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Fluency Disorders and Concomitant Disorders in Children: Updating our Practices

Lisa R. LaSalle, PhD, CCC-SLP

Moderated by:
Amy Natho, MS, CCC-SLP, CEU Administrator, SpeechPathology.com

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CONTINUED

Fluency Disorders and Concomitant Disorders in Children: Updating our Practices

Lisa LaSalle, Ph.D., CCC-SLP
University of Redlands

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CONTINUED

Learning objectives:

Participants will be able to:

(1) Describe how to plan an evidence-based assessment of a child who stutters and/or clutters with a co-occurring speech sound or language disorder (CWS/C+).

(2) Describe how to plan evidence-based treatment of a child who stutters and/or clutters with a co-occurring speech sound or language disorder (CWS/C+).

(3) Describe how to assess progress of a child who stutters and/or clutters with a co-occurring speech sound or language disorder (CWS/C+) using a variety of methods.

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timed agenda

- :00 background about this population
- :15 best assessment plans for this population
- :25 treatment philosophies
- :35 best treatment plans for example cases from this population
- :60 clinical decisions about speech sound disorders and language learning disorders in regard to stuttering and cluttering
- :70 assessing progress
- :85 summary Q&A

8

CONTINUED

<u>Background</u> about this population of children who stutter and/or clutter

+

show a co-occurring S/L disorder (CWS/C+)

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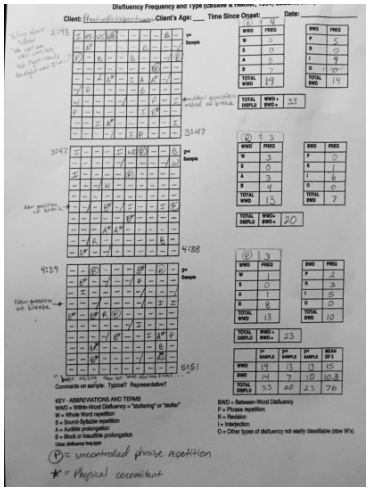
CONTINUED

Background on stuttering+



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Definition of developmental **stuttering**, specified for children

- Child exhibits 3 or more stuttering-like disfluencies ("stutters") per 100 syllables in a representative speech sample
- Child's parents report concern over "stuttering"
- Onset is typically before the age of 4 years (e.g., Yairi & Ambrose, 2005)
- A presumed loss of voluntary control during speech production occurs for the child, as evidenced by facial and vocal physical tension

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CONTINUED

There has been **considerable controversy** over the prevalence of concomitant disorders with fluency disorders because of recovery vs. persistency, >1 diagnosis, how these diagnoses are made, and what levels and/or quality of evidence exists (e.g., Nippold, 2018; Ambrose, Yairi, Loucks, Seery & Throneburg, 2015)

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Arndt & Healey's (2001): survey of SLPs

- Reported on 467 CWS being served by the SLPs:
  - 262 (56%) children had a fluency disorder *only*
    - A subgroup of these children were *suspected* to show a concomitant disorder.
  - 205 (44%) had a verified concomitant phonological and/or language disorder
  - When treating these children with stuttering plus another disorder, the majority of clinicians used a "blended approach" ala Bernstein (1995)
- Since Arndt & Healey, see Logan & LaSalle (2003): Sequential, Cyclical-time-, activity-, or criterion-based, and Concurrent approaches

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Research to date on "stuttering+"

1. **~30-40% of CWS show a concomitant speech sound or phonological disorder**, and this is been shown in over 20 studies to date when an astute reader looks at the Methods exclusion/inclusion sections (e.g., Yaruss, LaSalle & Conture, 1998; LaSalle, in prep.; cf. Nippold, 1990; 2018). *Is there a "clinic doorstep" bias? Which comes first, e.g., the S or the SSD concern?*
2. **~15-30% of CWS show a language disorder (e.g., Arndt & Healey, 2001).**
3. Shimada, Toyomura, Fujii, and Minami (2018) found that 3-year-olds who stutter were significantly likely to have showed delayed language development at the 1.5-year health checkup.
4. Newer ERP data of language differences in CWS

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CONTINUED

Research to date on "stuttering+"

3. **ADHD:** Between 4% (Arndt & Healey, 2001) and 26% (Riley & Riley, 2000) of school-age children who stutter have been found to show ADHD-like symptoms, but, if we include parent ratings of ADHD-like symptoms, that co-occurrence is even higher (~58%) (Donaher & Richels, 2012).
4. **Chang et al. (2018)** applied in/exclusion criteria in Year1 of a longitudinal study. In subsequent years, 14% of CWS (v. only 2.4% NS) went on to be diagnosed ADHD, falling into that 4-26% documented co-occurrence of stuttering+ADHD range. Other psychiatric conditions as new Dx's? More common in CWS.

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CONTINUED

Three more stuttering+ ADHD resources:

1. Choi, Conture, Tumanova, Clark, Walden and Jones (2018) found that normally fluent children whose parents report a positive family history (FHP) of stuttering tended to report a positive family history of attention deficit/hyperactivity disorder (ADHD) and had lower language scores than those who had no FHP.
2. Donaher (2011, SFA DVD) describes the impacts ADHD has on one's ability to efficiently and fluently communicate. Of course, a language disorder (inc. phonology) has the same negative effects.

