Phonological, linguistic, fluency patterns in the ASD population: What to know and how to treat based upon what you know

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Our focus today

- Phonologic patterns in autism
  - What we see
  - What the research suggests may lie underneath
  - Clinical recommendations based upon what we know and see
- Language and literacy patterns in autism
  - What we see
  - What the research suggests may lie underneath
  - Clinical recommendations based upon what we know and see
- Fluency patterns in autism
  - What we see
  - What the research suggests may lie underneath
  - Clinical recommendations based upon what we know and see
- Putting it all together for overall case management

Autism Spectrum Disorder: DSM-5 Criteria

A. Persistent deficits in social communication and social interaction across multiple contexts

1. Deficits in social-emotional reciprocity
2. Deficits in nonverbal communicative behaviors used for social interaction
3. Deficits in developing, maintaining, and understanding relationships

Autism Spectrum Disorder: DSM-5 Criteria

B. Restricted, repetitive patterns of behavior, interests, or activities, as manifested by at least two of the following:

1. Stereotyped or repetitive motor movements, use of objects, or speech
2. Insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal behavior

Autism Spectrum Disorder: DSM-5 Criteria

B. Restricted, repetitive patterns of behavior, interests, or activities, as manifested by at least two of the following:

3. Highly restricted, fixation interests that are abnormal in intensity or focus
4. Hyper- or hypo-reactivity to sensory input or unusual interest in sensory aspects of the environment

Autism Spectrum Disorder: DSM-5 Criteria

C. Symptoms must be present in early childhood (but may not become fully manifest until social demands exceed limited capacities

D. Symptoms together limit and impair everyday functioning

Autism Spectrum Disorder: DSM-5 Severity

Severity is based on social communication impairments AND restricted, repetitive patterns of behavior.

Theme for today:

Expect the Unexpected

Phonologic patterns in autism

Phonology vs. phonetics

- Phonology = organizing sounds of language to make meaning
  - Tests that may measure: NonWord Repetition
- Phonetics = physically producing speech sounds
  - Tests that may measure: Goldman-Fristoe Test of Articulation (GFTA)

Early research

- Shriberg, Paul, McSweeny, Klin, & Cohen (2001)
  - 33% distortion errors in AS and HFA in adulthood (vs. 1-2% in adult population)
  - Residual distortion errors
    - Dentalized/lateralized sibilants
    - Derhotacized/labialized liquids

Early research

- Persisting developmental errors
  - Articulation
  - Phonological processes
- Same sound delays and error patterns as neurotypicals
- Phonology and phonetics are the "most spared" area of communication development (Kjelgaard and Tager-Flusberg, 2001)

Wolk, Edwards, Brennan (2016)

- At least a subgroup of children with autism present with:
  - Typical and atypical phonological errors
  - Atypical prosody
  - Limited consonant inventories

Why this new finding?

- Old research = used structured tests of articulation/phonology
- New research = used connected speech
- **Clinical implications for assessment**

Where does this begin?

- Wetherby et al. 1989 preverbal vocalizations
  - Deficient use of consonants
- Schoen et al. (2011)
  - 30 toddlers with ASD vs. 11 age-matched and 23 language-matched controls
  - ASD had atypical vocalizations and more limited number of consonants

Wolk and Brennan (2013)

- 8 children with ASD
- Ages 5:3 to 15:1
- 2 groups
  - Mild to moderate global language delay
  - Severe global language delay

Wolk and Brennan (2013)

- Findings
  - Some children exhibited phonological process errors of earlier development
  - Also atypical phonological processes
    - Prevocalic devoicing, segment coalescence, metathesis, epenthesis, initial consonant deletions
      - These processes suggest difficulties maintaining the syllabic structure

Wolk and Brennan (2013)

- Findings
  - Children with more severe language delay showed more phonological process errors in general
  - Children with more severe language delay showed larger proportion of atypical processes and patterns
    - Atypical cluster reduction
- Authors: Do children with ASD have difficulty with forming perceptual categories?..will return to this discussion…

What lies beneath

- Concomitant disorders impacting speech
  - apraxia, oral motor, fluency: Gernbacher et al., 2008
- Other conditions that impact ability to attend to sound/models
  - Hearing impairment/otitis media
  - Difficulty attending to the whole vs. small details
  - Klin (1992) failure to show preference for speech-like sounds in infancy…does this affect longstanding artic errors

Fluency patterns in autism

What we will focus on this section

- Introduction and overview
- What we do and don't know about the presence, potential causes, and treatment of fluency disorders in those with ASDs
- Review of cognitive features and potential contributors to disfluency in ASDs
- Application of known information to assessment and treatment

Stuttering-Like Disfluencies (SLDs)

Repetitions of:
Single-Syllable whole words (with tension) "I-I-I"

Sounds or syllables (part-word repetition)
"*d-d*-uck"
"*Spi-spi*derman"

Prolongations "*sss*ometimes"

Blocks/Tense Pauses "st---uck"
Broken Words "bro—ken"

Nonstuttering-Like Disfluencies

Repetitions of:
Multisyllable whole words "open-open"
Phrases "I want—I want"

Revisions "I like unicorns, no, I mean dragons"

Interjections/Fillers "um, uh, er, well, like, so"

Cluttering definition

*Cluttering is a fluency disorder wherein segments of conversation[1] in the speaker's native language[2] typically are perceived as too fast overall[3], too irregular[4], or both. The segments of rapid and/or irregular speech rate **must** further be accompanied by one or more of the following: (a) excessive "normal" disfluencies[5]; (b) excessive collapsing[6] or deletion of syllables; and/or (c) abnormal pauses, syllable stress, or speech rhythm.*

St. Louis and Schulte (2011)

Some examples

- http://www.mnsu.edu/comdis/ica1/papers/dewey1c.html
  - What patterns in definitions do you notice?
  - Anything else you hear going on?
- http://www.mnsu.edu/comdis/ica1/papers/kissagizlisc.html
  - As you hear more pauses what do you notice?

Atypical disfluencies

- Atypical disfluencies
  - Final sound and syllable repetitions (w/ or w/o pause)
    - "light-t" "train-ain"
  - Final sound prolongations
    - "thissss"
  - Within-word breaks, insertions
    - "op—en" "tea-he-he-heacher"

"Atypical Disfluency Patterns" (ADP) [Reeves, 2010]

Patterns of stuttering/disfluency noted in individuals with Autism Spectrum Disorders (ASDs)

- Simmons and Baltaxe (1975)
  - 7 adolescents, 14 to 21 years of age
  - Diagnosed with autism and average IQ
  - "hesitations," "repetitions," "prolongations," "nonfluencies" (SLDs and NSLDs)
- Dobbinson et al. (1998)
  - 28-year-old woman
  - Diagnosed with autism and mental retardation
  - Repetitions of word parts, syntactical structures, and lexical items

Patterns of stuttering/disfluency noted in individuals with Autism Spectrum Disorders

- Klin, Volkmar, Sparrow (2000): "Dysfluencies are…common" (p. 378) in Asperger Syndrome" (AS)
- Shriberg et al. 2001: 67% male speakers with AS and 40% with HFA: "inappropriate or nonfluent phrasing on more than 20% of utterances" (p. 1109)
  - "These data suggest that many speakers with autistic syndromes produce notably disfluent speech" (p. 1109)

More detailed fluency analyses have revealed…

- SLDs, NSLDs, and atypical disfluencies in individuals on the spectrum:
  - 8 preschoolers on the autism spectrum (Plexico, Cleary, McAlpine, & Plumb, 2010)
  - 1 school-aged child with Asperger's (Sisskin, 2006; Tetnowski et al., 2012)
  - 2 teens on the autism spectrum (Hietella & Spillers, 2005)
  - 1 teen with Asperger's (Sisskin, 2006)
  - 2 young adults with Asperger's (Scott et al., 2006)
  - 13 adults on autism spectrum (Lake et al., 2011)
    - Increased silent pause and disfluent repetitions; fewer filled pauses and revisions as compared to controls

A word about word final disfluencies

- Have been noted more in populations within a diagnostic category other than stuttering, such as children and adults with neurological insults (Ardila & Lopez, 1986; Bijleveld, Lebrun, & Van Dongen, 1994; Cosyns et al, 2010; Lebrun & Leleux, 1985; Lebrun & Van Borsel, 1990; Rosenfeld, Viswananth, Callis-Landrum, Didanato, & Nudelman, 1991; Stansfield, 1995; Van Borsel, Geirnaert, & Van Coster 2005; Van Borsel, Van Coster, & Van Lierd, 1996).
- Commonly found in kids with other diagnoses, particularly those with autism, ADHD
- Seems to be a growing consensus that regardless of diagnosis (or lack thereof), the kids with these issues also have other (sometimes subtle) pragmatic language issues

