

<招待論文>

The CALMS: A Multidimensional Approach to Assessing and Treating School-Age Children Who Stutter

E. Charles Healey*

This article is a summary of information provided by the author to Hiroshima University and two other universities in Japan during his visit in December, 2011. The content is based on a multidimensional model of stuttering that accounts for cognitive, affective, linguistic, motor, and social (CALMS) factors that contribute to the maintenance of stuttering in school-age children who stutter. This article describes the CALMS model and how it serves as the basis for the 23 items used in the CALMS Assessment of stuttering. Specific items used in the CALMS Assessment are listed along with the rationale for assessing each item. Once the assessment data are obtained, a profile of performance across the 23 items can be created. From the profile, a clinician can focus on specific items across the CALMS domains that need to be addressed in treatment. Specific treatment suggestions for children who stutter are described.

Key Words: children who stutter the CALMS assessment and treatment for stuttering

Introduction

In December, 2011, I was invited by Dr. Nori Kawai to visit Japan and provide a series of presentations about my approach to assessing and treating school-age children who stutter. It was an honor to visit Japan and meet so many wonderful people and colleagues during my visit.

The purpose of this article is to provide an overview of the Cognitive, Affective, Linguistic, Motor, Social (CALMS) Assessment for School-Age Children Who Stutter. This assessment is published in partnership with the University of Nebraska and is available for use by school-based and clinic-based professionals who assess and treat disfluent children. The assessment is based on a model of stuttering that I created which emphasizes an interactive, multidimensional approach to assessment and treatment. In the following sections, I will describe the assessment and discuss how assessment data can be used to plan treatment. Let's begin with an overview of the assessment.

What is the CALMS Assessment?

The CALM assessment is a multiple-domain and data-based guide for examining school-age children who stutter (CWS). It is intended to document a child's strengths and weaknesses in performance across the five CALMS domains. Speech-language pathologists (SLPs) can use the CALMS assessment to gather information about five factors that are thought to be key to stuttering in (CWS). The set of CALMS assessment materials is specifically designed to assist a clinician in planning for, and acquiring information about, the current profile of a child's stuttering through ratings of performance on 23 items.

A rating from 1 to 5 is used for each item. Each rating is based on a level of concern about a child's performance ability on any particular item. A rating of 1 = "No Concern," 2 = "Borderline Concern," 3 = "Mild Concern," 4 = "Moderate Concern," and 5 = "Extreme Concern." Data derived from the assessment can then guide a clinician in the planning of treatment.

The CALMS assessment is NOT a standardized test or norm-referenced instrument. It follows the principle of criterion-referenced testing in that the data acquired from the CALMS assessment for

*University of Nebraska-Lincoln, Lincoln, Nebraska, USA

each child reflects his/her current level of performance. That child's performance is independent of how other CWS perform and is not compared to children who are fluent speakers.

How is the CALMS Assessment Used?

The CALMS assessment was not developed to take the place of various standardized instruments available for stuttering such as the Stuttering Severity Instrument Fourth Edition (SSI-4; Riley, 2009), The Behavior Assessment Battery for School-Age Children Who Stutter (Brutten & Vanryckeghem, 2007), the Test of Childhood Stuttering (TOCS; Gillam, Logan, & Pearson, 2009) and the Overall Assessment of the Speaker's Experience of Stuttering (OASES; Yaruss & Quesal, 2010). Some of the items used in the CALMS assessment are similar to those found in these standardized instruments; others were developed and field-tested in Nebraska and Iowa public schools over the past several years. Thus, this assessment can be used alone or in combination with other standardized measures of stuttering that will allow for a comprehensive assessment. Because many clinicians do not have access to the standardized instruments listed above, the CALMS could serve as a resource and guide for a clinician conducting an evaluation of school age CWS.

Why was the CALMS Assessment Developed?

Research has shown that SLPs do not feel comfortable or competent to work with CWS (Brisk, Healey, & Hux, 1997; Cooper & Cooper, 1996; Kelly, Martin, Baker, Rivera, Bishop, Kriziske, Stettler, & Stealy, 1997; Tellis, Bressler, & Emerick, 2008). Thus, the CALMS assessment was developed to: 1) help clinicians feel more comfortable and confident in evaluating stuttering, and 2) show how information from the CALMS assessment directly translates into specific therapy goals and objectives.

The Concept of Stuttering as a Multidimensional Disorder

Many clinicians believe stuttering is simply a speech disorder that is characterized by excessive

speech disruptions (i.e., repetitions, prolongations, and hesitations) in a person's speech. Viewing stuttering in this way represents a one-dimensional concept of stuttering. The disorder of stuttering involves much more than the disruptions in the forward flow of speech. We now know that a one-dimensional approach to stuttering cannot completely explain its complexity. We need to consider other factors such as what a child is thinking and feeling about stuttering, or how he/she is reacting to the stuttering given past negative speaking experiences. Therefore, it is important to assess these and other factors related to a child's stuttering, not just his/her disfluent speech. This conceptual approach would be a multidimensional perspective toward stuttering.

There are a large number of potential factors that could impact stuttering and assessing all of them would be difficult and time consuming. However, an examination of several recent multidimensional models of stuttering focus on a child's 1) speech-related neurophysiological processes, 2) linguistic skills and capacities, 3) emotional and attitudinal factors, 4) reactions to various listeners and speaking situations, and 5) cognitive skills. Some recent multidimensional models of stuttering include the Demands and Capacities Model (Starkweather, 1987), the Revised Component Model (Riley & Riley, 2000), the Multifactorial Dynamic Disorder Model (Smith, 1999), and the Dual Premotor Model of Stuttering (Alm, 2007). All of these models describe different ways various factors contribute to stuttering, which determines the level of fluency or stuttering an individual produces.

The CALMS Model of Stuttering

The CALMS model, developed by Healey, Scott Trautman, & Susca (2004), proposes stuttering is maintained by five domains or factors. These include Cognitive, Affective, Linguistic, Motor, and Social (CALMS) contributions to a fluency disorder. These factors interact in a complex way between and among factors (represented by the lines connecting the factors in the model below).

All five domains can contribute independently or in combination to create various frequencies and

types of stuttering. It is proposed that each child has a different level of abilities in each of the five CALMS domains. The assessment is designed to evaluate the functional level of each domain, which can be illustrated by a profile of abilities once all of the information from the assessment has been collected.

In a general way, the five CALMS domains reflect the strengths and weaknesses within each component for each person who stutters. Everyone who stutters is different and the functional level of any one of the CALMS factors will dictate how a child will manage his/her stuttering. This means we need to understand the current functional level of a child's thoughts, awareness, understanding, and perceptions (Cognitive) as well as his/her feelings and attitudes (Affective). These factors will impact how well a message will be formulated (Linguistic). Once the message is formulated, the child's speech motor system (Motor) will dictate how fluent or stuttered the message will be in a particular speaking situation given a particular listener or group of listeners (Social). The complex interplay between and among factors is thought to determine how effectively an utterance is produced within the context of an unstable speech motor system that sometimes functions along a fluency-stuttering continuum (Runyan & Adams, 1981).

It is assumed that disruptions or difficulties in managing one or more of the CALMS domains will result in increased stuttering. For example, the types of thoughts, feelings, and attitudes will contribute directly to what the child says and how fluently it is spoken in a given situation with a particular listener. The variable levels of performance in each component can occur at any time.

A graphic representation of the CALMS Model (Fig. 1) is shown on the next page and reprinted with permission.

Applying the CALMS Model to Assessment and Treatment

The CALMS assessment focuses on existing circumstances at any given time that characterize a fluency disorder rather than a diagnosis of whether stuttering exists or not. In this sense, the CALMS

assessment examines a child's performance against him/herself rather than against another child who stutters or one who speaks fluently.

In developing this assessment, efforts have been made to guide a clinician through the process of data collection and the interpretation of the findings associated with the CALMS factors thought to be central to the maintenance of stuttering (Healey, Scott Trautman, and Susca, 2004). A clinician does not need to have an extensive knowledge of fluency disorders to use this assessment. Clinicians should find the assessment items helpful in determining what needs to be assessed in a typical fluency evaluation of a school age child who stutters. Another important feature is that once the CALMS assessment has been completed, the profile developed from the individual item ratings can serve as a plan for treatment. Because every child will show a different profile of scores on the assessment items, it is not possible to describe in detail what a clinician might want to do in therapy. Rather, the treatment section of this manual provides a clinician with suggestions relative to principles, processes, and activities one could include in a treatment program for most school-age children who stutter. Below are a few key concepts a clinician might want to consider when developing an individualized treatment plan for CWS.

What are the main goals of an integrated therapy approach relative to the CALMS Assessment?

