Multidimensional Assessment & Treatment for Children Who Stutter

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ABCs of Stuttering

• Stuttering is a multidimensional disorder consisting of:
  ➢ A = Affective Components
  ➢ B = Behavioral Components
  ➢ C = Cognitive Components

• We must evaluate all components of stuttering if our treatment is to be successful

Explaining Cause to Parents

• Stuttering arises due to an interaction among several factors that are affected by both the child’s genes and the child’s environment
  ➢ Motor Skills
  ➢ Language Skills
  ➢ Temperament

• An interaction among factors contributes to the likelihood that the child will produce speech disfluencies and react to them

Assessing Preschoolers

• Most preschool children will recover
  ➢ 75-80% will stop stuttering on their own
  ➢ The majority recover within 6 to 12 months

• This is GOOD NEWS! This is BAD NEWS!

• There is no single factor that absolutely differentiates children who will recover from children who will persist

• We can make educated guesses based on the presence of key risk factors

- Gender
- Age at onset
- Length of time stuttering since onset
- Family history of chronic stuttering
- Slight or no decrease in overall frequency-type of stuttering within first 12 months
- Presence of prolongations and/or blocks
- Difficulties in areas of language, phonology, nonverbal IQ
- Negative reactions to the stuttering (sensitivity)

Assessment With Regard to IDEA Requirements

- Must use a variety of tools and strategies
- Obtain relevant, functional, developmental, and academic information about the child
- Information from parents and teachers
- No single criterion should be used to determine eligibility

Stuttering Evaluation

- Case History (including parent checklist of perceptions of child’s stuttering)
- Teacher checklist/interview
- Fluency sample (across a variety of speaking situations and tasks)
- Assessment of child’s reactions to & knowledge of stuttering
- Assessment of other people’s reactions to child’s stuttering
- Assessment of other speech-language areas (if necessary)
- Rate of speech (if necessary)

Evaluating the Physiological Behaviors

- Common measures include:
  - Frequency of disfluencies (or stuttering)
  - Types of disfluency
  - Duration of stuttering
  - Severity
  - Secondaries
- As children grow older and stuttering progresses, the observable characteristics tell less about the child’s experience with the disorder.
Formal Measures of Stuttering

- Most common assessment measures:
  - Stuttering Severity Instrument (SSI-4) - Riley, 2009
  - Test of Childhood Stuttering (TOCS) - Gillam, Logan, Pearson, 2009
  - Real-Time Analysis of Speech Fluency - Yaruss, 1998
  - Systematic Disfluency Analysis (SDA) - Campbell & Hill, 1987
- Stuttering behaviors are highly variable
  - People may not stutter at all in some situations
  - Try to collect multiple speech samples

Fluency Sampling Techniques

- Try to observe PWS speech in several interactions with different people, different locations, different speaking tasks (e.g., introduce fluency disrupters).
- Preschool (at least 2-3 of the following)
  - Parent-child interaction, picture description (monologue), play, play with pressures imposed, story retelling
- School-Age, Teenagers, Adults (at least 2-3 of the following)
  - Monologue (retelling a familiar/unfamiliar story), dialogue, dialogue with pressure, oral reading, telephone call

Analyzing A Speech Sample (Parris, 2010)

- Score a representative sample
- Sample size of at least 300 syllables/wds. is adequate
- 100 syll./wds. from 3 samples gives range of behaviors
- Coding assists in determining frequency and/or types of disfluencies
- Also can measure duration and note secondaries
- Clusters: ≥2 disfluencies on same or adjacent syll./wds.
- Make judgment calls and then be consistent with ourselves

Coding Different Types of Disfluencies

- More typical (“normal”) disfluencies generally occur between word units
  - Phrase repetitions (Rp)
  - Interjections (I)
  - Revisions/False starts (Rv)
  - Multisyllabic Word Repetitions (Mrw)
- Stuttering-Like Disfluencies (SLDs) generally occur within word units
  - Part word repetitions (Rpw)
  - Whole word repetitions (Rw)
  - Prolongations (P)
  - Blocks (B)
Examples of Concomitant Behaviors

What is the child doing physiologically when stuttering?

- Posturing Behaviors
- Respiratory Behaviors
- Facial Behaviors
- Vocal Behaviors
- Syntactic & Semantic Behaviors

Real Time Analysis of Speech Fluency (Yaruss, 1998)

- Basic procedure involves observing a speech sample and counting fluent and disfluent (or stuttered) syllables/words (videotape, audiotape, or on-line).
- Representative sample: Do not worry about missing words/syllables or maintaining pace with the speaker. Focus is on obtaining a representative sample.
- Step 1: Observe the client speaking for a few minutes to become familiar with the general speaking style & pattern of disfluencies of speech.
- Step 2: Begin coding speech with a dot for a fluent syllable/word and a coding symbol for a disfluent syll.

Interpretation: Preschool Stuttering Criteria (Yairi, 1997)

- Frequency:
  - >10% TOTAL disfluencies per 100 syllables/words
  - OR 3 or more Stuttering-Like Disfluencies (SLDs) per 100 syllables/words

- Type:
  - More than 50% of TOTAL disfluencies are atypical types of disfluencies (SLDs)
  - OR Prolongations comprise >30% of SLDs (Conture, 2001)

- Duration:
  - Units of Repetition: average ≥1.5 units OR are ≥ 0.5 seconds
  - Prolongations/Blocks are ≥ 0.5 seconds

Cont’d.