To sum up

- What we know so far
  - Disfluency (more and less typical) and stuttering (more and less typical) happen in Autism Spectrum Disorders
  - The same patterns have been seen in different individuals in the contexts of reading (Hietala & Spillers, 2005; Scott et al., 2006) repetition tasks (Scott et al., 2006) and conversation (Dobbinson, Perkins, Boucher, 1998; Hietala & Spillers, 2005; Paul et al., 2005; Scott et al., 2006; Shriberg et al, 2001; Sisskin, 2006) but there are individual differences as well
  - Awareness seems to be on a continuum

Scaler Scott, Tetnowski, Flaitz, & Yaruss (2014)

- 11 Kids with Asperger's
- 11 Kids who stutter
- 11 Kids with no diagnosis

- All in grades 4-7
- Fluency analysis taken during an expository discourse task

Scaler Scott, Tetnowski, Flaitz, & Yaruss (2014)

- In Asperger group
  - 4/11 children met criteria for a fluency disorder
    - 1 pure stuttering with secondary behaviors and negative feelings and attitudes
    - 1 pure cluttering
    - 2 cluttering-stuttering
  - 8/11 children presented with WFDs
    - Percentage of total words disfluent ranged from 1 to 39%

Language and literacy patterns in autism

What we typically see

- Strong word decoding (is it true decoding?)
- Poor phonological awareness
  - Not always and relative to comprehension
- Poor comprehension
  - Hyperlexia at times
  - Decreased prosody when reading
    - Whispered, fast and/or soft
- Poor story retell

What lies beneath?

- Visual strengths and strengths in sight words
- Difficulty breaking down bigger chunks of language (echolalia first)
- Decreased self monitoring = decreased self-monitoring of comprehension breakdowns
- (Lanter & Watson, 2008)

What lies beneath?

- Poor schema development = difficulty with structure for retell
- Difficulties with pragmatics = difficulties with
  - Inferencing character feelings
  - Difficulties with inferences in general
  - Difficulties using evidence to support an argument/opinion
  - Difficulties understanding how much background a person may need during retell

Conclusions

- Many phonological errors are atypical
- Disfluencies are more atypical
  - Word final disfluencies
  - Mid word breaks/insertions
- Literacy patterns are atypical
  - Strong word identification yet poor comprehension

Why might the atypical be so typical in ASD?

- Focus on parts vs. whole
  - Phonology: Lacking knowledge of syllabic structure
  - Fluency: Placeholders…repeating part rather than whole word
  - Linguistic: Focus on detail, not big picture
  - Literacy: Isolated reading w/o focus on big picture comprehension of story

Semantic verbal fluency in ASD

(Pastor-Cerezuela et al., 2016)

- Let's try a categorization task….
- Count your overall number…does size matter?
- Now let's analyze your approach:
  - Clusters
    - Number of clusters
    - Size of clusters
  - Switching

Semantic verbal fluency in ASD

(Pastor-Cerezuela et al., 2016)

- The analysis reveals
  - Number of switches = executive and flexibility indicator
  - Size of clusters = measure of generativity and lexical = semantic access
  - Number of clusters = additional measure of cognitive flexibility

Cognitive features of autism

- Working memory
  - Williams et al. (2005): lack of deficits, more in processing complex tasks
  - Joseph et al. (2005): no use of verbal mediation to monitor goal-related information in working memory
- Self-monitoring
  - Response inhibition (Agram et al., 2010)
    - Mixed findings for behavioral response inhibition
    - Consistent findings for difficulties with eye movement inhibition
- Perseveration (Rehfeldt & Chambers, 2003)
  - Treatment of verbal perseveration in cognitive approaach

Cognitive features of autism that may contribute to disfluency

- Increase in typical disfluency
  - Language factors?
    - Boscolo et al. (2002)
    - Van Borsel & Tetnowski (2007)
    - Hall (1977, 1996; Hall et al., 1993)
- Stuttering-like disfluencies
  - Neurological factors
    - Van Borsel et al. (1996, 2005)

Cognitive features of autism that may contribute to disfluency

- Atypical disfluencies
  - Perserveration
    - Rehfeldt & Chambers (2003)
    - Scaler Scott & Sisskin (2007)
    - Cosyns et al. (2010)
  - Pragmatic/perspective taking
    - Scaler Scott , Block, Reardon-Reeves et al. (2013)
  - Language organization
    - Sisskin (2006)
- Cluttering
  - Disinhibition (Alm, 2011)
  - Working memory (Scaler Scott et al, in review)

Cognitive issues

- Theories of autism
  - Information processing theory (Minshew & Williams, 2008)
    - Individuals with autism have difficulty processing information due to multiple impairments that may interact (depending upon the situation, task, environment, etc.) and placing "load" on the individual's processing ability
      - Sensory impairments
      - Motor impairments
      - Memory impairments (working memory)
      - Expressive deficits

Cognitive issues

- This theory addresses all intact and impaired structures in brain and cognition
- Authors believe that intellectual disability is not separate from autism but that the information processing capacity of the individual produces a specific cognitive profile (how much does it take to tax your client's system?)
  - The more severe your information processing issues, the closer you move to intellectual disability

Syntactic theories (Bernstein Ratner, 2013)

- And disfluency in late talkers
- Could this relate to WFDs and their variability?

Phonology evaluation

Given what we know about atypical patterns

- Phonology
  - How is it treated differently in evaluation?
  - If it is not, how should it be treated differently?

Given what we know about atypical patterns

- Phonology
  - Need to look for atypical phonological processes
  - Need to look into connected speech

What tests might we use?

- Goldman-Fristoe with the Khan Lewis (Pearson)
- Bankson-Bernthal Test of Phonology (Pro-Ed)
  - Word Inventory
  - Consonant Inventory
  - Phonological Processes
- Hodson Assessment of Phonological Processes (Hodson; Pro-Ed)
- Clinical Assessment of Articulation and Phonology-2 (Secord & Donohue; Pro-Ed)

Other important measures

- Phonetic inventory
  - Include all consonant singletons that occur in at least 2 lexical items, regardless of correctness
    - Word initial
    - Word final
  - Consonant clusters
    - Word initial
    - Word final

Other important measures

- Phonetic inventory
  - Word shapes
    - V, VC, CV, CVC
    - Any other monosyllables, two and three-syllable words

Other important measures

- Has anyone used this?
- https://www.youtube.com/watch?v=2mukklSH1MM

Atypical phono processes to look for

- Prevocalic devoicing (paby/baby)
- Segment coalescence
  - Spoon = fun
    - Frication and voicelessness of /s/
    - Labality and voicelessness of /p/
    - Combine for voiceless, labial fricative /f/
- Metathesis (bakset; efelant)
- Epenthesis (bulue)
- Initial consonant deletion (un/sun)

Differential diagnosis

- If you have syllable coalescence (balloon = boon) then is this really cluttering over co-articulation?
- If you have vowel deviations, is this really apraxia?

Fluency evaluation

Given what we know about atypical patterns

- Fluency
  - Need to look for cluttering and atypical disfluency
  - Need to look into connected speech
    - Conversation
    - Monologue

Applications of what we know to evaluation

- Be on the lookout for traditional stuttering, atypical disfluencies, cluttering, negative feelings and attitudes in this population

Differential Diagnosis

How do I get to the bottom of this?

- Getting a sample and doing a fluency analysis is key
  - Approximately 500 words (or syllables) or 5 minute sample in conversation, monologue
  - Word for word transcription and fluency coding

How do I get to the bottom of this?

- Determine what percentage of words are represented by:
  - NSLDs
  - SLDs
  - Word final disfluencies
  - Atypical pauses (for cluttering)
  - Over-coarticulation (for cluttering)

Examples

- **Atypical Pause**:
  - He saw the//bird with the blue feathers

Overlap between cluttering and stuttering

- *Cluttering is a fluency disorder wherein segments of conversation[1] in the speaker's native language[2] typically are perceived as too fast overall[3], too irregular[4], or both. The segments of rapid and/or irregular speech rate **must** further be accompanied by one or more of the following: (a) excessive "normal" disfluencies[5]; (b) excessive collapsing[6] or deletion of syllables; and/or (c) abnormal pauses, syllable stress, or speech rhythm.*
- Differential dx of rate:
  - Palilalia?
  - Avoidance or escape behaviors?