A popular notion among speech-language pathologists (SLPs) who specialize in stuttering is that people who stutter represent a heterogeneous group of individuals (Yairi & Seery, 2011). Therefore, the treatment should be tailored to meet the needs of each child. Stuttering can be treated from different perspectives but the philosophical approach that is consistent with the CALMS Model is an integration of fluency shaping and stuttering modification strategies (Bennett, 2006; Conture, 2001; Gregory, 2003; Guitar, 2006; Healey & Scott, 1995; Manning, 2010; Ramig & Bennett, 1997; Shapiro, 2011; Yairi & Seery, 2011). These approaches encourage the child to use fluency-enhancing techniques with deliberate modification of stuttering severity and negative emotions tied to stuttering. The goals and objectives that are

The CALMS Model of Stuttering

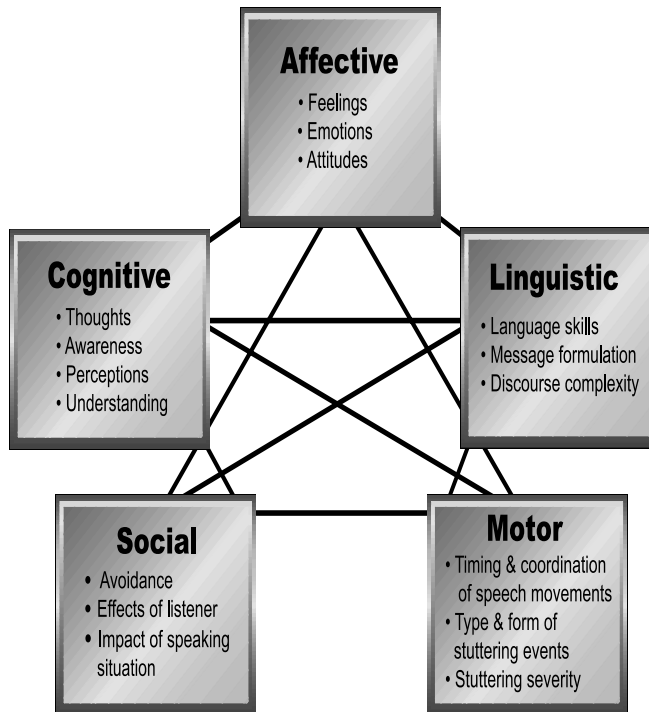


Fig. 1 A graphic representation of the CALMS Model

developed for treatment are individualized for each child based on the profile of performance from the assessment. In general, the main goals are: 1) to help school-age CWS communicate in an easier way (i.e., through easier, less tense stuttering or talking fluently without extreme physical or mental effort), 2) to enhance children's awareness and understanding of their stuttering, 3) to improve children's feelings, emotions, and attitudes about stuttering, and 4) to have children feel comfortable saying what they want, to anyone, at anytime, in any situation, without fear or avoidance (Healey & Scott, 1995; Ramig & Bennett, 1995).

Finally, a clinician, the assessment team, and the child who stutters should set goals that meet the individual's needs. For example, even though it is important for CWS to learn to identify stuttering events in their speech, some will have a relatively easy time learning to do this while others might have difficulty recognizing when a stuttered moment occurs. Thus, a clinician needs to be flexible in setting goals early in treatment and be able to shift to

other short-term goals that seem to move the child's stuttering management in a positive direction.

What's involved in an integrated treatment approach?

The process of changing stuttering takes considerable time and effort. Stuttering is not something that is "fixed" and changes in stuttering don't occur in a short amount of time. Because therapy can last from months to several years, CWS may get discouraged or be concerned that they are not talking "better" after being in therapy. It also is important to consider that any treatment outcome is a by-product of several factors such as the amount of time devoted to treatment, the skills of the clinician, the motivation of the child, the support parents provide during the treatment process, and the development of appropriate treatment goals.

An integrated approach is designed to make therapy a positive experience. The clinician needs to have a positive perspective about stuttering and

help a child understand what factors contribute to increases or decreases in stuttering. Specifically, an attempt has been made to include activities in therapy that address at least one or more of the CALMS components. For example, a clinician can help a child gain an understanding of what happens when they stutter by discussing and modeling changes in how talking can be made easier. The clinician can imitate the stuttering behavior the child exhibits and then a discussion can take place about what might be happening in the child's speech mechanism when stuttering occurs. At the same time, a clinician can ask the child how he/she feels emotionally when stuttering happens, what thoughts he/she is having, and how the stuttering might change depending on what is said and who is listening.

How does each CALMS component relate to treatment?

1. Cognitive Component: Before CWS can work on changing the way they talk, it is important to determine what they understand about their stuttering and what happens when they talk fluently. It is also important to help CWS to be aware of what they do when they stutter and what they think and feel about other peoples' reactions to their stuttering. Treatment should help children understand that their stuttering is, to some extent, under their control. The overall goal of the cognitive aspect of treatment is to help CWS learn how to think more positively about their stuttering and not perceive their stuttering as something bad or something they are doing is wrong. We also want them to learn how to monitor their speech and be aware of stuttering events when they occur. Awareness of stuttering is an important part of the treatment process but a process that can take considerable time to develop. We also want children to understand how and why certain techniques they have been taught can improve the management of their stuttering.

2. Affective Component: This component addresses a child's feelings, emotions, and attitudes related to stuttering. If children have any negative feelings about their stuttering, then these need to be addressed in therapy. Included in this aspect of therapy

is some discussion of being teased or bullied when they stutter and what they can do or say as a response. It is also common for CWS to avoid stuttering or hide the fact that they stutter. However, we want to work on reducing or eliminating the feeling of wanting to avoid or conceal stuttering. Through the course of therapy, we want children to know that it is OK to stutter, it is OK to fail, and it is OK to feel bad about stuttering. Children also need to understand that acceptance of their stuttering is one of the keys to managing it.

Acceptance of stuttering does not mean that one does not need to work on stuttering. In fact, it means quite the opposite. Without acceptance, anything CWS try to do to change the way they speak probably will not be maintained. Acceptance starts with learning what happens during a stuttering moment (Williams, 1971) and is the foundation of learning to use speech modification techniques. Helping children accept their stuttering will also lead to more positive feelings and reactions about the way they talk as well as help them realize that stuttering does not define who they are as a person (Murphy, Yaruss, & Quesal, 2007a; Yaruss, Coleman, & Quesal, 2012). The treatment environment can facilitate a child's acceptance of stuttering when the clinician is comfortable addressing the stuttering in an honest, open manner. There is much each child can teach a clinician about how he/she is coping with stuttering. The clinician needs to be a good listener and discuss the child's feelings openly without judgment.

3. Linguistic Component: One well-known feature of stuttering is that short, simple phrases typically produce less stuttering than long, complex utterances. And, when the topic of discussion becomes more complicated, an increase in stuttering will be observed. When a clinician carefully manages the complexity of the spoken message, CWS can experience success at a level that produces the most fluent or less stuttered speech. Once some success is achieved at simple linguistic levels, a clinician can gradually increase the difficulty of what is said to see if the child can continue to manage his/her speech. The quantity and complexity of information conveyed could impact the level of stuttering. This is why a clinician needs to carefully monitor and plan the

linguistic complexity of the materials that will be used during each treatment session.

4. Motor Component: Speaking is a very complex motor act, so it takes a lot of skill and coordination to speak fluently. CWS are thought to have a fragile or unstable motor control system for speech (Smith, 1999). Sometimes the speech motor system works smoothly (fluency appears) but at other times, the system shifts into a repetitive pattern and/or sounds/words become prolonged or blocked. To minimize these disruptions in the forward flow of speech, clinicians teach CWS to implement techniques for talking smoothly and easily. Some techniques are more helpful than others but the goal is to find techniques that compensate the most for disruptions in a child's respiratory, phonatory, and articulatory speech processes. For example, if a child has difficulty initiating voicing at the beginning of a word or phrase, then the child will benefit from being taught a technique called an "easy onset of phonation." At first, we might have the child talk in a slightly artificial or exaggerated way in order to practice this new voice initiation technique. With practice, the goal is to have the child develop enough skill in using any fluency-enhancing and/or stuttering-modification technique well enough so it can sound somewhat natural. We might also teach a child how to modify a stuttering event when it occurs. In all, we will try to give children lots of tools for talking more easily and eventually, let them choose which speech tools are the most helpful (Bennett, 2006). The overall goal of therapy for the motor component of the CALMS approach is to teach motor speech strategies that facilitate a combination of improved timing and coordination of speech movements as well as a reduction in the tension and effort in producing speech.

