, speech mechanism
  - ☑ Function: observable disfluencies, fluency, rhythm, speed, anxiety
- Personal Factors/Reactions
  - Affective
  - Behavioral
  - Cognitive
- Environment (external influences on fluency)
  - Reactions of people in person's environment
  - Supports & services in person's environment
  - Electronic/digital devices or tech
- Activity limitation/Participation restriction
  - Speak, converse, discourse, interact, social
  - Interactions in education, employment, community

# ABCs: Similar considerations w PWS/PWC (Yaruss, 1998)

- Affective
  - feelings
  - attitudes, experiences
  - coping style, temperament
- Behavioral
  - motor behaviors, speech disfluencies
  - accessory behaviors, tension
  - avoidance, escape
- Cognitive
  - psychological
  - self-evaluation

# Define

- HX: many ways to describe
  - Challenging in research
  - Confusing to clinicians
- LCD *(St. Louis & Schulte, 2011)*
  - Perception of rapid rate .... PLUS at least one of these:
    1. excessive normal disfluencies
    2. excessive collapsing or deletion of syllables
    3. abnormal pauses, syllable stress, or speech rhythm
  - *Note: not all speech samples need to contain evidence of speech cluttering for cluttering diagnosis*

# Assessment (DX): Methods & procedures

- Overall
  - Video/audio-record to address “normalization”
  - Frequently rely on “professional judgement”
- Tasks
  1. **Intake** background, history
  2. **Domains** to assess
  3. **Speech modes** to include
  4. **Speech behaviors** to track & quantify

# 1. Assessment: Intake

- Case history (as usual)
  - Parent/client/partner/close friend interview
  - Medical history, family HX
  - Onset, changes, treatment
  - Other challenges?
    - Attention
    - Learning
    - Language
- Questionnaires
  - OASES (Yaruss, Quesal, & Coleman, 2010)
  - KiddyCAT (Vanryckeghem & Brutton, 2007)
  - TOCS Observational Rating Scales (Gillam, Logan, & Pearson, 2009)

## 2. Assessment: Domains

- Speech behaviors
  - Rate
  - Rhythm & unusual pausing
  - Fluency
  - Articulation
- Language
  - Narrative vs sentence/phrase level
- Attention & Auditory Memory
- Self-survey checklists
  - Predictive Cluttering Inventory—PCI (Daly, 2006)
  - Checklist of Cluttering and Associated Features—COCAF (Ward, 2018)



# 3. Assessment: Modalities

- Across modalities

1. Conversation (~5-10m)
2. Oral reading (~5m)
3. Narrative retell (~5m)

- Additional

- Monologue (~5m)
  - Expository discourse (~5m)
- 

- Compare/Contrast

- Sequencing, syntax, tangential, over-elaborate, detail, intelligibility

## 4. Assessment: Speech behaviors

- Rate
- Rhythm & unusual pausing
- Fluency
- Articulation

# Assess: Speech Rate

- Subjective perception
- Quantify articulatory rates (sps, spm)
- SPS calculation
  - Rapid burst & count syllables for 1-second → maximum articulatory rate
  - Guide to “fast” articulatory rates (Van Zaalen, Wijnen, & Dejonckere, 2011a)
    - Young > 5.1 sps
    - Adolescents > 5.4 sps
    - Adults > 5.6 sps
- SPM calculation
  - Speech rate might be WNL (Guitar, 2014)

Age (y)	Range in Syllables per Minute	Reference
3	116–163	Pindzola, Jenkins, and Lokken (1989)
4	117–183	"
5	109–183	"
6	140–175	Davis and Guitar (1976)
8	150–180	"
10	165–215	"
12	165–220	"
Adult	162–230	Andrews and Ingham (1971)

# Assess: Speech Rhythm & Pausing

- Word stress
  - Increased stress on function words?
  - De-stressed content words?
- Rapid bursts influence perception of consistent rhythm
- Any features of rhythm impacting message clarity?
- Any pattern to unexpected pauses?