The Covert Stutterer

- "I will hide my stuttering at all costs"
- "You may never hear me stutter" (but certain individuals may)

Avoidance vs. escape behaviors

- To ***avoid*** stuttering a client may:
  - Not speak to a certain person
  - Speak only when they feel fluent ("fluent" days)
  - Not participate in class or take on certain work responsibilities involving speaking
  - Email/text instead of calling
  - Speak in a fluency enhancing condition (whispering, accent)
  - Substitute words

Avoidance vs. escape behaviors

- To ***escape*** stuttering a client may:
  - Change a word once they become stuck
  - Say "forget it" or not finish a thought
  - Revert to use of fillers, tricks, changing body movements/postures
  - Revert to running starts

Keep in mind

- There are varying degrees of covert stuttering, ranging from overt behaviors accompanied by covert aspects (i.e., word/communication avoidance) to completely covert with no overt behaviors noticeable to the casual observer
- Be careful not to over or under-interpret these behaviors
- Kids as young as 7 or 8 begin "Chasing the fluency god" (Starkweather) and can become masters of tricks and disguises

Scoping out escape/avoidance behaviors

- If you are unsure about a word avoidance, feign ignorance and ask again
- Reading passages help pinpoint avoidance
- Set up a game, etc. where suspected words, sounds have to be said as part of the rules
- Put your client in a difficult situation when able (phone calls with specific words)

Keep in mind

- Cluttering and stuttering commonly occur together
- Speeding up rate can be a way to avoid stuttering for some. It will also trigger cluttering symptoms in some clients if they are prone to cluttering
- Word substitution can be subtle and variable
- You may only note *signs* or develop *hypotheses* in your evaluation which will warrant further exploration in treatment

Overlap between cluttering and stuttering

- *Cluttering is a fluency disorder wherein segments of conversation[1] in the speaker's native language[2] typically are perceived as too fast overall[3], too irregular[4], or both. The segments of rapid and/or irregular speech rate **must** further be accompanied by one or more of the following: (a) excessive "normal" disfluencies[5]; (b) excessive collapsing[6] or deletion of syllables; and/or (c) abnormal pauses, syllable stress, or speech rhythm.*
- Differential dx of NSLDs:
  - Covert stuttering?
  - Language issues?
  - Bilingual issues?

Overlap between cluttering and stuttering

- *Cluttering is a fluency disorder wherein segments of conversation[1] in the speaker's native language[2] typically are perceived as too fast overall[3], too irregular[4], or both. The segments of rapid and/or irregular speech rate **must** further be accompanied by one or more of the following: (a) excessive "normal" disfluencies[5]; (b) excessive collapsing[6] or deletion of syllables; and/or (c) abnormal pauses, syllable stress, or speech rhythm.*
- Differential dx of over-coarticulation:
  - Dysarthria?
  - Articulation issues?

Other things to note in differential diagnosis

- *Cluttering is a fluency disorder wherein segments of conversation[1] in the speaker's native language[2] typically are perceived as too fast overall[3], too irregular[4], or both. The segments of rapid and/or irregular speech rate **must** further be accompanied by one or more of the following: (a) excessive "normal" disfluencies[5]; (b) excessive collapsing[6] or deletion of syllables; and/or (c) abnormal pauses, syllable stress, or speech rhythm.*
- Differential dx of speech rhythm:
  - This is not the prosodic patterns noted in other disorders such as autism

Other things to note in differential diagnosis

- *Cluttering is a fluency disorder wherein segments of conversation[1] in the speaker's native language[2] typically are perceived as too fast overall[3], too irregular[4], or both. The segments of rapid and/or irregular speech rate **must** further be accompanied by one or more of the following: (a) excessive "normal" disfluencies[5]; (b) excessive collapsing[6] or deletion of syllables; and/or (c) abnormal pauses, syllable stress, or speech rhythm.*
- There is nothing in here about atypical disfluencies, which can co-occur with cluttering, but are **not** part of the diagnostic criteria for cluttering!

What features distinguish cluttering from stuttering

- Rapid rate resulting in breakdown of intelligibility
- Over-coarticulation
- Excessive normal disfluencies
- When rate is adjusted, symptoms often disappear (not always the case for stuttering)

What does the research say?

- About Attention Deficit Hyperactivity Disorder
  - Working memory deficits are language based?
    - Cohen, Vallance, Barwick, Im, & Menna (2000)
  - The dilemma:
    - Do we need to rethink the potential language issues in cluttering as executive function issues?
    - Or do the EF issues in ADHD need to be thought about from a language perspective?
  - Response inhibition and speech fluency
    - Engelhardt, Corley, Nigg, & Ferreira (2010)

Future research considerations

- What about those tense pauses/moments that seem like stuttering blocks…but might not be? (Scaler Scott, Bossler, Veneziale, Nelson, 2015)
- Is cluttering an executive functioning issue and is this what's observed in the current language production of those with cluttering?
  - Working memory: ***score gaps***: (Kidron, Scaler Scott, Lozier, 2012)
  - Response inhibition: (Scaler Scott, Bossler, Veneziale, 2015)

Reporting results: The format

- Outline each criterion
- Describe the behaviors that might fit into this criterion
- Draw a conclusion

The format

- Criterion #1 (mandatory for diagnosis of cluttering): *Cluttering is a fluency disorder wherein segments of conversation[1] in the speaker's native language[2] typically are perceived as too fast overall[3], too irregular[4], or both.*
- In conversation, narrative, and expository speaking contexts, Ray did exhibit irregularity of speech, characterized by inconsistent "bursts" of rapid speech. This characteristic was especially observed in speaking contexts where Ray demonstrated high interest in the topic. Rapid bursts of speech resulted in decreased intelligibility of speech.
- ***Criterion 1 is met for rapid/irregular rate of speech.***

The format

- Criterion #2: ***at least one*** of the following three symptoms (A, B, or C)
- Criterion 2A: an excessive number of disfluencies, the majority of which are not typical of people who stutter
- Need a disfluency analysis
  - Non-stuttering-like disfluencies
  - Stuttering-like disfluencies

Disfluency analysis

- Conversation sample of 500 syllables
- 2% SLDs consisting of tense pauses and prolongations
- 11% NSLDs consisting of phrase repetitions, interjections, and revisions
- SSI-4 score of very mild (overall score of 10)
- **Are the tense pauses stuttering?

The format

- Ray does also meet this criteria for cluttering, as indicated by his greater use of NSLDs than SLDs in disfluency analysis, and his frequent use of revisions illustrated in the speech samples transcribed below…
- Yep/ but they are-there-there/ (Rev) two of them are the same class/ (Rev) like two of each are the same class/ (Rev) I have two classes of US History/

The format

- Criterion 2B: excessive collapsing or deletion of syllables
- Ray exhibited excessive over-co-articulation; in these instances, Ray tended to produce all of the words in parentheses as one continuous word. He also produced weak endings on these words, compromising intelligibility.
- "Basically (he's making too much noise) his mother says it's time for a bath and then he loses the soap while he's in the bath. Then (he gets out of the bath) and to brush his t-, to brush his teeth and he s-, ends up spreading toothpaste on his new pajamas."

The format

- Criterion 2C: abnormal pauses, syllable stress, or speech rhythm
- Ray meets the criteria for this aspect of speech as well. His pauses at times appeared in places where one would not expect them grammatically, as illustrated in several speech samples
- Examiner: Do you have a favorite book of all time?
- Ray: Pro-probably Harry Potter. Because, I-, well, I (pause)don't know, I rea-, I was introduced to (pause) it when I was 12 and I, I really enjoyed (pause) it.

The format

- ***Overall, necessary criteria are met for a diagnosis of cluttered speech (i.e. irregular rate plus 3/3 of resulting symptoms)***
- ***Overall, necessary criteria are not met for a diagnosis of cluttered speech, as rapid and/or irregular rate are not present***

Things to think about when making recommendations

- How often do these behaviors occur?
- How much do they interfere with a client's overall communication effectiveness?
- How much do they have the potential to interfere with a client's communication effectiveness?

Evaluation of Literacy

Given what we know about atypical patterns

- Language/Literacy
  - Need to look at decoding vs. comprehension
  - Need to consider what the available tools out there tell us
    - Their limitations
    - Other options

Evaluation

- Prior to decoding comes
  - Phonological awareness
    - Best test (younger)
      - Phonological Awareness Test (PAT-2)
    - Best test (older)
      - Last 2 subtests of PAT-2
      - Comprehensive Test of Phonological Processing (CTOPP-2)

Phonological awareness implications

- Will need to look at whole picture
  - Does lack of phonological awareness impact their:
    - Reading?
    - Spelling?
  - Rapid naming
  - Working memory

Reading fluency

- Gray Oral Reading Test (GORT-4
- Test of Silent Contextual Reading Fluency (TOSCRF-2)
- Test of Silent Word Reading Fluency (TOSWRF-2)
- A note about reading fluency testing and fluency disorders

Comprehension

- Gray Oral Reading Test
- Gray Silent Reading Test
- Qualitative Reading Inventory (Pearson)
- The differences and what to expect

QRI sample writeup

- See word doc

Treatment

Clinical recommendations

- What's the priority
- What are the strategies that work best given their strengths, what keeps them engaged, etc.?

Clinical recommendations

- Given this, how do we work with families?
  - Determining priorities throughout the lifespan
  - Rethinking the need for intervention based up what we know about persistence of errors into adulthood?

