

# PRAXIS Review Course in Speech-Language Pathology: Fluency, Fluency Disorders, and Stuttering

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The information in this presentation was compiled by Dr. Derek Daniels

# Disclosure

- I receive an honorarium for this presentation.
- I authored a book chapter in a book that I reference later in the presentation.



# Important Topic Areas

- Fluency and Different Types of Fluency Disorders
  - Fluency and Disfluency
  - Childhood-Onset Stuttering (sometimes called Developmental Stuttering or Persistent Developmental Stuttering)
  - Neurogenic (or Acquired) Stuttering
  - Psychogenic Stuttering
  - Cluttering
- Childhood-Onset (Persistent Developmental) Stuttering
  - Etiology, Nature, and Characteristics
  - Theoretical Foundations
  - Principles of Assessment
  - Intervention Approaches

# Fluency and Disfluency

- Fluency – the forward, smooth, effortless flow of speech
- Fluency consists of
  - Rate
  - Continuity
  - Effort
- Disfluency – interruptions in the forward flow of speech. Everyone experiences disfluency.
- Typical disfluencies (usually less than 3 iterations)
  - Phrase repetitions (I want, I want a drink)
  - Phrase revisions (I need, please hand me that book)
  - Interjections (We, um, we went to the store)
  - These disfluencies result from the speaker *trying to formulate* a message (i.e., trying to find the right words). This is different from a speaker who knows exactly what they want to say but has *motoric difficulty* saying it.
  - Sometimes an individual who stutters might repeat phrases or interjections *in anticipation of stuttering* on the next word.

# Childhood-Onset (or Persistent Developmental) Stuttering

- Stuttering is a *neuro-developmental* condition: it arises during childhood because of atypical growth and development of the central nervous system (Smith, 1999; 2017).
  - Genes – fixed at birth
  - Epigenesis (epigenetics) – the timing and intensity of gene expression
  - Experience – developmental, psychosocial, environmental.
- Stuttering has a largely genetic basis. This affects motor and sensory systems of the brain, which are influenced by environmental demands (Ambrose, 2004).
  - Genetics and Epigenetics
  - Neurophysiology (sensory, motor, and sensorimotor integration systems)
  - Psychological
  - Environmental
- GENES → BRAIN → BEHAVIOR

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# Characteristics of People Who Stutter

- 1) Core behaviors / Primary behaviors / Stutter-like disfluencies (SLDs)
  - Part-word (sound/syllable) repetitions: repeating sounds or syllables (3 iterations or more) of words (p-p-pizza, g-g-g-green, ba-ba-ball)
  - Single syllable whole-word repetitions: repeating a single-syllable whole word of usually more than iterations (my-my-my teddy bear)
  - Prolongations: prolonging a sound usually more than 1 second; the sound or airflow continues but movement of the articulators is stopped (ssssnake, pleeeease)
  - Blocks: a temporary stoppage of airflow (laryngeal or articulatory) (I\_\_ike, n\_\_ame, \_\_pizza)

Guitar, B.A. (2019). *Stuttering: An integrated approach to its nature and treatment* (5th Ed). Philadelphia: Wolters Kluwer.

# Characteristics of People Who Stutter

- 2) Coping strategies / Secondary behaviors / Accessory behaviors: learned behaviors that are triggered by anticipating stuttering, or by the experience of stuttering.
- As stuttering continues to develop, children are likely to develop reactions to it. Some of these include:
  - Muscle tension (face, jaw, lips)
  - Rising intonation
  - Struggle
  - Physical concomitants (heads nods, hand movements)
  - Circumlocutions
  - Tongue clicking

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# Categories of Secondary Behaviors

- **Escape** – behaviors that occur when the speaker is in the moment of stuttering and tries to terminate, or escape, the stutter. Example: a person nods their heads several times to try and stop the stutter and continue the word.
- **Avoidance** – behaviors that occur when the speaker anticipates a stutter and tries to avoid it from happening. Example: A speaker might say a different word for fear of stuttering on the intended word.