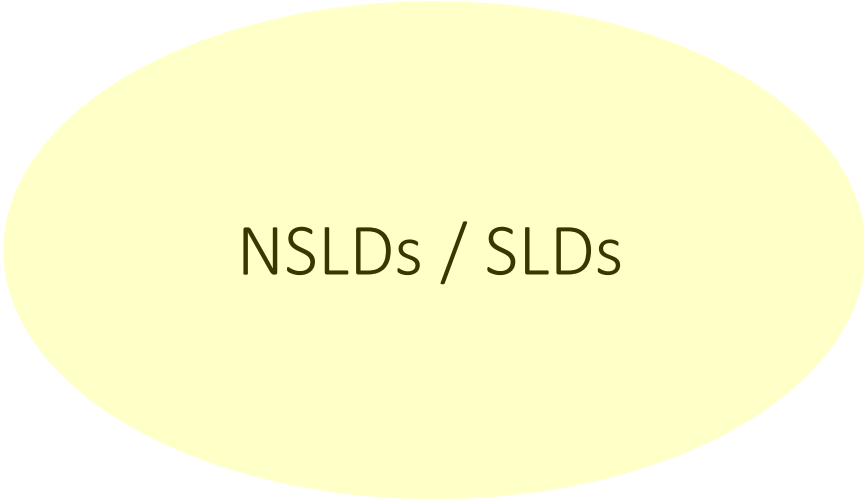
# Assess: Fluency

- NSLDs

- Repetitions
  - Phrase
  - Whole-word
    - Client age?
- Revisions
- False start
- Maze
- Interjections

- SLDs

- Blocks
- Prolongations
- Part-word repetitions
- Whole-word reps w/tension



NSLDs / SLDs

- *Ratio of NSLDs > 1.7 might indicate cluttering* (Van Zaalen, Wijnin, & Dejonckere, 2009a)

# Assess: Articulation

- General lack of articulatory precision that is:
  - Not phoneme specific & Not present in isolation or syllable level
- Co-articulation is good...unless outside typical limits
  - Over Co-articulation → "mushy, mumbly, blurry, blended"
- Omit syllables
  - Weakly accented syllables = Telescoping (dinosaur → "disaur")
- Omit words
  - Pronouns, articles (go to the game → "go to game")
- Multisyllabic words, changing stress patterns
  - *READ: chysthanthemum; possibilities; statistical*
  - *READ: "certify, certificate, certification"; "accumulate, accumulation, accumulating"*

# Other Assessment: Checklists

- Daly (2006): Predictive Cluttering Inventory (PCI)
- Ward (2018): Checklist of cluttering and associated features (COCAF)

PREDICTIVE CLUTTERING INVENTORY (PCI)  
David A. Daly (2006)

INSTRUCTIONS: Please respond to each description section below. Circle the number you believe is most descriptive of this person's cluttering.

Descriptive Statement	Frequency						
	Always	Almost Always	Frequently	Sometimes	Infrequently	Almost Never	Never
<b>PRAGMATICS</b>							
1. Lack of effective self-monitoring skills	0	5	4	3	2	1	0
2. Lack of awareness of own communication errors or problems	0	5	4	3	2	1	0
3. Compulsive talker: verbose, tangential, word-finding problems	0	5	4	3	2	1	0
4. Poor planning skills: mis-judges effective use of time	0	5	4	3	2	1	0
5. Poor social communication skills: inappropriate turn-taking; interruptions	0	5	4	3	2	1	0
6. Does not recognize or respond to listener's visual or verbal feedback	0	5	4	3	2	1	0
7. Does not repair or correct communication breakdowns	0	5	4	3	2	1	0
8. Little or no excessive effort observed during difficulties	0	5	4	3	2	1	0
9. Little or no anxiety regarding speaking; unbothered	0	5	4	3	2	1	0
10. Speech better under pressure (improves short-term with concentration)	0	5	4	3	2	1	0
<b>SPEECH-MOTOR</b>							
11. Articulation errors	0	5	4	3	2	1	0
12. Irregular speech rate: speaks in spurts or bursts	0	5	4	3	2	1	0
13. Telespeeches or omissions words	0	5	4	3	2	1	0
14. Rapid rate (tachylalia)	0	5	4	3	2	1	0
15. Speech rate progressively increases (festinating)	0	5	4	3	2	1	0
16. Variable prosody: irregular melody or stress pattern	0	5	4	3	2	1	0
17. Initial loud voice trailing off to unintelligible murmur	0	5	4	3	2	1	0
18. Lack of pauses between words and phrases	0	5	4	3	2	1	0
19. Repetition of multi-syllabic words and phrases	0	5	4	3	2	1	0
20. Co-existence of excessive difficulties and stuttering	0	5	4	3	2	1	0
<b>LANGUAGE-COGNITION</b>							
21. Language is disorganized: confused wording; word-finding problems	0	5	4	3	2	1	0
22. Poor language formulation: poor story-telling; sequencing problems	0	5	4	3	2	1	0
23. Disorganized language increases as topic becomes more complex	0	5	4	3	2	1	0
24. Many revisions; interjections; filler words	0	5	4	3	2	1	0
25. Seems to verbalize before adequate thought formulation	0	5	4	3	2	1	0
26. Inappropriate topic introduction, maintenance, or termination	0	5	4	3	2	1	0
27. Improper linguistic structure: poor grammar; syntax errors	0	5	4	3	2	1	0
28. Distractible; poor concentration; attention span problems	0	5	4	3	2	1	0
<b>MOTOR COORDINATION-WRITING PROBLEMS</b>							
29. Poor motor control for writing (messy)	0	5	4	3	2	1	0
30. Writing includes omission or transposition of letters, syllables, or words	0	5	4	3	2	1	0
31. Oral diadochokinetic coordination below expected normal levels	0	5	4	3	2	1	0
32. Respiratory dysrhythmia: jerky breathing pattern	0	5	4	3	2	1	0
33. Clumsy and uncoordinated; motor activities accelerated or impulsive	0	5	4	3	2	1	0

