Temperament, Emotion and Stuttering: Evidence, Assessment and Treatment

Photo of sculpture, wall of home in Dornbusch, Frankfurt am Main, Germany. Wikimedia Commons (allemp.de)

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Presentation to Fullerton Fluency Conference, Center for Children Who Stutter, California State University, Fullerton, CA
Saturday October 20, 2018

http://vkc.mc.vanderbilt.edu/childhoodstuttering/

Disclosures:
R. Jones & E. Conture

• DISCLOSURES
  • Financial:
    • Edward G. Conture has financial relations regarding thoughts/ideas/material from two of his published books which are included in the content of this October, 2018 Fullerton Fluency Conference, a cooperative offering from the Center for Children Who Stutter in collaboration with California State University (CSA), Fullerton and the California Speech-Language-Hearing Association.
    • Robin M. Jones receives salary from Vanderbilt University Medical Center, Dr. Jones is also the principal investigator on grants that relate to the thoughts/ideas/material in this presentation from NIH/NIDCD and the Vanderbilt Kennedy Center.
  • Non-financial:
    • Both presenters - Edward G. Conture and Robin M. Jones - have non-financial relations with those publications they have (co)authored that are part of the content of this October, 2018 presentation to the Fullerton Fluency Conference, a cooperative offering from the Center for Children Who Stutter, California State University (CSA), Fullerton and the California Speech-Language-Hearing Association.

Preparation of this presentation was supported in part by National Institutes of Health (NIH) grants from the National Institute on Deafness and Other Communication Disorders (NIDCD) to Vanderbilt University (5R01DC000523-19) and the Vanderbilt University Medical Center (R21DC016723), the National Center for Research Resources, a CTSA grant (1 UL1 RR024975) to Vanderbilt University, and Vanderbilt University and Vanderbilt Kennedy Center Discovery Grants. The research reported herein does not reflect the views of the NIH, NIDCD, or Vanderbilt University.

Where in the world is the Vanderbilt Children’s Stuttering Project located:
South-Central USA; specifically Nashville, Tennessee; and housed in the Vanderbilt University Medical Center (VUMC) Bill Wilkerson Center (VBWC)

Learner Outcomes
Saturday 10/20/18

1. After this course, participants will be able to describe and discuss emotional processes associated with stuttering in young children (between- and within-group considerations) and their potential clinical implications.
2. After this course, given audio/video samples and case histories, participants will be able to identify and contrast individuals whose stuttering might or might not involve temperamental/emotional factors to consider in assessment and treatment.
3. After this course, participants will be able to describe one evidence-based method for assessment of childhood stuttering, that considers how individual differences in children’s temperament and emotional processes may impact such assessment.
4. After this course, participants will be able to explain one evidence-based method for treatment of childhood stuttering, that considers how individual differences in children’s temperament and emotional processes may impact such treatment.

I. INTRODUCTION: GENERAL, SPECIFIC PURPOSES AND OUTLINE

"...a varying effect may not be accounted for by reference to an unvarying cause" (Johnson, W. & Associates, 1959, p. 3)

General Purpose

• To provide evidence-based information about temperament in young children and its association to as well as implications for the diagnosis and treatment of childhood stuttering.
Outline Temperament and Stuttering: Saturday 10/20/2018

I. GENERAL PURPOSE
II. DEFINITIONS AND DESCRIPTION OF CHILDHOOD STUTTERING
III. DEFINITIONS AND DESCRIPTION OF EMOTION AND TEMPERAMENT
IV. ROTHBART’S (2011) THREE TEMPERAMENTAL FACTORS AND RELATED IMEASURABLE SCALES
VII. RESEARCH FINDINGS (2003-2018) RE TEMPERAMENT AND STUTTERING: EVIDENCE FROM CODED BEHAVIORAL OBSERVATIONS
VIII. ASSESSMENT OF CHILDHOOD STUTTERING, INCLUDING REFERENCE TO TEMPERAMENT AND EMOTION
IX. TREATMENT OF CHILDHOOD STUTTERING, INCLUDING REFERENCE TO TEMPERAMENT AND EMOTION

II. Definitions and Descriptions: CHILDHOOD STUTTERING

“...a varying effect may not be accounted for by reference to an unvarying cause” (Johnsion, W. & Associates, 1959, p. 5)

Childhood Stuttering What is It?