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3. Ntourou, Anderson & Wagovich's (2018) parent ratings and direct measures of 75 CWS and 75 CWNS, aged 3;0-5;11 (years; months):
   - Compared to CWNS, the **CWS were rated less proficient in working memory, shift/flexibility, and overall executive functioning,** which was found to be clinically significant in CWS in 2.5 – 7 times the rate found in CWNS.
   - **Behavioral task findings:** 3-year old CWS, compared to NS peers, performed more poorly on a Head-Toes-Knees-Shoulders task (HTKS; Cameron Ponitz, McClelland, Matthews, & Morrison, 2009).

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Background on *cluttering+*

Concomitant disorders associated with cluttering include, but are not limited to:

- ADHD
- Articulation / phonological / SSD
- Behaviors that are not always good pragmatics
- Learning disabilities
- Literacy disorders
- Stuttering

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Definition of cluttering, specified for children (LCD definition, St. Louis & Schulte, 2011)

- Child's speech is overly rapid and/or jerky in delivery, and…
- ***…one of these three*** features must be observed:
  - Co-articulation or weak syllable deletion is excessive;
  - Abnormal pausing or speech rhythm;
  - Disfluencies of the non-SLD type (i.e., whole-word repetitions, phrase repetitions, revisions, interjections) are excessive
- Caregivers report concern over "talking too fast; we can't understand him"; onset is later, after ~8yo

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Just two examples of research on "cluttering+stuttering" :

1. In Van Zaalen, Wijnen, de Joncker (2009), 57 ten- to twelve year-olds were divided into three disfluent groups based on careful diagnoses by eight different SLPs in the Netherlands. The groups were:
   i. Stuttering children (*N* = 15 ; 26%)
   ii. Cluttering children (*N* = 17 ; 30%)
   iii. Cluttering-stuttering children (*N* = 25 ; 44%)
2. As a comparison in adults, 11/17 (65%) of Ward, Connally, Pliatsikas, Bretherton-Furness & Watkins' (2015) participants who clutter showed evidence that they also stutter.

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CONTINUED

Best assessment plans for this population of CWS/C+

(0:15)
(1) We need to thoroughly assess each of the suspected problem areas. Rule out hearing concerns.

(2) We diagnose stuttering, cluttering, SSD, language-learning disorders, but not ADHD. We can, however, assess temperament (e.g., *Behavioral Style Questionnaire*; McDevitt & Carey, 1975).

(3) We can support the family in their decisions about ADHD or do "Interprofessional practice or IPP".

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CONTINUED

Assessment strategies with preschoolers who **stutter**

- First contact:
  - Assess fluency in-depth first, due to risk factors and "window of opportunity"
  - In order to assess fluency well in preschoolers, you need a representative sample, and the preschooler must enjoy talking, get excited, increase length and complexity of utterances etc.
  - Screen other areas (phonology, perhaps a 50 utterance MLU count)
- Second contact:
  - Assess in-depth areas that are failed in a screening
  - Determine the parents' goals/wishes for their child

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CONTINUED

Assessment of fluency in preschoolers: Representative sample

- Parent-child interaction / free play: Provide toys the child is interested in; tell the parent, "talk and play like you would at home" → clinician-child
- We try for 900 syllables of spontaneous speech, including narratives
- Score the frequency type data *on Stuttering Severity Instrument (SSI-4*; Riley, 2009)
- Modified Stocker probe technique (Stocker, 1976)
- If they are at the age of four, use *Test of Childhood Stuttering* (Gillam, Logan & Pearson, 2009)

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CONTINUED

Assessment strategies with **school-agers** who stutter

- First contact:
  - Ask, "tell me why you're here today" to prioritize goals. Also *Communication Attitude Test-Revised* (DeNil & Brutten, 1991; found in BAB) is useful because it doesn't mention "stuttering," and it allows the child to do so first: ***Our responses?***
  - Screen other areas (e.g., Articulation: stimulability testing; Language: standardized or do a language sample analysis, looking at C-units)
- Second contact:
  - Spent some time talking to the parents about their concerns, document any medication that the child might be on for ADHD, depression, etc.

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CONTINUED

Assessment of fluency in school-age children: Representative sample

- Clinician-child conversation should be based on open ended questions
- Again, 900+ syllables of spontaneous speech, including narratives, excited ones are best
- Score on *SSI-4*; Riley (2009)
- If < 13yo, use *Test of Childhood Stuttering* (Gillam, Logan & Pearson, 2009)
- Attitude skills are critical: *CAT-R; Overall Assessment of the Speakers Experience of Stuttering* (Yaruss & Quesal, 2011)

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CONTINUED

Assessment strategies with school-agers who *clutter*

- First contact:
  - ***Determine if the child's S/L behaviors fit the definition of cluttering, and if the child also stutters***
  - Ask, "tell me why you're here today" to prioritize goals. Often, these kids are sent in by someone have low to no awareness of any speech problems.
  - Assess in-depth other areas other areas (e.g., Articulation: stimulability testing; Language: standardized or do a language sample analysis, looking at C-units)
- Second contact:
  - Teachers and/or parents report any academic concerns as these are more prevalent in CWC than in CWS

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CONTINUED

Assessment of fluency in school-age children suspected to *clutter*

- Clinician-child conversation should be based on open ended questions; sample writing as well
- Again, 900+ syllables of spontaneous speech, **including wordless picture book narratives;** consider functional topics
- *Cluttering Severity Instrument (Bakker & Myers, 2008; Myers & Bakken, 2014)* or cluttering scale
- Trial therapy is critical; if rate control is a struggle, teaching how to slow is helpful; re-doing mushy words and/or fast whole-word repetitions will help.