TOTAL SCORE: \_\_\_\_\_

COMMENTS:

Table 18.1 Checklist of cluttering and associated features (COCAF).

		1	2	3	Reported but not observed	Seen at assessment
Speech rate and speech fluency	Excessively fast speech rate					
	Short bursts of fast speech					
	Unable to maintain natural speech rhythm					
	Inappropriate pausing					
	Inappropriate breathing patterns					
	Phoneme repetition					
	Part-word repetition					
	Word repetition					
	Phrase repetition					
	Articulation	Mumbling/low volume				
Indistinct speech output						
Excessive coarticulation/over-coarticulation						
Cluster reduction						
Weak syllable deletion						
Festinant speech (speech becomes faster and more mumbled over a sentence or phrase)						
Transposition of phonemes (spoonerisms)						
Anticipatory coarticulation errors						
Mispronunciations						
Speech characterized by a lack of physical tension						
Language and linguistic fluency	Confused wording					
	Unfinished sentences					
	Revised sentences/phrases					
	Word retrieval difficulties					
	Inappropriate pronoun usage					
	Use of non-specific words, such as 'thing'					
	Use of interjections and fillers - 'um', 'er', 'well', 'you know'					
	Poor syntax					
	Empty speech/maze behaviour					

Table 18.1 (cont.)

		1	2	3	Reported but not observed	Seen at assessment
	Repetition and revision of words and phrases					
	Semantic paraphasias - magazine for paper					
	Unfinished sentences					
	Possible high level comprehension difficulties					
	Unconcerned about/unaware of speech and language errors					
Disorganized thinking	Reduced ability to sequence significant events in a story (also may give prominence to unimportant details when storytelling)					
	Gives inappropriate level of detail					
	Goes off-topic/tangential speech					
	Unaware of fluency/speech/language errors					
	Writing	Poor handwriting				
Written errors mimic speech errors, including missing or transposed characters, lack of consistency in letter height						
Careless spelling errors						
Attention	Short attention span					
	Easily distracted					
	Forgetful					
Other nonverbal attributes	Poor gross and fine motor control					
Other						

1 = within normal limits; 2 = appears more commonly than expected; 3 = strong feature. Shaded areas indicate parameters that are directly consistent with the LCD definition of cluttering. Note, though, that some other features may well have ramifications for those core LCD behaviours. For example word retrieval, which is not an LCD feature in itself, could lead to abnormal pausing or increase in normal nonfluency through adding filler words, e.g. 'um', 'er' - both of which are core cluttering characteristics.

# Other Assessment: Handwriting (Ward, 2018)

The other breadth of the above  
has left the field of investment unbroken  
and the following general view of the  
type of work of large investors (undoubtedly  
this is the case). Institutional investors and  
in the context I do not wish to include  
the strongly capital - fixed - income funds  
or equity funds. The stock market is  
notoriously a slow market and it  
requires a high degree of patience and  
perseverance. It is not wise to expect the  
steady stream of billions of dollars of  
new investment to have been made  
of American stocks in any substantial  
scale, and ~~the~~ part of it is steadily  
expanding, the full return investment  
money.  
Kroger's People  
The fixed income investors are  
in that line



