

# Assessment of Fluency Disorders and Intervention

Katherine Lamb, Ph.D, CCC/SLP

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# Financial and non-financial disclosure statement

- Relevant Financial Relationship(s): I am a salaried employee of Valdosta State University; University System of Georgia.
- Relevant Nonfinancial Relationship(s): I have no relevant non-financial relationship(s) to disclose related to this presentation at GSHA.

# What is stuttering?

- Disruption in the forward flow of speech
- Complex interactions in the individual's environment
- Individual's abilities
- Elements in stuttering include cognition & linguistic formulation
- Not just speech motor
- Cause is not known
- Do know that it involves linguistic planning
- This planning must be faster than motor execution, so conclude use of higher level functions

# What are our assumptions in assessing an individual with stuttering?

- A child suspected of having a problem with fluency also has other SLVH or B
- Subtle to significant
- We choose the assessments based on our experience, knowledge, beliefs, and assumptions of a disorder
- Have awareness, extensive knowledge and understand current research & data

# Comprehensive assessment

- H & B
- Client, significant others, parents, and/or teachers descriptions
- Developmental information
- Academic areas if appropriate
- Standardized/formal assessments, including:
  - Speech & language
  - Articulation
  - Phonology
  - Vocabulary: receptive and expressive
  - Morphological & syntax
  - MLU
- Any stressors that influence

# Assessment goals

- Differentiate those who stutter and those who do not
- Compile the results for the layperson
- Have rationale for the intervention plan
- Remember those other factors
  - Motor speech & language skills, support from others, emotional influences, motivation, and cognition
- Include the individual's perspective for prioritizing therapy

# Assessment

- Developmental history
- Disfluencies
- Secondary behaviors
- Beliefs and emotions
- Other speech and language skills
- Other individuals and parent's beliefs

# Assessing disfluencies

- Syllable & word count of stuttering frequency
  - Collect language samples from conversation & oral reading
  - Calculate frequency and duration of disfluencies
  - Typical disfluencies: hesitations, filler words, revisions, phrase & word repetitions



# Assessing Disfluencies

- Atypical disfluencies include blocks, prolongations, sound syllable and word repetitions
  - Disruption in forward flow
  - Struggle behavior(s)
  - Reduced or no eye contact
  - Avoidance behaviors
  - Questionnaires for situations and emotional

# Assessing Behaviors

- Stuttering is highly variable across environments
- Important to get a representative picture across all environments
- Word and situation avoidances can be difficult to identify
- This makes identifying avoidances even more difficult
- May have other S&L or cluttering

# Interviewing

- Interviews with the client, parents, other family members can assist & provide valuable insights into understanding
- Ask broad & open-ended questions
- Descriptions, occurrences, times lines, situations, episodes

# Specific areas to address in the assessment

Rate of productions

Continuity of the productions

Rhythm

Effort

Need to also determine the presence, or rule out the presence & severity

Core behaviors

Secondary behaviors

Negative attitudes & feelings

# Assessing core, secondary and attitudes

- Core behaviors
- Continuity, rate, & rhythm of speech
  - Types & frequency, rate & prosodic features
- Secondary behaviors
- Physical efforts of speech
  - Observe & record escape behaviors
  - Questionnaires can help determine avoidance behaviors
- Attitudes, emotions & feelings
- Assessment of the mental effort of speech
  - Questionnaires on self-worth, self-perception, life-goals

# Classification (Guitar 2006)

- Borderline
- Beginning
- Intermediate
- Advanced

# Beginning

- Between 2-8 years
- Muscle tension
- Rapid, irregular repetitions & prolongations
- Pitch rise
- Escape behaviors develop
- Frustration

# Advanced

- Between 13 & adulthood
- Very similar to intermediate
  - may even display fewer core behaviors because they have developed so many avoidance behaviors
- Well-developed self-image as a stutterer



# Differential Diagnosis

- Normal developmental disfluency & early signs of stuttering are often difficult to differentiate
  - diagnosis made tentatively
  - both direct observation & information from the client's speech in different situations & different times

# Different Types: Episodic stress reaction

- Not clinically significant for SLP
  - normal disfluencies but without avoidance

# Different Types: Psychogenic stuttering

- Traumatic experience
  - Grief
  - Breakup of a relationship
  - Psychological reaction to physical trauma
  - Homogeneous
  - Sudden onset & associated with a significant event
  - Not influenced by speaking situations
  - Little awareness or concern