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CONTINUED

Treatment philosophies for children who stutter, or children who clutter, plus have a concomitant S/L disorder, inc. ADHD (CWS/C+) (:25)

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CONTINUED

For all these children, no matter the age, at the end of an assessment, it is best to do *trial therapy*

Trial therapy could even be considered *dynamic assessment* depending on how it's done

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CONTINUED

Trial therapy ideas: For the child who…

- **Stutters + S/L disorder:** e.g., If he is stimulable for velars, set up minimal pairs (MP) (*tea/key*) embedded in a carrier phrase activity (*I found a...Did you find something that I can drink? …that unlocks?*) You are looking for:
  - Does he speak more fluently than during spontaneous?
  - Does he self-correct /t/ to /k/ when needed for meaning? (why the stimulability criteria for MP Tx)
  - Dos he respond to massed practice with *"I"* utterances and self-correct *"Me found a.." to "I found a"* (SLI; EV)
- **Shows an overly active temperament** (pre-ADHD): Temperament management strategies, setting up choices; praising follow through, etc

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Types of CWS/C+ treatment:

- Disorder1 (D1) = stuttering or cluttering (or by priority)
- Disorder2 (D2) = SSD, language disorder, ADHD/temperamental challenges, etc (or by priority)

- **Concurrent:** Most challenging, wherein D1 & D2 goals are addressed in the same activity
- **Cyclical:** D1 & D2 goals trade priority: Three options:
  - **Activity-based:** In one session, there is a D1 & a D2 activity
  - **Time-based:** D1 is worked on for a couple weeks, then D2
  - **Criterion-based:** When D1 goal has been met at a certain criteria, e.g., 4/5 stutters are modified or parents say "it's better", D2 can now be worked on
- **Sequential:** D1 is worked on until resolution; then D2: Could be detrimental: which is D1? is there a window of opportunity for D2 to be resolved?

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Logan & LaSalle (2003)

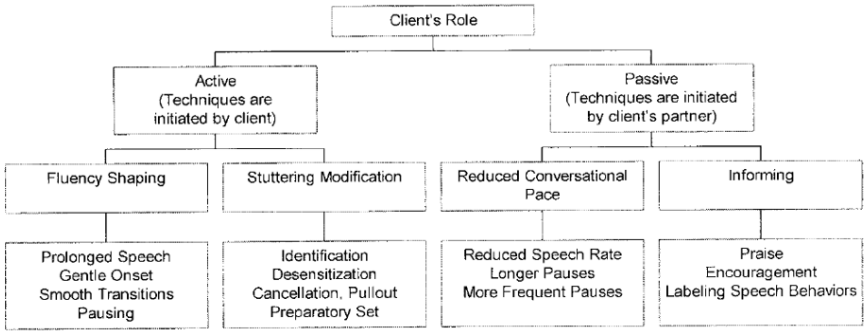

Figure 1 An overview of strategies used to treat stuttering in school-age children. Strategies are organized according to whether they demand active or passive participation from children.

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Logan & LaSalle (2003)

Table 1 Potential Intervention Models for Children Who Present Stuttering and Concomitant Articulation/Phonology or Language Impairment

Demand for Multiple, Simultaneous Changes	Model	Example
High	Concurrent	Ask child to incorporate fluency, articulation, and/or language targets, simultaneously (i.e., within the same activity)
	Cyclic (activity based)	Treat impairment$_1$* and impairment$_2$† during separate activities within the same session
	Cyclic (time based)	Treat impairment$_1$ for several weeks, treat impairment$_2$ for several weeks, then re-treat impairment$_1$ for several weeks, if necessary
	Cyclic (criterion based)	Treat impairment$_1$ until child meets specific performance criteria, then, treat impairment$_2$ until child meets specific performance criteria, then resume treatment for impairment$_1$, if necessary
Low	Sequential	Treat impairment$_1$ until resolution, then treat impairment$_2$ until resolution

*Refers to a disorder that is considered a primary treatment priority.
†Refers to a disorder that is considered a secondary treatment priority.