# Characteristics of People Stutter

- 3) Feelings and Attitudes

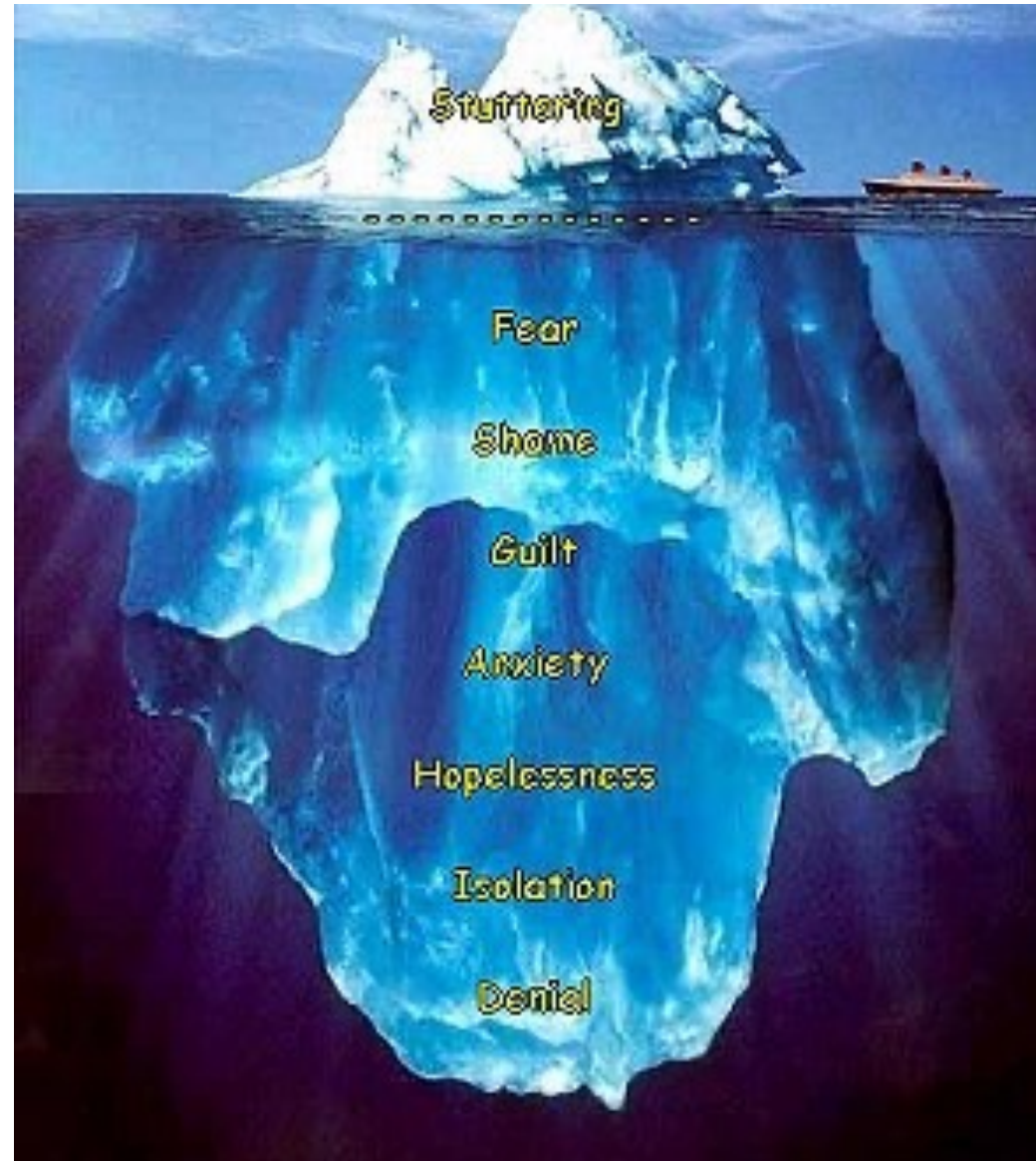
- Different emotions, beliefs, and forms of self-talk that are created in the speaker from the experience of stuttering.
- These vary among people who stutter.
- If these are negative or self-defeating, then it is important that you address these in therapy.

# The ABCs of Stuttering

- Affective Components – how do I **feel** about myself and my speech
- Behavioral Components – what linguistic and/or physiological **speech patterns** do I exhibit
- Cognitive Components – what **thoughts** have I developed about my stuttering.

# Sheehan's Iceberg Illustration

- Stuttering has both overt and covert components.
- The overt and covert components of stuttering.
- Overt – everything that's observable; what you can see and hear.
- Covert – not observable; what you cannot see and hear.