5. Social Component: The type of speaking situation and listener also impacts how well children manage their stuttering. Some speaking situations will be quite difficult and others will be easy, so developing a hierarchy of speaking situations is one aspect of the social component that needs to be addressed in treatment. Another goal of treating the social component is to help CWS become good communicators.

This implies that CWS should: a) not avoid talking to a person or avoid a situation because stuttering might occur, b) focus on being a good listener, c) provide an acceptable amount of eye contact with the listener, and d) tolerate interruptions by others. Clinicians can help children achieve these goals by role-playing various speaking situations and talking about what contributes to being a good or poor communicator.

CALMS Component Items

CALMS Assessment includes 23 items across the five domains that are related to the maintenance of stuttering. The goal of the assessment is to measure a child's performance on each item in order to determine the status of performance. Each item is based on a 1-5 rating. The definition of each rating is described in sufficient detail in the assessment such that a clinician can assign a rating that matches a child's performance. Some item ratings are more objective than others but field-testing has been conducted to ensure the rating criteria are as clear and objective as possible. The CALMS assessment also includes materials needed for data collection on each item within each component. The ratings for each item are then used to complete a profile of performance for each child who stutters (see sample at the end of this section).

Can Other Tests Be Used With the CALMS Assessment?

Yes. There isn't any limitation to supplementing the CALMS assessment with information derived from other tests or measures. For example, it is possible that a clinician would like to use standardized measures such as the Stuttering Severity Instrument, Fourth Edition (SSI-4; Riley, 2009), the Overall Assessment of the Speaker's Experience of Stuttering (OASES; Yaruss & Quesal, 2010), the Communication Attitude Test (CAT; Brutton & Vanryckeghem, 2007) and the Test of Childhood Stuttering (TOCS; Gillian, Logan, & Pearson, 2009). Because the results of these tests or measures would not fit into the 1-5 rating categories used in the CALMS assessment, information obtained from these formal

test instruments could not be used in the CALMS assessment data. The CALMS assessment could provide supplemental evaluation data to formal tests and measures.

Can I Assess the Components in Any Order?

Yes. There is no requirement that the testing be done in any specific order or during one session. Time constraints could limit how much testing is completed at any one time. Consequently, assessment of a child's performance could be done across several days or treatment sessions until all of the data are collected for the 23 CALMS items. Some clinicians might prefer to start with the short questionnaires associated with the affective and social components as well as administer the short true/false test regarding information about stuttering in the cognitive component (item #4). A clinician should probably allot one to one and half hours for assessing the remaining items under the cognitive, linguistic, and motor components.

Description of the CALMS Assessment Items

The following is a detailed discussion of each of the five CALMS components and the items under each component. The rationale underlying each item is provided in italics so it is clear how the information obtained will provide important insights about a child's performance across the five CALMS domains.

COGNITIVE

1. **Identification of stuttering during oral reading:** To determine the level of awareness and identification of stuttering within a structured speech context like oral reading. A child cannot be expected to change the way he talks unless he can identify the stuttering he produces.
2. **Identification of stuttering in spontaneous speech:** To determine the child's awareness and identification of stuttering under typical speaking circumstances. The aim of this assessment item is to document the level of self-monitoring

of stuttering a child shows during connected speech.

3. **Identification of stuttering from a clinician's model:** To determine a child's awareness and identification of stuttering when produced by another speaker. A child might not be aware of his own stuttering but can hear stuttering when produced by someone else.
4. **Child's knowledge of stuttering:** Children who stutter should know a few well-known facts about stuttering. Knowledge is empowering. The questions asked in this section mirror those commonly asked about stuttering (e.g., Stuttering Foundation website (www.stutteringhelp.org) "Did You Know") and reflect general information about the nature of stuttering included in recent textbooks on stuttering.
5. **Child's knowledge of previously learned speech techniques:** To examine a child's knowledge of what speech modification techniques have been learned in previous treatments and to determine if the child understands why they make talking less stuttered.

AFFECTIVE

1. **Measuring negative feelings about stuttering:** This item examines how often a child's negative feelings about stuttering are related to a few common real-life experiences.
2. **Determining words that reflect feelings toward stuttering:** This item seeks to determine how often a child uses or thinks of certain words to describe how he/she feels about stuttering.
3. **Examining attitudes about talking:** This item attempts to determine how a child feels about talking. As Brutton and Vanryckeghem (2007) have shown, there are statistically significant differences between children who stutter and children who do not stutter regarding each group's attitude toward talking. The statements

and types of responses used in the scale below are adapted from those used the standardized assessment called the Communication Attitudes Test (CAT).

LINGUISTIC

1. **Determining the relationship between linguistic complexity and frequency of stuttering:** Research has shown that there is a relationship between linguistic complexity and the frequency of stuttering. This item attempts to establish the level of complexity that creates a substantial increase in stuttering frequency.
2. **Assessing overall language ability:** Because verified language impairment or a subtle language deficit can co-exist with stuttering (Ardnt & Healey, 2001) it is important to either formally or informally assess a child's language abilities.
3. **Assessing speech sound production and phonological skills:** Research has shown (Ardnt & Healey, 2001; Blood, Ridenour, Qualls, & Hammer, 2003) that about 33% to 45% of children who stutter will also have speech sound disorders or phonological disorders.

MOTOR

1. **Examining the characteristics of a child's stuttering (4 items):** It is important to determine the different forms and types of stuttering in order to gain a full understanding of a child's fluency disorder. Improvements in the form and type of stuttering that occur from treatment can be a positive indicator of progress, even if the frequency of stuttering has not changed or has changed only minimally.

This item is divided into subcategories of a) types of stuttering, b) average number of units produced during part-word and whole-word repetitions, c) the overall tempo and regularity of the repeated units, and d) the degree of tension, effort, and struggle associated with

stuttering events.

2. **Measuring stuttering frequency in reading and spontaneous speech (2 items):** One of the key aspects of a fluency evaluation is to obtain a measure of stuttering or disfluent speech. The frequency of stuttering or disruptions in the forward flow of speech is one measure of progress in treatment. By measuring stuttering in two speech contexts, such as oral reading and conversation, a comparison can be made relative to how structured (reading) or unstructured (conversation) speech contexts influence a child's stuttering frequency.
3. **Measuring the duration of stuttering events:** The duration of the stuttering moment serves as one indicator of stuttering severity.
4. **Determining the presence of secondary coping behaviors:** The variations in secondary characteristics or behaviors that accompany a stuttering event are limitless among children who stutter. The more these behaviors are present, the more a child is trying to cope with stuttering. The presence of these behaviors is also important because it can be an indicator of stuttering severity.

SOCIAL

1. **Determining the frequency of avoidance associated with words and people:** It is important to know how often the child is avoiding stuttering and/or how stuttering is contributing to an avoidance of talking to certain people in his/her environment.
2. **Determining the frequency of stuttering in various speaking situations:** The type of speaking situation can directly affect the frequency of stuttering. Therefore, it is important to determine the child's perceptions of how often they stutter in a few specific speaking situations he/she might encounter on a daily basis.
3. **Determining how stuttering impacts peer**

relationships: Stuttering can impact how often a child interacts with his/her peers. It is important to know if stuttering is contributing to the child having few friends.

4. Determining how stuttering impacts school and extracurricular activity performance: Stuttering can impact how often a child stutters in various social situations within and outside of the classroom setting. The child's responses to these statements about these situations can help define an educational disability.

After each item has been rated on a scale of 1-5, then a profile of item scores can be generated.

The item profile gives a clinician a clear understanding of the items that need to be addressed in treatment. Initially, the clinical focus might be on items that are rated "3" or above because those are the items where the student has the worst performance and are areas of greatest concern.

Suggestions for Treating Stuttering Based the CALMS Profile

The following are recommended activities that follow the items on the CALMS Assessment. The goal is to address various aspects of stuttering while incorporating as many CALMS components as possible. After each activity in parenthesis is a list of CALMS components that particular activity includes.