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CONTINUED

To treat stuttering in preschoolers:

- Demands capacity model (DCM; indirect):
  - Facilitate fluency through building a linguistic hierarchy from either/or questions/carrier phrases to spontaneous speech fluency (elements of GILCU)
  - Slow rate of speech as a model, may or may not be effective with CWS+SSD (LaSalle, 2015)
  - Recast child's stuttered utterances
- Response contingent stimulation (RCS) (Lidcombe; direct) model:
  - Identify "smooth" (fluent) vs. "bumpy" (stuttered) speech
  - Praise smooth five times more often than correct bumpy
  - Involve parents; I prefer that they only praise smooth

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CONTINUED

To treat stuttering in school-age:

- Stuttering modification: stutter more easily and openly
  - Identification
  - Pseudostutterig
  - Modification of fake and then real stutters thru Van Riper triad
  - Self-disclosure in an as-needed, objective manner
- Fluency shaping: speak more fluently
  - Speech production improvements to prevent stutters
  - Slow rate or continuous phonation
  - Modified phonation intervals
  - If needed, improve naturalness

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CONTINUED

To treat cluttering in school-age:

- Increase self-awareness of unintelligibility, “mushy” words (Scaler Scott, 2017), and/or disfluent words through recorded playback and monitoring or
- Increase the child’s perspective of the listener, through barrier tasks, and other activities that require clear speech
- Encourage child’s use of a “just right” vs “too fast” rate
- Reduce weak syllable deletion process application from baseline.
- Facilitate fluency through DAF and other rate tools.

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CONTINUED

Best treatment plans for use with example cases from this CWS/C+ population (0:35):

First, Preschoolers who stutter+
Outcomes: What was best, and what could have been better

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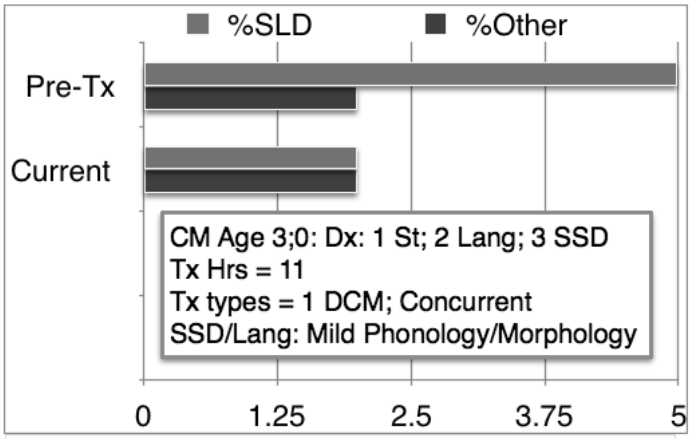

Current Tx: Maintain fluency; assess & treat SSD

38

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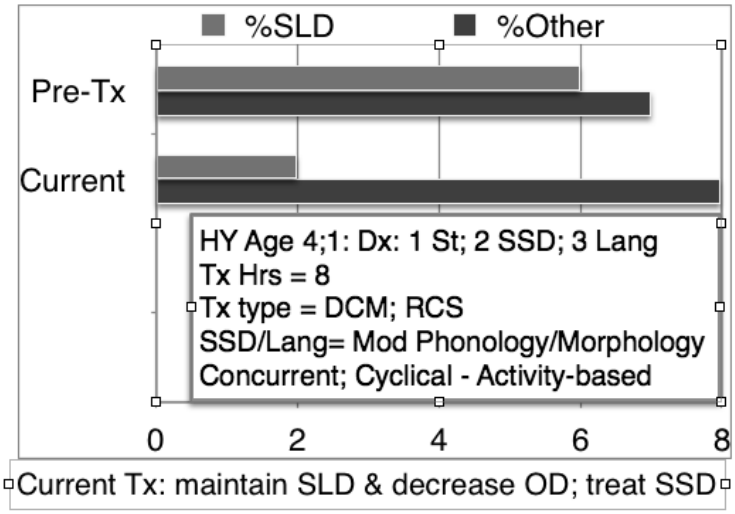
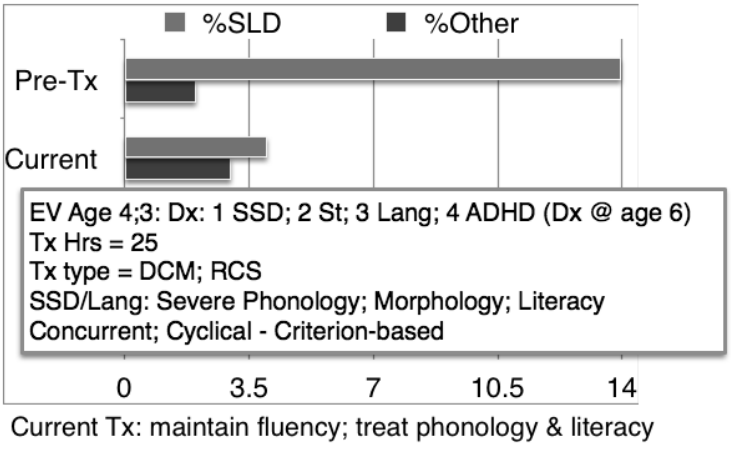
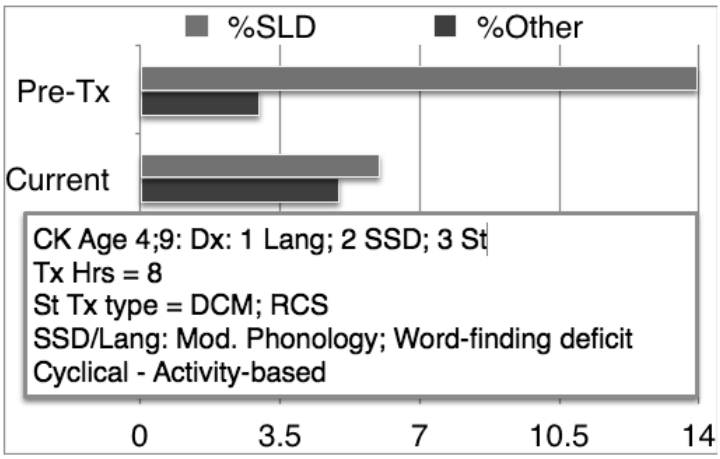