# Characteristics of Stuttering

- Prevalence (how many people currently have this disorder): Approximately 1% of the general population (approximately 3 million people in the US)
- Incidence (how many people have stuttered at some point in life): Approximately 5% of the general population
- Onset: Stuttering usually emerges between the ages of 2 and 6, a time when language is rapidly developing. The onset can be gradual or sudden.
- Genetics: Stuttering is more frequent in males than females. In young children, the ratio is approximately 2:1. In older children and adults, the ratio is approximately 4:1. Stuttering often runs in families.

# Characteristics of Stuttering

- As many as 80% of children who begin to stutter will recover without treatment
- Intelligence: People who stutter do not differ in levels of intelligence from people who do not stutter.
- Concomitant disorders: Stuttering can co-occur with other communication disorders, such as phonology and language.
- Brain differences: Research suggests that people who stutter exhibit different brain activity patterns during moments of stuttering (often showing more activity in the right hemisphere during stuttered speech).

# Characteristics of Stuttering

- Adaptation effect – the idea that a person’s fluency will increase up repeated readings of the same passage.
- Consistency effect – the idea that if a person reads the same passage, they are likely to stutter on the same words as before.
- Expectancy (anticipation) effect – the idea that a person can predict which words they will stutter on.

# Characteristics of Stuttering

- Spencer Brown (1945)
- Stuttering often occurs at the beginning of words and utterances
- Stuttering often occurs on longer and more grammatically complex utterances
- Stuttering often occurs more on stressed syllables
- Stuttering severity may vary with different types of social situations and communicative intents (or speech acts)

# Delayed Auditory Feedback (DAF) and Frequency Altered Feedback (FAF)

- Stuttering diminishes (or disappears) under certain conditions. These include:
  - Singing
  - Speaking in unison
  - Choral reading
  - Talking with a metronome
  - Talking in the presence of noise
  - Talking under delayed auditory feedback (DAF)
  - Talking to pets or babies
  - Adaptation effect
- Stuttering increases under various types of pressures and linguistic demands.
- Delayed auditory feedback (DAF) – delaying the timing and/or duration of an auditory signal (usually via headphones or an electronic device).
- Frequency altered feedback (FAF) – changing the frequency of an auditory stimulus (usually via headphones or an electronic device).



# Cluttering

- The person is speaking at a rate that is too fast *for their system to handle*. It's not just speaking too fast.
- When a person speaks too fast (than their system can handle), there's a breakdown in the clarity of sound production – this is cluttering.
- Perceived rapid and irregular rate
- Sudden bursts of rapid speech that is difficult to understand and somewhat disfluent
- May have an excess of normal disfluencies, collapsing syllables, deleting syllables, and atypical pauses
- People who clutter do not clutter all the time. These speech behaviors only need to happen enough to disrupt effective communication.

# Cluttering

- Be sure to rule out:
  - Covert stuttering
  - Stuttering-like disfluencies
  - Language-based disfluencies
- When they speak at a rate that their system can handle, their speech sounds more typical.
- With effort and attention, the speaker may be able to speak without cluttering
  - Example: Does adding pauses help?

# Neurogenic (Acquired) Stuttering

- Caused or exacerbated by neurological disease or damage, such as stroke, head trauma, brain injury, tumor, or neurodegenerative diseases.
- Typical onset is after childhood

# Characteristics of Neurogenic Stuttering

- Stuttering tends to occur more on function words as well as content words.
- Stuttering is not restricted to initial syllables of words.
- Relatively few secondary behaviors
- Little to no adaptation effect
- Little to no reduction of stuttering under fluency-inducing conditions
- Relatively little fear and anxiety



THEORETICAL FOUNDATIONS OF CHILDHOOD-ONSET  
(PERSISTENT DEVELOPMENTAL) STUTTERING

# Past Theories

- Physiological
  - Stuttering is caused by a physical (or structural) defect.
- Psychological
  - Stuttering is caused by an underlying weakness in the psyche.

# Past Theories

- Cerebral dominance theory: Introduced by Samuel Orton and Lee Travis
  - An organic theory of stuttering
  - Stuttering occurs as a result of confused hemispheric control
  - It is caused by switching handedness (which is not true!)
  - It is a neurological condition.
- Diagnosogenic theory: Introduced by Wendell Johnson
  - Stuttering is caused when people react to the label of stuttering.
  - A learning theory of stuttering
  - Stuttering is caused when parents mistakenly label a child's *normal disfluencies*.
  - Stuttering emerges when the child tries to avoid normal disfluencies
  - Stuttering is learned.
  - None of these ideas are true!