- Stuttering = a developmental communication disorder where the flow of speech is disrupted or broken, resulting in:
  - Repetitions of sounds/syllables (“li-li-li-like this”),
  - Repetitions of single-syllable words (“I-I-I like this”)
  - Prolongations (“llllike this”), or
  - Abnormal stoppages (no sound) on sounds and syllables.
- Unusual facial and body movements may be associated with or occurring before, during and/or after instances of stuttering

What is the average and range of stuttered disfluencies exhibited by preschool-age children?

As expected, preschool-age CWS and CWNS significantly differ re stuttered disfluencies (e.g., sound/syllable repetitions) (After Tumanova et al., 2014)

Assumption: we assume genetics and/or experience impact most commonly discussed causal contributors to stuttering, with all such contributors involving the brain, at least at some point in the process

Genetics + Experience

Assumption: these temperamental predispositions serve to actively filter one’s experiences/learning

Choleric Melancholic Sanguine Phlegmatic


What is the average and range of stuttered disfluencies exhibited by preschool-age children?

As expected, preschool-age CWS and CWNS significantly differ re stuttered disfluencies (e.g., sound/syllable repetitions) (After Tumanova et al., 2014)
III. DEFINITIONS AND DESCRIPTION OF EMOTION and TEMPERAMENT

Emotion defined

• “Emotion is a process, a constant, vigilant process...which periodically reaches a level of detection for the person (i.e., a feeling) or an observer” (Cole et al., 2004, p. 319)

• Emotional behavior can be unconscious, quick (LeDoux, 1996).

• Feelings can be conscious, slower (LeDoux, 1996).


Temperament (an umbrella term for a constellation of individual differences): Definition

Temperament (an English word):

• Comes from temperamentum (Latin) or “mixture, which comes from temperare or ‘mingle in due proportion’”


Temperament defined:


• Temperament “…refers to stable individual differences that appear from birth onward and that presumably have a genetic and neurobiological basis.” (Mervielde & De Pauw, 2012). In Zenter & Shriner (Eds.) Handbook of Temperament. New York: The Guilford Press, p. 21.

Choleric Melancholic Sanguine Phlegmatic

Temperament defined: Cont’


• “These tendencies are:
  • biologically based
  • linked to an individual’s genetic endowment” (p. 207) (Posner, Rothbart, & Sheese, 1981, as cited by Rothbart, 2007), and,
  • not continually expressed” but “…dependent on the appropriate eliciting conditions, that is, the content of situations” (Rothbart, 2011, p. 14).

IV. ROTHBART’S (2011) THEORY OF TEMPERAMENT, ITS THREE FACTORS AS WELL AS RELATED 15 (MEASURABLE) SCALES

“...THE CHILD’S EFFECTIVE EXPERIENCE...HER [SYRIL ESCALONA’S] IDEA WAS THAT EVENTS IN CHILDREN’S LIVES ARE EXPERIENCED ONLY AS THEY ARE FILTERED THROUGH THE INDIVIDUAL CHILD’S NERVOUS SYSTEM, SO THAT AN ENVIRONMENTAL EVENT IS NOT THE SAME FOR ALL” (ROTHBART, 2011, P. 30)
Employing factor analysis, Rothbart et al. (2001) reported three unobserved variables - called factors - that describe variability among a larger number of observed, correlated variables.

The resulting test, Children’s Behavior Questionnaire (CBQ) (Rothbart et al., 1994; 2001) is a validated caregiver–rating report, with various forms differing in numbers of questions.

Three broad factors arising from factor analysis of CBQ:

- **Surgency**: disposition to positive emotions, rapid approach to potential awards and high activity level (similar to extraversion)

- **Negative affect**: fear, anger, frustration, discomfort, sadness and slowness to recover from distress

- **Effortful control**: inhibitory control, attention focusing, low-intensity pleasure, and perceptual sensitivity.