%SLD
%Other
Pre-Tx
Current
HY Age 4;1: Dx: 1 St; 2 SSD; 3 Lang
Tx Hrs = 8
Tx type = DCM; RCS
SSD/Lang= Mod Phonology/Morphology
Concurrent; Cyclical - Activity-based
0
2
4
6
8
Current Tx: maintain SLD & decrease OD; treat SSD

39


%SLD
%Other
Pre-Tx
Current
EV Age 4;3: Dx: 1 SSD; 2 St; 3 Lang; 4 ADHD (Dx @ age 6)
Tx Hrs = 25
Tx type = DCM; RCS
SSD/Lang: Severe Phonology; Morphology; Literacy
Concurrent; Cyclical - Criterion-based
0
3.5
7
10.5
14
Current Tx: maintain fluency; treat phonology & literacy

40



Current Tx: decrease fluency; treat SSD & word-finding

41

<u>Best treatment plans</u> for use with example cases from this CWS/C+ population *continued:*

School-agers who stutter+ Outcomes: What was best, and what could have been better

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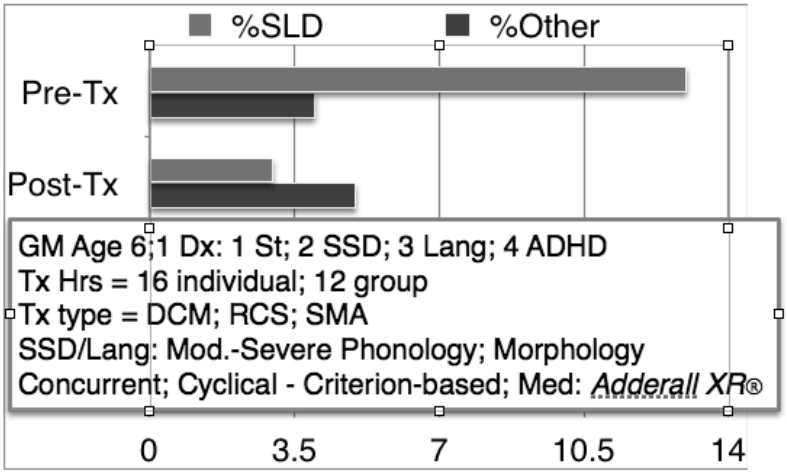
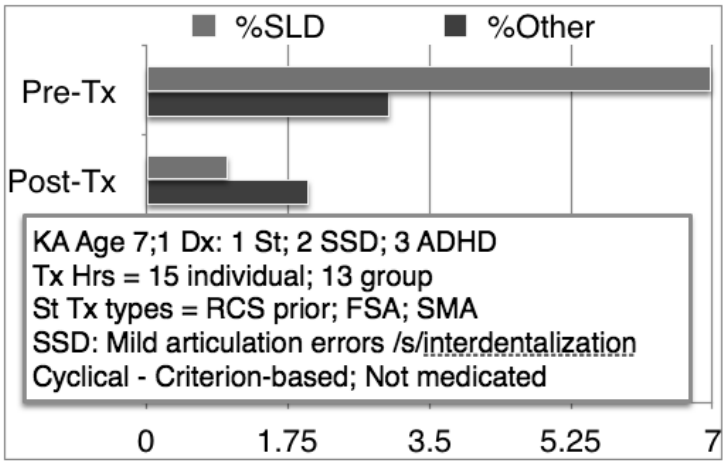
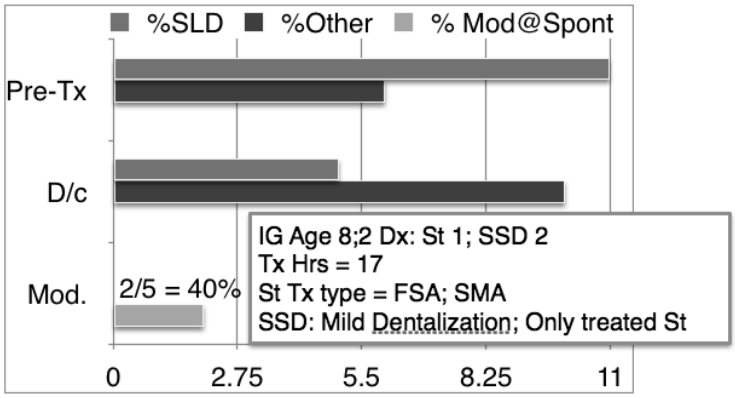