# Past Theories

- **Approach-Avoidance:** Introduced by Wendell Johnson and Joseph Sheehan
  - People who stutter are caught between drives to speak and drives to avoid speaking.
- **Anticipatory Struggle:** Introduced by Oliver Bloodstein
  - People stutter because they develop a belief that speech is difficult.
  - When people who stutter anticipate difficult words, they predispose themselves to stutter by putting their speech musculature in a tense state before uttering the feared word. (Think about this in relation to how you approach a feared situation).
- **Auditory-Perceptual**
  - Stuttering is caused by deficits in the auditory feedback system



# Past Theories

- Genetics
  - Twin studies
    - Concordance / discordance
  - Adoption studies
  - Family studies

# What Do We Currently Know?

- *Stuttering is multifactorial.* Advocates of multifactorial frameworks contend that stuttering is too complex of a problem to be viewed from singular etiology.

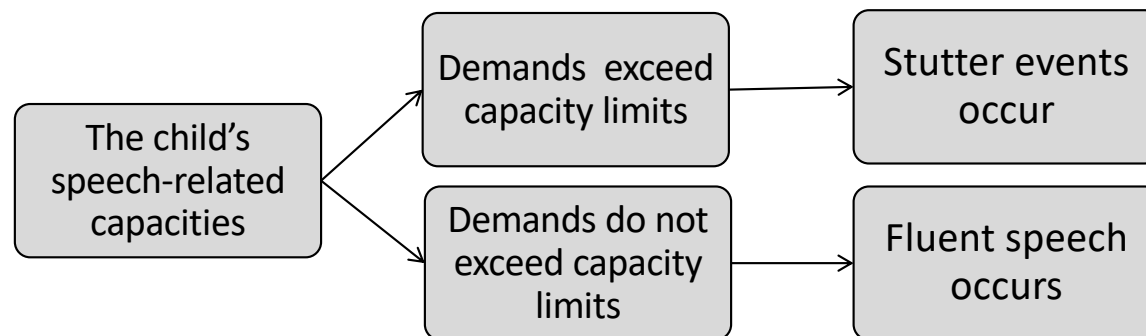
# Multifactorial Perspectives

- Demands and Capacities (Starkweather)
  - Speech performance demands exceed a person's capacity for fluency.
    - Motor
    - Social
    - Cognitive
    - Emotional
    - Linguistic

# Demands-Capacities Model

(Starkweather & Gottwald, 1990)

Stutter events arise when various *demands* exceed the speaker's *capacities* for fluent speech. For example, a child attempts speech performance beyond their abilities.



# Returning To Our Current Thinking

- Stuttering is a *neuro-developmental* condition: it arises during childhood because of atypical growth and development of the central nervous system (Smith, 1999; 2017).
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# PRINCIPLES OF ASSESSMENT

# Risk Factors Associated With Stuttering

- These are important for evaluating young children who stutter
  - Family history of stuttering (genetic component)
  - Longer time since onset (>6 months)
  - High degree of reactivity (temperament)
  - Concomitant speech and language disorders
  - Gender
  - Signs of tension and struggle while speaking
  - Stuttering behaviors progressively increase
  - Secondary behaviors are present
  - The child is aware and concerned
  - Parent concern

# Assessment of Young Children (below the age of 6)

- Thorough case-history
  - Probe for risk factors
- Parent input
- Standardized measures
  - Speech and language tests
    - Test of Childhood Stuttering (ages 4 through 12)
    - Stuttering Severity Instrument (can be used for all ages)
    - A language measure (such as the Preschool CELF)
    - A measure of articulation and phonology (such as the Goldman-Fristoe)
- Non-standardized measures
  - Narrative samples across contexts
    - Story retell
    - Story generation
  - Observations of parent and child