Directionality of Effect:

- **(A) Causal**: Temperament causes Stuttering

- **(B) Consequential**: Temperament consequence of stuttering

- **(C) Bi-directional**: Temperament impacts stuttering and stuttering impacts temperament

- **(D) Correlation**: Temperament related to stuttering through a third variable (e.g., gender, maternal education)

How is any of the above associated with stuttering?

- First, all humans have a temperament.

- Second, all people who stutter, including preschool-age CWS, are humans.

- Therefore, CWS have a temperament NOT because they stutter, but because they are human.

- The issue, therefore, is not whether CWS, at or near the onset of stuttering, have a temperament (because all CWS [and CWNS] DO have a temperament)

- Instead, the issue is whether: CWS’s temperament is associated with the onset, exacerbation and/or maintenance of their stuttering.

One other thing about temperament: Temperament is related to personality but it is not personality.

- “Temperament and experience together ‘grow’ a personality” (Rothbart, 2007 p. 207).


- “As such, the resulting personality reflects the person’s cognitions about others, self and the physical and social world, including variables such as attitudes and values.” (Conture, Kelly & Walden, 2013).

Zach and Nick come next...
Parent’s description of temperamentally-related behaviors of their twin sons: Zach and Nick

Takeaway messages from parents description of their two twin son’s (Zach and Nick) temperamentally-related behaviors

Zach (blue):
- Laid back
- Easy going
- Adaptable
- Outgoing
- Distractible
  - Attention diverted in 5 minutes
- Less inhibited
- Funny
- Happy-go-lucky

Nick (red):
- Intense
  - 100% all day every day
- Does everything fast
  - Moves fast
  - Talks fast
- Hyper-focused
  - Hears nothing around him
  - Stays with what he’s doing
- Verbal
  - Often
  - Early

Zach and Nick’s Emotional Reactivity and Regulation from their parent’s report on the Children’s Behavior Questionnaire (CBQ)


VI. SYNOPIS of RESEARCH FINDINGS (2003-2018) RE TEMPERAMENT, EMOTION AND CHILDHOOD STUTTERING: EVIDENCE FROM CAREGIVER REPORTS

“...while parent report measures do contain some subjective parental components, available evidence indicates that these measures also contain a substantial objective component that does accurately assess children’s individual characteristics” (Henderson & Wachs, 2007, p. 402).
Example CBQ subscale questions for caregivers

- “Is very difficult to soothe when s/he becomes upset”
- “Likes to go high & fast when pushed on a swing”
- “Is slow & unhurried in deciding what to do next”

Reactivity

Negative (Negative Affect)

Positive (Surgency)

Regulation

Effortful Control

Synopsis of what we have learned from caregiver reports?

- Compared to CWNS peers, CWS exhibit:
  - Greater Reactivity
  - More Emotional Reactivity, Negative Affect and Extreme Behavioral Inhibition
  - Lesser Regulation
  - Less Attentional and Emotional Regulation as well as Inhibitory Control

- Negative affect relates to receptive vocabulary

VII. INTRODUCTION TO PICTORIAL/WITTEN CBQ-BASED CASE STUDIES (TO BE SPREAD THROUGHOUT REMAINDER OF TALK):

- All case studies based on CWS (n = 100) and CWNS’s (n = 100) initial visit (Time 1 of 4 Time points – 8 months apart - across 24 months); all 200 children are between 3 years, 0 months to 5 years, 11 months age.
- Some case studies will display central tendency and others will display extremes of the three Rothbart-model temperamental factors: negative affect, surgency and effortful control

Graphic representations for High and Low CBQ factors (n = 3)

“High” and “low” CBQ indicators for case studies
Range of CBQ values for case studies based on our Vanderbilt sample of approximately 100 CWS

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<td>3.9 - 5.0</td>
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<td>Effortful control</td>
<td>4.5 - 5.5</td>
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“Kenneth” (not real name)
Male, 3 years 10 months: Central Tendency (CBQ)