- Coding symbols: See previous slide; each syllable/word is either fluent or disfluent.
- Use Disfluency Count Sheet: Can be used to compute total disfluency or to compute stuttering frequency alone http://www.stutteringcenter.org/stuttering-center-forms.html
- Multiple Disfluency Types on a Single Syllable/Word: Three options: a) Select only the disfluency type that is most salient or severe, b) code each disfluency type present in the cluster (count cluster as “other”-stuttered syllable), or c) if a certain pattern consistently exhibited (e.g., P Rpw) - count as “other”
- Intrajudge agreement is important.
Stuttering Criteria (cont’d)

- **Nonspeech Behaviors:**
  - Any audible or visible tension/secondaries associated with the stuttering event
  - Indication of awareness of difficulty and avoidance

- **Clusters:**
  - # of disfluencies per cluster: mean of 3
  - # of disfluencies occurring in clusters: mean of 50%
  - Presence of 2 or more SLDs contained in cluster is sign of severity

Assessing the Child’s Reactions to Stuttering

- Can play an important role in determining the nature of the stuttering disorder and the progress child will make in therapy (Manning, 2001)

- A child’s reactions to stuttering are probably the most critical factors influencing his ability to manage stuttering over the long term (Cooper, 1986)

- Generally, the more negative emotionality the child experiences when stuttering, the greater the need to include modification components in the treatment plan (Guitar, 2006)

Talking to Children About Talking & Stuttering

- Four step process to evaluate the affective and cognitive aspects of stuttering:
  - General questions
  - More specific questions
  - Pencil-paper tasks
  - Standardized measures

General Questions About Talking

- Do you like talking?
- Who do you like to talk to the best?
- What do you like to talk about the most?
- Is talking usually easy for you?
- If you could change something about your talking, what might it be?
- Do you know why you’re here today?
More Specific Questions About Stuttering (Chmela & Reardon, 2001)
• What do you mean, talking is hard?
• What does that mean, stuttering?
• Can you show me what it sounds like?
• When, where, who does it happen with?
• What do you do when it happens?
• Have you ever talked about it with anyone?
• Does it ever make you feel sad… mad… frustrated…?

Pencil-Paper Tasks (Chmela & Reardon, 2001)
Some sample pencil-paper tasks:
• Hands Down
• What’s True For You
• Important Stuff About Me
• Draw Me a Picture
• Worry Ladder, ETC.
• Parent & Teacher Questionnaires (IMPORTANT)

Examples of Standardized Measures for Feelings & Attitudes
• Overall Assessment of the Speaker’s Experience of Stuttering (3 normed versions: School-age 7-12; Teen 13-17; Adult 18+) – Pearson Publishers
• Behavior Assessment Battery for School-Age Children Who Stutter (includes CAT, SSC, BCL, KiddyCat . . .) – Normed on ages 6-15 years – Plural Publishing
• KiddyCat Assessment for Preschool and Kindergarten Children Who Stutter – Normed on children 3-6 years of age – Plural Publishing

• Multidimensional stuttering assessment for children 7-14
• Now commercially available for purchase at: www.nutechmarketplace.com
• Assesses five domains: SLP gets an individual profile of ratings for each area to assist in treatment targets:
  ✔ Cognitive
  ✔ Affective
  ✔ Linguistic
  ✔ Motor
  ✔ Social
Domains & Potential Adverse Effects on Education (Ribbler, 2006)

- Academics & Learning
- Independent Functioning
- Socio-Emotional Functioning
- Communication

From Assessment Findings, Goals May Address:

- Child’s beliefs and feelings regarding communication
- Child’s knowledge of speech and stuttering
- Speech-motor behaviors

Goals for Changing Fluency—Fluency Shaping (FS)

- Goals that focus on strategies for changing timing and tension in speech production to increase fluency. Examples:
  - Easy onset of phonation
  - Light articulatory contacts
  - Pausing and phrasing
  - Reduced rate
  - Easy relaxed approach, smooth movements (ERA-SM)
  - Airflow control
  - Continuous phonation (voicing)
  - Many others . . .

Sample Fluency Shaping Goal

- X will exhibit <3 SS/100 syll. in a 300 syll. sample across 3 sessions in at least 2 different environments.
  - X will use a reduced rate of speech in structured speaking tasks of increasing linguistic length and complexity, beginning at the 2-word phrase level and moving through the linguistic hierarchy given a clinician model of reduced rate with 90-95% accuracy at each level across two consecutive sessions.
  - X will maintain fluent speech in structured speaking tasks beginning at the simple sentence level with clinician using a slow-normal model with 90-95% accuracy at each level across two consecutive sessions.
  - X will transfer smooth speech strategies with different conversational partners in at least three different settings
  - X will maintain fluency in the presence of identified fluency disrupters for up to two minutes.
Sample Fluency Shaping Goal

- Sample Goal: Child will demonstrate knowledge and use of # (or name) speech management techniques (at the ___ level) (in ____ speaking situations) as measured by self-reports and clinical data records (journal, rubrics, etc.)
  - Child will utilize easy onset of phonation in 9/10 opportunities when:
    - Naming objects/people in pictures
    - Oral reading with / without visual cues
    - Providing short descriptions of pictures
    - Making inferences about pictures
    - Providing short summaries of stories
    - Discussing activities from a recent social event

Goals for Changing Stuttering (Stuttering Modification)

- Goals that focus on reducing physical tension during stuttering. May include:
  - Goals for learning about the speech production mechanism
  - Goals that explore the nature of the child’s blocks
  - Goals that modify tension during stuttering
  - Goals that focus on reducing fear and sensitivity about stuttering (desensitization)
  - Goals that help the child move forward with speech

Sample Stuttering Management Goals & Objectives

- Annual goal: X will demonstrate the ability to modify physical tension in his speech musculature and use pull-outs during 4 of 5 conversational speaking tasks with varying conversational partners in the school.
  - X will exhibit the ability to explain the key components of the speech production mechanism to the clinician when prompted.
  - X will demonstrate the ability to increase/decrease physical tension in various parts of the speech mechanism following the clinician’s model.
  - X will demonstrate the ability to stay in the stutter for up to 3 seconds with the clinician in the therapy room during 8 out of 10 trials.
  - X will exhibit the ability to use pull-outs during pseudo- or real stuttered words at increasing levels of length and complexity in the therapy room during 8 out of 10 trials.
  - X will use pull-outs 80% of the time without reminder cues from the clinician in monologue speaking tasks.

Cognitive Treatment Areas (Chmela & Reardon, 2001)

- Goal that deals with helping the child develop positive thoughts, perceptions, and awareness of stuttering and fluency
- Goal that focuses on what the child does or does not know and understand about his/her stuttering
- Goal that explores the child’s reactions to and perceptions of listeners to the stuttering
Sample Cognitive Goals/Objectives for Stuttering

• X will increase his knowledge about stuttering by answering 8/10 questions correctly that deal with basic stuttering facts across 3 different quizzes.
• X will educate two friends about his stuttering treatment techniques.
• X will explain the difference between normal nonfluencies & stuttering to his parents & clinician.
• X will identify 70% of his tense stuttering in a story retelling task with no clinician cues across 2 consecutive sessions.