# Developmental stuttering

- Young children
- Most common form of stuttering
- Some scientists believe that DS occurs when children's S&L abilities are unable to meet verbal demands
- DS runs in families
- NIDCD researchers isolated three genes that cause stuttering (NIDCD 2010)

# Different Types: Neurogenic stuttering

- After a CVA, TBI, or other brain injury
- Brain has difficulty coordinating the different components because of signaling problems between the brain & nerves or muscles

# Cluttering

- Fluency disorder characterized by
  - rapid and/or irregular speaking rate
  - excessive disfluencies
  - language or phonological errors & attention deficits
- A fluency disorder, not stuttering & excessive disfluencies:
  - Does not sound fluent
  - Excessive levels of normal disfluencies
  - Little or no apparent physical struggle in speaking
  - Few if any secondary behaviors
- A rapid and/or irregular speaking rate:
  - Talks too fast
  - Sounds jerky.
  - Pauses that are too short, too long, or improperly placed

# How to decipher: Stuttering or not

## Three SLDs

- Part word repetitions
- Single syllable repetitions
- Dysrhythmic phonations

- Adams (1977)

## ODs

- Interjections
- Polysyllabic word repetitions
- Phrase repetitions
- Revisions

## Comparison of Disfluencies

Speech Characteristics More Typical of the Normally Disfluent Child	Speech Characteristics More Typical of the Beginning Stutterer
1. 9 or fewer disfluencies per 100 words (includes all types)	1. at least 10 disfluencies per 100 words (includes all types)
2. whole-word and phrase repetitions, interjections and revisions are the predominant types	2. part-word repetitions, audible and silent prolongations and broken words are the predominant types
3. 2 or fewer unit repetitions per part-word repetition ("b-b-ball")	3. at least 3 unit repetitions per part-word repetition ("b-b-b-ball")
4. schwa vowel ("uh") not present, ("bee-bee-beet" not "buh-buh-beet")	4. schwa vowel ("uh") present, ("buh-buh-beet" not "bee-bee-beet")
5. little if any difficulty starting and/or sustaining voicing or air flow for speech; interruptions are generally brief and effortless	5. frequent difficulty in starting and/or sustaining air flow or voicing for speech; interruptions are generally more forced and of longer duration

# Yairi and Ambrose (1992)

- Include those more typical of stuttered speech, SLD
- part-word repetitions
- single-syllable word repetitions
- dysrhythmic phonation
- These are examples of these disfluencies & how they may be coded
- If there is more than one disfluency on a word (a disfluency cluster), each disfluency should be coded.
- "d-d-d-----dog dog is big," =
- part-word repetition, prolongation, and single-syllable word repetition = ([PW3] [DP] [WW1] DOG IS BIG)



# Examples: Yairi and Ambrose (1992)

Utterance	Disfluency	Coding
1. S-s-s-see the duck	Part-word repetition	[PW3] See the duck.
2. I-I-I want to go there	Single syllable word repetition	[WW2] I want to go there.
3. Whe----re is it?	Disrhythmic phonation	[DP] Where is it?
4. I - um - go there.	Interjection	I [I] (UM) go there.
5. I want the remo-remote.	Multisyllabic word repetition	I want the [M] remote.
6. I go---I go to the store.	Phrase repetition	[P] (I go) I go to the store.
7. I ride my bike---scooter.	Revision	I ride my [R] (bike) scooter.
8. I want to go ---.	Abandoned	I want to go>

# *Stuttering Severity Instrument (SSI-3 & SSI-4)*

- Severity:
  - SSI: based on frequency of disfluencies, duration of blocks, and physical concomitants
    - very mild, mild, moderate, severe, very severe

# Assessment of Fluency in School-Age Children

- Criterion referenced instrument for children 5-18 years
- Multi-sourced and multi-factored format
- Differential evaluation
- Parent/teacher interviews
- SL & Physiological function

# Assessment of Stuttering Behaviors

- Parental Diagnostic Questionnaire
- Classroom Fluency Checklist

# Summary of what to do with a fluency assessment

- Case History
- Careful observation of speech behavior
  - Collect speech samples
  - Measure frequency and type of stuttering
- Collect information about attitudes toward speaking
- Plan treatment
- Prognosis

# Intervention for Stuttering

Katherine Lamb, Ph.D., CCC/SLP

# Aim of Intervention is to

- modify
- eliminate
- compensate

# LTG (Long Term Goals)

- Some LTGs include:
- Reduce the negative feelings
- Reduce the occurrences/frequency
- Reduce abnormalities in S
- Reduce avoidances and escapes
- Reduce negative thoughts and attitudes about S