Overview

It should be obvious from the previous information above that my philosophy about treatment involves a multidimensional approach. That means that one approach or one set of procedures cannot be applied to all children who stutter (CWS). Treatment is not only about teaching children a series of techniques to help them be fluent or modify a moment of stuttering. A clinician and child need to work together to make treatment relevant and timely

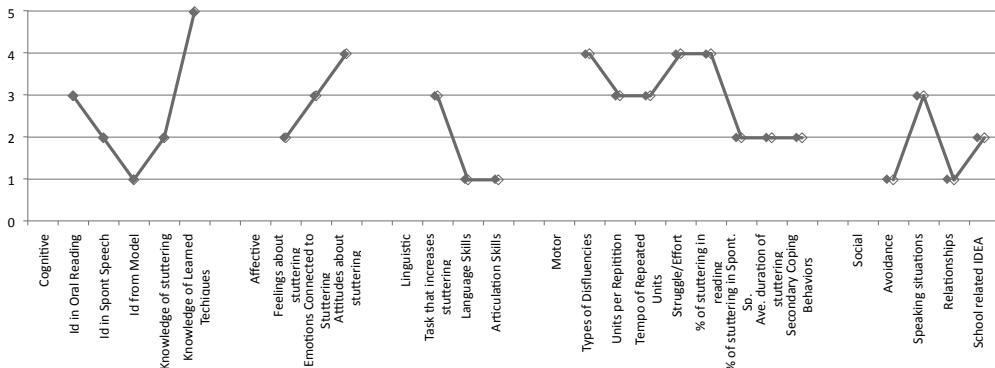


Fig. 2 Individual Item Profile Across the 23 CALMS Items

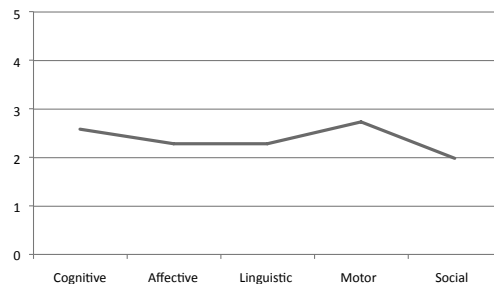


Fig. 3 Average Score Profile for the Five CALMS Components

such that each person is willing to contribute to the overall success that might take place. For many school-age CWS, a clinician has to be somewhat directive in the planning of treatment but that should not overshadow the needs of the child. Flexibility in meeting short-term and long-term goals is important (Ramig and Bennett, 1997).

To assist a clinician in planning treatment, the CALMS item profile that is created at the end of the assessment can serve as a road map for what needs to be addressed. Nevertheless, the implementation of the treatment plan is joint venture between clinician and the child.

Because every child will show a different profile of scores on the CALMS assessment, it is not possible to describe in detail what a clinician might want to do in therapy. The focus of this section is to provide a clinician with suggestions relative to principles, processes, and activities one could include in a treatment program for most school-age CWS. The discussion about treatment in this section will focus on key concepts a clinician might want to consider when developing treatment activities that address specific CALMS components and goals.

In the sections below, each activity will have the letters C (cognitive), A (affective), L (linguistic) M (motor), and/or S (social) behind the name of the activity. The letters stand for the component(s) that is/are being included in the activity.

Increasing awareness and understanding of stuttering (C, A, M)

One of the first steps in therapy, regardless of how long a child has been in treatment, is to determine a child's current understanding and conceptualization of stuttering. No matter how much treatment a child has received, it is important to review what he/she knows about his/her stuttering before any strategies for managing stuttering are taught. Questions like these should be asked: How well can the child identify and recognize stuttering moments? How much does the child know about stuttering? How well does the child understand what has been taught in previous treatments? Recall that answers to these questions come from data collected in the cognitive component of the CALMS assessment.

One of the first treatment activities I use with many CWS is a discussion of different ways people talk, which emphasizes to a child that fluency and stuttering exist along a continuum of behavior (Runyan and Adams, 1981). CWS need to understand that when they talk, it isn't necessarily just fluent or stuttered. There are many variations of how speech can sound fluent or stuttered. Helping a child to understand that there are different forms of stuttering and that there are different ways to stutter could also help reduce negative emotions that are associated with moments of stuttering (Yairi and Seery, 2011).

This activity involves taking a piece of paper and dividing it into four different sections, side to side or two sections above or below the middle of the page. Below is an example of how the page could be laid out and appear.

Questions to ask for all categories:

When you talk in that way (each category), what is happening?

- a. Is your air coming out or do you feel tension in the chest or stomach areas?
- b. Is there tension in your vocal cords?
- c. Is there tightness or tension in your lips and/or tongue?
- d. How do you feel inside (emotionally) when you talk that way?
- e. How does your body or muscles feel (physically) when you talk that way?

In the upper-left section is a category called "Normal Talking or Easy Fluent Speech." In this section, I had the child count to 10 and say the days of the week, like was done in the evaluation. Usually, children will be very fluent during these automatic forms of speech. Also, I try to come up with short phrases that a child might produce fluently such as "hi" or "how are you?" or "Where are you going?" The focus here is to have the child talk about how it felt physically and emotionally to count to 10 or say the days of the week with easy, relaxed speech. Typically, a child will not report any tension during these types of simple speaking tasks and airflow and voicing are produced effortlessly. There aren't any

negative feelings attached to this form of speech but if there are, then I discuss them and write them down in this section of the page.

In the upper-right section is the category “Normal Bumps or Typical Nonfluent Speech.” This type of speech conveys that all people produce occasional disruptions in their speech. Examples of phrases are “Well...ya know...um... uh...like ya know...etc. This type of speech could also include one unit whole-word and phrase repetitions and/or phrase revisions such as “Wh-What are you doing?” or “Can Can I go too?” Again, the focus is on the physical and emotional feelings associated with these types of responses that occur with both children who do and do not stutter. Ask the child what types of filler or interjections he/she uses or hears other children and adults use when they talk. A related assignment would be to have the child listen and pay close attention to the conversations of his/her peers and focus on the types of word and phrase repetitions. It is important to convey to children that everyone is “normally disfluent” at times and this kind of speech is not the same as stuttering.

The lower-left section of the paper is the category “Easy or Little Stutter.” This is the first discussion of the child’s stuttering. The idea behind this category is to help a child differentiate between two basic forms of stuttering—ones that are very pronounced and others that are less involved. The “little stutter” category represents mild forms of stuttering the child produces. This type of stuttering usually involves minimal tension in the speech mechanism or stuttering events that are not pronounced. A clinician and the child together can use pseudo or voluntary stuttering as a way to purposely create an easier, shorter version of a real stuttered moment. As with the other sections, guide the child into a discussion of what it feels like physically and emotionally to have a “little stutter.”

The lower-right section of the paper is the category “Hard or Big Stutters.” These types of stuttering events involved multiple unit part-and whole-word repetitions, tense sound prolongations, or any severe form of stuttering the child produces. Again, pseudo or voluntary stuttering is used so the child can identify the feelings he/she has during this type of stuttering. Imitate different forms of “hard or big stuttering.”

Help the child talk about what he/she is doing with his/her speech mechanism, what thoughts are taking place during these stuttered moments, and how it makes him or her feel when stuttering is produced in this way.

Practice identifying stuttering events and improving self-monitoring skills (C, A, M)

After discussing the types of fluent and stuttered speech people produce, it might be of value to spend some time helping CWS identify and monitor their speech during oral reading and while producing spontaneous speech. This activity would be helpful for children who do poorly on the first two items of the Cognitive Component in the CALMS assessment.

Helping children identify stuttering events can be done using audiotape or videotape samples. Recording a short portion of reading or spontaneous speech allows the child to listen to the speech he/she produced. Clinicians can assist in asking the child to point out where stuttering events occur. Then, a discussion can take place about the physical and emotional features of a particular stuttering event. Improvements in a child’s ability to identify stuttering events can take a long time to occur so this activity should be included throughout a stuttering therapy program. Ultimately, we want CWS to catch the majority of stuttering events or recognize that they are about to take place. In this way, strategies taught later in treatment will be used effectively. However, I believe that CWS who do not self-correct or self-monitor after a long period of therapy probably will not improve their management of their stuttering.

Practice using voluntary stuttering—stuttering on purpose (C, A, M, S)

This activity follows logically from the previous activity because some voluntary or pseudo-stuttering was introduced while discussing little and big stutters. The intent of this activity is to help children accept the fact that stuttering is something they have some control over instead of something that is out of their control. By purposely using

pseudo-stuttering or voluntary stuttering, a child can learn to reduce the fear of stuttering or reduce the need to conceal the fact that stuttering is present. The intent of this activity is for children to learn and understand what is happening when they stutter as well as show them they have some control over how they stutter. I ask children to imitate or “fake” stuttering in the same way they actually stutter. So, if they typically produce a multiple part-word repetitions like “c-c-c-c-can I go?” then I stutter in the same way. I also ask if I am doing it the way he/she stutters and if not, then I ask them to show me how to change what I am doing. It is important to tell the child that you are not imitating their stuttering to make fun of them or mock them. Rather, you are trying to understand how they stutter so you can understand what they do when they stutter.