Sample Annual Goal for Cognitive Component

• X will learn about stuttering and develop and maintain positive attitudes about communication as determined by informal assessment checklists/portfolios and a decreased score on the Communication Attitude Test.
  ➢ X will learn six facts about stuttering and verbally share three facts with two different classmates.
  ➢ X will develop and explain 3 problem-solving plans using the five-step process and will execute each.
  ➢ X will document negative thoughts and reframe them into more positive alternatives in 8/10 opportunities.
  ➢ X will identify 3 difficult speaking situations and develop and execute steps in the speech hierarchy.
  ➢ X will identify and explain to two people of his/her choosing the process of producing speech and the anatomical structures involved in this process, as well as stuttering, through use of drawings and other illustrations.

Affective Treatment Areas
(Chmela & Reardon, 2001)

Can include goal(s) that focus on:
• Normalizing feelings, emotions, and attitudes about stuttering (desensitization)
• Understanding of emotional reactions to stuttering
• Improving self-esteem and positive reactions to stuttering
• Being open about stuttering
• Reducing/eliminating avoidances

Sample Affective Goal Areas for Stuttering

• With the clinician's assistance, the child will develop & execute a plan for a teacher meeting (&/or classroom presentation) about stuttering.
• X will ask X questions or provide X answers in class at the level appropriate for his overall performance in class.
• X will demonstrate desensitization to stuttering by using 5 easy pseudostutters during a conversation in the classroom with the tchr.
• X will use easy onset of phonation as he approaches identified feared words in structured conversation while talking with the other children in his speech therapy group on 4 out of 5 trials in the clinic setting.
• X will voluntarily stutter with at least three different listeners outside the therapy room.
• X will tell 3 people of his choosing that he stutters and report results back to the clinician.
• X will brainstorm about appropriate responses to teasing and use these responses on at least three occasions during role-play activities in tx.
Sample Annual Goal & Benchmarks for Affective Component

- X will increase his verbal participation in school by 50% as reported by his teachers & staff.
- X will answer 5 questions per week in the classroom.
- X will state his opinion once per week to the teacher.
- X will volunteer to read in class at least once per week.
- X will learn two verbal methods for dealing with teasing.
- X will learn six facts about stuttering and verbally share three facts with classmates when the SLP gives a classroom presentation about stuttering.
- By the end of the IEP year, X will demonstrate improved acceptance of his stuttering as indicated by the results of a communication attitude scale.

Treating Preschoolers

- The primary goal of treatment for preschoolers is to **eliminate stuttering**.
- Successful outcome = no stuttering
- This may be different from the goals for treating school-age children, adolescents, and adults.

Current Evidence-Based, Family-Focused Treatments for Preschoolers

- Basic assumptions
- Indirect and Direct Treatments (Combinations)
  - Demands & Capacities Model (DCM)
  - Palin Parent-Child Interaction Therapy (PCIT)
  - Family-Focused Treatment Approach
- Direct Treatment
  - Lidcombe Program for Early Stuttering

Demands & Capacities (DCM)

_**Gottwald & Starkweather, 1999, 2010**_

Multifaceted Treatment Goals: Goal <3% SS in spont. spch.

*Parents/caregivers learn* (Family Component):
- Education about stuttering and treatment process
- New ways to speak to reduce fluency demands
- New ways to alter the communicative environment & stressors
- How to practice with child, when to reinforce child’s use of new skill, and how to support child’s self-esteem

*Children learn* (Direct Child Therapy):
- To speak in a slower, more relaxed way
- How to change struggled stuttering
- Use of skills in more demanding environments (transfer)
DCM Program Overview

- Family & child meet with clinician 1X/week for 60 minutes (plus parent “special times” at home with child each day)
- Combination of direct child therapy and family focused treatment each session-individualized; children 2-6 years.
- Sessions usually begin with play period between child, family, and clinician (usually videotaped)
- Discuss with parents a) child’s fluency patterns over past week, b) skills parents practiced, c) issues that need to be addressed this sess. (model, coach, practice) – homework
- Clinician and parents work directly with child to develop skills to foster fluency (e.g., reduced rate, identify stutters and replace with more relaxed and typical disfluencies)

Modifying the Speech & Language of Family Members

- Use a slower easier speech rate
- Pause between conversation turns (reduce time pressure)*
- Eliminate questions requiring long, complex answers
- Respond to the content of the child’s message regardless of fluency
- Acknowledge struggled stutters using meaningful words

Modifying the Child’s Talking Environment

- Institute turn-taking rules to eliminate interruptions
- Allow ample time for activities and transitions
- Show child ways to get a talking turn without stressing fluency
- Eliminate talking at stressful times
- Set up a special parent-child playtime each day
- Maintain structure and routine where possible

Recent DCM Outcome Data

- 1996: 15 families, 14 maintained normal fluency at 1-year follow-up phone call (1 withdrew, still stuttered); average length of tx 14.5 sessions
- 2006: 30 families, 26 achieved and maintained normal fluency at 1-year follow-up (3 still in tx at end of study, 1 started stuttering again when family relocated); average length of therapy 13.7 sessions
Palin Parent-Child Interaction Therapy (Kelman & Nicholas, 2008)

- Combination of indirect & direct child strategies
- Goal is normal fluency (<3% SS) or until parents are no longer concerned; for children 2-6 years
- In-depth assessment: Child and parent
- Treatment progression
  - Six (one-hour) clinic sessions with parents
  - Six week home-based consolidation period
  - Direct treatment with child (if needed)
  - Review 6 weeks, 3 months, 6 months, one year post-onset

PCIT: Stage 1

- 5-minute video is made of each parent playing with the child in the clinic at the beginning of the sessions. Parents introduced to “Special Time” – designated home practice sessions.
- Parents view videotape to identify interaction styles that support the child’s fluency with input from SLP.
- Each parent individually selects an interaction style that he/she would like to try to perform more often; becomes a goal for practice during ‘Special Time’ at home. Parents rarely have more than 3 targets throughout program. SLP models, coaches.
- 5-minute playtime that each parent completes individually with the child. Each parent must agree to a set number per week.
- Parents complete a homework sheet following each "Special Time" to reflect on their targets. Clinician monitors implementation.
- Begin to identify other times outside of ‘Special Time’ to facilitate child’s fluency