# Contemporary intervention approaches for Stuttering

# Fluency Shaping

- Stuttering is a learned behavior
- Based on operant conditioning
- Goals in FS
  - To establish fluent speech in controlled environments
  - Shape the "pseudo-fluent" speech into fluent speech and generalize

# Stuttering Modification

- Stuttering is a result of avoidance or a struggle with a disfluency
- Goals in SM
  - Reduce the speech related avoidance behaviors
  - Reduce the fear and negative feeling and attitudes toward speech
  - Modification of the the stuttering form
    - Reduce the rate of S
    - Reduce the struggle behaviors related to S
    - Reduce the tension related to S

Fluency Shaping	
Basis	Learned behavior
Intervention for behavioral	Spontaneous or controlled fluency
Other intervention	No direct affective changes
Procedures	Assist client for stutter free speech with several techniques. Modify the way of speaking
Type of structure	Very structured

<b>Stuttering Modification</b>	
Basis	Results from avoidances and struggle
Intervention for behavioral	Spontaneous or controlled fluency or acceptable stuttering
Other intervention	Identify and understand thoughts, attitudes and feelings about speech
Procedures	Reduce the fears and avoidances and use modification techniques
Type of structure	Less structured

# Pro and con of FS & SM

- FS:
  - Very structured
  - Fast changes
  - Likely to have less naturalness
- SM:
  - Client is actively involved in the intervention
  - Process takes longer
  - More skill is required by the SLP

# FS or SM?

- FS:
  - Less negative associations with speech
  - No avoidance in speech
- SM:
  - Do well in discussions
  - Avoidances in speech
  - May benefit with a positive self-image

# STUTTERING MODIFICATION



# Plan

- Motivation phase
  - SLP establishes their role as a companion and a guide
- Identification phase
  - PWS determines their overt behaviors and covert experiences that they feel are characteristic of their stuttering

# Plan

- Desensitization
  - Decreasing anxieties about speech and other negative emotions related to stuttering
- Modification
  - Unlearning the habitual avoidance responses and struggle responses.
  - Learning new fluent responses

# Plan

- Stabilization
- SLP assists the client to consolidate gains made in order to develop new fluent forms of stuttering automatic
- Significant focus on monitoring of speech

# Motivation

- SLP needs to demonstrate a sincere and genuine interest in the PWS, as a person first
- Therefore the SLP must
  - support
  - have understanding
  - **permissiveness**

# Motivation

- Some techniques
  - SLP should imitate stuttering behaviors presented by the client
  - SLP needs to encourage the client to express feelings about themselves as a PWS
  - SLP should encourage fluent events and less tense events
  - SLP needs to summarize the client's feelings, but also allow for correction

# Motivation

- SLP should provide a brief overview of the intervention plan
- SLP needs to assist the client in understanding that they are an active participant in intervention
- Client needs to take ownership
- SLP needs to motivate often

# Identification

- Technique
- Collect and organize the events of the stuttering behavior.  
Identify:
  1. fluent words
  2. Short easy stutters
  3. Avoidances
  4. Timing and struggle behaviors
- Must be identifies w/o negative emotions
- SLP should be imitating
- No modifications at this stage

# Identification

- Identify fluent words and stutters
  - When trained, attempt other situations
  - Keep track of “fluent” SLDs
  - Use visualization
  - Encourage the client, but stay grounded
- Identify avoidance behaviors
  - You are not changing; identifying
  - Need to include a reading task
  - Identify the what and the how
  - Seek cues that appear to induce avoidances
  - SLPs need to remain understanding and supportive of the client



# Identification

- Identify postponement behaviors
  - Interjections, repetitions (whole word), and other motor activities
  - Discuss openly with the client those triggers or cues

# Identification

- Identify timing behaviors
  - Those that seek to terminate the delay and initiate speech
  - These are the behaviors that produce the highest level of listener penalty
  - Provide opportunities for the client to vent regarding the events
  - Try to imitate and present calm demeanor

# Identification

- Identify verbal cues
  - Be sure the client looks at all behaviors
  - Identify phonemic and positional cues that will signal a stutter
  - Look at other loci factors such as word length, meaningfulness)
  - Test them
    - Look closely at the expectancy and actuality

# Identification

- Verbal cues
  - Ask several questions
    - Accuracy of prediction
    - How far before did (you) fear the sound or word?
    - Does fear vary in the intensity?
    - What is it that you fear will occur?