In general

- Think about the thinking patterns in autism
- Think about the cognitive flexibility in autism
- Think how both of these things are going to impact
  - Seeing the need for strategies
  - Receptivity to strategies
  - Carryover of strategies

For each Category

- We will discuss
  - How their thought patterns can lead to lack of receptivity to strategies
  - How to work this out
    - Using what we know about how they think to design treatment differently

Phonological processes

Treatment

Consider

- Our explanations and demonstrations
  - May need to be high level or they may shut us out
- In other cases our explanations and demonstrations
  - May need to be concrete or they may shut us out

Also…

- Our rules
  - Need to be congruent with what they know and have learned
  - Fit into their schema of "helpful"
- This is NOT an easy task!

But

- Before you design something completely different let's not reinvent the entire wheel
- Let's start where we would usually start and modify from there

Wolk and Brennan (2013)

- Findings
  - Some children exhibited phonological process errors of earlier development
  - Also atypical phonological processes
    - Prevocalic devoicing, segment coalescence, metathesis, epenthesis, initial consonant deletions
      - These processes suggest difficulties maintaining the syllabic structure

If we assume a pure phonological process disorder

- Just remember there is often a motor component too

Playing to ASD Cog Features

A rule-bound child feels more comfortable with lists of rules and expectations

Final consonant deletion

- Example error: “beh” for “bed”
- Touch cues: you can add these as needed to facilitate a given sound. Example:
  - For /d/:
    - Index finger points to upper lip near alveolar ridge while thumb rests on chin. Pull fingers away while making /d/ sound. Hold other finger on larynx (do not pull away) for voicing as needed.

Final consonant deletion

- Introduction:
  - Do you know what a body part is? How many body parts can you name? They are parts that you put together to make your whole body. Did you know that words have parts too? We can clap out the parts. Listen. “po—ta—to” (claps hands together as says each syllable). You try it. Let’s see if we can figure out how many parts your name has. Let’s try some others (they may have to just listen to you clap first to name the # of parts…if needed you can have them count the claps)

Final consonant deletion

- Introduction:
  - Now we’ve figured out the big parts to words. But words have even smaller parts, they are called sounds. You might know sounds, they go with letters. What sound does “b” make? What letter does your name start with? I bet you know what sound that letter makes?
  - Let’s see if we can tell how many sounds these words have? I am going to clap each time I make a sound and you tell me how many times I clap.
    - b-e-d; c-a-t; d-o-g; i-n; f-i-sh; (do 3-4 sounds to start)
  - Now let’s see if you can clap when I say the sounds (may have to do it together at first, then fade to child doing it on their own)

Final consonant deletion

- Introduction:
  - Okay, you are getting good at hearing all the sounds in words. Now let's see if you can hear just the last sound in a word. I'm going to say it a little louder than the others. Listen and see if you can hear it.
    - b-e-**d**; c-a-**t**; f-i-**sh**
  - Great, now you can hear the last sound. The word would sound silly if I left the last sound out. Listen, here's "fish": f-i; here's "cat": c-a
  - Now see if you can tell when I leave the sound off or not. Sometimes I will and sometimes I won't. Don't let me trick you!

Final consonant deletion

- Ways to facilitate:
  - Use backwards buildup (tap table while saying each part)
    - Ex. t
    - at
    - cat
  - If client still seems to be leaving out the last sound, have them tap and emphasize that sound more when producing the word.
    - Ex. Ca**t**
  - Can also use touch cues to make sure they "get that last sound"

Final consonant deletion

- Other strategies:
  - If child can identify letters, cut apart letters of a word on an index card and put back together. Ex. cut apart "c," "a," "t"
  - Say first sound while putting down and tapping letter
  - Say first 2 sounds while putting down both letters and tapping
    - /k/ (make sound) and tap 1 card
    - /a/ (make sound) and tap 1 card
    - /ka/ (make sounds) and tap both cards
    - /t/ (make sound) and tap new card
    - /kat/ (say word) and tap all card at once

Final consonant deletion

- For those children at lower cognitive levels:
  - Use backwards buildup but with touch cues for each sound and cue to "do what I do"
  - Overemphasize final sounds with touch cues then have them imitate
  - Have a visual target they can hit for final sound (e.g. blow tissue for final /t/)

Idiosyncratic processes

- Initial consonant deletion
  - Can we use the same concept? Yes
  - Can we make it concrete in the same way? Yes

Rules and cues

- That word has 3 parts, I only heard two
- Let's say all 3 parts
- Book or posters with pages showing rules (pictures with words under for nonreaders)

- Words that follow the 3 part rule
  - Dog 
  - Cat 
  - Mom 

The front part is missing!

Introduction…stopping

- Today we are going to talk about "stop" and "go" sounds. Can you make the /s/ sound? (or listen as I make it). Try to make that sound (or SLP makes it) for as long as you can. I will say "go" for you to start the "go" sound. And you will keep GOing until I say "stop."

Introduction…stopping

- There are some sounds that you can't keep going. Like /t/ or /p/. Try to say those sounds when I say "go" and see if you can keep them going? We can't keep them going…this is why they are called "stop" sounds.
- You are very good at stop sounds. (Have client try some they make). We are going to work on some "go" sounds.

Stopping…ways to facilitate

- First be sure they can discriminate "stop" from "go" sounds
- Have contests to see who can hold the sound the longest

Stopping…ways to facilitate

- Think about
  - Where the client is
  - Where the client needs to be
  - How you can get the client there
- Example: tee/see
  - /t/ (occlusion)
  - /s/ (no occlusion)
  - Contrasts: push tongue tight on spot; hold it; let it go/slide it off; make "go" sound

Introduction…cluster reduction

- Do you know what a vowel is? Let's see if you can name the vowels. What are the rest of the letters called? Yes, they are consonants. When 2 or 3 consonants come together at the beginning or end of a word, they are called a cluster. It's like these popcorn clusters (Smartfood). Just like the popcorn clusters stick together to make the popcorn, the letters stick together to make sounds in words.

Introduction…cluster reduction

Introduction…cluster reduction

- In clusters, each letter makes a sound. There are times when two letters come together to make one sound, like /sh/, or "th". These are <u>not</u> clusters. In clusters, all letters go to work.

Introduction…cluster reduction

- I will show you some words and let's see if you can find the clusters:
  - **bl**ue
  - **sp**ot
  - **spr**ing
  - mi**lk**
  - **gr**ape

Introduction…cluster reduction

- Now I will either say the words with the clusters, or I will leave a sound out. See if you can guess if I say all the sounds or leave one out:
  - **b**ue
  - **sp**ot
  - **pr**ing
  - mi**lk**
  - **g**ape

Introduction…cluster reduction

- Now I will do it again. See if you can guess ***how many sounds*** I leave out:
  - **b**ue
  - **sp**ot
  - **r**ing
  - mi**lk**
  - **g**ape

Introduction…cluster reduction

- Now I will do it again. See if you can guess ***which sounds*** I leave out:
  - **b**ue
  - **sp**ot
  - **r**ing
  - mi**lk**
  - **g**ape

Cluster reduction…ways to facilitate

- Have the client try to leave sounds in or take them out and have you guess what they've done

Cluster reduction…ways to facilitate

- Think about
  - Where the client is
  - Where the client needs to be
  - How you can get the client there

Cluster reduction…ways to facilitate

- Example: /bu/ for "blue"
  - /b/ (where is their tongue?)
  - /l/ (where does their tongue need to be?)
  - Touch cues: make /b/ and "freeze" it; position tongue; finish word
  - Use touch cues and practice with multiple reps to get sequence; you are working on coordinated movements
  - You can also start with "lue" and build in /b/ in same way

Idiosyncratic Process: Segment coalescence

- If "swim" becomes "fim"
- We need to make sure we help them put all the parts together

Weak syllable deletion

- Example error: "tato" for "potato"
- Touch cues: you can add these add needed to facilitate a given sound. Example:
  - For /p/:
    - Hold closed lips gently between your index finger and thumb. As you or child makes the sound, pull your fingers away.