Interaction Targets Typically Selected by Parents

- Reducing speech rate
- Giving the child time to initiate, respond, and finish talking
- More equal balance of turns
- Matching complexity of language to child’s abilities
- Altering the balance of questions: comments
- Following child’s lead in play
- Increasing eye contact

Palin PCIT Outcome Data

  - 6 children, ages 3-11 to 4-11
  - 6 in-clinic family sessions; 6 in-home sessions with focus on family interaction
  - All 6 children had significant reductions in stuttering
- 2008: 6 children, ages 3-3 to 4-10
  - 4 out of 6 significantly reduced stuttering at one year follow-up; 2 continue to receive treatment
Family-Focused Treatment Approach
(Yaruss, Coleman, & Hammer, LSHS, 2006)

- Stage 1: Parent education (usually 1-2 sessions)
  - Cause of stuttering
  - Types of disfluencies
  - Home charting exercise, etc.

- Stage 2: Parent-child sessions for fluency facilitating modifications (usually 5-7 sessions)
  - Clinician models with child; parents observe
  - First one parent (then the other) interacts with child while receiving on-line feedback from clinician
  - Parents receive DVD of session to review at home

Family-Focused Treatment Approach - Cont’d

- Modifications taught
  - Reducing parents’ speaking rates (easy talking)
  - Reducing time pressures (delaying response)
  - Reducing demand for talking (recast/rephrase)
  - Modify questioning (if necessary)

- Maintaining healthy attitudes
  - Help parents learn to accept disfluencies as normal part of learning to speak, listen to child’s concerns about talking, talk to child about stuttering

- Stage 3: Child-Focused Treatment (if needed)

Family Focused Treatment Outcomes

- 11 of 17 preschoolers demonstrated a significant reduction in stuttering frequency over 6-8 sessions of family-focused therapy only
- 6 of the 17 children received child-focused therapy following family-focused therapy.
- 1.5 to 3 years later, all but one of the children continue to present with normal fluency

Lidcombe Program for Early Stuttering
Onslow, Packman, & Harrison, 2003; Packman et al., 2011

- Parent-delivered; direct stuttering treatment for children to age 6
- Based on operant conditioning principles
- Goal is to eliminate stuttered speech; begins with training parents
- Verbal contingencies for stutter-free and for stuttered speech (5:1)
- Begin with structured sessions at home (parent administers verbal contingencies), 15 min./day, monitor child’s language level for lots of fluent speech, contingencies specific to speech (“smooth talking”; “oops, a little bumpy”)
- Move quickly to unstructured feedback throughout the day
- Complete Lidcombe manual can be obtained online by typing “Lidcombe Program Guide 2011” into browser window
Data Collection

- % Stuttered Syllables (SS) from 300 syllable sample each clinic visit at the beginning – optional after first visit (Bridgman et al., 2011)
- Severity Ratings (SRs) made by parent each day of the week
  - At the end of each day, how would you rate your child’s speech fluency
  - 1 = no stuttering
  - 2 = very mild stuttering
  - 10 = the most stuttering ever

Lidcombe Program
Stage 1 Goal: Achieve Fluency

- Weekly 1-hour sessions with SLP (modeling, coaching, problem-solving)
- Daily structured treatment moving to unstructured treatment with verbal contingencies directly applied by parent; daily severity ratings completed and graphed by clinician
- To move to Stage 2, for 3 consecutive weeks, child’s:
  - SRs = 1 minimum of four days/week; rest of week SRs = 2
  - No SRs of 3 or more
  - SRs = 1-2 in clinic
- Median number of sessions at U of VT = 17 (Miller & Guitar, 2009)
- Median number of sessions Sydney = 16 (Rousseau et al., 2007)

Verbal Contingencies: Stutter-Free Speech and for Stuttered Speech

- MUST give 5 verbal contingencies for stutter-free speech BEFORE giving a verbal contingency for unambiguous stuttered speech
- Praise for stutter-free speech
- Acknowledge stutter-free speech
- Request for self-evaluation
- Acknowledge stuttered speech
- Request for self-correction (not a demand)

Lidcombe Program—Stage 2 Goal: Maintenance (~1 year)

- ½ hour sessions at 2, 2, 4, 4, 8, 8, 16 week intervals
- Wean off parent-delivered feedback
- Parents flexibly deliver contingencies in the event of a spike
- Return to Stage 1 if not meeting criteria in two consecutive sessions

Clinical Trials: Lidcombe Program

- Extensive evidence base
- Phase I, II, and III trials (see Rousseau et al., 2007; Lewis et al., 2008)
- Near 0 levels of stuttering 4-7 years post-tx
- Randomized Control Trial (Jones et al., 2005)
  - Large Cohen effect size ($d = 0.9$)
  - Odds Ratio of 7.7
  - Different from control group 9 mos F-U ($p = .003$)

Early Treatment of Stuttering: Comparison of Two Approaches

- 30 children, randomly assigned to Lidcombe or DCM treatment
- Stuttering frequency significantly reduced in both groups in 12 weeks; no statistically significant difference between outcomes of the two approaches
- Parent satisfaction similar in both groups

Teaching Direct Fluency Strategies—Young Child

- Clinician models strategies continuously throughout sessions
- Discriminate slow vs. fast speech
- Introduce any new technique at imitated level first
- Begin with warm-up (child can achieve 100% success)
- Follow a hierarchical linguistic progression – a MINIMUM of 60-100 responses at targeted level during drill per session
- Criteria: Minimum of 90-95% accuracy of technique use across two consecutive sessions
- Begin to work on transfer using easy talking
- May need to work with fluency disruptors

Fun With Fluency—Ages 2-7

(Walton & Wallace, 1998)

- Teach Easy Speech & Stretchy Talk
  - Clinician models entire time; use visual representation
  - a) stretch only the first word of a phrase group OR b) stretch everything
  - Gradually increase length and complexity (move up linguistic hierarchy)
- Make direct requests for easy speech
- Rate is only a means to smoothness. Ultimately, we want smooth not “slow”
- Ultimate goal: 1 SS/minute or less OR <3 SLDs/100 syllables or words
Transferring Fluency

- Begin transfer process early (e.g., after child is successful at carrier sentence level in tx. rm.)
- Use hierarchy by changing only one component in transfer until child is successful, then add another component
- Make it explicit that the clinician and child are working on easy, smooth talking
- Always have child transfer at linguistic level he/she has been successful at in therapy room with clinician at 90-95% or better during 2 sessions.
- May need to work on fluency disrupters after transfer

Desensitizing a Child to Fluency Disrupters

List identified disrupter in hierarchy from least disruptive to most disruptive.