%SLD
%Other
Pre-Tx
Post-Tx
GM Age 6;1 Dx: 1 St; 2 SSD; 3 Lang; 4 ADHD
Tx Hrs = 16 individual; 12 group
Tx type = DCM; RCS; SMA
SSD/Lang: Mod.-Severe Phonology; Morphology
Concurrent; Cyclical - Criterion-based; Med: Adderall XR®
0
3.5
7
10.5
14

43

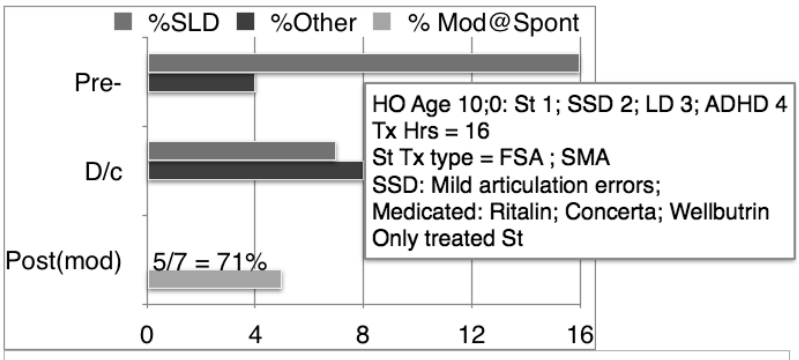

%SLD
%Other
Pre-Tx
Post-Tx
KA Age 7;1 Dx: 1 St; 2 SSD; 3 ADHD
Tx Hrs = 15 individual; 13 group
St Tx types = RCS prior; FSA; SMA
SSD: Mild articulation errors /s/interdentalization
Cyclical - Criterion-based; Not medicated
0
1.75
3.5
5.25
7

44



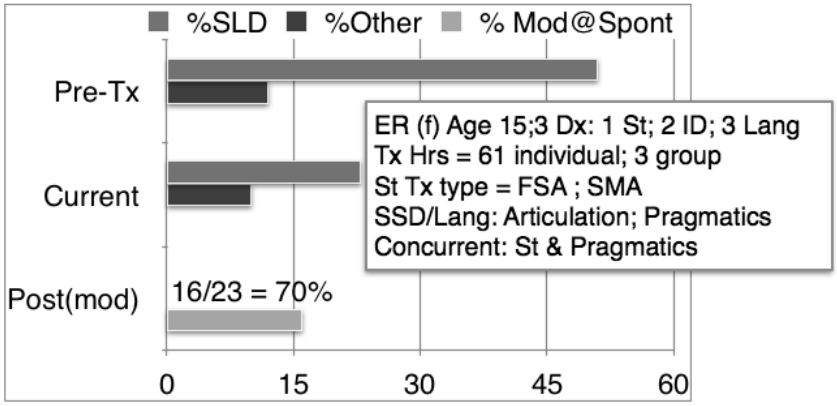
D/c: If client returns, can he identify stutters; use any SMA tools? If not, SMA again, perhaps with FSA as a platform

45



D/c: If client returns, how are other disorders being treated? Changes in meds and effects of changes?

46



47

Clinical decisions about speech sound disorders and language learning disorders in regard to stuttering and cluttering
(0:60)
Let's begin with cluttering…