# Identification

- Identify situational cues
  - Client needs to examine those situations that will cause anxiety
    - This typically will lead to relationships
  - Don't probe too much, but attempt to be specific as possible
  - Assess the reality
  - Share the reality of rejections

# Identification

- Core behaviors
  - Isolate the motor behaviors
  - Use several trials of the same stuttered word and analyze for differences
  - Be a descriptive articulation diagnostician
  - Look for "trigger postures"
  - Assess tremors
  - Try to remove emotions

# Desensitization

- Goals
  - Reduce speech related anxiety and negative emotions
  - Learn new methods of coping with and responding to stuttering
  - Dissociate response from stimuli

# Desensitization

- Introduce stress
  - This is unique to each client
  - Encourage the client to describe the level of stress
- Establish hierarchies of stimulus sets
  - Include and involve the client
  - Need to progress to those situations that have a high chance of evoking emotions



# Desensitization

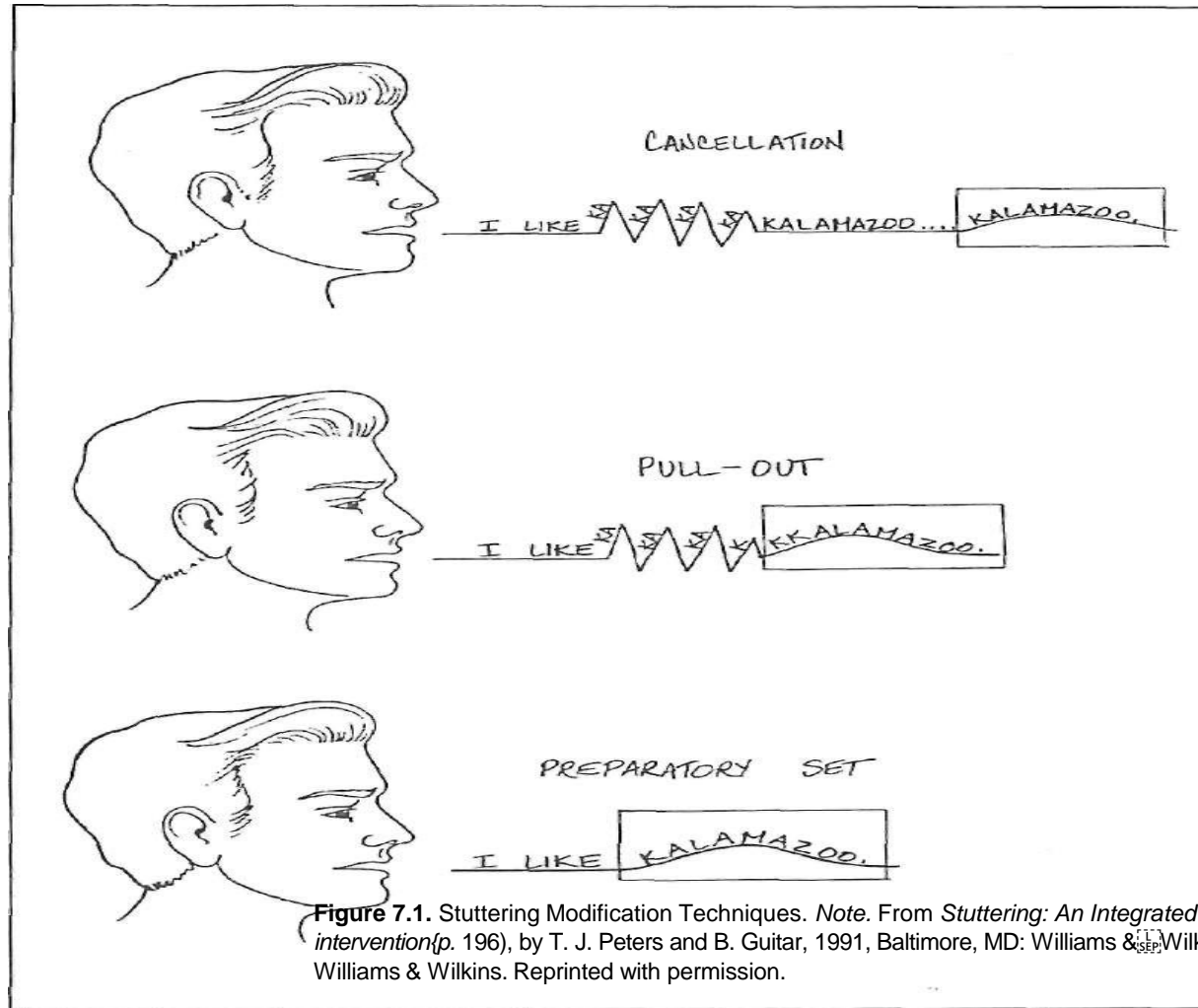
- Desensitization to the listener's reactions
  - Hurry up
  - Interrupting
  - Challenge
  - Misunderstandings
  - Asked for repetition
  - Noises
- Goal is to assist the client to not yield to the listener's pressures