1. Engage child in game, eliciting easy speech at the sentence level for several minutes.
2. Introduce fluency disrupter.
3. When child begins to exhibit a breakdown in fluency, immediately remove disrupter, and record time fluent in presence of disrupter.
4. Immediately engage child in structured activity where he can experience success with easy speech and continue for several minutes.
5. Re-introduce fluency disrupter.

Stuttering Modification for Beginning Level CWS

- Use Stuttering Modification (SM) only for kids who still have tense stutters after Fluency Shaping (FS) therapy
- Key is to help child
  - Catch himself during a stutter
  - Change stutter to a looser, more relaxed sound
  - Finish the word slowly and deliberately (in control)
- How?
  - Model easy stutters
  - Model self corrections
  - Play “catch me” or “speech cops” game
  - Active “play” with repetitions &/or prolongations
  - Child produces easy stutters (“Tigger Talk”)
  - Child changes his own “real” stutters

Goals for Fluency Therapy for School-Age Children (Manning, 2001)

- Gain understanding of the speech mechanism and stuttering
- Enhance speech fluency
- Manage stuttering that occurs
- Transfer speech strategies
- Deal with emotions and attitudes
- Reduce fear of speaking and stuttering
- Improve skill as a communicator
- Address relapse
Behavioral Area (ABCs)--Learning Objectives for SLPs . . . (Zebrowski, 2004)

- Explain how speech is produced
- Relate the child’s speech behaviors to speech physiology
- Analyze the child’s speech behavior to determine possible speech modification tools
- Select the appropriate speech modification tool(s) for the child to change
- Explain the purpose of each speech modification tool to the child
- Rate the child’s ability to use a speech modification tool
- Construct an appropriate systematic speaking hierarchy to practice the speech modification tools
- Plan for transfer of skills to different environments

. . . So We Can Help the Child

- Understand how speech and stuttering are produced
- Identify moments of stuttering a) modeled by clinician, b) produced in own speech
- Label where tension is produced during moment of stuttering
- Analyze own overt and covert communication behaviors
- Produce different speech modification tools as instructed by the clinician
- Rate a) own ability to use speech modification tools, b) personal preferences for using different speech modification tools
- Employ speech modification tools to create easier, more fluent speech

Essential Clinical Skills (Zebrowski, 2004)

- Telling child what’s coming next (we’re going to do this three times)
- Questioning the child for understanding – do you understand why we’re doing this?
- Knowing when and how to prompt/branch
- Asking permission: Is it okay if I interrupt you?
- Acknowledging the message/valuing communication
- Using humor
- Contrasting (saying hard/saying soft)

The “Biggies” of Handling Stuttering (Reardon-Reeves, 2010)

All aspects of therapy attempt to affect any combination of the following:

- Physical Tension
- Frequency & severity of stuttering
- Time pressure
- Ease of tool use
- Comfort level with tool use
- Hiding/avoiding stuttering
- Feeling of choice/control
- Tolerance of communicative pressures
- Confidence
- Anxiety or fear
Therapy Involves ... Exploring Talking

- Understanding and making choices about talking may be the most important piece of the therapy puzzle.
- In order to understand and feel what s/he does during stuttering, child must know how we talk
  - Establishes common terminology between child & clinician
  - Develops understanding of how we coordinate respiration, phonation & articulation for speech
  - Reinforces that his/her speech system is “normal”, e.g., nothing needs to be “fixed”

Exploration and Discovery
(Williams, Dell, Guitar, and others)

- Exploring Speech
  - Anatomy and physiology
  - Ways our voice works
  - Choices in talking
  - Tight or loose muscles
  - Playing with speech

The “Speech” Man
Ramig & Bennett

- Why are we learning this?
  - It is the “underlying map” for everything else we do
  - Discover the process of speech
  - Increase proprioceptive awareness of the “speech works”
- What are the steps?
  - Develop visual “Speech Man” by “playing with speech and having child make discoveries”
  - Discuss each part of the speech mechanism and how it helps to create speech
- Sample Benchmark
  - Following creation of a representation of the speech mechanism, X will accurately label and describe the production of speech at his appropriate cognitive level across 4 of 5 trials.

Exploration and Discovery (cont’d)

- Exploring Stuttering
- Learning the facts
  - Facts/Myths – What is stuttering?
  - Famous People who Stutter
  - Cause of stuttering
- “Catch me” (and self) games
- Speech detective
- Teaching others
- See http://www.stutteringhomepage.com,
  http://www.stutteringhelp.org,
- See Chmela (2006). Focus on Fluency program
Purpose of exploring talking and stuttering is to experiment with choices for:

- Changing speech – Tools for changing airflow, tension, voicing, movement, rate

  WHICH LEADS TO . . .

- New ideas about speaking, for example:
  1. "I don’t have to keep using the same patterns of speaking"
  2. "I have options for speaking and stuttering"

Therapy Involves . . .

Exploring Talking

Improving Fluency through Communication Modifications

- Most techniques for improving fluency focus on TIMING or TENSION

  Timing
  - Reducing speaking rate
  - Pausing and phrasing
  - Reducing PACE

  Tension
  - Light contacts
  - Easy starts/easy onsets
  - Cancellations
  - Pullouts

- Linguistic Length and Complexity

Fluency Shaping (FS)

Two primary ways to change stuttering into fluent speech in a structured treatment situation then transfer fluency to more natural contexts:

1. Response Contingent (operant) – Reinforce fluency/correct stuttering & transfer (no alteration of child’s natural speech). Data keeping involves # of stutters

2. Fluency Enhancing Behaviors (FEBs) – Establish fluency using speech changes & transfer. Data keeping involves # of times/how long used FEBS along with periodic stuttering probes.

