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Stuttering Assessment and Treatment: A Holistic Approach
Guest Editor: Craig Coleman, MA, CCC-SLP, BCS-F, ASHA-Fellow

Overview and Assessment of Stuttering: What Every SLP Should Know
Craig Coleman, MA, CCC-SLP, BCS-F, ASHA Fellow

Moderated by:
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Stuttering Assessment and Treatment: A Holistic Approach

Guest Editor: Craig Coleman, MA, CCC-SLP, BCS-F, ASHA-Fellow

Overview and Assessment of Stuttering: What Every SLP Should Know

Craig Coleman, M.A., CCC-SLP, BCS-F, ASHA-F
Presenter Disclosure: Financial: Craig Coleman was paid an honorarium for this presentation. He is co-owner of the Stuttering Academy, and co-authored and receives royalties for the OASES. Non-financial: Craig is a board-certified specialist in Stuttering, and serves on the ASHA Board of Directors.

Content Disclosure: This learning event does not focus exclusively on any specific product or service.

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Learning Outcomes

After this course, participants will be able to:

- List risk factors associated with chronic stuttering for young children.
- Describe current research trends in the epidemiology of stuttering.
- Describe foundational principles of stuttering assessment and treatment.
- Explain the components of the ICF model.
- List 2-3 examples of specific assessment goals related to the ICF model.
- Develop treatment goals for people who stutter, based on assessment data.
Defining Stuttering

- The public and professionals have difficulty providing a comprehensive definition of “stuttering”
- Prior to a face-to-face stuttering training, only 1/24 certified SLPs accurately defined the comprehensive nature of stuttering (Coleman & Weidner, 2014)
- Even though the term emerges in later school age, awareness of stuttering emerges as early as preschool

Defining Stuttering

- Why does it matter?
  - For professionals, a one-dimensional definition of stuttering will result in one-dimensional therapy
  - For people who stutter, defining the various aspects of stuttering can lead to improved understanding and validation of their stuttering experiences
  - For the public, defining stuttering is the first step in improving attitudes towards it
Why is Stuttering Difficult to Define?

- Largely because how it has been viewed throughout history:
  - A structural problem with the tongue (from 322 B.C. through late 1800s)
  - A psychological issue/neurosis (early 1900s)
  - Cerebral dominance/handedness (mid 1900s)
  - A conditioned or learned response (mid 1900s which perpetuated into the 1980s-90s)
  - A physiological problem with coordination and timing (late 1970s – present)

Stuttering is...

A disruption in the flow of speaking characterized by repetitions (sounds, syllables, words, phrases), prolongations, blocks, interjections, and/or revisions. These disfluencies may be accompanied by physical tension, negative reactions, secondary behaviors, and avoidance of sounds, words, or speaking situations.

Stuttering vs. Disfluency

- **Stuttering**
  - Not typical
  - Characterized by repetitions, blocks, and prolongations
  - Increased physical effort
  - May have negative reactions

- **Disfluency**
  - Every speaker is disfluent (~3%)
  - Revisions, interjections, easy phrase repetitions

Stuttering

- **Repetitions**
  - Repeat a sound or word over and over again

- **Prolongations**
  - Make a sound longer than it should be

- **Blocks**
  - Get completely stuck and no sound comes out
Disfluency

- Phrase Repetitions
- Interjections
- Revisions

Classifications of Fluency Disorders

<table>
<thead>
<tr>
<th>Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Onset</td>
<td>Stuttering that began in childhood during one's otherwise normal development</td>
</tr>
<tr>
<td></td>
<td>Most of our stuttering cases fall here</td>
</tr>
<tr>
<td>Neurogenic</td>
<td>Stuttering that results from damage to the nervous system</td>
</tr>
<tr>
<td></td>
<td>Stuttering secondary to stroke or TBI would fall here</td>
</tr>
<tr>
<td>Psychogenic</td>
<td>Stuttering that results from an underlying psychological disorder</td>
</tr>
<tr>
<td></td>
<td>Conversion reaction disorder would fall here</td>
</tr>
<tr>
<td>Cluttering</td>
<td>A fluency disorder in which speech may be perceived as too fast and/or too irregular</td>
</tr>
</tbody>
</table>
Basic Facts

- In general, misconceptions about stuttering exist in all researched cultures, religions, languages, occupations, generations, SES levels, etc. (see St. Louis, 2015)
- Negative public attitudes toward stuttering and people who stutter can have serious social, emotional, relational, and vocational consequences for people who stutter
- For people who stutter, misconceptions about stuttering (held by the others or self) can also lead to self-stigma

Why does it matter?