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<th>Value</th>
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<tr>
<td>Surgency</td>
<td>4.5</td>
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<tr>
<td>Effortful control</td>
<td>5.0</td>
</tr>
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BACKGROUND INFORMATION

Birth order – Unknown
Stuttering (at time of initial diagnostic; % = percentile rank) – TSO: 11 months
AGE AT ONSET: 2;11
STUTTERING SEVERITY: (GSE: 11, NAM: 20-40)%
STUTTERING FREQUENCY: 6% (SND)
TOS-LS: Mild Speech Fluency Rating (13), Greater than Typical Fluency-related Consequences (10)
KIDDC/1-3L: Total negative attitudes to speech for CWNS
Speech-language (standard score = 95)

VIII. RESEARCH FINDINGS (2003-2018) RE TEMPERAMENT, EMOTION AND CHILDHOOD STUTTERING: EVIDENCE FROM CODED BEHAVIORAL OBSERVATIONS

Coded Behavioral studies: Designed to address 2 questions...

- Are there differences in CWS and CWNS emotional responses to various emotionally-arousing conditions?
- Are emotional processes prior to and/or during speech associated with changes in speech fluency of young CWS?

Important Note
Re American culture: Negative emotions are typically down-regulated.
Positive emotions are typically un-regulated.

Answers:
- Yes. CWS, compared to CWNS, exhibited significantly more negative affect after receiving an undesirable gift.

Four Paradigms used for coded behavioral observations of emotion, temperament, and childhood stuttering:

- **Paradigm 1: Disappointing Gift**
  - Children participate in a neutral/baseline condition and in conditions where they receive a “desired” (positive) gift and in conditions where they receive a disappointing (negative) gift. Their response to receiving each is observed/recorded.

- **Paradigm 2: Frustrating “attractive toy in a transparent box” task**
  - Children participate in a neutral/baseline condition and in conditions where they have a set of keys to try to open the transparent box and get a prize. As the keys do not work, the box is opened and the keys are put away.

- **Paradigm 3: Listen to overheard conversations and tell a story**
  - Children participate in conditions where they listen to “overheard” neutral and emotional conversations and then produce a narrative.

- **Paradigm 4: View emotionally arousing video clips and tell a story**
  - Children participate in conditions where they view neutral and emotionally arousing video clips and then produce a narrative.
Question: Are CWS (n=16) more disfluent during conversations following the desired (positive) and disappointing (negative) gift conditions compared to the neutral?

Answer: Yes. CWS exhibit more disfluencies - both SD and NSD - after receiving the desired than receiving the disappointing gift.

Behavioral Observation (Experimental, Cross-Sectional): Question: Do CWS (n=18) (a) display more negative emotional reactivity and less regulation during a frustrating task than CWNS (n = 18) and (b) are these processes related to stuttering?

Answer: (a) Yes. CWS exhibited more reactivity (i.e., negative emotion) and more regulation (e.g., self-speech).

(b) Yes, but only for regulation and in different ways. CWS's increased self-speech predicted increased stuttering, but increased distraction behaviors predicted decreased stuttering.

Behavioral Observation (Experimental, Cross-Sectional): Question: Do CWS (n=9) display increased stuttering with decreased emotion regulation?

Answer: Yes. For CWS, increased stuttering was significantly related to decreased regulatory duration ($r = -.862, p = .003$) and regulatory strategy frequency ($r = -.76, p = .045$)

Behavioral Observation (Cross-Sectional): Reactivity
Question: Do CWS (n=8) display increased negative emotional reactivity prior to stuttered versus fluent utterances following emotionally arousing conditions?

Answer: CWS's utterances were 1.8 times more likely to be stuttered when associated with negative affect following the happy condition.

Behavioral Observation (Cross-Sectional): Regulation
Question: Do CWS (n=8) differ from CWNS (n=8) in emotion regulation (ER) prior to and during fluent utterances following emotionally arousing conditions?