# Differential Diagnosis (Scaler Scott & Ward, 2013; St. Louis, 2011; Ward, 2018)

Context	Cluttering	Stuttering
Speech rate:	sounds too fast	sounds interrupted
Disfluency ratios:	NSLDs > SLDs	SLDs > NSLDs
Disfluency types:	<ul style="list-style-type: none"> <li>●Phrase Rep</li> <li>●Whole-word Reps w/o tension</li> <li>●Interjections</li> <li>●Revisions</li> </ul>	<ul style="list-style-type: none"> <li>●Blocks</li> <li>●Prolongations</li> <li>●Part-word reps</li> <li>●whole-word Reps w/tension</li> </ul>
Articulation clarity:	omit syllables, words	no omissions, but interrupted
Rhythm, Pauses:	unexpected accelerated bursts	interruptions
Word, syllable stress:	unexpected stress errors	typical but interrupted
In pressure situations (i.e., DX)	↑ Fluency (“normalization)	↓ Fluency
In more relaxed & casual conversation (i.e., not self-monitoring speech)	↑ Cluttering	↓ Stuttering
Across lifespan, self-awareness for speech challenges	Can be low	Rarely low

# Review: Current definition

- LCD definition *(St. Louis & Schulte, 2011)*

- Rate: \_\_\_\_\_

- Plus at least one more...

1. Excessive \_\_\_\_\_

2. Excessive \_\_\_\_\_

3. Abnormal \_\_\_\_\_

Important note: \_\_\_\_\_

# Review: ABCs of Cluttering

- Affective
  - feel: **frustrated, embarrassed, unaffected**
  - attitudes & experiences: **tired of “what?”; why don’t people understand me?**
  - coping style, temperament: **individual**
- Behavioral
  - speech disfluencies: **NSLDs**
  - accessory behaviors, tension: **not expecting these unless stuttering also present**
  - avoidance, escape: **not expecting these unless stuttering also present**
- Cognitive
  - psychological: **individual**
  - self-evaluation: **possibly lower/harder for PWC**

# After DX...moving toward TX

- Completed DX using ICF framework & ABCs
  - Speech function
  - Personal factors
  - Environmental supports
  - Activities & Participation
- Analyze & interpret
- Prioritize goals across domains w client & family:
  - Speech functions (rate, rhythm, fluency...)
  - Language & learning features (organization, sequencing, word-finding...)
  - Attention & Self-regulation factors (self-awareness, self-regulation, self-monitoring)

# Treatment (TX): Methods

- Overall
  - Hierarchies
  - Features
- Procedures
  1. Principles to guide procedures that you choose
  2. Targets
  3. Cluttering & Stuttering (PWC/S)
  4. Cluttering + Co-occurring

# TX: Overall hierarchies to consider

- easy—hard; short—long; simple—complex; fast—slow; low—high
  - Linguistic
  - Cueing, Support
  - Speech modality
  - Interest
  - People
  - Setting, Situation
  - Speech sounds
  - Strategies

# TX: Overall features (Bennett, 2011; Langevin & Boberg, 1996; Scaler-Scott & Ward, 2013; St. Louis, 2011)

- Education & shared understanding
  - Motivational Interviewing (Miller & Rollnick, 2013) for natural reinforcers & meaningful goals for best progression
  - Get support system going
  - Functional & fun
  - Setup cueing system
  - Treat stuttering if necessary
- 
- PWS/C: Start where there is most impact to communication & confidence *(likely start w FS strategies either way)*

# 1. TX: Principles to guide procedures (Bennett, 2011)

- Therapy should:
  - Teach clients the language of fluency
  - Help the client understand dimensions of own cluttering
  - Encourage & teach self-monitoring
  - Include activities initiated with clear rationale for each task
  - Use routine that follows consistent routine & sequence of practice
  - Incorporate repetitive practice w/variety of tasks
  - Incorporate concrete & conceptually-based activities



## 2. TX: Basic targets for cluttering

- Flexible rate control
- Using pauses naturally
- Smooth integration of 3 systems (*respiration* + phonation + articulation)
- Self-awareness → self-monitoring → strategy selection
- Emotions

- 
- Fluency?
  - Language?
  - SSD?

# 3. TX: Cluttering + Stuttering...complementary

- Preventive, Fluency Shaping
  - Flexible rate control → easy, relaxed approach to speaking
  - Using pauses naturally → phrasing
  - Smooth integration of 3 systems → prolonged speech, single-sound stretch
- Responsive, Stuttering Modification
  - Self-awareness & self-monitoring → CX, PO, PrSet
    - Cancellation
    - Pull-out
    - Preparatory Set
- Emotions