Weak syllable deletion

- Introduction:
  - Do you know what a body part is? How many body parts can you name? They are parts that you put together to make your whole body. Did you know that words have parts too? We can clap out the parts. Listen. "po—ta—to" (claps hands together as says each syllable). You try it. Let's see if we can figure out how many parts your name has. Let's try some others (they may have to just listen to you clap first to name the # of parts…if needed you can have them count the claps)

Weak syllable deletion

- Introduction:
  - When we say words, we need to say it with all of its parts. How many parts are in your name again? I am going to clap out your name with all the parts. Jen—ni—fer. Now I'm going to clap it out again but I will leave one part out. See if you can guess what I forget. Jen—fer. Does that sound silly? [If child can't tell what part you left out, you can just have them tell identify if a given word has all of its parts or is missing one. You can use the child's error words if available]

Weak syllable deletion

- Ways to facilitate:
  - Use backwards buildup (tap table while saying each part)
    - Ex. fer
    - nifer
    - Jennifer
  - If client still seems to be leaving out a syllable, have them tap and emphasize that syllable more when producing the word.
    - Ex. Jennifer

Metathesis

- Example errors: "decks" for "desk"; "efelant" for "elephant"
- Touch cues: This process may be a good time to combine touch cues to facilitate appropriate sound sequence. Ex.:
  - El (touch cue to upper lip for /l/)
  - e (pull finger away as you are moving from /l/ to e
  - Index finger below lower lip where teeth rest

Metathesis

- Introduction:
  - Do you have socks and shoes? Which do you put on first, your socks or your shoes? If you put on your shoes first and then your socks, what would happen? Guide child with cued questions that it would not look "just right". We need to do this in the correct order: socks first then shoes. This will help us get it just right.

Metathesis

- Introduction:
  - When we say our sounds, we also have to put them in the right order. I am going to say your name with the sounds mixed up and you can tell me if it sounds "silly" or "just right." "Nomica" (for "Monica"). Try a few examples like this.

Metathesis

- Ways to facilitate:
  - Use backwards buildup (tap table while saying each part)
    - Ex. fer
    - nifer
    - Jennifer
  - Use touch cues to facilitate correct sound sequence (ex. “ask”)

Epenthesis

- Example error: “buhlue” for “blue”
- Touch cues: you can add these add needed to facilitate deletion of “uh”. Example:
  - For /buhlue/:
    - Hold closed lips gently between your index finger and thumb for /b/. Slide thumb away and move index finger to tap upper lip for transition to /l/.

Epenthesis

- Introduction:
  - Do you know what a body part is? How many body parts can you name? They are parts that you put together to make your whole body. Did you know that words have parts too? We can clap out the parts. Listen. “po—ta—to” (claps hands together as says each syllable). You try it. Let’s see if we can figure out how many parts your name has. Let’s try some others (they may have to just listen to you clap first to name the # of parts…if needed you can have them count the claps)

Epenthesis

- Introduction:
  - Now we’ve figured out the big parts to words. But words have even smaller parts, they are called sounds. You might know sounds, they go with letters. What sound does “b” make? What letter does your name start with? I bet you know what sound that letter makes?
  - Let’s see if we can tell how many sounds these words have? I am going to clap each time I make a sound and you tell me how many times I clap.
    - b-e-d; c-a-t; d-o-g; i-n; f-i-sh; (do 3-4 sounds to start)
  - Now let’s see if you can clap when I say the sounds (may have to do it together at first, then fade to child doing it on their own)

Epenthesis

- Introduction:
  - Okay, you are getting good at hearing all the sounds in words. Now let’s see if you can hear an extra sound I am going to put in that you do not need. I will say it a little louder than the others. Listen for it.
    - **buh**–lack; **suh**–weet
  - Great, now you can hear the extra sound. The word sounds silly that way.
  - Now see if you can tell when I put in the extra sound or not. Sometimes I will and sometimes I won’t. Don’t let me trick you!

Epenthesis

- Ways to facilitate:
  - Use backwards buildup (tap table while saying each part)
    - Ex. ack
    - black
  - If client still seems to be putting in extra sound, make paper cuts of sound and throw them away when made by accident
  - Can also use touch cues to make sure they don’t drop jaw to “uh”

Epenthesis

- Other strategies:
  - If child can identify letters, cut apart letters of a word on an index card and put back together. Ex. cut apart "c," "a," "t"
  - Say first sound while putting down and tapping letter
  - Say first 2 sounds while putting down both letters and tapping
    - /k/ (make sound) and tap 1 card
    - /a/ (make sound) and tap 1 card
    - /ka/ (make sounds) and tap both cards
    - /t/ (make sound) and tap new card
    - /kat/ (say word) and tap all card at once
  - Make an "uh" sound and practice taking it away before saying the word

Epenthesis

- For those children at lower cognitive levels:
  - Use backwards buildup but with touch cues for each sound and cue to "do what I do"
  - Overemphasize words with touch cues then have them imitate
  - Have stuffed animal react when they do/do not put in sound

Fluency treatment

- We will address:
  - Stuttering
  - Cluttering
  - Atypical Disfluency

First, let's clear up a myth

- Some children with ASD are not aware of their disfluencies BUT
- Some are and have negative feelings and attitudes about them
- Some are aware but pretend they are not: defense mechanism
  - See this moreso for cluttering and atypical disfluencies but I have seen it in stuttering as well

Also, remember

- Identifying disfluency in others vs. themselves does involve different levels of perception
- So does identifying disfluency in themselves on recordings (which some are sensitive to, so be careful)
- The ultimate goal is for them to identify moments as they occur…so don't stick too long with identification on recordings

Also, remember

- What we know about repetition in teaching those with ASD

More evidence in not sticking with one thing too long

What we know about treatment of fluency disorders in autism

- Stuttering
  - Brundage et al. (2013)
- Word final disfluencies
  - Recovery in those not on spectrum
    - Mowrer (1987)
    - Luna et al. (2007): changes in EF w/maturation
  - Treatment by identification and correction
    - Tetnowski et al. (2012)
    - Van Borsel et al. (2005)
    - Scaler Scott, Block, Reardon-Reeves, et. al. (2013)

What we know about treatment of fluency disorders in autism

- Stuttering
  - Brundage et al. (2013)
    Runyan and Runyan (1986)

Preparatory Set (also known as slide in)

- This stuttering strategy helps you get control back from the stutter BEFORE you stutter.
- **What you do before you stutter.**
- Say the word by gently stretching the first vowel
- Go GRADUALLY from a 3 to a 4 to a 5 tension level when you stretch out the word. Consider 5 is a level of tension in your articulators that is "just right" to produce sounds clearly. A "1" level of tension is too loose, so that people cannot understand your words. A "10" level of tension is too tight, so that sound will not come out.

Cancellation (also called erase)

- This stuttering strategy helps you get control back from the stutter. It also helps you "cancel" out the reinforcing effects of any "tricks" you might have picked up along the way to avoid your stuttering, like running starts, inserting sounds or words unnecessarily, switching words.
- **What you do:**
- Finish the word you stuttered on
- Stop for one second
- Then say the word again with a stretch

- You can use this strategy to take back control after a moment of stuttering or after use of a trick. Approach the word you avoided with a preparatory set to "cancel" the trick you used.

Slide out

- This stuttering strategy helps you get control back from the stutter WHILE you are stuttering.
- **What you do while you are stuck.**
- Make what is tight loose GRADUALLY
- Go GRADUALLY from a 10 to a 7 to a 5 and stretch out the word.

Going to neutral

- When stuttering happens it is normal to want to try to fight it and push the sound out.
- But when you fight stuttering it fights back harder.
- So if you go to neutral then you stop the fight and you can have control and use a strategy again.
- Neutral means you close your lips and nothing is happening. You are not trying to push a sound out and you are not doing anything with your lips.
- When you are sure your lips are in neutral, then try to stretch the first vowel to get the word out.
- You can use neutral when a stretch doesn't seem to be working. Or if you are stuck on a vowel or /h/ sound.
- Remember if you try neutral and the sound still gets stuck keep going back to neutral until you can get the sound out. It will take a little practice but will get easier and will help you have control and say what you want.
- Sometimes you can use only neutral and then say the word you were stuck on. If you still get stuck add the stretch on the vowel of the difficult word.

Light contact

This stuttering strategy helps you change the tension of a sound to help you get the sound out.

How you do it for practice.

1. When you say a word beginning with a consonant, press your lips or your tongue where they should go in a stuck way.
2. Hold this position for 3 seconds WITH EYE CONTACT.
3. Make your lips or tongue loose (or go to neutral if a vowel or /h/).
4. Then say the word keeping your lips or tongue loose.

- Continuous phonation
- What you do:
- The idea of continuous phonation is to keep your voicing from your vocal cords constantly going while you talk.
- How you do it:
- Try to connect all of your words as you talk. Think about connecting the end of one word to the beginning of the next word.
- After a long phrase or sentence, when you have a natural pause in speech, start your next phrase or sentence with continuous phonation, connecting all of the words.
- Note: When first using this strategy your voice will sound more monotone. This will lessen as you get faster with connecting the words.

- Rules for the "Stretch"
- ***Rules for mom or dad:***
- Remind Aidan to stretch when you hear a stutter or an "um" that you think is a filler word starting Aidan's sentence
- Only remind Aidan when you are home and no friends are over
- If Aidan gives you the "not a good time" signal, then he doesn't need to stretch
- Remind Aidan to stretch no more than 5 times a day (this does not include the 3 times he uses the signal…so you can remind him 8 times total, but he only has to respond 5 times total)

- Rules for the "Stretch"
- ***Rules for Aidan:***
- If mom or dad reminds you to stretch you can stretch the next word you are going to say, you don't have to go back and repeat yourself
- You can give mom or dad the "not a good time" signal up to 3 times a day. The other 5 times mom or dad reminds you to stretch you need to stretch.
- When you give mom or dad the signal, be sure you just raise your hand and don't put it in their face.
- When you give the signal, be polite in your words and tone of voice.