1. Response-Contingent Programs

- Reduces stuttering directly without teaching specific fluency skills to modify speaking or stuttering
  - Praise for stutter-free speech and correction for stuttered speech
  - Can involve gradual increase in length and complexity of utterance
  - Must meet criteria before moving to next step in program; transfer; maintenance. Published outcomes available.

  Examples:
  1. GILCU Program – Ryan
  2. ELU Program – Ingham Costello
  3. Lidcombe Program for School Age Child - Onslow & Packman
2. Fluency Enhancing Behaviors (Easing into speech)

- **Speech Rate Reduction**
  - a) prolongation of all syllabic units, b) increase pause time between phrases, c) stretching initial segments of an utterance; d) continuous voicing
- **Easy Onset of Phonation**
- **Light Articulatory Contacts**

All are practiced in a hierarchy – manipulating linguistic length and complexity: a) systematic increase, b) manipulating discourse, c) semantic context

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### Pausing/Phrasing

**Yaruss & Reardon, 2004**

- **Why are we learning this?**
  - A break in a message every 3-6 (or so) words
  - Creates normal breath support
  - Can allow for decreased physical tension
  - Enhances formulation time

- **What are the steps?**
  - Normal breaks/silence within sentences when speaking or reading
  - No “deep breaths” allowed – keep it natural
  - May “mark” reading passages where child and clinician choose appropriate pausing.

- **Sample Benchmark**
  - X will pause every 3-5 words (where appropriate) in monologue speaking situations in X setting for up to two minutes.

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### Easy Onsets

**Runyan & Runyan; Yaruss & Reardon (and others)**

- **Why are we learning this?**
  - Opportunity to initiate first sounds of a word with an easier, relaxed (decreased tension) approach to phonation
  - Also adds smoother transitions between words in phrases
  - Indirectly reduces rate

- **What are the steps?**
  - Learning in a s-l-o-w stretch at first, and progressing to more normal sounding speech as progress is made
  - Smooth transition through phrase groups: Easy relaxed approach: Ease into the first two sounds, let the rest go with continuous sound; pausing for control
  - A—my, A—my and John,
  - A—nie and Matt // a—sked for directions

- **Sample benchmark:** X will use easy onsets of phonation at the beginning of each phrase during oral reading tasks with visual cues with 90% accuracy

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### Easier Relaxed Approach-Smooth Movements (ERA-SM)

**Hugo Gregory**

- **Why are we learning this?**
  - Opportunity to initiate first sounds of a word with an easier, relaxed (decreased tension) approach to phonation
  - Also adds smoother transitions between words in phrases
  - Indirectly reduces rate

- **What are the steps?**
  - Learning in a s-l-o-w stretch at first, and progressing to more normal sounding speech as progress is made
  - Smooth transition through phrase groups: Easy relaxed approach: Ease into the first two sounds, let the rest go with continuous sound; pausing for control
  - A—my, A—my and John,
  - A—nie and Matt // a—sked for directions

- **Sample benchmark:** X will use easy onsets of phonation at the beginning of each phrase during oral reading tasks with visual cues with 90% accuracy
Light Articulatory Contacts
Runyan & Runyan, 1993 (and others)

- Why are we learning this?
  - Reduces tension while developing a “lighter touch” of speech mechanism parts
- How do we do it?
  - Following discussion of the speech machine, and in conjunction with easy onsets, discuss and demonstrate tight and loose muscles in general, and then with speech articulators (Dei)
  - Using play activities, clinician and child use contrasts of muscular tension during talking to feel what “light” touches are like and how they can help our speech
- Sample Benchmark: X will demonstrate light articulatory contacts during structured speaking tasks in X of X trials in the therapy room with the clinician.

Data Collection

- Initially tracking strategy use (% use in linguistic level OR amount of time maintaining strategy)
- Take fluency probes in connected speech to determine if frequency, type, duration are decreasing (every 3 weeks or so)
- Long term goal is <3 SLDs per 100 syllables OR less than or equal to 1 SW per minute.

Therapy Involves . . . Problem Solving

- Disfluency and stuttering represent difficulty in connecting sounds, syllables and words. Given that,
  - Attend to where you are “disconnecting” and what you are doing. What needs to be done to “move forward” and smoothly connect sounds, syllables, and words while speaking?
  - The same principles are used to both initiate and maintain ‘easy’ speech, AND to produce ‘easier’ stuttering

Therapy may Involve . . . Exploring Stuttering

- Identify aspects of stuttering
- Use a hierarchy to experiment with change
- Working through identification, desensitization, and modification hierarchy helps the child to reduce worry and fear about speaking and stuttering
- Exploring stuttering ties information from exploring talking to child’s own behavior/speech patterns
Desensitization Phase

- Pseudostuttering with eye contact
- Learning about tension
- Locating tension
- Tension and the speech mechanism

<table>
<thead>
<tr>
<th>Significant Tension</th>
<th>Moderate Tension</th>
<th>Slight Tension</th>
<th>Regular Tension</th>
</tr>
</thead>
</table>

- Staying in the stutter
- Negative practice/3 ways to say a word
- Voluntary stuttering

Pseudostuttering & Learning about Tension (Ramig & Bennett, 1995)

- **What is it:** Putting fake, easy stuttering in mouth; playing with stuttering
- **Purpose:** Become more comfortable and less anxious about stuttering
- Experiment with different types of pseudostuttering
- “Catch” each other pseudostuttering
- Identify what word/sound person got stuck
- Talk about what it sounded like; then move to catching real slurs (tense)

Locating Tension and Staying in the Stutter (Ramig & Bennett, 1995)

- **Purpose:** Child identifies the loci of moments of his own stuttering and where tension is in the stutter. Desensitizes to stutter.
- Clinician does some pseudostuttering on a number of different words and sounds. Clinician & child attempt to discover location of areas of clinician’s tension (staying in the stutter; use visual cue).
- Child does pseudostuttering (staying in the stutter; use visual cue) and clinician asks questions about tension; feel how tension can travel while holding onto the block
- Child repeats process on real stuttering with clinician help (staying in the stutter) to locate tension.