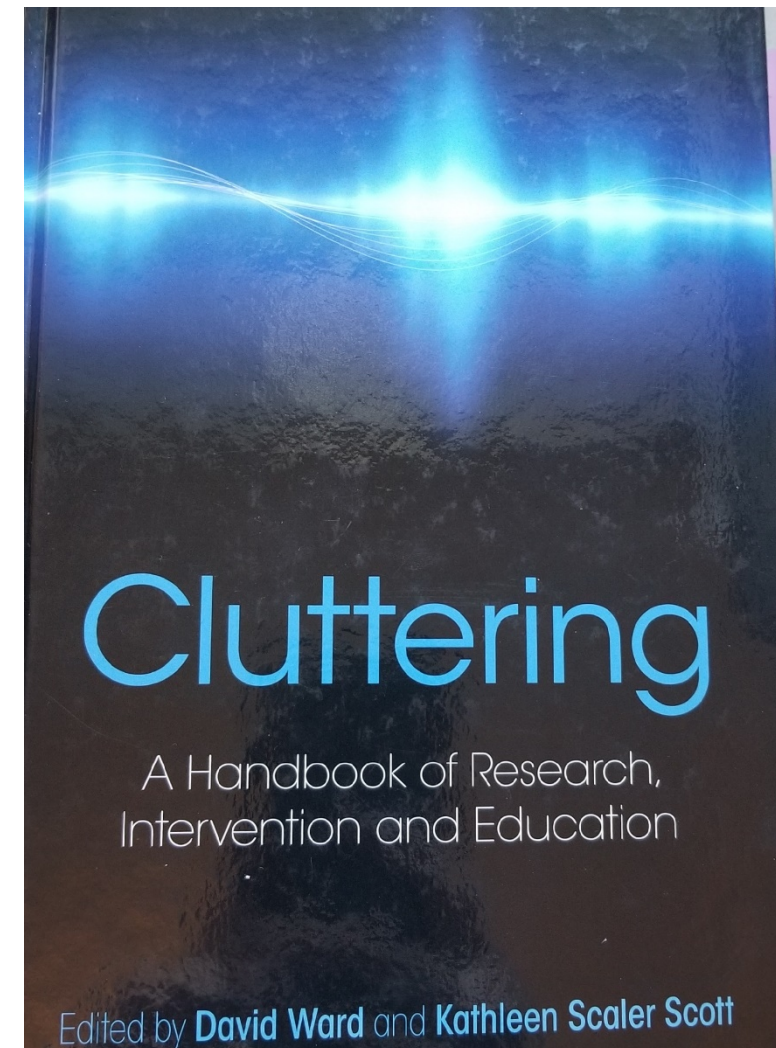
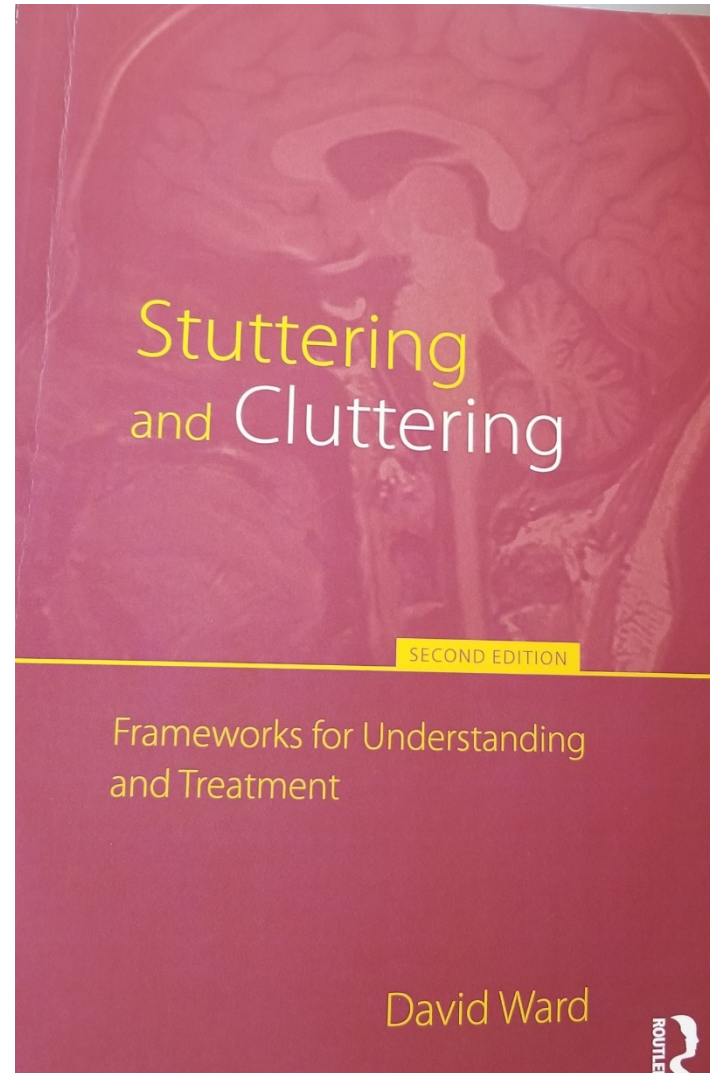