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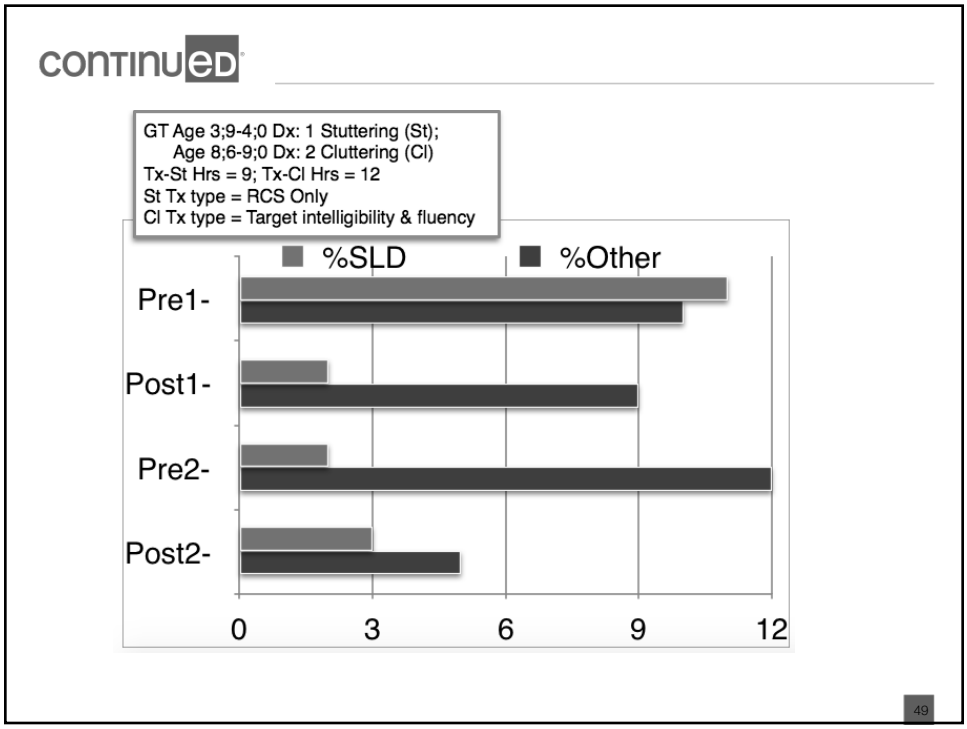
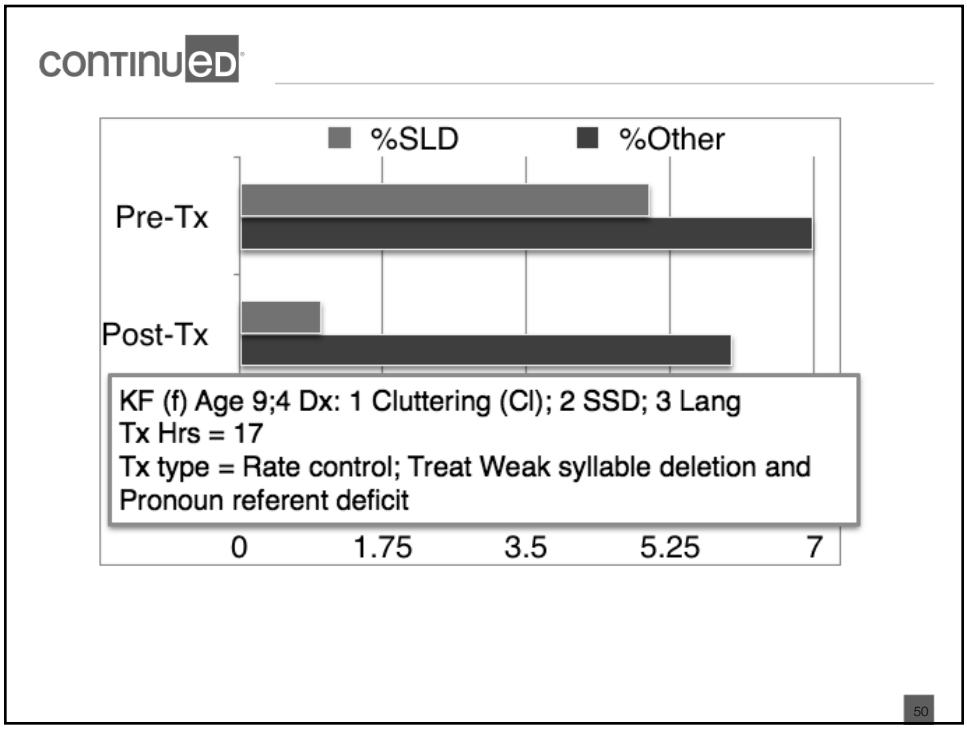
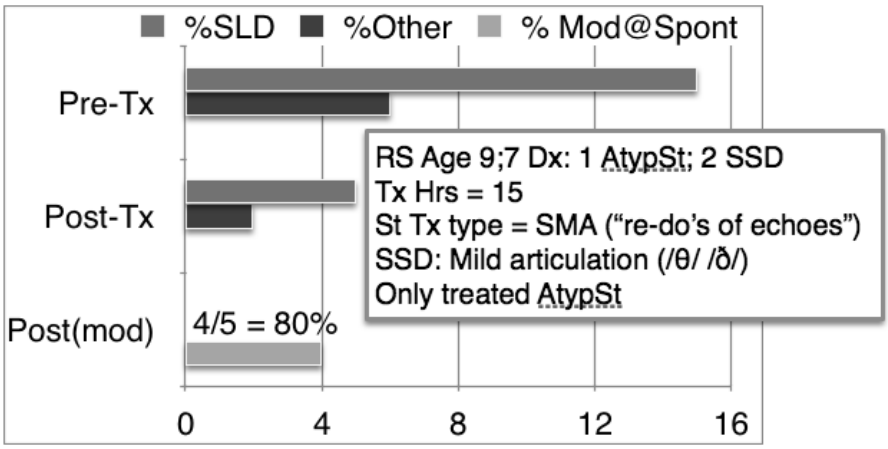
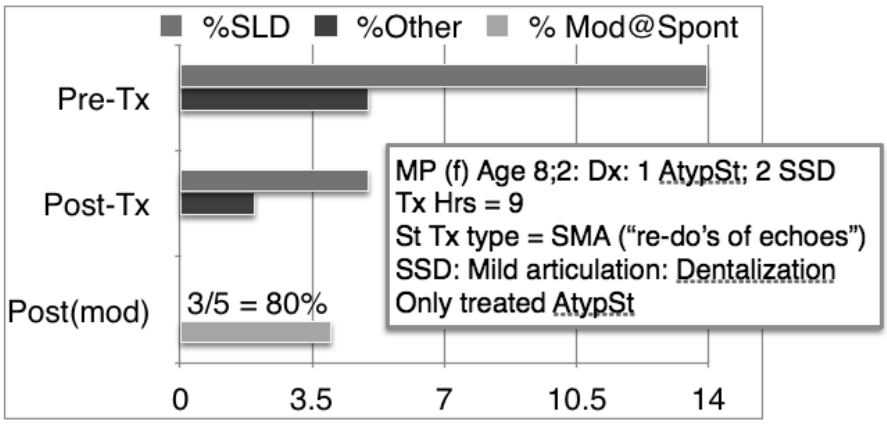