Answer: CWS were 2.3 times more likely to exhibit emotion regulatory behaviors prior to and during fluent utterances after a happy compared to an angry condition (CWNS exhibited the opposite pattern).

Behavioral Observation (Cross-Sectional): Emotional Reactivity and Regulation During Speaking

Answer: Yes. For CWS, increased negative emotion while speaking was associated with more stuttering, however, more regulatory behavior in the context of greater negative emotion was associated with less stuttering.

Behavioral Observation (Cross-Sectional): Reactivity

Answer: Yes. CWNS exhibited more disfluencies - both SD and NSD - after receiving the desired than receiving the disappointing gift.

Behavioral Observation (Cross-Sectional): Regulation

Answer: CWNS were 2.3 times more likely to exhibit emotion regulatory behaviors prior to and during fluent utterances after a happy compared to an angry condition (CWS exhibited the opposite pattern).
Question: Does emotion (neutral, positive, negative) impact speaking (articulation) rate of CWS-persistent, CWS-recovered, and CWNS?

**Answer:** Yes. CWS-persistent, when compared to CWS-recovered and CWNS, exhibited significantly slower speaking (articulation) rate following the negative compared to the neutral emotion condition.

[109, Walden, Jefferson, Choi, Jones, 2018]

**Behavioral Observation (Longitudinal): Speaking rate**

**What have we learned from coded behavioral observations?**

- **Cross-sectional findings:**
  - Young CWS, compared to their CWNS peers, exhibit more extreme high than extreme low behavioral inhibition; and CWS with greater behavioral inhibition exhibit more stuttering
  - Less emotional regulation associated with increased stuttering
  - Stuttering decreases in situations where emotional regulation is required, for example, when receiving a disappointing gift.
  - Stuttering increases, however, when emotional regulation is used prior to speaking, perhaps diminishing the reserve of emotional regulation during the speaking task.

- **Longitudinal findings:**
  - For CWS-persistent, compared to CWS-recovered and CWNS, emotion impacts articulation rate (a likely marker of the speech-motor execution system)

**Temperament/Emotion: Evidence from Psychophysiology**

(i.e., activity of sympathetic and parasympathetic aspects of autonomic nervous system associated with various speech-language and emotional challenge conditions)

**Parasympathetic branch of autonomic nervous system**

- **Purpose:** To promote calm states and emotional regulation
- **Emotional regulation indexed by:** Respiratory sinus arrhythmia (RSA)
  - RSA = Heart rate variability associated with spontaneous respiration (increased heart rate with inhalation and decreased with exhalation)

**Sympathetic branch of autonomic nervous system**

- **Purpose:** To promote "engagement" with the environment and is associated with emotional reactivity
- **Emotional reactivity is indexed by:** Skin conductance (SC)

Recapping: Activity, purpose and measure of Parasympathetic and Sympathetic branches of autonomic nervous system

- **Parasympathetic branch**
  - **When active**: During times of rest and relaxation: Heart rate is lower
  - **Purpose**: To promote calm states and emotion regulation
  - **Indexed by**: Respiratory sinus arrhythmia (RSA)
    - Heart rate variability associated with spontaneous respiration (increased heart rate with inhalation and decreased with exhalation)

- **Sympathetic branch**
  - **When active**: Responding to an exogenous or endogenous stressor: Heart rate is higher
  - **Purpose**: To promote engagement with the environment and is associated with reactivity
  - **Indexed by**: Skin conductance (SC)

Organization of Psychophysiological Findings:
We employed three paradigms to psychophysically study emotion, temperament, and childhood stuttering

(1) **Stressful (rapid) picture naming**
   - Sympathetic activity (skin conductance), a physiological index of emotional reactivity

(2) **Video viewing followed by speaking**
   - Sympathetic and parasympathetic activity, physiological indices of emotional reactivity and regulation

(3) **Passively viewing pictures**
   - Cortical activity, a physiological index of emotional reactivity

Reminder: All Psychophysiological findings (as well as preceding caregiver reports, self-reports and coded behavioral observations) relate to preschool-age – 3 years 0 months to 5 years 11 months – CWS and CWNS

Psychophysiological study of Emotion Reactivity: Skin conductance

**Question**: Is skin conductance activity during stressful picture naming an early marker for persistent stuttering (n = 9), compared to children who recovered (n = 17), and children who do not stutter (n = 17)?