Understanding what happens when stuttering occurs and what part of the speech mechanism is involved (C, M)

CWS will benefit from learning and understanding the link between stuttering events and disruptions in airflow, voicing, and articulation. This process involves teaching a child concepts related to the normal aspects of talking, the structures that might not perform correctly when a stuttered event occurs (Guitar, 2006; Williams, 1971), and terminology that will be used throughout the treatment program (Rentschler, 2012). For example, I typically say something like, “We talk normally by first inhaling some air and then gradually releasing that air slowly as we say what we want to say. As the air goes through the vocal cords, they come together to create a vocal sound. This process must be slow and gradual so the airflow helps to gradually bring the vocal cords together. After voicing is started, then movements of the tongue, lips, and jaw make the sounds into words.” Runyan and Runyan (2007) use the term “speech helpers” as another way to help a child understand the structures involved in producing speech.

As we discuss the relatively simple respiratory, phonatory, and articulatory movements needed for normal speech production, I use a drawing of the speech mechanism. This diagram helps a child

understand what happens at each level of speech that corresponds to one form of stuttering the child produces. For some children, it might be just one of the speech systems that is not working efficiently while with other children, it might be two or three systems that do not work in a coordinated fashion. An understanding of how the speech mechanism works for both fluency and stuttering sets up the learning process for specific techniques that help improve a child manage of his/her stuttering. As the speech mechanism is described, the child is asked to label each structure and discuss what role it plays in his/her stuttering. For example, when asked where the child feels tension while speaking, the child points to the larynx. That would suggest the child is aware of tension in the vocal cords but might not understand how tension in this part of the speech mechanism contributes to his/her stuttering.

Facilitating more positive attitudes and feelings about stuttering (C, A)

Many CWS have fears, apprehensions, frustration, and embarrassment about their stuttering, which can lead to more negative feelings such as shame and anxiety (Yairi and Seery, 2011). Sometimes children are fearful because they do not have a good understanding or knowledge of a problem they have. This is where increased knowledge about stuttering can help reduce fears and negative feelings. Recognize that fears and anxieties about stuttering lead to negative perceptions and cognitions about talking.

Negative feelings can lead to negative attitudes that are reinforced by the negative reactions of others toward how the child speaks. If a clinician ignores or hopes the negative attitudes and feelings will go away as the child works on his/her speech, the child will most likely not show progress in managing his/her stuttering on a long term basis. Most of the time, successful treatment outcomes will not occur when a clinician focuses too much attention on fluency control or when too much time is spent on teaching a child to control each stuttering event. Addressing the children’s feelings and emotions about their stuttering and themselves as people who stutter is an important component to any stuttering

therapy program (Chmela & Reardon, 2001; Guitar, 2006; Shapiro, 2011).

Working on emotions and negative reactions toward stuttering should be done gradually and only after a clinician has established a good rapport with the child. Children need to trust the clinician before they will be willing to open up about their feelings about stuttering. However, once rapport is established, encouraging a child to talk about how he/she feels and reacts to stuttering should be included as an ongoing part of the treatment program.

Clinicians need to recognize that once an increase in the awareness and identification of stuttering as well as the use of voluntary stuttering have been addressed (i.e., like the activities described above), more direct work on feelings and emotions can be initiated. However, before approaching a child's emotional reactions to stuttering, a clinician needs to determine how much the child knows about stuttering. Discussing the answers to the true/false test used in the Cognitive section of the assessment would be a good starting point. Depending on the age of the child, you also could discuss myths about stuttering and stereotypes of people who stutter (Murphy, Yaruss, & Quesal, 2007a). Information concerning frequently asked questions about stuttering, facts about stuttering, and famous people who stutter can be found on the Stuttering Foundation website and the stutteringhomepage.com website in the "Just for Kids" section.

Once the child has a good understanding of stuttering facts and information, an activity that follows Murphy's (2005) recommendations (as shown in the Stuttering Foundation DVD #9505) is to give the child a piece of paper and have him/her write down an emotion or feeling he/she has toward stuttering. For example, let's say a child feels "mad" or "sad" when he/she stutters. After writing the word on a piece of paper, I like to ask the child to think and talk about a time when that feeling occurred. It's not critical that the child talk about a time or experience when a particular feeling was experienced but it is helpful to link the emotion to a situation. After talking about the feeling, the next step is to have the child crumple the paper into a small ball of paper. The child can squeeze the ball of paper tightly and then release the tension while the clinician talks

about the feeling. Finally, the clinician can have the child throw the piece of paper across the room, into a container, or at a target on a wall. This symbolizes that the child is a master over his/her emotion and "tossing bad feelings away" is better than bottling up them up inside. The paper ball also gives the child a concrete representation of a feeling toward his stuttering and tossing it away is a constructive way to deal with that emotion.

Another activity, recommended by Murphy (2005), is to use Play-Doh® or clay that a child can mold into various pieces such as four or five small clay figures of some kind. Each piece can represent a stutter or a large piece can represent a big stuttering moment. A clinician could have a child produce an imitated stutter or use pseudo-stuttering on a word or in a short phrase. After a stuttering event is produced through pseudo-stuttering, the child can smash or squeeze the clay piece. This activity can be repeated several times with the child making new clay figures while imitating various stuttering events.

A child might also be receptive to the idea of doing a short classroom presentation on stuttering. With the help of the SLP and teacher, a child can talk to his/her classmates about many aspects of stuttering (Murphy, Yaruss, & Quesal, 2007b). This activity works well for children who do not stutter to learn more about stuttering and how to help their classmate who is working on managing his/her stuttering.

An additional activity a clinician can try in therapy is to have a child draw a picture of what his/her stuttering looks like. Children can depict their stuttering in many ways and a drawing can sometimes give a clinician insight into how they conceptualize stuttering. Examples of children's drawings of how they view their stuttering can be found on the Stuttering Foundation website (www.stutteringhelp.org). This section of the website also has letters from kids that might be helpful when talking about a child feels about stuttering compared to other CWS.

Five strategies for facilitating improved fluency and/or reduced severity of stuttering (C, A, M, S)

There are many ways to modify a child's

speech pattern but I like to focus on five strategies or techniques commonly used in stuttering therapy. These include easy onsets of phonation, light articulatory contacts, a reduction in conversational speech rate, pullouts, and cancellations (Guitar, 2006). Each of these techniques is designed to help children feel like they have some control over how they talk and how they will modify any stuttering event that occurs. I like to teach each child all of these strategies and then find two or three of them that seem to work best and/or are ones a child remembers to use most of the time.

As stated above, an important aspect of teaching any of these strategies is to emphasize how and why any strategy helps make talking easier. If a child doesn't grasp these two concepts, then the strategy will be used only during therapy. The goal is for a child to use a strategy without prompting and gradually use it outside of therapy in everyday speaking situations at home and school. Many children learn strategies but only use them when prompted by a clinician or parent. Children who don't monitor themselves and make changes in their speech on their own will not improve a great deal. This becomes a frustration for the child, the clinician, and the parents. But, with a clinician's guidance in structuring the training of the strategies, a child will have a better chance of learning and using what he/she has been taught. Let's now talk about one of the most common techniques or strategies used in stuttering therapy—easy onsets of phonation.

Easy Onsets of Phonation

This strategy goes by a variety of terms such as easy voicing, easy starts, soft voicing onsets, and air voice. Use a term the child comes up with after the strategy is explained and practiced.

The rationale for this technique is to reduce laryngeal tension that is linked to a stuttering event. The strategy will also help children who have difficulty or feel that there is a loss of control over initiating and/or maintaining voicing while speaking. This technique is useful when a child points to the laryngeal area when asked what part of the speech mechanism he/she feels tense or where a sound "gets stuck." Many children are aware of laryngeal

tension or tightness in the vocal mechanism and point to that area when they experience a moment of stuttering.

If a child does not have any laryngeal tension or delays in voicing onset that lead to stuttering, then the easy onset technique or strategy does not have to be taught. However, if there are concerns that a child cannot turn on the voice and maintain voicing efficiently throughout a phrase, then this strategy should be helpful.

First, an easy onset can be taught two ways: 1) using more airflow prior to the onset of phonation or 2) gradually increasing the vocal intensity of a sound at the beginning of a word. For both types of easy onsets of phonation, it is important to teach the use of the easy onset of phonation in varying speaking contexts and situations. Also, variations in the amount of airflow or increased vocal intensity needs to be practice in order to produce relaxed and controlled voicing onsets. This ensures that CWS realize there is not just one way an easy onset can be produced. Ultimately, a child should be able to produce words or phrases with an easy onset with good control and that is somewhat natural sounding.

Light Articulatory Contacts

This strategy is sometimes called light contacts, light touches, or soft touches. The rationale for teaching the light articulatory contact (LAC) technique is to reduce the tension and force used in the lip and tongue movements when producing speech sounds. It is an effective technique for children who are exhibiting struggle or repeated attempts at a consonant sound at the beginning of a word. In contrast, children who do not display or report any tension or excessive force in the tongue or lips during speech would not be candidates for this technique.