# Assessment of School-Age Children and Teens

- Thorough case-history
- Parent and teacher input
- Client interview (\*\*how is stuttering an adverse impact for the client\*\*)
- Standardized measures
  - Speech and language tests
    - Test of Childhood Stuttering (ages 4 through 12)
    - Stuttering Severity Instrument (can be used for all ages)
    - A speech and language screen (evaluate if necessary)
  - Impact
    - Overall Assessment of the Speaker's Experience of Stuttering (OASES): School-Age Version (7-12) and Teens Version (ages 13-17)
    - Communication Attitudes Test
    - Behavior Assessment Battery
- Non-standardized measures
  - Narrative samples across contexts
  - Story retell
  - Story generation

# Assessment of Adults

- Thorough case-history
- Client interview (\*\*how is stuttering an adverse impact for the client\*\*)
- Standardized measures
  - Speech and language tests
    - Stuttering Severity Instrument (can be used for all ages)
  - Impact
    - Overall Assessment of the Speaker's Experience of Stuttering (OASES): Adult Version
    - Wright and Ayre Stuttering Self-Rating Profile (WASSP)
    - Modified Erickson Scale
    - Perceptions of Stuttering Inventory

# Important Diagnostic Questions

- Is this childhood-onset stuttering (sometimes referred to as developmental stuttering), normal disfluency, or another type of fluency disorder?
  - What are the client's linguistic and motoric patterns of behavior?
  - What factors influence these patterns of behavior?
- What is the history?
- What choices is the client making because they stutter?
  - How does the client think and feel about communication?
  - What are the client's present coping strategies?
  - Does stuttering negatively impact quality of life?

# Diagnostic Criteria

- Behavioral: Type, Frequency, Duration, Severity.
  - 3 or more core behaviors per 100 words
  - 3 or more iterations of a disfluency (e.g., p-p-p-pizza)
  - Duration of longer than 1 second
  - Speech rate
  - Location of stuttered disfluencies
- Secondary behaviors and coping strategies
- Associated speech and language problems
- Reactions to stuttering
- **\*\*Adverse impact\*\***

# Diagnostic Considerations

- Remember: Stuttering is more than stuttering
- What are the contributing etiological factors?
  - Stuttering is “built-in”
- What are the person’s observable behaviors
  - You may not always see them
- Remember that stuttering has overt and covert components.
- What are the person’s ABC’s? How do other people react to the person’s stuttering?
- What is the overall impact?
- Preschool children: are they at risk for continuing to stutter?
- Older children and adults: How is stuttering affecting them at the present time?

# Does the child need therapy?

- Consider “*watchful* waiting” if:
  - The child’s behavioral severity of stuttering is mild
  - Parent concern is not great
  - Onset within a few months
  - Child is younger than 3.5 years
  - Not many risk factors present (such as family history of stuttering, concomitant disorders, secondary behaviors, reactions to stuttering, etc)

# Does the child need therapy?

- Consider therapy if:
  - The child is older than 3.5 years
  - The child has been stuttering for more than 6 months
  - The child is concerned about stuttering
  - Parents are concerned
  - High risk factors involved (especially family history)
- For children who don't have a documented family history of stuttering, an evaluation of their phonological skills can be important for deciding whether or not child needs therapy.
  - BBTOP
  - Nonword repetition tasks



# PRINCIPLES OF INTERVENTION



## Young Children (below the age of 6)

- Therapy can be indirect or direct
- Indirect therapy - for children who exhibit mild behavioral severity, no tension while speaking, no secondary behaviors, and minimal to no negative reactions to stuttering.
- Direct therapy – for children who exhibit moderate or severe behavioral severity, tension while speaking, secondary behaviors, and adverse reactions to stuttering.

# Indirect (or Less Direct) Therapy

- Strategies
  - Parent counseling
  - Parent training
  - Modifying the home environment
- When observing the family interaction patterns, look for:
  - Fast rates of speech
  - Lack of pauses
  - Interruptions
  - Frequent open-ended questions
  - Frequent criticisms or corrections
  - Inconsistent listening

# Direct Therapy

- Principles
  - Explain the concept
  - Give them a model
  - Have them say it after you
- Strategies
  - Slightly reduced rate (pausing)
  - Easy talking
  - Easy starts
- Create a communicative environment that supports the child's capacities for fluency.
  - Easy, relaxed speech (Mr. Rogers)
  - Rephrasing
  - Turn-taking
  - Resisting time pressure
  - Listening/Attending

# Therapeutic Programs for Young Children (Ages 6 and below)

- Remember that therapy is always individualized!
- Palin Parent-Child Interaction (PCI)
- RESTART (Demands and Capacities)
- Lidcombe
- Comprehensive Treatment Program (Yaruss)

# Intervention for Older Children (ages 7 and older) and Adults

- Steps in the treatment process (based on Van Riper's model):
  - Education – learning about speech and stuttering
  - Identification – identifying core behaviors, secondary behaviors, and associated thoughts and feelings
  - Desensitization - feeling more comfortable in difficult speaking situations
  - Modification – making changes to speech behaviors
  - Stabilization – helping changes in therapy to become more automatic
  - Generalization – helping the changes to generalize from one setting to another.