Negative Practice/3 Ways to Say a Word (Bennett & Ramig, 1995)

- **Purpose:** Emphasis is on feeling the contrast between tension levels & monitoring sensations both productions evoke. Provide successful experiences in tension reduction. Desensitizes.
- Negative Practice: Clinician and student produce a word in a hard way (100% tension) and then reduce the tension by 50%. Practice stuttering behaviors using varying degrees of tension.
- 3 Ways to Say a Word: regular (fluently), easy stuttered way, hard stuttered way with tension and struggle
Voluntary Stuttering
Van Riper, 1972; Sheehan, 1970

- Why are we learning this?
  - Doing what we fear. Desensitization
  - Getting it out in the open (openness not hiding)
  - Decreases physical tension
  - Decreases avoidance of stuttering

- What are the steps?
  - SLP demonstrates a purposeful “easy stutter” on a word
  - Child and SLP take turns putting moments of easy stuttering (bounces or slides) into speech during structured activities and then in “real life”
  - Learning to “play” with stuttering and teaching parents and others to stutter

Cancellations
Van Riper, 1973

- What’s in it for me?
  - Taking control of the tension after the stuttered word

- What are the steps?
  - Utilizing easier onset or easier stuttering on a previously stuttered word AFTER a moment of stuttering has occurred
  - SLP demonstrates a moment of stuttering, stops, pauses (for long enough to . . . ), relaxes speech musculature and attempts a second production utilizing a smooth form of “easier stuttering or an easy start
  - Clinician uses leading questions and matter-of-fact comments to DISCOVER WITH the child rather than “teach”.

- Sample Benchmark: X will successfully utilize cancellations during structured narrative speaking tasks in the clinical setting in 9 out of 10 stutters.

Pull Outs
Van Riper, 1973

- Why are we learning this?
  - Controlling stuttering tension DURING the moment
  - Making the involuntary into voluntary (Sheehan)
  - Moving forward with speech (Bloodstein, Williams, others)

- What are the steps?
  - During “catching” the moment, demonstrate staying in tension and “sliding out” by decreasing the tightness in our speech muscles AS we say the word
  - Use visual cues/analogies to help children understand concept

- Sample Benchmark: X will effectively pull-out of moments of stuttering during oral reading tasks in the clinical setting in 9 out of 10 stutters.

Transfer & Maintenance

- Help child maintain skills that have been learned
- Encourage generalization of speech changes from therapy to real world
- Increase self-monitoring and self-recording of performance
- Maintenance: Gradually reduce treatment (obtain samples of speech, oral reading, & talk with child about how he has been talking in everyday speaking situations); Relapse=usually re-enroll in treatment for “booster sessions”
Hierarchies for Transfer of FS / SM Skills

- Develop hierarchies for activities and assignments WITH child. Child must be a part of sequencing hierarchy. They bridge the gap between therapy room and real world (spontaneous use chart).
- Change only one aspect at a time for success, then add another aspect; enhance child’s chances for success
- Example of hierarchies to consider with regard to practice of speech tools:
  - Location (where), Conversational partner (who), Linguistic level (what), Time (when)

SCHOOL TRANSFER – Goal-- CWS will transfer FS/SM into the ___ environment at the ___ level

<table>
<thead>
<tr>
<th>CWS will create &amp; execute contract cards with teacher.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brainstorm with child &amp; teacher a goal for the classroom setting</td>
</tr>
<tr>
<td>Consider goals involving speech tools as well as attitudes/feelings</td>
</tr>
<tr>
<td>Create a contract card including Goal, Task, and Check for agreement</td>
</tr>
<tr>
<td>Create new goals consistently</td>
</tr>
<tr>
<td>Follow-up discussion with child &amp; teacher</td>
</tr>
<tr>
<td>Staple in speech notebook</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CWS will create &amp; execute coach cards with teacher.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brainstorm with child ways to monitor speech modification in classroom</td>
</tr>
<tr>
<td>Create a coach card by listing a goal.</td>
</tr>
<tr>
<td>Negotiate a place to keep card</td>
</tr>
<tr>
<td>Child self-monitors/places a check on card</td>
</tr>
<tr>
<td>Follow-up discussion</td>
</tr>
<tr>
<td>Staple in speech notebook</td>
</tr>
</tbody>
</table>

(Chmela, 2000)

Cognitive Treatment Activities

Chmela & Reardon, 2001; Reardon & Yaruss, 2004; Reitzes, 2006

- Explore & discuss types of disfluencies; basic facts of stuttering (books, websites)
- Understand and explain how the speech mechanism works for normal speech; what happens when stuttering
- Increase self-monitoring of stuttering (1 finger exercise)
- Changing thinking: List negative thinking and discuss a more positive way to look at each statement listed
- Question of the week: Clin. and/or client driven questions
- Identify, explore, and explain meaningful topics related to stuttering
- Develop problem solving plan related to stuttering issues
- Identify difficult speaking situations and develop/execute steps using a speech hierarchy

Problem-Solving Plan (Chmela & Reardon, 2001)

**Steps**

1. Name the problem: “The problem is...”
2. Fill in the blanks: “I feel __ because __ and I want __.”
4. Discuss consequences of each choice: “If __, then __ ; choose one or more solutions.”
5. Create a plan for follow-up.
### Affective Treatment Activities

Chmela & Reardon, 2001; Reardon & Yaruss, 2004; Reitzes, 2006

- Use voluntary stuttering to reduce anxiety, sensitivity, and fear of stuttering
- Acknowledge that you stutter to others
- Play with stuttering – different ways to stutter
- Teach others how to stutter – grade them
- Participate in stuttering surveys
- Dealing with teasing
- Participate in a classroom or teacher presentation on stuttering
- Reduce/eliminate avoidance (situations/words) due to stuttering

### Strategies for Dealing with Teasing

- What is teasing, why do people tease, how does teasing make someone feel?
- Brainstorm ways to react (ANYTHING)
- Categorize helpful/hurtful ways to react
- Choose 1 or 2 helpful reactions (e.g., humor, educate, acknowledgment, ignore)
- Role play the situations in therapy
- Continue the problem solving process as incidents occur

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### Teacher Meeting

Chmela & Reardon, 2001; Reardon & Yaruss, 2004; Reitzes, 2006

- 4-6 weeks into therapy
- Negotiate who will say what (SLP/child)
- Key teacher questions:
  - What does the child need to do “in communication” to succeed in your classroom?
  - What communication situations are challenging for the child
- Problem-solve those situations
  - Information about stuttering (what it is, types, facts/myths)
  - Information about my stuttering (history, easy/difficult speaking times, feelings about stuttering)
  - Ways you can help (contract cards, reactions)
  - Etc.