**Answer**: Yes. At initial time point (Time 1 – closest to stuttering onset - of 4 consecutive time points, 8 months apart), CWS-persistent, compared to CWS-recovered, exhibited higher sympathetic arousal

Paradigm 1: Stressful (rapid) picture naming

Cortical index of emotional reactivity: Late Positive Potential (LPP)

- **LPP** is a highly replicable and stable measure associated with emotional arousal.
- **LPP** emerges around 300 ms and is sustained until 2000 ms post stimulus onset.

**Fig. 1**: Reactivity: Higher LPP amplitudes for emotional than neutral stimuli

Fig. 1. Schupp et al., 2000.

Paradigm 2: Viewing of emotionally arousing video clips and immediately after telling a story

Psychophysiology measured during three tasks: Viewing a neutral video clip, emotionally- arousing video clips, and narrative tasks following the emotionally arousing video clips

During paradigm 2 we simultaneously measured:

- Emotional Reactivity by means of skin conductance
- Emotional Regulation by means of respiratory sinus arrhythmia

(Paradigm 1 continued)
**Psychophysiological study of Emotion Reactivity: Skin conductance**

**Question:** Do CWS (n=20) exhibit greater skin conductance level (SCL, an index of emotion reactivity) during speaking tasks following emotionally arousing conditions than CWNS (n=21)?

**Answer:** Yes. CWS, compared to CWNS, exhibited greater skin conductance during the narrative following the positive condition.

(Jones et al., Journal of Fluency Disorders, 2014)

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**Psychophysiological study of emotion regulation: RSA**

**Question:** Is respiratory sinus arrhythmia (index of emotion regulation) an early marker for chronic stuttering in children with persisting stuttering (n = 10), children who recovered (n = 20), and children who do not stutter (n = 36)?

**Answer:** Yes. CWS-Persistent, compared to CWS-Recovered and CWNS, exhibited significantly higher RSA during the neutral narrative than the positive and negative narratives.

(Pruett et al., in preparation)

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**Psychophysiological study of cortical versus peripheral regulation: Executive function and RSA**

**Question:** Are caregiver reported executive functions and respiratory sinus arrhythmia (index of emotion regulation) during speaking associated with stuttering in CWS and CWNS?

**Answer:** Yes. For CWS with low executive functions, greater decreases of RSA (lower emotional regulation) from baseline are associated with increased stuttering frequency.

(Jones et al., JSILHR, 2017)

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**Psychophysiological study of Emotion Reactivity: Electroencephalography (EEG), specifically late positive potential (LPP)**

**Question:** Is late positive potential (LPP, an index of cortical reactivity) during viewing of emotionally arousing pictures greater in CWS (n = 17) than CWNS (n = 22)?

**Answer:** Yes. CWS, compared to CWNS, exhibited significantly greater LPP amplitude for unpleasant pictures.

(Zengin-Bolatkale et al., 2018)
"Dimitri" (not real name)
Male, 3 years 7 months: High Negative Affect and Low Surgency (CBQ)

**Internal regulation**

Primary temperament instrument – CBQ, Surgency = 4.6, LS = 2.9
Internal observation + parent report of temperamentally related behavior –
Parents unable to provide precise information regarding onset of stuttering due to car wreck, birth of younger sibling, and moving to a new place occurring around the same time and related behavior –
Informal observations and parent report of temperamentally related behavior –

**External regulation**

Primary temperament instrument –
CBQ, Surgency = 4.6, LS = 2.9
External observation + parent report of temperamentally related behavior –
Parents unable to provide precise information regarding onset of stuttering due to car wreck, birth of younger sibling, and moving to a new place occurring around the same time and related behavior –

During the first visit, Dimitri responds to examiner questions and only differs in stuttered disfluencies.