Typically, CWS will show stuttering on voiced and voiceless stops because those sounds involve contact of the lips (/p/ or /b/), tongue against the alveolar ridge (/t/ or /d/) or the tongue against the palate (/k/ or /g/) followed by a release of airflow. The way LACs are taught and explained will depend on the age of the child. Nonetheless, below is one approach to explaining the LAC technique on words beginning with /p/, /t/, and /k/

The LAC production process used for /p/, /t/, and /k/ is similar to other consonant sounds that involve contact of the articulators such as the voiced consonants /b/, /d/, /g/, /f/, /v/ etc. Attention should be paid to making sure all contacts are produced with lots of airflow so the production sounds like you are “blowing the sound out.” It’s important for the clinician to model the production of these sounds frequently and give children plenty of words to practice before expecting them to use this strategy effectively.

Speech Rate Reduction

It is well known that slowing one’s speech rate can facilitate improved fluency by reducing the timing and planning needed to move the articulators from one contact to another during connected speech (Guitar, 2006). Thus, the rationale for using this technique is to have a CWS produce slower, smooth speech movements at a speech rate that facilitate improved fluency. The speech rate has to be slower than the rate a child usually uses in conversation. Focusing on a slight stretch or lengthening of the syllabic unit or using a slight prolongation to all syllables in a phrase is the key concept behind a slower, smoother speech rate. A common term for this type of speech is “Stretchy Speech.” Many children reject talking slower because it sounds unnatural. Therefore, most children will not use a speech rate that is too slow and deliberate. However, when a slower rate is taught initially, it is important to establish a rate that feels comfortable and improves fluency. This might be slower than a child normally talks but once the child gets the feel for how much easier it is to make slower, less-tense speech movements, it should be easy to “sell” the idea that this is a rate that could be used on a regular basis. One approach is to tell the child to use three different rates: fast, slow, and one in between. The “in between” rate is the target speech rate; one that produces increased fluency and a feeling of greater speech control. Practicing these three speech rates in various speech contexts helps a child establish a target rate he/she can use on a regular basis. It is best if the rate can be measured in syllables per minute to provide a target rate for practice in and outside of therapy.

Phrasing can also be used a way to reduce speech rate. Gregory (2003) uses this approach in his easy, relaxed, and smooth movement (ERA-SM) training. Gregory’s focus is on “speech chunks” or phrase units. An utterance is broken into small units such that a sentence like “I would like to go outside and play with my friends” would be broken into phrases such as “I would like… to go outside…and play with my friends.” Using oral reading passages, a child can be taught to pause at commas and break up long sentences into shorter ones by making marks with a pen or pencil at specific locations in the sentence. This same style of speaking is then practiced while conversing about what was read. After some practice, a child is encouraged to use the phrasing in conversation.

Pullout and Cancellation

The pullout and cancellation techniques for managing a moment of stuttering were developed by Van Riper (1973). These are two popular ways to modify stuttering events to make them less severe. Guitar (2006) discusses these techniques in detail. The rationale behind these techniques is to have a child change from a tense stutter to a more relaxed and controlled form of stuttering. The pullout (or the idea of “pulling out” of a stutter) means that once a stuttered sound occurs in a word, the child is taught to hold on to the sound being stuttered and then slowly prolong the rest of the sounds in the word, much like a car gradually moving out of mud or snow when stuck. Usually, children have to be well aware of their stuttering in order for this strategy to be used effectively. For example, if a child stutters on the word “really,” the child needs to immediately detect the stuttering moment and voluntarily shift to repeating the “r” sound a few times or prolonging the sound in its normal manner. As the sound is repeated or prolonged, tension is reduced and the child slowly produces the remaining sounds in the word. It would look like “r-r-rrreeeaallllyy” or “r---rrrrreeeaallllyy.” Once this technique is practiced in imitated stuttered words, then practice would be done with short phrases, sentences, and in conversational speech.

A key feature of the pullout is to have the child feel the change in tension and use relaxed speech

movements to finish the word. The pullout cannot be rushed or tried when muscle tension is still present in the articulators. Another variation of the pullout that has been used is to change a prolongation of a sound into an easy, effortless, repeated sound as the word is finished. It would look something like “r--ruh, ruh, ruh, really.” The perception of an easy, effortless repetition of a couple of syllables would tend to sound like a normal form of disfluent speech.

The cancellation technique is another strategy that can be used to modify a stuttered moment. Cancellations focus on reducing tension, force, and effort that is being used to produce a sound or word. As with pullouts, cancellations can be taught using imitated stuttering and then tried during actual stuttering events. The child is taught to focus on the feelings that accompany stuttering so an immediate recognition takes place that a stutter has begun. Once the child starts a stuttered word, he/she is instructed to cancel or stop the production. During the next few silent seconds, the child needs to change the tension in the musculature and/or shift to another way of producing the stuttered word. For example, if the child stutters on the word “thanks,” the “th” might be repeated or prolonged. At that point, the child stops the production of the “th” sound and then changes to do something different, which in this case might mean using an LAC on the “th” sound and then completing the word “thanks.” For some CWS, this technique can be hard to learn and use effectively. Most see it as “stop and starting over,” which is not the case. It is also common that CWS tend to rush the reproduction of the word rather than using a slow change to start the word again. If the cancellation is done too quickly, it will sound like another stuttered word. So, it is important that a clinician talk about how this strategy is not about stopping and starting over but a new way to reduce tension and to plan a different (not necessarily fluent) way to change a stuttered sound or word into a less stuttered event that is accomplished without fear or apprehension.

Managing stuttering through the manipulation of the linguistic length and complexity of utterances (C, A, L, M, S)

One aspect of stuttering therapy that is important

for a clinician to manage is the simplicity or complexity of the utterances the child will produce. Recall that the first linguistic component item on the CALMS assessment looks at the relationship between utterance complexity and the frequency of stuttering. As the length and complexity of what is said increases, CWS are more likely to stutter. Therefore, a clinician needs to plan speech material that elicits a particular level of speech production that facilitates less stuttering and/or increased management of stuttering events. In order to assist a child in feeling successful in managing his/her stuttering, the clinician should use a linguistic level where the child can talk in an easy way with minimal tension and struggle. Then, as the child produces consistent control and ease with simple linguistic utterances, the clinician needs to elicit utterances that involve a slight increase in linguistic complexity. The rationale for increasing the gradual length and complexity of utterances is well documented in the Ryan’s (1974) treatment approach and Costello’s (1983) extended length of utterance (ELU) program. I do not think it is necessary to follow a strict sequential approach such as one word, two words, three words, short sentences, phrases, and then long connected speech as a way of gradually establishing increased fluency. I also do not believe that children have to be 100 percent fluent at any level of speaking in order for them to feel like they are making positive changes in their speech.

I recommend that for any topic of discussion, clinicians follow the situational and semantic contexts described in the Situational-Discourse-Semantic (SDS) model of language (Norris & Hoffman, 1993). The situational and semantic context portions of the SDS model fit well with the gradual increase in utterance complexity that can be systematically manipulated by a clinician during treatment. These two aspects of the SDS model include contextualized and decontextualized contexts (situational) as well as transitions from simple labeling and description to speaking about inferences or evaluations about a topic that is unstructured (semantic context). An example of treatment that incorporated this model into a stuttering therapy program is discussed in a paper by Healey, Scott-Trautman, and Panico (2001).

Below is a suggested linguistic complexity

sequence that incorporates either the contextualization or decontextualization of a topic and a gradual increase in semantic difficulty. These aspects of the linguistic message then need to be used in conjunction with a speech-modification technique. I recommend using four levels of linguistic complexity while talking about a topic the child enjoys discussing and knows quite a bit about. These four levels are:

Level 1: Contextualized labeling and description of terms associated with a topic

Level 2: Increased length of utterances through structured discussion of a topic using contextualized materials

Level 3: Inclusion of questions that require an inference or interpretation of contextualized or decontextualized information

Level 4: Decontextualized story telling or spontaneous speech

An example of how to generate responses about the topic of baseball, progressing through Levels 1-4 that incorporate all CALMS components.

Contextualized Materials: Diagrams, pictures, and reading material of various types. With this topic, a child could draw a baseball field or a clinician could use a picture of a real baseball field. In a hand-drawn diagram, the child could draw the infield area, the bases, and the outfield. These materials help set the structure of the context for the discussion about this sport. It also starts the speech practice at a level that a child can manage easily.