# Desensitization

- pseudostuttering
  - Avoid the feared sounds and words
  - Begin
  - in therapy room
  - with mild repetitions and prolongations
  - Important to do this without emotionality

# Modification

- Goals
  - Client will learn that it is possible to stutter fluently
  - Client will learn they are responsible for the form of stuttering they present
- 2 sub-phases
  - Variation
  - Modification



**Figure 7.1.** Stuttering Modification Techniques. *Note.* From *Stuttering: An Integrated Approach to its Nature and Intervention* (p. 196), by T. J. Peters and B. Guitar, 1991, Baltimore, MD: Williams & Wilkins. Copyright 1991 by Williams & Wilkins. Reprinted with permission.

# Goals of modification

- Must be hierarchical
- Must lead to control of behavior

# Stabilization

- Goals
- Consolidate the gains and make a new form of speech become more automatic
  - Group therapy over individual
  - Self intervention is encouraged

# Stabilization

- Step 1
- Convince the client that they need this stage
- Recommend they keep a journal on their fluency
- Review previous fluency gains

# Stabilization

- Fluency practice
  - Echoing or shadowing fluent speech
    - SLP needs to remain as a consultant
  - Continuous talk
    - Gradually and in a systematic approach, increase speech rate



# Stabilization

- Faking
- Client should fake easy repetitions in specified situations
- Should also fake the original form of stuttering and practice cancellations and pull-outs
- Resistance training
  - Confronting situations that had previously made the stuttering worse
- Terminate intervention

# FLUENCY SHAPING

# Techniques

- Full breaths (diaphragmatic breathing)
  - Goals:
    - Breathing in isolation
    - Sustaining breath for phonation
- Easy onsets: using light adduction before voicing
  - Annie Ate An Apple
  - Focuses on vowels
  - Goals:
    - Isolation to connected speech
      - Frequency varies within connected speech

# Techniques

- Continuous phonation and continuous speech
  - Goals proceed from short utterances (CVCs to sentences)
- Light articulatory contacts
  - Saying consonant sounds with very easy loose articulation.
  - Phonemes to conversation
  - Contrast drills help

# Techniques

- Airflow techniques:
  - Good for silent blocks
  - Produce /h/ sound or glottal fry to get out of block
- Prolongations of vowels/stretched speech
  - Designed to reduce articulatory speed
- Phrasing
  - Grouping together of words
  - Relies upon punctuation

# Techniques

- DAF:
  - Used to decrease speech rate
- Rhythmic speech
  - Metronomes
  - Melodic Intonation Therapy (MIT)

# FS

## Establishment

- To complete this stage, the client must
  - be able to count stuttered words
  - articulate more precisely
  - prolong vowels
  - control speech rate
  - produce SW/M in all 3 words

# FS

## Transfer

- Use the “fluent” speech in a variety of settings with several different people
  - Increase the physical distance from the therapy room
  - Increase audience size
  - Classroom, class work, home
  - Phone
  - Strangers
  - Other
  - All day
- Criterion should be set at 5-10 minute of fluent speech in large group situations



# FS Maintenance

- Finding the magic number of techniques
  - Hopefully zero
- Typically accomplished over 2 years
- Reassessing in all 3 modes
  - Dialogue
  - Monologue
  - Reading

# HELPFUL WEBSITES

- STUTTERING FOUNDATION OF AMERICA (SFA)
  - <http://www.stutteringhelp.org/>
  - <https://secure.stutteringhelp.org/sfairinet.dll/>
- NATIONAL STUTTERING ASSOCIATION (NSA)
  - <http://www.nsastutter.org/index.html>
- STUTTERING HOMEPAGE
  - <http://www.stutteringhomepage.com/>