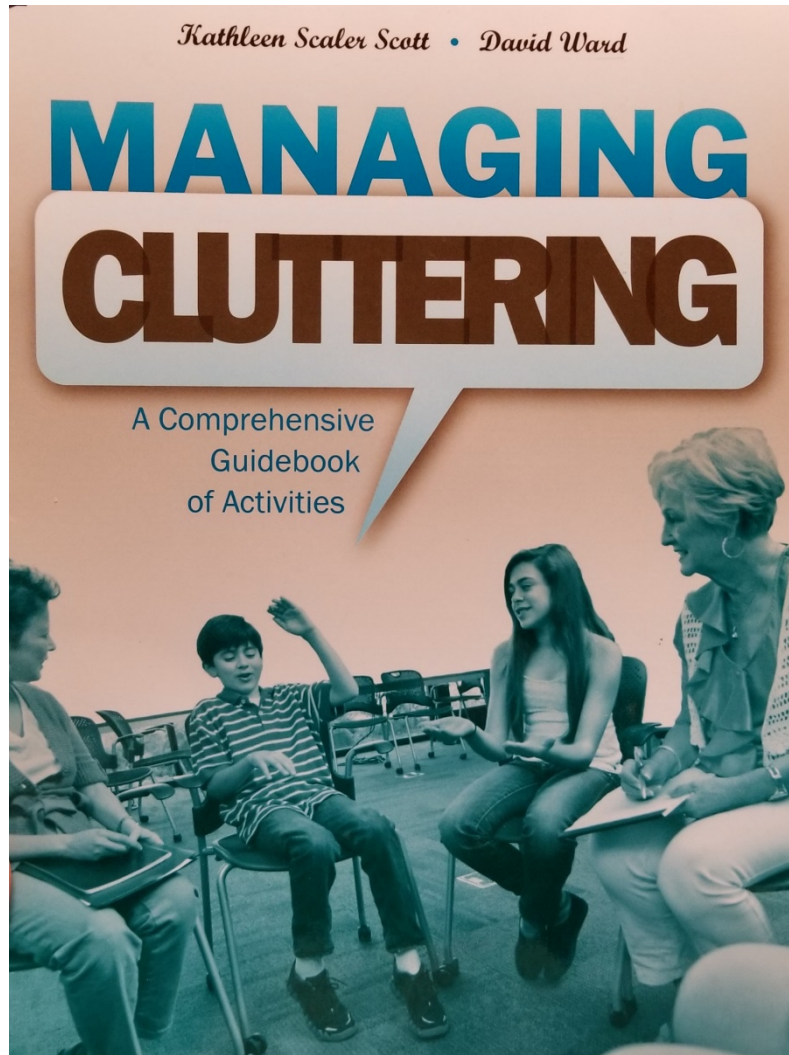
# 4. TX: Cluttering + other challenges