Level 1: Contextualized labeling and short descriptions of a baseball field and baseball players

Using a picture or a drawing of a baseball field, the child could label the position of each player on the baseball field. This usually elicits considerable easy, controlled speech that is highly fluent because the child is producing one-to-two word responses. If there is stuttering with tension or struggle at this level, the clinician should stay at this level until one-to-two word productions are managed more effectively. The clinician can gradually make the utterances a little longer but relatively simple by describing the role of each player. This can be done

using a carrier phrase like, "This is..." For example, "This is the first baseman and this is the second baseman". Or other short sentences can be used like:

- "The shortstop plays in the space between second base and third base."
- "The three outfielders help make outs for long hits."

Next the clinician could make a list of terms used in baseball and print off the terms with a short definition of each term, such as:

Strike out: When a batter swings at pitches three times without hitting the ball

Double play: Two outs are made on one play

Ground out: The ball is hit on the ground and the player throws the ball to a base before the runner touches the base.

Fly out: A player catches the ball in the air before it hits the ground.

The list can be as long or short as needed. Care should be taken to define terms using words in a way a child might explain the term. As the child gains some control over his/her fluency with these short descriptions of baseball terms, then the length of the term definition or description could increase or have the child describe two terms at the same time. This adds length to the utterance but keeps complexity constant. A clinician should also control the length of what the child says about a term as way to help him/her manage either a fluent response or relaxed, easy stuttered speech. The child will be asked to use a technique or strategy taught in therapy while describing the terms. Typically, I say, "What technique are you going to use? What are you going to pay attention to or focus on while you tell me about (a term)? How and why does that technique make the phrase easy to say? Ok, when you are ready, tell me about the first term and then after that we will talk about how you did." After some practice with techniques at this level, I recommend that the child rate their own performance rather than relying on me for feedback. This is important because it encourages self-monitoring and self-evaluation. I use a simple five-point scale for children to rate their performance. Usually, I have a "1"

represent “excellent performance” and a “5” represent “poor performance.” Or, you and the child can define the terms that will be used in 1-5 scale.

The clinician can alternate between or among speech-modification strategies if more than one has been taught. Switching among a few strategies or techniques helps promote the learning of the new speech skill that assists in achieving more fluent or less stuttered speech. This level can also be used as homework practice with the child’s parents. Encourage the child to practice describing the terms to a parent in the same way as the terms were produced during treatment. Contact the parent and let them hear a model of the technique being used. Specify how long the practice will take, who the child will be talking to, and what he/she will focus on during the practice. It is recommended that practice last no more than 10 minutes each day so the child does not dislike the time spent on this activity. Some agreement on how long speech practice at home will last should be discussed between the child, the clinician, and the parent.

Level 2: Increased length of utterances through structured discussion of baseball using contextualized materials

Once the child achieves consistent fluency or minimal stuttering at Level 1, the clinician can move to Level 2. This level will require more controlled use of a strategy when a longer utterance is being produced. For example, let’s say that the child has told you three ways a strike out can occur in baseball. In Level 1, the child would say each way as an individual utterance. In Level 2, the child is to tell you all three ways to get a strike in baseball.

The child might say, “The player swings and misses the pitch three times or the batter hits a ball foul outside the lines that mark the edge of the field on the first and third base sides. Another way is when the batter tips the ball and it’s caught by the catcher.”

This example shows how much more information is shared but the material is still contextualized because the three ways to get strike outs in baseball have been written out or discussed before this task. The child is simply talking about several pieces of

information that they know very well and have can refer to in written form. At this level, you make the combined information as long or short as the child can manage. Considerable practice at this level is important to build speech-management skills and to help increase a child’s confidence that he/she is learning how to manage stuttering.

One way to make this stage of practice slightly harder is to have the child give the clinician eye contact or say in such a way that it sounds like it would in conversation. I find this makes it slightly more difficult for the child and it serves to challenge his/her ability to maintain strategy use when the speaking situation contains a small degree of emotion because of the use of eye contact. This also makes the spoken information somewhat more realistic.

Additional ways to increase the length of utterances using contextualized materials

A. Reading and Retell

Below is an example of having a child read and then retell information about baseball. This story gives structure to what a child will retell without the requirement to follow the material word for word. The speech task is to read and describe in his/her own words in as much detail as possible, the key features of an American baseball field.

Baseball is a game that is played on a field shaped like a diamond. The long boundary lines go from home plate in a line to first base and another one goes in line with third base. A foul ball occurs when the ball is hit outside the lines of the playing field. The object of the game is for one team to score more runners across home plate than another team during a nine-inning game. All players sit in the dugouts when their team is at bat. Batters get ready to hit in the place called the “on deck circle.” Fans of the teams sit in seats surrounding the field and hope that they can catch a foul ball or one hit for a home run. If they do, they get to keep the ball.

This material can be broken up into individual sentences or read as paragraph material. The focus of this activity is to incorporate as many CALMS components as possible when reading or talking about the material. It is assumed that before you

introduce this activity into therapy, the child has a firm grasp of how and why certain speech modification strategies will assist in making talking easier. It is also assumed that the child has been taught or has improved his/her self-monitoring skills. With these assumptions in mind, below is an example of how to incorporate all of the CALMS components into this stage of treatment:

1. Ask the child to select a speech-modification strategy he/she would like to use while reading or talking about the content of the paragraph material (motor component). Perhaps the child says, "I will use easy onsets." Ask the child to tell how and why this is going to help him/her improve their speech. I would also ask what he/she is going to pay attention to during the reading or story telling. This will alert the child that he/she should do some self-monitoring (cognitive component).
2. Ask how he/she is feeling and if there is any nervousness, anxiety, or fear (affective component). If so, then you need to talk about any negative feelings before the reading/story telling begins.
3. Tell the child that at the end of the reading/story telling that you want him/her to rate how well the easy onsets (or other strategy) were produced. As stated above, use a 1-5 scale to evaluate performance and together, define what a "1" and a "5" represent. It's important that the child do as much of the self-rating as possible so there is less reliance on the clinician for feedback and evaluation (cognitive component).
4. Because the material is paragraph-length reading or story telling from reading, it is considered contextualized material (linguistic component). The clinician or a peer would be the listener in the therapy room or classroom (social component).

B. Picture Description

Another activity that can be done at this stage is to have children formulate their own messages. One of the easiest ways to do this is to show a picture that describes an action. Find a picture that shows an action scene about baseball and ask the child to go through the same sequence of integrating all five CALMS components as above with the written material.

Cognitive Component: What you are going to do or pay attention to when you say what is going on in this picture?

Affective Component: How you are feeling before you tell me about this picture?

Linguistic Component: What are you going to say about this picture? (Clinician can request or model the length and complexity of what is said about the picture)

Motor Component: What strategy or strategies will you use when talking about the picture?

Social Component: First, you can say it to me (clinician) but I also want you to take this home and tell your mom and/or dad or brother/sister about this picture.

Again, the child is asked to rate his/her performance on a scale of 1-5. Also, questions can be asked that go beyond the picture such as:

- "What do you think will happen next?"
- "Why does the catcher have his foot in front of home base?"
- "What could the runner do to slide into home safely?"

Responses to these types of questions will make the speech management a little more challenging.

Level 3: Inclusion of questions that require inference or an interpretation of contextualized or decontextualized information

At this level, gradually make the speech management slightly more difficult by asking questions that require long answers a child can generate on his/her own. The questions come in the form of inferring and interpretation about what is taking place in a situation. For example, questions like:

- "Why is it difficult for pitchers to get strikeouts?"
- "If there is a runner on first base and the batter hits the ball on the ground, what might happen next?"
- "Why do runners steal bases?"
- "Why isn't stealing a base done often in a baseball game?"

- When would stealing bases be a good idea or a bad idea?"

This type of questioning requires some preparation before treatment so the questions elicit the intended level of response. Again, asking the child to use a strategy and to pay close attention to what is happening when he talks is an important part of the speech training strategy.

Level 4: Decontextualized story telling or spontaneous speech

This is the most difficult level of speech control. A child should not reach this level until he/she can demonstrate consistent speech management at levels 1, 2 and 3. If a child is not prepared for this level, most likely, he/she will go back to the old form of stuttering and forget to use any strategies that have been taught. So, this level will require a child have a firm grasp on how and why they are using a strategy to produce a high level of fluency or minimal stuttering. It is also important at this stage that clinicians focus on less noticeable strategy use than at earlier stages of treatment. For example, that if a child uses an easy onset of phonation to ease into a word, the use of the easy onset should be so subtle that only the child knows he/she is using it to control voicing onset.

At this level that child tells stories about baseball that they are familiar with or repeat after hearing a story read to them. It is also possible for children to talk about something that happened with their favorite professional baseball team or one of their favorite players. The key is to use decontextualized material to make the discussion similar to natural conversation.