**Psychophysiological study of Emotional Reactivity: EEG/LPP and caregiver report**

**Question:** Are the EEG/LPP (cortical) indices of emotional reactivity associated with caregiver report of temperament?

Answer: Yes, for some caregiver reports of temperament.

**What have we learned from psychophysiological findings?**

**BETWEEN-GROUP (CWS vs. CWNS) Differences:**

(1) CWS, compared to CWNS, exhibit:
Greater cortical reactivity to unpleasant pictures
Greater SCL (indexed by emotional reactivity) during positive narrative
(2) CWS’s parents’, compared to CWNS’s parents’, observations of their child’s emotions:
Are associated with aspects of their child’s emotional reactivity
(3) CWS’s cortical reactivity, when compared to CWNS:
Greater RSA during a neutral compared to positive and negative narratives.
(4) CWS-persist, compared to CWNS, exhibit:
Higher RSA during a neutral compared to positive and negative narratives.
(5) Interactions between CWS’s executive function and respiratory sinus arrhythmia is related to their stutter frequency
(6) CWS-persist, compared to CWNS-recover, exhibit:
Increased physiological reactivity during a fast paced (stressful) picture naming task.

**X. Assessment of Childhood Stuttering, Including Reference to Temperament and Emotion**
Some Basic Goals of Stuttering Assessment

- Does the person stutter?
- How is the stuttering affecting communication? Family? Social interactions outside home/school? Behavioral management?
- Is the stuttering likely to be transient or chronic? [for children]
- Is therapy indicated?
  - If so, what type of approach is best?

A Comprehensive Assessment Protocol

Some Basic Goals of Stuttering Assessment

- Does the person stutter?
- How is the stuttering affecting communication? Family? Social interactions outside home/school? Behavioral management?
- Is the stuttering likely to be transient or chronic? [for children]
- Is therapy indicated?
  - If so, what type of approach is best?

![Image of assessment protocol with icons and text]

Speech Disfluency Types

- **Stuttered Disfluencies (SD):**
  - Sound/syllable repetitions (e.g., “He is ru-ru-running.”)
  - Monosyllabic whole word repetitions (e.g., “I-I-I was there.”)
  - Audible sound prolongations (e.g., “Mmmmmore please.”)
  - Inaudible sound prolongations (e.g., “[…]More milk, please.”)

- **Non-stuttered Disfluencies (NSD):**
  - Interjections (e.g., “um,” “er,” “uh”)
  - Phrase repetitions (e.g., “I was – I was there.”)
  - Revisions (e.g., “He was; they were driving.”)

Types of Speech Disfluency

(A) **Non-stuttered Disfluencies:**
(sometimes called “other” or “normal”)
- Phrase repetitions, revisions, interjections, etc.

(B) **Stuttered disfluencies**
(sometimes called Atypical or Stuttered-Like):
- Sound/syllable repetitions
- Monosyllabic whole-word repetitions
- Sound prolongations
- Stoppage or blockages (“blocks”)


![Image of hand movements and words]

Ellen M. Kelly June 28, 2012 TSU
Comparison among Anderson and Conture (2000) (research), Yaruss, LaSalle and Conture (1998) (clinical) and Graham & Conture (2007) (clinical) samples of preschool CWS in terms of chronological age and measures of disfluency (after Richels & Conture, 2007, Fig. 5-1).

As expected, preschool-age CWS and CWNS significantly differ re stuttered disfluencies (e.g., sound/syllable repetitions) (After Tumanova et al., 2014). What is the average and range of stuttered disfluencies exhibited by preschool-age children?

Less expected, CWS and CWNS also significantly differ re non-stuttered disfluencies (e.g., revisions) (Tumanova et al. 2014). What is the average and range of non-stuttered disfluences exhibited by preschool-age children?

Stuttering is Variable, for example, between therapy sessions.