- Helping people who stutter and the public understand basic facts about stuttering can help mitigate negative attitudes and social penalties
- Advocacy depends on a solid understanding about the disorder
Basic Facts

- Approximately 1% of the adult population stutters (prevalence)
  - Over 3 million in US
  - 60 million worldwide
- Approximately 5% of people stuttered at some point in their lives (incidence)
- Stuttering exists in all cultures and races

Basic Facts

- Peak onset between 2-4 years of age
  - Average age of onset 33 months (2yrs 9 months)
- For adults, the ratio is approximately 3-4 males:1 female
  - At time of onset, the ratio is about 2 males:1 female
Basic Facts

- Stuttering is a disorder of motor coordination and can impact the various systems of speech (i.e., respiration, phonation, articulation)
- In the general population, stuttering is not linked to intelligence
- Stuttering usually decreases or does not occur in the following situations:
  - Choral reading
  - Whispering
  - Singing

Risk Factors

- For young children, risk factors inform the prognosis for recovery or persistence of stuttering
- Why does it matter?
  - Understanding risk factors helps the client, parents, and SLP to get their expectations in line with reality
Risk Factors

- Family history of stuttering
- Male gender
- Stable or increasing disfluencies
- Greater than 6 months since onset
- Physical tension/secondary behaviors including subtle ones (pitch/loudness increases)
- Frustration/awareness
- Prolongations/blocks
- Later onset stuttering
- Other speech/language concerns
- Parental concern

Causes

- The current research tells us that stuttering is likely multifactorial with strong links to genetics and neurophysiology
- There is a definite shift in recognizing stuttering as being **physiological** in nature, *not psychological*
Much of the current work in stuttering and genetics has been carried out by Dennis Drayna and colleagues at the NIH. See Frigerio-Domingues & Drayna (2017) for a review.

- Stuttering has been linked to genetic mutations in 4 genes: GNPTAB, GNPTAG, & NAGPA, AP-4
- Mutations in these 4 genes are suggested to explain the cause of stuttering for up to 20% of persistent stuttering cases
- A mutated GNPTAB gene has also been reported to lead to stuttering in mice!
Genetics

- Twin studies and adoption studies provide further evidence that stuttering has strong genetic links.
- Concordance of stuttering is much higher in identical twins (~52-57%) than in fraternal twins (~12-31%).
- Adopted children with an adoptive parent who stutters are not at higher risk for stuttering; adopted children with a biological parent who stutters are more likely to stutter than those with a fluent biological parent.

Neurophysiology

- Soo-Eun Chang and colleagues at University of Michigan have contributed a great deal to what we currently know in this area.
- Fluent speech depends on well-established connections among brain regions that support auditory processing, motor planning, and motor execution.
- These areas are connected through a white matter tract called the superior longitudinal fasciculus.
  - People who stutter have been shown to have disruptions to this white matter tract and functional differences with other deep brain structures (e.g. basal ganglia, thalamus, cerebellum).
Multi-factorial

- In young children, stuttering may increase when the demand for speech chronically exceeds the child’s capacity to produce speech
- Fluency occurs when capacities exceed demands
- Other factors such as child’s temperament, environment, and predisposition also play a role

What is the ICF?

- The ICF is a model developed by the World Health Organization (WHO) to help guide clinical decisions based on a number of factors, outside of just the surface-level characteristics
- [https://www.asha.org/slp/icf/](https://www.asha.org/slp/icf/)
- Four components:
  - Body Function and Structure
  - Activity and Participation
  - Environmental Factors
  - Personal Factors
Body Function and Structure

- Describes anatomy and physiology/psychology
  - Genetics, neurophysiology, surface-level behavior, tension, etc.

Activity and Participation

- Describes the person's functional status including communication, interactions with others, etc.
  - Avoidance
  - Thought-process
Environmental Factors

- Factors that are not within the person's control, such as family, work setting, laws, cultural beliefs, community, etc.

Personal Factors

- Can include race, gender, age, educational level, temperament, etc.
Assessment

- **Purpose:**
  - For **preschool children** – to determine whether or not the child needs treatment
  - For **school-aged children and adults** – to determine whether or not the child is ready for therapy and why they are coming for an evaluation now

Preparing for the Assessment

- For all ages, you’ll likely need:
  - A **disfluency count sheet** to count disfluent and fluent words or syllables
    - Access here: [www.stutteringacademy.com](http://www.stutteringacademy.com)
    - **Stuttering Severity Instrument-4** to perform a standardized measure of stuttering
  - **Recorded speech samples** from home or another setting
Preparing for the Assessment

You may also need:

- **Overall Assessment of the Speaker's Experience of Stuttering (OASES).**
  - The OASES assesses the life impact of stuttering relating to a person's: overall knowledge of stuttering, reactions to stuttering, functional communication, and quality of life
  - Versions include:
    - OASES-A (18+ yrs)
    - OASES-T (13-17 yrs)
    - OASES-S (7-12 yrs)

For older children, you may also need:

- **Community Centered Stuttering Assessment (CCSA)**
  - The CCSAs assesses the impact of stuttering on a child's life as reported by familiar listeners
  - Versions include:
    - Child
    - Parent
    - Teachers
    - SLPs
  - Access here: [www.stutteringacademy.com](http://www.stutteringacademy.com)
Conducting the Assessment

- Parent Interview (face-to-face, phone, or written responses)
- Child interview (especially for older children)
- Assessing the observable stuttering in various speaking tasks
- Assessing the attitudes and emotions

Parent Interview

- Is there a family history of stuttering?
- Does the child have any other speech/language issues?
- Are there any other medical concerns?
- How does the child interact with others? Are his interactions impacted on by his stuttering?
- What is the impact on social and educational activities?
- Does stuttering prevent the child from participating?
- Who else is involved in the child’s care on a regular basis?
Parent Interview

- How long has child been stuttering?
- Has stuttering changed over time?
- What types of stuttering is the child exhibiting?
- How much is the child stuttering? Is stuttering increasing or decreasing?
- Does the child have any tension when stuttering?
- Does the child seem concerned?
- How are others reacting?

Child Interview (Older Children)

- Child needs to be interviewed to determine:
  - Child’s readiness for treatment
  - Any differences in parent/child beliefs and reports
  - Child's previous experiences in treatment
  - Child’s emotional response to disfluency
  - Child’s ability to use fluency strategies
Assessing the observable stuttering

- Conversation
- Story Retell
- Reading
- Picture Description
- Interaction with Parent
- Interaction with Siblings
- Interaction with Peers

Want to obtain % stuttered words in a speech sample (~200-300 words) gives us a good representation

Divide total number of stuttered words by total number of words
Assessing the observable stuttering

- In addition to the amount of stuttering, determine:
  - **Types** of stuttering
  - Average **length** of stuttering events (for blocks, prolongations, and repetitions)
  - Average number of **iterations** (for repetitions)
  - Associated **secondary behaviors** during moments of stuttering (eye blinking, head nods, etc.)
  - Associated **tension** during moments of stuttering (facial grimacing, pitch breaks, etc.)

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Assessing the observable stuttering

- Deja’s disfluency rate was 11% in conversational speech and 17% in an oral reading task. She exhibited moderate physical tension in the face and neck during periods of stuttering. She also exhibited secondary behaviors, such as head-nodding and hand-tapping. Deja exhibited repetitions (sound, word, and phrase), prolongations, and blocks. She exhibited repetitions of up to 6 iterations and average length of blocks/prolongations was approximately 3 seconds.
Assessing the affective component

- Results from the OASES and CCSA can serve as a baseline for the affective/cognitive components
- Children may be initially hesitant to talk about their stuttering emotions/reactions. Other approaches to start those conversations might include:
  - Books about stuttering
  - Videos featuring children who stutter
  - Drawings

Assessing the affective component

- Allow the child to express their feelings about stuttering through art
- “How does stuttering make you feel?”
- “What does it feel like when you stutter?”
- “What do other people do when you stutter?”
Assessing the affective component

- Use scales or images to assess how a child is feeling about or dealing with their stuttering
  - 1 – 10
  - Likert (e.g., not good to very good)
  - Emojis

Determining if Treatment is Indicated (Preschool)

- Assess all risk factors
- Is stuttering increasing or decreasing?
- Age is not that important!
Determining if Treatment is Indicated (Older Children)

- Does the child want treatment?
- What are the child’s expectations for treatment?
- Can the clinician give the child and parents what they want?
- What are the primary goals of the child and parents?
- Is the child ready to make changes?

Developing Goals

- Preschool
  - Parents
  - Children
  - Direct vs. Indirect
Developing Goals

- School-Age/Adolescent/Adults
  - Education
  - Fluency
  - Tension and Secondary Behaviors
  - Overall Communication
  - Thoughts and Feelings

Case Study: Preschool

- 4 year-old boy
- family history of stuttering (father stutters)
- No other speech/language concerns
- Stuttering started over 1 year ago
- Child is aware of his stuttering and starting to exhibit negative reactions: avoidance, decreased utterance length
Disfluency rate = 15% with repetitions (all types), prolongations, and blocks
- Moderate physical tension; pitch/loudness changes
- Secondary behaviors: eye-blinking; head movement
- SSI-4 rating: moderate-severe

Case Study: Older Children/Adults
- Age (16)
- Stuttering since age 3
- Had previous therapy focusing on improving fluency
- Impacting ability to participate in school; thinking of choosing a career they do not want because of perception of required speaking
- OASES scores in moderate-severe range
Specific difficulty noted:
- Talking on the phone
- Starting conversations
- Talking in groups
- Participating at school
- Job interviews
- Ordering food

Disfluency rate is 5.5% with some blocks and prolongations; moderate tension

Questions / Comments
- ccoleman@edinboro.edu
- Web: www.stutteringacademy.com
- Facebook: https://www.facebook.com/groups/168290933806220/
References