When you manage your speech, you can use strategies in two ways:

Proactive: This means you use your strategy BEFORE you get stuck (stuttering) or a word is unclear (cluttering)

Reactive: This means you use your strategy AFTER you get stuck (stuttering) or a word is unclear (stuttering)

Cluttering treatment

Relevant background information

- 11 years, 4 months
- Diagnosis of Asperger, ADHD with impulsivity
- Receives OT due to handwriting issues
- Received speech therapy prior to evaluation
- Evaluation sought to confirm diagnosis of cluttering
- Orthodontist found narrow palate causing front tongue carriage

Diagnostic Measures

- Connected speech contexts
  - Conversation
  - Monologue
  - Expository discourse
- SSI-4
  - Reading
  - Picture description
  - Story tell from picture
- Goldman-Fristoe Test of Articulation, Second Edition
- Disfluency analysis

Criteria #1: perceived rapid or irregular rate

- In conversational tasks, client did exhibit **irregularity** of speech, characterized by fluctuations between a **fast** and a typical **rate**. Below is an examples of this:
- Examiner: What were the other two books you read?
- Client: /Uh/ (increasing rate) one-ah-em/I hven-finished yet/and one-ah-them (back to typical rate) was called *The Pigman*/

Criteria #1a: excessive NSLDs

- 500-syllable sample of monologue speech.
  - 3/500 or 0.6% stuttering-like disfluencies
    - part-word repetitions of the first sound of words (e.g. "t-telephone").
  - 141/500 or 28% **nonstuttering-like disfluencies**
    - revisions (e.g. "It's, I don't know why it's called…")
    - interjections (e.g. "um")
    - single syllable whole word repetitions (e.g. "a–a") without tension.
  - SSI-4 Score = 2 (no stuttering)

Criteria #1b: over-coarticulation

- Goldman Fristoe Test of Articulation
  - Standard score 95
  - Substitution of voiceless "th" for /s/ and /s/ blends
- Other speech contexts (reading, story telling, conversation, monologue, expository discourse)
  - Forward tongue position during speech
  - Intelligibility broke down significantly during story retell and other open-ended speech tasks
  - Multiple instances of **over-coarticulation**

Criteria #1c: atypical pausing

- During monologue, client did exhibit **atypical pausing**. Below is an example of this. AP represents an atypical pause, meaning a pause in an unexpected place in the sentence.
- Client: /I went (AP)/on the (AP)/sled hilling/but (AP)/it was kinda fun to just watch Little League/

Diagnostic Findings & Recommendations

- Diagnoses
  - Cluttering
  - Speech sound disorder due to tongue thrust
- Recommendations
  - 60-minute weekly sessions to address symptoms of cluttered speech and resting tongue posture

Targets for therapy

Short-term goals/objectives:

- 1) Client will identify when his listener has not understood him in 4/5 opportunities with 90% accuracy.
- 2) Client will identify why his listener has not understood him in 4/5 opportunities with 90% accuracy.
- 3) Client will repair communication breakdowns in 4/5 opportunities with 90% accuracy.

Activities to address targets

1) Client will identify when his listener has not understood him in 4/5 opportunities with 90% accuracy.
   - Increase eye contact
   - Identify when there is a breakdown
     - In reading
     - In structured game
     - In structured conversation
     - In unstructured conversation in the clinic
     - In functional situations outside the clinic

The components

How I say it + What I Say = Effective Message

Activities to address targets

2) Client will identify why his listener has not understood him in 4/5 opportunities with 90% accuracy.
   - Reasons a listener might not be understood
     - How I say it
   - Identify why there is a breakdown (flow charts)
     - In reading
     - In structured game
     - In structured conversation
     - In unstructured conversation in the clinic
     - In functional situations outside the clinic

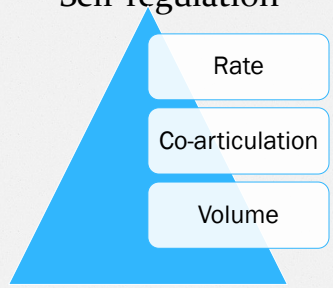
Solution-based flow charts

Was my speech mushy?	Was my speech too fast?	Did my words come out before I was ready?
• YES • Overemphasize sounds and syllables	• YES • Increase pauses	• YES • Increase pauses • Use verbal organizers

Activities to address targets

3) Client will repair communication breakdowns in 4/5 opportunities with 90% accuracy.
- Repair the breakdown (flow charts)
  - In reading
  - In structured game
  - In structured conversation
  - In unstructured conversation in the clinic
  - In functional situations outside the clinic

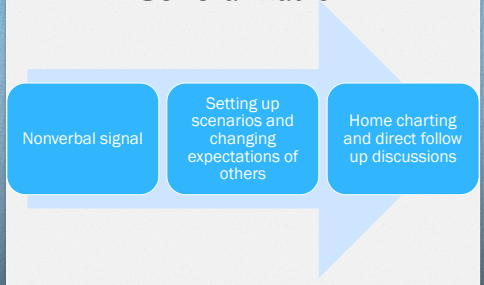
Self-regulation



Activities to address targets

- Drill type exercises
  - Tongue twister words
  - Self regulation of rate
    - In reading
    - In structured conversation

Generalization



Goal #1 & 2: Identify the breakdown

- By end of semester
  - While answering open-ended questions, client independently maintained eye-contact and read facial expressions while speaking with 82% accuracy in the therapy room
  - Homework sheets were sent home to address carryover, client reported that he maintained eye-contact and read facial expressions approximately 4 times a week.

Goal #3: Repair the breakdown

- By end of semester
  - While answering open-ended questions, client independently incorporates pauses into his speech with 67% accuracy in the therapy room.
  - While answering open-ended questions, client independently over emphasizes word endings and syllables in his speech with 70% accuracy in the therapy room.
  - Homework sheets were sent home to address carryover, client reported that he corrected "mushy speech" approximately 3 times a week.

Considerations for this child

- Foundations laid, and continued work is needed
- Direct work on atypical pausing was not needed

Considerations for this child

- Keys to generalization
  - Considerations for ADHD needed to be taken into account to ensure compliance with home activities (charting)
  - Motivation to change was high and progress was noted by client
  - Mom was on board (NONverbal signal)
  - Environment facilitated practice (set up scenarios)

Considerations for cluttering in school-age kids

- Specific assessment is needed
  - Comparison of intelligibility in multiple speech contexts
  - Fluency Analysis
- Concomitant disorders must be taken into consideration in development and implementation of plan
  - How will the concomitant disorder impact generalization AND what can you do about it?
- Team approach is necessary with relevant individuals (e.g. family, teachers, orthodontist, etc.)

Treatment of atypical disfluencies

Our current status

- In depth analysis of areas of memory, syntax, and language organization
- Developing profiles of students based upon testing scores
- Targeting areas in treatment based upon testing scores

Word final disfluencies

Middle School : Case One

Student: "J"

Graduate Student Clinicians:

Fall 2012: Kearston

Spring/Summer 2013: Kenslie

Fall 2013: Becca

"J": Background

- 5th grade (began and continued into 6th grade)
- Diagnosis of Asperger's Disorder and ADHD
- No formal speech intervention in school but social group targeting pragmatics

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"J": Monologue

- **Percentage of words that are**:
  - NSLDs: 9%
    - 4% phrase repetitions, 33% revisions, 56% interjections, 7% single syllable whole word repetitions without tension, and 1% multiple syllable whole word repetitions
  - SLDs: 5%
    - 9% part-word repetitions at the beginning of words, and 91% word-final disfluencies.
    - Awareness and cognitive misperceptions about how WFDs began
    - Fear of teasing regarding WFDs
      - "I-and I was really scared they would make fun of me, but good th-thing that they didn't."