GT Age 3;9-4;0 Dx: 1 Stuttering (St);
Age 8;6-9;0 Dx: 2 Cluttering (Cl)
Tx-St Hrs = 9; Tx-Cl Hrs = 12
St Tx type = RCS Only
Cl Tx type = Target intelligibility & fluency
%SLD
%Other
Pre1-
Post1-
Pre2-
Post2-
0
3
6
9
12
49

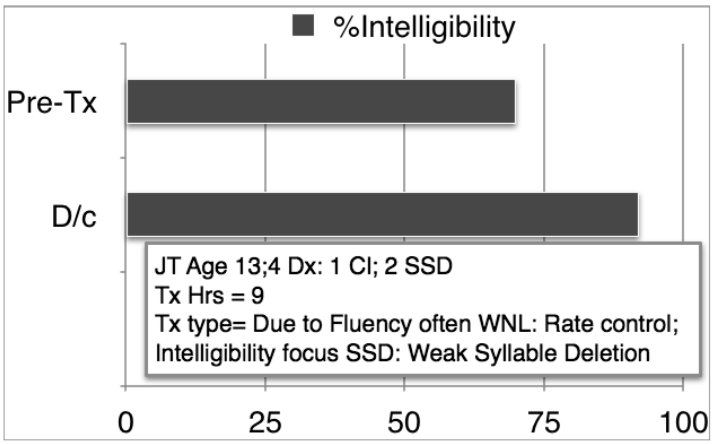

%SLD
%Other
Pre-Tx
Post-Tx
KF (f) Age 9;4 Dx: 1 Cluttering (Cl); 2 SSD; 3 Lang
Tx Hrs = 17
Tx type = Rate control; Treat Weak syllable deletion and
Pronoun referent deficit
0
1.75
3.5
5.25
7
50


%SLD
%Other
% Mod@Spont
Pre-Tx
Post-Tx
Post(mod)
4/5 = 80%
RS Age 9;7 Dx: 1 AtypSt; 2 SSD
Tx Hrs = 15
St Tx type = SMA ("re-do's of echoes")
SSD: Mild articulation (/θ/ /ð/)
Only treated AtypSt
0
4
8
12
16

51


%SLD
%Other
% Mod@Spont
Pre-Tx
Post-Tx
Post(mod)
3/5 = 80%
MP (f) Age 8;2: Dx: 1 AtypSt; 2 SSD
Tx Hrs = 9
St Tx type = SMA ("re-do's of echoes")
SSD: Mild articulation: Dentalization
Only treated AtypSt
0
3.5
7
10.5
14

52



D/c: If client returns, what percent of weak syllable deletion applying? Rate control needs?

53

Assessing progress: (:70) Variability is the "name of the game" with fluency…

What else is variable?

- ADHD-like symptoms are variable
- But not as much so phonology and language skills and abilities, they are only somewhat variable

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CONTINUED

Example of goals + progress

- **D1 Goal:** Client will modify 4/5 actual stutters (cancellations, pullouts and/or prep sets) in a monolog with an unfamiliar listener. (Methods?)
- **D1 progress:** Client did not yet meet this goal, but reached a 3/5 modification rate with an unfamiliar listener. He reported using cancellations when unsuccessful at pullouts on actual stutters. (Methods?)

- **D2 Goal:** Client will reduce percent application of gliding and vocalization from 40-60% respectively to a lower %
- **D2 progress:** Client only occasionally mis-articulates /r/ and rhotics, near 0% application of both phonological processes vocalization and gliding.

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CONTINUED

For this reason, why not plot the more variable behaviors regularly to see the trends?

- Fluency
- Compliance, task compliance, attentiveness, reflective rather than impulsive behaviors

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CONTINUED

- Plot the less variable and slower to achieve behaviors:
  - phonological process application decreases;
  - articulation and intelligibility outcomes;
  - language gains (LSAs, standardized percentile ranks)

  in larger time increments (e.g., Wk1-Wk12)
- If not improving when using a blended approach, consider shifting them to the D1 priority.
- Stuttering treatment has a window of opportunity of about two years time since onset for preschoolers, but a few weeks of focused phonology or language therapy can theoretically benefit many of these children (e.g., GT)

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CONTINUED

Another way to look at progress is *what if stuttering is "part and parcel of" the SSD or of language disorder?*

In these cases, it makes more sense to put speech sound disorder and language disorder as D1 priority, and plot progress more regularly for those disorders, even though with the right approach we would hope they would be incrementally increasing.

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CONTINUED

Assessing treatment efficacy

- Baseline v. Outcome of Tx period
- Baseline (first 10 min) v. (last 10 min) of Tx sessions
- Plot for each behavior of interest pre-and post-:
  - stuttering frequency and type
  - attitudes about stuttering
  - phonological process application
  - number of adult–like utterances; MLU-m, C-unit measures
  - number of noncompliant episodes; task completions

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CONTINUED

Summary Q&A (:85)

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