- Low cognition
  - Modeling (“try this”; “do what I do”)
- ASD
  - Client engagement & using topics of interest
  - Modeling w quick transfer to functional speaking applications
- ADD/HD
  - Self-regulation; Consistent TX w/internal & external reinforcers
- LD
  - Organization; Multiple opportunities to receive & use/express
- Typical cognition—Gifted
  - Knowledge; Self-advocacy; Self-directed goals & transfer

# References

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- Scaler Scott, K. & Ward, D. (2013). *Managing Cluttering: A Comprehensive Guidebook of Activities*. Eds. Kathleen Scaler Scott and David Ward. Austin, TX: Pro-Ed, Inc.
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# Resources to consider (Scaler Scott & Ward, 2013; Ward, 2018; Ward & Scaler Scott, 2011)



Thank you!

Questions?

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# DX Tracking chart...idea to build on (Scaler Scott & Ward, 2013)

## Summary of Core Cluttering Symptoms

Client Name \_\_\_\_\_ DOB \_\_\_\_\_ Date \_\_\_\_\_

For a diagnosis of cluttering to be made, the perception of abnormally fast or jerky speech rate must be present (#2) together with the presence of at least one conversational indicator (#3, #4, or #5).

	<b>Sample length</b> (total number of seconds)	<b>1. Speech rate</b> Mean rate (in SPS) vs. maximum rate (measured over 1 second in SPS)	<b>2. Does speech rate <u>sound</u> abnormally rapid or jerky?</b> Meets criteria for cluttering? Yes/No/Borderline	<b>3. Speech rhythm and unusual pausing</b> Within normal limits? Yes/No/Borderline	<b>4. Excessive collapsing/deletion of syllables</b> Within normal limits? Yes/No/Borderline	<b>5. Normal disfluencies</b> a. Excessive number? Yes/No/Borderline b. Ratio of NSLDs/SLDs (for clients who clutter and stutter)	<b>Overall: indicative of cluttering?</b> Yes/No/Borderline
<b>Conversation</b>							
<b>Oral reading</b>							
<b>Story retelling</b>							
<b>Monologue</b>							
<b>Other (e.g., expository discourse)</b>							

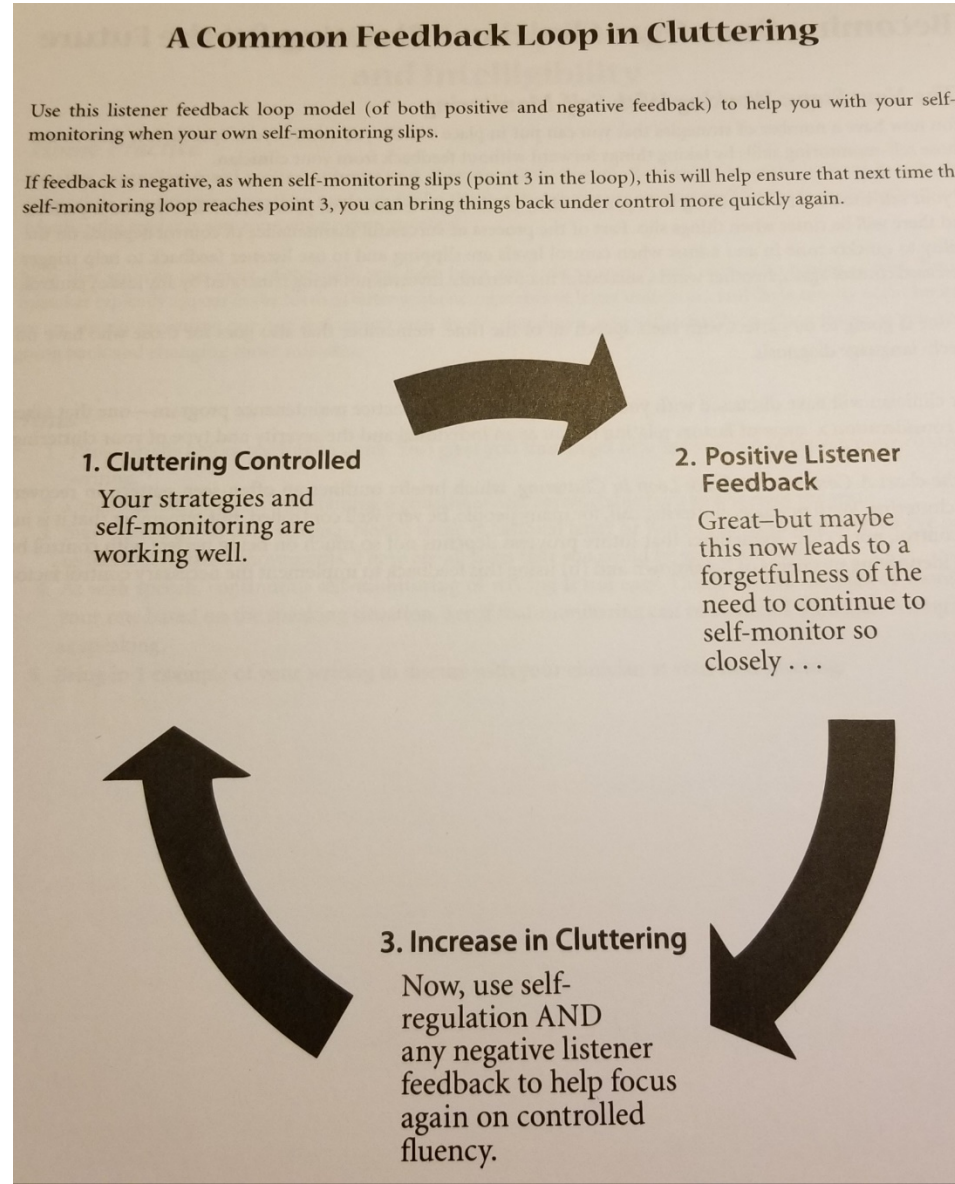
*Note.* SPS = syllables per second; NSLDs = non-stuttering-like disfluencies; SLDs = stuttering-like disfluencies.