Conclusions

It is hoped that the information in this article provides readers with a better understanding of a multidimensional approach to assessing and treating stuttering. The CALMS model serves as a theoretical foundation for the items selected for an assessment of stuttering. The model is also useful to explain to clients, parents, and teachers about how the disorder

of stuttering can be conceptualized. The primary purpose of the CALMS model and assessment is to make sense out of complex disorder. With the data derived from the assessment, supplemented with other data obtained from standardized measures of stuttering available on the market, it is possible for clinicians to feel more confident in knowing what information to gather in order to conduct a comprehensive evaluation of a child's stuttering. As with any disorder, treatment plans should evolve from objective data from an evaluation. The CALMS model and assessment were designed with this specific purpose in mind.

References

- Alm, P. A. (2007). *The dual premotor model of stuttering and cluttering: A framework*. Paper presented at the 27th World Congress of the International Association of Logopedics and Phoniatrics, Copenhagen.
- Ardnt, J., & Healey, E. C. (2001). Concomitant disorders in school-age children who stutter. *Language, Speech, and Hearing Services in Schools, 32*, 68–78.
- Bennett, E. M. (2006). *Working with people who stutter: A lifespan approach*. Columbus, OH: Merrill Prentice Hall.
- Blood, G. W., Ridenour, V. J., Qualls, C. D., & Hammer, C. S. (2003). Co-occurring disorders in children who stutter. *Journal of Communication Disorders, 36*, 427–449.
- Brisk, D. J., Healey, E. C., & Hux, K. A. (1997). Clinicians' training and confidence associated with treating school-age children who stutter: A national survey. *Language, Speech, and Hearing Services in Schools, 28*, 164–176.
- Brutten, G., & Vanryckeghem, M. (2007). *The Behavior Assessment Battery for school-aged children who stutter*. San Diego, CA: Plural Publishers.
- Chmela, K. & Reardon, N. (2001). *The school-age child who stutters: working effectively with attitudes and emotions*. Memphis, TN: Stuttering Foundation of America.
- Cooper, E. B., & Cooper, C. S. (1996). Clinician attitudes towards stuttering: two decades of change. *Journal of Fluency Disorders, 21*, 119–136.

- Costello, J. (1983). Current behavioral treatments for children. In D. Prins & R.J. Ingham (Eds.). *Treatment of stuttering in early childhood* (pp.69-112). San Diego, CA: College-Hill Press.
- Couture, E. G. (2001). *Stuttering: Its nature, diagnosis and treatment*. Boston: Allyn & Bacon.
- Gillam, R., Logan, K., & Pearson, N. (2009). *TOCS: Test of Childhood Stuttering*. Austin, TX: Pro-Ed.
- Gregory, H. H. (2003). *Stuttering therapy: Rationale and procedures*. Boston, MA: Allyn & Bacon.
- Guitar, B. (2006). *Stuttering: An integrated approach to its nature and treatment* (3rd ed.) Baltimore, MD: Williams & Wilkins.
- Healey, E. C., & Scott, L. A. (1995). Strategies for treating elementary school-age children who stutter: An integrative approach. *Language, Speech, and Hearing Services in Schools, 26*, 151-161.
- Healey, E. C., Scott Trautman, L. A., & Susca, M. (2004). Clinical applications of a multidimensional model for the assessment and treatment of stuttering. *Contemporary Issues in Communication Science and Disorders, 31*, 40-48.
- Healey, E. C., Scott-Trautman, L. & Panico, J. (2001) A model for manipulating linguistic context in stuttering therapy. International Stuttering Awareness Day Internet Conference, Mankato State University, Mankato, MN.
- Kelly, E. M., Martin, J. S., Baker, K. I., Rivera, N. J., Bishop, J. E., Kriziske, C. B., Stettler, D. S., & Stealy, J. M. (1997). Academic and clinical preparation and practices of school speech-language pathologists with people who stutter. *Language, Speech and Hearing Services in Schools, 28*, 195-212.
- Manning, W. (2010). *Clinical decision making in fluency disorders*. (3rd ed.). Clifton Park, NY: Cengage Learning.
- Murphy, W. (2005). *Dealing with guilt and shame*. Memphis, TN: Stuttering Foundation DVD No. 9505.
- Murphy, W., Yaruss, J. S., & Quesal, R. W. (2007a). Enhancing treatment for school-age children who stutter I: Reducing negative reactions through desensitization and cognitive restructuring. *Journal of Fluency Disorders, 32*, 121-138.
- Murphy, W., Yaruss, J. S., & Quesal, R. W. (2007b). Enhancing treatment for school-age children who stutter II: Reducing bullying through role-playing and self-disclosure. *Journal of Fluency Disorders, 32*, 139-162.
- Norris, J. & Hoffman, P. (1993). *Whole language intervention for school-age children*. San Diego, CA: Singular Publishing Group, Inc.
- Ramig, P. R., & Bennett, E. M. (1995). Working with 7-12 year old children who stutter: Ideas for intervention in the public schools. *Language, Speech and Hearing Services in Schools, 26*, 138-150.
- Ramig, P. R., & Bennett, E. M. (1997). Clinical management of children: Direct management strategies. In R. F. Curlee & G. M. Siegel (Eds.), *Nature and treatment of stuttering: New directions* (2nd ed., pp. 292-312). Needham Heights, MA: Allyn & Bacon.
- Rentschler, G. J. (2012). *Here's how to do stuttering therapy*. San Diego, CA: Plural Publishing.
- Riley, G. (2009). *Stuttering Severity Instrument for Children and Adults* (4th ed.). Austin, TX: Pro-Ed.
- Riley, G. & Riley, J. (2000). A revised component model for diagnosing and treating children who stutter. *Contemporary Issues in Communication Science and Disorders, 27*, 188-199.
- Runyan, C. M. & Adams, M. R. (1981). Stuttering and fluency: Exclusive events or points on a continuum? *Journal of Fluency Disorders, 6*, 197-218.
- Runyan, C. M., & Runyan, S. E., (2007). The fluency rules program for school-age children who stutter. In E. G. Couture & R. F. Curlee (Eds.), *Stuttering and related disorders of fluency* (3rd Ed.), New York, NY: Thieme Publishers.
- Ryan, B. P. (1974). *Programmed therapy of stuttering in children and adults*. Springfield, IL. Charles C. Thomas.
- Scott Trautman, L. A., Healey, E. C., & Norris, J. (2001). Effects of contextualization on fluency in three groups of children. *Journal of Speech-Language-Hearing Research, 44*, 564-576.
- Shapiro, D. (2011). *Stuttering Intervention: A collaborative journey to fluency freedom* (2nd ed.). Austin, TX: Pro-Ed.
- Smith, A. (1999). Stuttering: A unified approach to a multifactorial, dynamic disorder. In N. Bernstein Ratner, & E. C. Healey (Eds.). *Stuttering research and practice: Bridging the gap* (pp. 123-130). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

- Starkweather, C. W. (1987) *Fluency and stuttering*. Englewood Cliffs, NJ: Prentice Hall.
- Tellis, G., Bressler, L., & Emerick, K. (2008). An exploration of clinician views about assessment and treatment of stuttering. *Perspectives on Fluency and Fluency Disorders*, 18 (1), 16-23.
- Van Riper, C. (1973). *Treatment of stuttering*. Englewood Cliffs, NJ: Prentice Hall.
- Williams, D. E. (1971). Stuttering therapy for children. In L. E. Travis (Ed.), *Handbook of speech pathology and audiology* (pp. 1073-1093). Englewood Cliffs, NJ: Prentice-Hall.
- Yairi, E., & Seery, C. H. (2011). *Stuttering: Foundations and clinical applications*. Upper Saddle River, NJ: Pearson Education, Inc.
- Yaruss, S., & Quesal, R. (2010). *OASES: Overall assessment of the speaker's experience of stuttering*. Bloomington, MN: Pearson/AGS.
- Yaruss, S., Coleman, C., & Quesal, R. (2012). Stuttering in school-age children: A comprehensive approach to treatment. *Language, Speech, and Hearing Services in Schools*, 43, 536-548.

About the Author:

E. Charles Healey is a professor of speech-language pathology at the University of Nebraska for the past 35 years. During his career, he has received a University Distinguished Teaching Award, the honors of the Nebraska Speech-Language-Hearing Association, a distinguished alumni award from the University of Kentucky, and is an ASHA Fellow. Dr. Healey is currently an ASHA Board Recognized Specialist in Fluency Disorders and an Associate Editor for the *Journal of Fluency Disorders*. He has published many journal articles and book chapters concerning adults and children with fluency disorders. Dr. Healey has presented numerous workshops and seminars on the assessment and treatment of school-age children who stutter.

The CALMS Assessment (English Version) is available for purchase. Using Google, search for *calms stuttering.com* for more information about the assessment and what it has to offer.

(2013. 1. 18受理)