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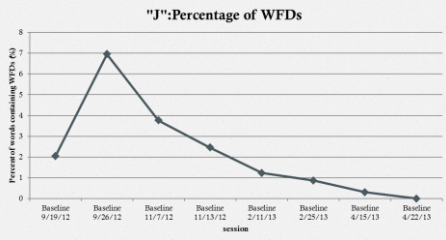
"J": Therapy Approach/Goals

- Working memory targeted
  - WFDs primary area of concern
    - Reason for SLT referral
    - Reason for parent referral
    - Child expressing concern over potential consequences

Treatment Outcomes: "J"



Treatment outcomes: "J"

- WFDs on downward trend
- Parent and child report decrease
- Student moved through conversation interrupt, identifying WFDs, applying strategies to simulated and real WFDs
- Student worked on applying strategies to real moments of disfluency and rating which strategies work best

Barriers Phase One: "J"

- Client had difficulty with "concept" of interruption and disliked the game
- Client had difficulty with issue of attending the sessions and acted out toward parents during sessions regarding therapy (this often combined with dislike toward game)
- Client needed maximum prompts to begin speaking on a topic (baseline/probe), though this was usually done with tangible objects around the room, or speaking of the client's interests
- The client's behavior fluctuated variably making it difficult to plan out whether or not you would be dealing with more behaviors or more conversation to get enough data

Overcoming Barriers: "J"

- The role reversal aspect of the conversation interrupt game made client more comfortable since he initally felt the game was to "make fun" of his disfluencies
- Youtube videos and centering therapy around topics of high interest allowed the client to elicit more conversation.

Multiple fluency concerns

High School

Student: "M"

SLT: Brenda

"M": Background

- 8th grade (began; continued into high school; 10th grade)
- Eligibility areas: AU and SI
- Speech therapy addressing: receptive and expressive language, pragmatic language, monitor fluency differences

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Examples of M's disfluencies

- **N**on-**S**tuttering-**L**ike **D**isfluency:
  - Clayton was burning the-the midnight oil
  - Equations and numbers*/were at (Rev)/trying to invade his house
- **S**tuttering-**L**ike **D**isfluency:
  - Clay-Clayton still ha-had fifteen page s to review
- **W**ord **F**inal **D**isfluency:
  - Hoping and praying-**ing** to hear
- **Atypical Pause**:
  - He could no longer keep his eyes open so he*/hit the sack
- **Overcoarticulation**:
  - That night Clayton dreamed of numbers and equations

Examples of M's disfluencies

- Clayton was burning the-the midnight oil studying for tomorrow's*/algebras final (pause)-nal/at one*/A.M./Clay-Clayton still ha-had fifteen pages to review but*/he could no longer keep his eyes open so he*/hit the sack/that night Clayton dreamed of numbers and equations and numbers*/were at (Rev)/trying to invade his house/and surrounding/Clayton could even hear you-(Rev)/the numbers hit the glass and*/of his bed/when*/you*/those ping ping ping as they tried to get inside/Clayton huddled deeper under the blankets covering his ears/still*/the sound of the numbers hitting the glass keep*/him from sleep-(Rev)/from sleeping soundly/finally it was morning and Clayton shut off the alarm/and stumbled from bed/de-(Rev)/dreading to face the day/he-he glanced out the window and saw the ground blank-blank –key and white/Clayton hurried and turned the radio/hoping and pray**ing-ing** to hear h-(Rev)/hurt-a-c**hai-hai** on the list/

Using the data to determine treatment

"M": Therapy Approach/Goals

- Working memory targeted
  - Associated with cluttering type behaviors?
  - Associated with atypical disfluencies?
- Brenda: "Now he does have a lot of repetitions and the repetitions would probably be more of the, I don't know if they're due to the planning or if they're just – I don't know if they're even stuttering, they're odd things that we see that go on. You know where he'll say the same sounds paused in between words. I think you guys have a better handle on how you put it than I do."
  "But that I think is the biggest problem that the teachers report about him anyway, is him mumbling and running everything together."

M's IEP goals

- When study began, M had no specific fluency goals. He was addressing pragmatic language.
- 2012-13 remainder of 8th grade and most of 9th
  - Middle and high schools use 6 week grading periods. Speech therapy was planned as:
    - Direct service, 5 sessions per grading period 45 minutes per session
    - M continued with new pragmatic language goals and the following fluency goals were begun to address inappropriate pausing, inhalations, word stress, repetition of last syllable in words:

M's IEP goals

- 1. Within 36 instructional weeks, M will discern atypical disfluencies in the clinician's speech during 4 out of 5 times, in two separate measures*
- 2. Within 36 instructional weeks, M will discern atypical disfluencies when listening to audio/video tape of his own speech, with 90% accuracy in two separate measures*
- 3. Within 36 instructional weeks, M will precisely read words, during structured reading activities with 90% accuracy, in three separate measures*
- 4. Within 36 instructional weeks, M will use pauses (i.e., where commas, periods, etc.) during structured reading activities, with 90% accuracy, in three separate measures*

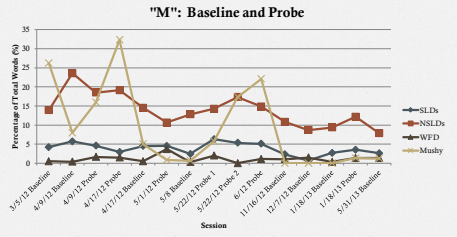
*As measured by: data/anecdotal notes and teacher observation over time

M's IEP goals

- 5. Within 36 instructional weeks, M will precisely say words during structured speaking activities with 90% accuracy in three separate measures*
- 6. Within 36 instructional weeks, M will use natural pausing (i.e., same as used in reading with periods and commas) during structured speaking activities with 90% accuracy, in three separate measures*
- 7. Within 36 instructional weeks, M will complete working memory activities with 75% accuracy in three separate measures*

*As measured by: data/anecdotal notes and teacher observation over time

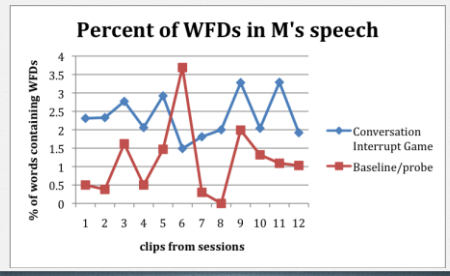
Treatment Outcomes: "M"



Treatment outcomes: "M"

- "Mushy" speech was on a downward trend
- SLT noted that she heard more WFDs and revisions (NSLDs) in her room than "mumbling" but acknowledged may be related to structure of each setting; NSLDs were on a downward trend
- Student had moved to identification stage of WFDs and having a difficult time with this
- Student currently enrolled in last stage of process with new SLT
- Thoughts: Increased WFDs during conversation interrupt game due to increased taxing of working memory?

Comparison of WFDs: "M"



Barriers for M

- Although English is proficient, M has dual language with Dutch being primary
- M has multiple communication issues to be addressed
  - Pragmatic language
  - Articulation/Mushy speech
  - Atypical disfluency
- M has difficulty identifying WFD in himself "in the moment"

Barriers for M's SLT

- Brenda had the most difficulty
  - scheduling M during middle and high school
    - M changing schools
    - prioritizing M's goals/objectives
- Brenda had difficulty finding time
  - to correspond with off site mentor
  - providing recorded data to mentor
- Brenda had difficulty with technology
  - Video/audio recording, computer, Dropbox, phone, flash drive

How to manage multiple fluency concerns

- One on the front burner, rest on back burner, bring more together as ready
- Work on multiple skills at once

Multiple fluency concerns

- Choose either: 1) disorder which seems to have the most negative impact upon effective communication; 2) disorder client is most ready to tackle
- May have to warn clients that changing one may change the other, but reassure that you will put strategies into place to deal with each change as it comes up

Working with families

- Identifying areas of need in all areas of communication
  - In what contexts?
  - Is it the right timing?
  - What are the priorities?
  - What are the long term implications
    - Waiting to work on a given skill

Case example: Peeling Jenna's Onion

- ASD Level 2
  - Parental Concern 1 (18 months)
    - Get her talking!
  - What underlies the not talking?
    - Is it apraxia?
    - Is it oral motor?
  - Mom's choice: Let's do oral motor therapy

Case example: Peeling Jenna's Onion

- ASD Level 2
  - Parental Concern 2 (3 years)
    - I can't understand what she's saying!
  - What underlies the lack of intelligibility?
    - Is it apraxia?
    - Is it oral motor?
    - Is it phonology/articulation?
  - Mom's choice: Let's add PROMPT

Case example: Peeling Jenna's Onion

- ASD Level 2
  - Parental Concern 3 (4.5 years)
    - She's having big stuttering blocks and avoiding communication
  - What underlies the fluency issue?
    - Late talker and genetic predisposition?
    - Syntactic development?
  - Mom's choice: Let's add fluency therapy

Case example: Peeling Jenna's Onion

- ASD Level 2
  - Parental Concern 4 (4.5 years)
    - She's not reading and writing
  - What underlies the literacy issue?
    - Phonological awareness issues?
    - Comprehension issues
  - Mom's choice: Let's add literacy

Case example: Peeling Jenna's Onion

- ASD Level 2
  - Parental Concern 5 (4.5 years)
    - She doesn't have many friends, having trouble socially
  - What underlies the social issue?
    - Pragmatics? Fluency? Intelligibility? Speed of processing?
  - Mom's choice: This is all too much!!!