# TX Example ideas

- What is cluttering (and stuttering)...& what to do about it.
- To improve communication, there is evidence for targeting:
  - Educate & make speech changes (Scaler Scott, Ward, & St. Louis, 2010)
  - Repair communication breakdowns (Fey, Warr-Leeper, Webber, & Disher, 1988)
  - Reading nonverbal signals (Hopper, Holland, & Rewega, 2002)
  - Problem solving (Blood, 1995a, 1995b)
  - Eye contact, engagement (Greenspan, 2001; Prizant & Myer, 1993)
  - Client motivation (Arkes, 1978)



# TX Example ideas to build on (Scaler Scott & Ward, 2013)



# TX Examples Mini-lesson topics

- What happens when people aren't understood?
- How to control my speech system?
- How to manage my communication challenges?
- Contrastive experiments with varying speech features
- Catch, Identify, Decode → explore *what I said vs. what I meant*
- Catch online hierarchy → explore with how to repair
- How are Cluttering & Stuttering different?
- How do Cluttering & Stuttering work together?
- What strategies work & how can I choose different ones?

# TX: Data monitoring...idea to build on (Scaler Scott & Ward, 2013)

**Base Rate Control Monitoring Sheet**

**Directions:** Fill out the following chart to check your progress.

	<b>4 SPS rate achieved?</b> Yes/No (client ratings)  Speaking situation(s) (reading, conversation, etc.)  How many attempts needed to achieve consistent rate?	<b>Consistency of speech rate</b> (client ratings)  5 = <i>very consistent</i> 1 = <i>very inconsistent</i>	<b>Clarity of speech</b> (client ratings)  5 = <i>perfect clarity</i> 1 = <i>very unclear</i>	<b>Clarity of speech</b> (observer ratings)  5 = <i>perfect clarity</i> 1 = <i>very unclear</i>	<b>Particular problems?</b> (client and observer ratings)  For example: Specific word difficulties?
Day 1					
Day 2					
Day 3					
Day 4					
Day 5					

# TX: Rate control (Bennett, 2011)

*Table 11.3* Marshall and Karow's (2002) strategies for rate control intervention

<i>Technique</i>	<i>Description of Technique</i>
Instructions to slow down	<ul style="list-style-type: none"><li>• Clinician modeling</li><li>• Remind patient to slow down</li></ul>
Prolonged speech	<ul style="list-style-type: none"><li>• Prolonging vowels within syllables and words</li><li>• Using continuous voicing</li><li>• Clinician models</li></ul>
Rhythmic cueing	<ul style="list-style-type: none"><li>• Clinician points to words in passage</li><li>• Rhythmically signaling desired speaking rate through finger tapping</li></ul>
Metronome	<ul style="list-style-type: none"><li>• Metronome set to 90 beats per minute</li></ul>
Finger/hand tapping	<ul style="list-style-type: none"><li>• Tap finger or hand in cadence with each word spoken</li><li>• Clinician modeling</li></ul>
Pacing board	<ul style="list-style-type: none"><li>• Point to sections of board upon producing each word</li><li>• Clinician modeling and demonstration</li></ul>
Delayed auditory feedback (DAF)	<ul style="list-style-type: none"><li>• DAF set at 250 ms</li><li>• Clinician modeling and instruction</li></ul>

# TX: Stress (Bennett, 2011)

*Where's the emphasis?*

*Sentence*

*Picture depicting emphasis*

Do YOU want an apple?



Do you WANT an apple?



Do you want an APPLE?



# TX: Word-finding (Bennett, 2011)

*Table 11.5* Word-finding treatment ideas as applied to people with cluttering

<i>Author</i>	<i>Word-finding treatment suggestions</i>
Bennett	<ul style="list-style-type: none"><li>• Name key elements of description using graphic organizers</li><li>• Use color coding to facilitate word associations</li><li>• Sort words according to their proper classification</li><li>• Perform compare/contrast activities</li><li>• Complete analogies</li></ul>
Daly and Burnett	<ul style="list-style-type: none"><li>• Name attributes within given category</li><li>• Categorize items or objects</li><li>• Provide detailed description of objects with increased use of descriptors</li><li>• Describe similarities and differences</li></ul>
Myers and Bradley	<ul style="list-style-type: none"><li>• Increase semantic classification and categorization skills</li><li>• Increase speech and accuracy of word retrieval</li></ul>
St. Louis and Myers	<ul style="list-style-type: none"><li>• Work on word finding through reduced speech rate</li><li>• Work on semantics and syntax, especially relational vocabulary (because, unless)</li><li>• Use mental mapping of narratives to facilitate organization</li><li>• Help clients identify 'maze' behaviors</li></ul>

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