### Classroom Presentation

See Stuttering Homepage, NSA, SFA outlines

- For child experiencing negative peer reactions; holding back from speaking
- Negotiate with child (readiness, who says what, how to do it)
- Brainstorm information to share
- Create format; no ONE way to do it
- Example: About my stuttering, facts, favorite myths, famous PWS, different ways people stutter, speech tools & how they help, ways teachers and kids in class can respond and help (do’s and don’ts)
Fluency Portfolio (Healey)

• Examples of quantitative data (Symptoms):
  ➢ Frequency of stuttering produced in several contexts over time
  ➢ Types of stuttering produced, reduction in number and form over time
  ➢ Number of times behaviors are exhibited
  ➢ Number of times client self monitors and corrects a disfluent moment without prompting
  ➢ Videotapes and/or audiotapes to document changes in behaviors
  ➢ Changes in stuttering severity (SSI-4)

Fluency Portfolio (cont’d)

Examples of qualitative data on:

• Scores on scales (CAT, A-12), summary of comments & observations across sessions, improvements as indicated on the multidimensional treatment checklist, paper & pencil worksheets, rating sheets, etc.
• Comments from child, parents, & teachers about successes and failures -- logged & dated
• Child’s verbal explanations of concepts learned in treatment
• Products of therapy such as drawings, graphic organizers, ratings of performance, etc.
• Observation of the child in a variety of communication environments and with other communicative partners

Indicators of Progress in Therapy (Manning, 2001)

• Increase in ability to self-monitor
• Increase in ability to produce “open speech”
• Decrease in frequency/duration of stuttering
• Increase in normal speech formulation breaks
• Metalinguistic changes—understanding stuttering
• Increase in open decision-making/decreased avoidance
• Increased sense of self-worth/self-esteem

IDEA and Exit Criteria

• Students should be dismissed when:
  ➢ All goals/objectives have been met and no additional intervention is warranted
  ➢ Parent requests exit
  ➢ Intervention no longer results in measurable benefits
  ➢ Child is unwilling/unmotivated and efforts to address motivation have been unsuccessful
  ➢ Extenuating circumstances warrant discontinuation
  ➢ Disorder no longer impacts educational functioning
  ➢ Child no longer needs services to participate in curriculum

- Mirror those for entrance criteria
- Document that no further intervention is warranted for ALL aspects of stuttering problem, not just behavior (motor aspects)
- Exit criteria consider chronicity/relapse
- Provide for a continuum of support services – not just direct services

Stuttering and ASD
(Scaler Scott, 2006; Sisskin, 2006, 2012)

- Appears to be many cases of stuttering with ASD
- Types of disfluencies range from more typical disfluencies to stuttering disfluencies, to atypical disfluency, e.g., final syllable repetitions (sound–ound sound), final phrase repetition (swinging-ing back–wards–wards cause I –ause I –ause I), final sound prolongations, etc.
- Reactivity & awareness to disfluencies is less common in children with ASD.
- Consider what function of disfluency is – stuttering or serve some other function?
- Therapy: Traditional stuttering tools, e.g., easy onset, pausing/phrasing; use of Runyan & Runyan—Fluency Rules Program (speak slowly, say each word, say it short). Several recent case studies have involved stuttering modification strategies

- Carol Gray’s model for Social Stories is often helpful for describing stuttering tools for those with ASDs. Children with a lower comprehension level benefit from less description and more imitation of therapist models.
- Consider cognitive learning style in ASD, self-monitoring is difficult; consistent repeated practice, tools for organizing thoughts, such as visual organizers
- Teach and practice tools in the context of play or preferred activities for generalization to occur
- For higher level children, more recent case studies have shown that work on identification (awareness), correction (self-correction), and transfer/generalization have been successful. EX: begin with awareness, why coming to tx., move to catching the “cough”, catching the word “the” in clinician reading, catching the clinician using his/her disfluency, correcting (cancellation), increased self-monitoring, self-awareness. Improvement on target disfluencies shown

Stuttering and ADHD
(Donaher, Healey, and Soffer, 2008)

- The treatment strategy with the strongest scientific support for ADHD continues to be stimulant medications, e.g., Ritalin, Adderall, and Dexedrine. 70%–80% effectiveness for ADHD but may increase stuttering
- Non-stimulant medications, e.g., Strattera have been tried when ADHD coexists with stuttering. Stuttering appears to be reduced when combined with speech therapy. However, these medications are not as effective in handling the primary symptoms of ADHD.
- Prevalence of ADHD in school-aged children who stutter is between 4–26%.
Clinical findings suggest that significant attention and impulsivity issues, without a diagnosis of ADHD, negatively affect the outcome of stuttering treatment.

Therapy: Traditional FS/SM techniques. Provide visual cues, concrete examples/drawings, to help child understand and retain the information.

Use frequent praise and establish a reward system that changes over time.

Increase the child’s self-monitoring skills and awareness of how general communication behaviors affect interactions with others.

Helpful Resources

- Stuttering Homepage: [http://www.stutteringhomepage.com](http://www.stutteringhomepage.com)
- The Stuttering Foundation: [http://www.stutteringhelp.org](http://www.stutteringhelp.org)
- National Stuttering Association: [http://www.WeStutter.org](http://www.WeStutter.org)
- Charles Healey (U of NE): [http://www.unl.edu/fluency](http://www.unl.edu/fluency)
- Stuttering Center of Western Pennsylvania: [http://www.stutteringcenter.org](http://www.stutteringcenter.org)