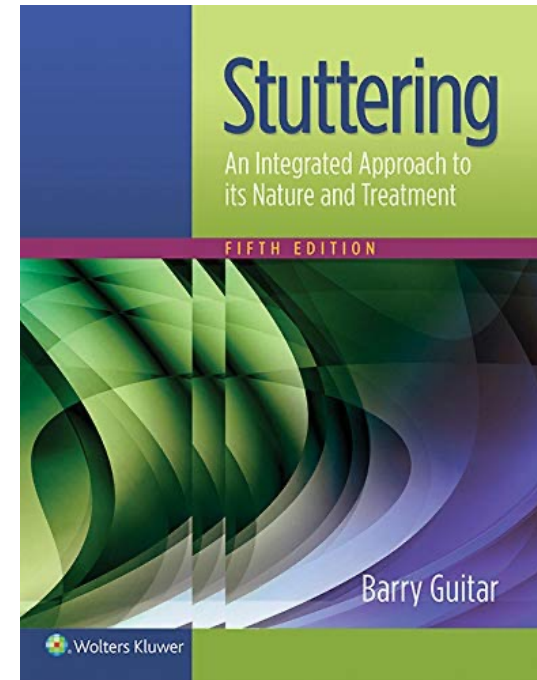
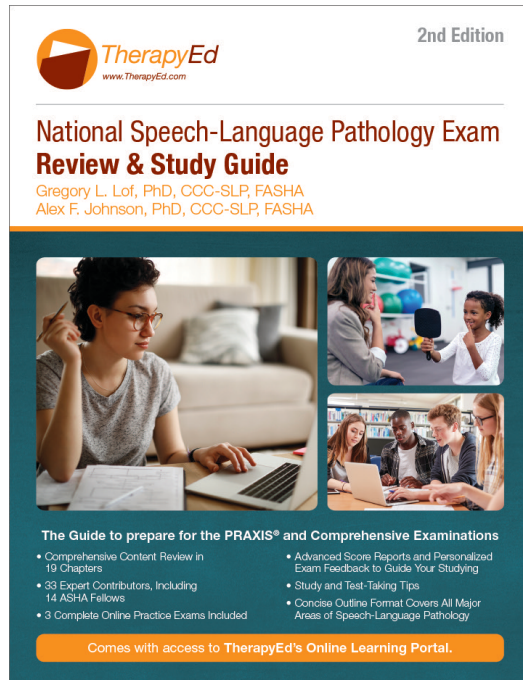
# Fluency Shaping

- Easier initiation and flow of speech
- Designed to increase fluency (spontaneous or controlled fluency)
- Very structured
- Easy onsets, light contacts, and reduced rate
  - Easy onsets - Prolong the first sound of words at the beginning of a clause or sentence.
  - Light contacts - Designed to prevent less physical tension on specific sounds. The articulators are brought together with minimal contact.
  - Reduced Rate - Designed to reduce rate to a slightly slower level. Pauses should be inserted in natural places.

# Stuttering Modification

- Tension reduction
- Also focused on reducing avoidance behaviors, fear, and anxiety around talking.
- Easy stuttering and voluntary stuttering
- Cancellations, Pull-outs, Preparatory sets
  - Cancellations – Modifying a moment of stuttering after it occurs. Following a moment of stuttering, pause to reflect on where tension occurs, and then repeat the word again with an easy start (slide) or an easy stutter (bounce).
  - Pull-outs - Modifying a moment of stuttering as it is occurring. During a moment of stuttering, reflect on where tension is occurring, and then finish the word in an easier way (i.e., with a bounce or slide).
  - Preparatory sets - Modifying a moment of stuttering before it occurs. Requires an awareness of when you might stutter. Before you say the word, ease into the first sound.

# Helpful Resources





My contact  
information

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