Putting it all together under one roof

- Shared reading
  - Target: engagement for function of literacy
  - Echo reading
    - Prosody
    - Intelligibility
    - Fluency Strategies

Putting it all together under one roof

- Reading in peer group
  - Target: pragmatic, social communication, reading comprehension
    - Asking and answering questions
    - Making predictions
    - Relating to life
    - Fluency and speech strategies **In context**
    - Writing about it: group reporter, journals

Fluency and intellectual disability

Fluency and Intellectual Disability

- Stuttering and/or cluttering in Down Syndrome
- Fluency Disorders in other "syndromes"

Fluency and Intellectual Disability

- In eval you need to separate
  - What is fluency of speech vs. fluency of language
    - Mazes, language organization issues
  - What are levels of auditory processing?
  - How is working memory? (self-monitoring)
  - What area(s) if addressed will give you the most benefit?
  - What are priorities? Of client? Family?

Case study

- 15 year old male with Down Syndrome
- At specialized school
- Difficulties with others understanding speech
- Not responsive to cues to slow down

Case study

- Evaluation to determine language, processing levels
- Meeting with family to determine priorities and home needs
- Meeting with school team to determine needs and barriers

Case study

- Trial therapy
  - Rainbow speech
  - Talk like a "Smart Board"
- Each skill had to be "boxed out" at first
- Needed different symbols on his desk for 2 different strategies targeting two different speech patterns. Required much repetition until mastered what strategy is best applied in what situation

Where do we begin?

- How will you
  - Decide what to work on when?
  - Decide what to put in the foreground/background?
  - How will you combine treatments?

Potential interactions between fluency disorders

Literacy Intervention

Stages of literacy development in young children

- **Emergent literacy**: birth to 5 years
- **Early literacy**: 5 to 7 years
- **Conventional literacy**: About 3rd and 4th grade. Ends at shift from *learning to read* to *reading to learn*

Then and now

- **Reading readiness**: idea that a child needs a certain level of oral language proficiency before they are "ready" to acquire reading and writing skills
- **Emergent literacy**: literacy emerges without formal instruction

Emergent Literacy Theory (Teale and Sulzby, 1986)

- Literacy development begins at birth, and many literacy milestones are achieved before children enter school.
- Literacy development and language are reciprocally related.
- Children are active participants in the literacy development process…how?

Emergent Literacy Theory (Teale and Sulzby, 1986)

- Children acquire much of their literacy knowledge incidentally.
- Children's literacy development is mediated by adults.
- Children's earliest literacy achievements tend to follow a developmental sequence.

Emergent literacy

- Four general domains of emergent literacy:
- 1) Print knowledge (alphabet knowledge, orientation of book and print)
- 2) Writing (invented spelling, name writing)
- 3) Oral language (grammar, vocabulary, narrative)
- 4) Phonological awareness

Phonological awareness

- An individual's awareness of the sound (phonological) structure of spoken words
- "Children exhibiting phonological awareness consciously recognize (or are at least sensitive to) the phonological units compromising a word"
- Kids with Autism and "The Big Picture"

What parts is the child sensitive to?

- Beginning around 3 to 4 years, the child will start to recognize:
  - Spoken words contain syllables (clapping word parts)
- As they get older, children start to recognize onsets, rimes, and individual phonemes
  - "Apple begins with a"
  - "Boy and bike both start the same"
  - "Man and pan rhyme"

What we typically see

- Strong word decoding (is it true decoding?)
- Poor phonological awareness
  - Not always and relative to comprehension
- Poor comprehension
  - Hyperlexia at times
  - Decreased prosody when reading
    - Whispered, fast and/or soft
- Poor story retell

What lies beneath?

- Visual strengths and strengths in sight words
- Difficulty breaking down bigger chunks of language (echolalia first)
- Decreased self monitoring = decreased self-monitoring of comprehension breakdowns
- (Lanter & Watson, 2008)

What lies beneath?

- Poor schema development = difficulty with structure for retell
- Difficulties with pragmatics = difficulties with
  - Inferencing character feelings
  - Difficulties with inferences in general
  - Difficulties using evidence to support an argument/opinion
  - Difficulties understanding how much background a person may need during retell

Clinical recommendations

For emergent literacy

- Shared reading
  - Promotes joy/love of reading
  - Promotes social engagement
    - What the research says
  - Promotes text knowledge (orientation to print)

For emergent literacy

- Shared reading
  - Can model think alouds for comprehension and using text/pictures to draw meaning
  - Provides exposure to narrative (and sometimes expository) structure
  - What research says about adapted shared reading and minimally verbal kids

Good book choices for children

- Few words
- Repetition (so children can join in)
- Large pictures
- Familiar themes (eating, animals, friends, family, things that happen in everyday life)
- Has action
- Variety of roles and different kinds of people (different cultures, countries, lifestyles)

Good book choices for children

- Familiar themes (eating, animals, friends, family, things that happen in everyday life)
- Has action
- Variety of roles and different kinds of people (different cultures, countries, lifestyles)

Keeping children's interest while reading

- Choose good/fun books
- Read with expression
- Show pictures/visuals as much of reading time as possible
- Have children sit close so you they can participate
- If child not attending use their name in the story

For reading decoding

- Strong decoding skills
  - Is it truly decoding or sight words due to visual strengths?
- Need to decide
  - How important is this skill? What will it impact down the road (high level decoding, encoding)?
  - How practical is it? (case example)

Also examine their response to reading

- Is there something in their history eliciting this response?
  - All behavior is communication
  - Case example

For reading decoding

- Take advantage of
  - Strong visual skills & associative skills
    - Sight words everywhere! (in multiple places to ensure generalization)
  - Sensitivity to parts vs. wholes (but watch blending)

For reading fluency

- Try neurological impress to take advantage of strong imitative skills
- https://www.youtube.com/watch?v=mGPxhCCOw_w
- https://www.youtube.com/watch?v=QTWW3QYd58Q
- Let's try

For reading fluency

- Try Reader's Theatre
  - Promotes confidence through repeated reading
  - Promotes visualization and acting out for story retell, etc.
  - Let's try

For reading comprehension

- Visualizing/verbalizing
- "I think that….because the words say…..and in the picture….."
- Junior Great Books finding evidence to back up your conclusions
  - Let's try

Fuzzy picture diagram

For reading comprehension

- Vocab (Lanter & Watson, 2008)
- Visualizing and Verbalizing
- Story structures for retells
- Lots of visuals
- Questions interspersed rather than all at beginning or end (what research says: O'Connor & Klein, 2004)
- Kids need direct and explicit…how did we figure that out?

Case example #1

- PDD-NOS
- 4 year old
- Difficulties with: processing language, pragmatics, focus
- Sing song prosody
- Likes to decode for sake of decoding but does not do so to obtain meaning

Case example #1

- The profile
  - Strong decoding
  - Poor fluency
  - Poor comprehension
- The plan & parent training
- The outcomes to date

Case example #1

- The long-term plan based upon profile
  - Peeling the onion and reading to learn
  - Parent training

Case example #2

- Autism Level 2
- Basic sentences to get needs met and can imitate but does not use spontaneous consistently
- Very anxious about reading decoding activities
- Could sound out words but doesn't like to and doesn't apply skill to real reading

Case example #2

- The profile
  - Poor decoding
  - Poor fluency
  - Poor comprehension
- The plan & parent training
- The outcomes to date

Case example #2

- The long-term plan based upon profile
  - Parent training

Challenging Cases

- Remember…
  - It's all about the cost-benefit ratio
  - When not ready make sure the door is left open and resources are provided…planting the seeds
  - Reach out to get the help and information you need
  - Take a long hard look at the priorities
  - If not a priority now it MUST be monitored for later

ASDs and Disfluency

- Some further reading to help you decide:

- http://www.mnsu.edu/comdis/isad10/papers/sisskin10.html
- http://www.mnsu.edu/comdis/isad10/papers/scott10.html

- National Stuttering Association brochure:www.stutteringhelp.org
  - Stuttering vs. Cluttering
- Stuttering Foundation of America DVDs
  - Autism and Fluency DVD (Sisskin)
  - Updated Cluttering DVD (Scaler Scott) avail starting at ASHA
    - Cluttering: Another Look
- See reference list

Resources

Managing Cluttering: A comprehensive guidebook of activities

Kathleen Scaler Scott and David Ward

Pro-Ed, Inc.

- National Stuttering Association: www.westutter.org

Resources

- Bennett Lanouette, E, (2011). Intervention strategies for cluttering disorders. In D. Ward & K. Scaler Scott (Eds.). Cluttering: Research, Intervention and Education. East Sussex: Psychology Press.
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Resources

- International Cluttering Association
  http://www.associations.missouristate.edu/ICA/

- First Cluttering Online conference:
  http://www.mnsu.edu/comdis/ica1/icacon1.html

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