For pre-literate/pre-reader children: Narrative, e.g., Wordless Storybook (FWAY)

Who, Where and What of Sampling of Stuttering and MLU

- Who (Clinician v. Parent), Where (Clinic v. Home), and What (Conversation v. Narrative) impacts stuttering frequency and MLU of CWS and CWNS
MLU and Stuttering?
Yes, aspects of the former does impact the latter

MLU: Conversation (Clinician/Clinic) vs. Narrative (Clinician/Clinic) (Johnson et al., 2009)

SD/TD ratio
- The ratio between Stuttered Disfluencies (SD) and Total Disfluencies (TD) – SD/TD ratio - as we’ll see in the next slide is an often overlooked, but is a very simple measure of stuttering, one that is relatively stable and helpful for tracking changes in therapy

MLU: Home (Clinician v. Parent) and Clinic (Clinician v. Parent) for CWS and CWNS (Johnson et al., 2009)

%SD/Total Disfluencies (TD) Conversation (Clinician) versus. Narrative (Clinician) for CWS and CWNS (after Johnson et al., 2009)
Initial Evaluation

Speech/Language Sample:
- family
- clinician
  - free play/conversation
  - Alter response demands (e.g., TOCS; reading vs. speaking)

Speech/Language Testing:
- Stuttering (e.g., SSI; TOCS)
- Language
- Phonology
- Self-perceptions (e.g., KiddyCAT; CAT-R; CAI; LCB)
- Oral-Motor
- Temperament (e.g., SBIS, CBQ-VSF)
- Other

Selected Assessment Tools re SPEECH, LANGUAGE & HEARING:
- Receptive vocabulary: Peabody Picture Vocabulary Test (PPVT)
- Expressive vocabulary: Expressive Vocabulary Test (EVT)
- Receptive & expressive language: Test of Early Language Development (TELD)
- Conversational language usage: Mean Length of Utterance (MLU)
- Articulation: Goldman-Fristoe Test of Articulation (GFTA) & KhanLewis Phonological Analysis (KLPA)
- General & oral motor functioning (if possible, history of first year of life, especially transition from bottle/breast to sippy cup and then sippy cup to regular cup)
- Hearing abilities: Pure tone screen & tympanometry

Selected Assessment Tools re STUTTERING:
- Behavior:
  - Stuttering Severity Instrument (SSI)
    www.mayer-johnson.com
  - Test of Childhood Stuttering (TOCS)
    www.mayer-johnson.com/TOCS
- Feelings/Thoughts/Cognitions:
  - Communication Attitude Test for Preschool & Kindergarten Children Who Stutter (KiddyCAT)
    www.pluralpublishing.com/publication_kiddycat.htm
  - Children’s Attitudes About Talking (CAT-R)

Selected Assessment Tools re Temperament/Emotional Reactivity and Regulation:
- CCS: Eisenberg, N. et al. [1993]. The relations of regulation and emotionality to preschoolers’ social skills and sociometric status. Child Development, 64, 1432-1438.

Selected Assessment Tools re General, Teacher and Parent Resources:
- Some general resources (information, assessment, and treatment):
  - Judith Kuster website: http://www.mnsu.edu/comdis/kuster/stutter.html
  - Stuttering Foundation of America: www.stutteringhelp.org
  - National Stuttering Association: www.national stutter.org
- For the Teacher(s):
  - Teacher Questionnaire (Stuttering Foundation of America (SFA), 2008)
  - Teacher’s Checklist-Fluency (Kuster website: www.mnsu.edu/comdis/kuster/TherapyWWW/checklist.html)
- For Parent(s):
  - TOCS Observational Rating Scales
    - Speech Fluency Rating Scale
    - Disfluency-Related Consequences Rating Scale
  - Parent Questionnaire (SFA, 2001)
  - Temperament Characteristics Scale (Oyler, 1996)
"Dan" (not real name)  
Male, 3 years 1 months: High Surgency and Low Effortful Control (CBQ)  

**BACKGROUND INFORMATION**

- Birth order: Unknown
- Stuttering (at time of initial diagnostic; % = percentile rank): TSO: Unknown
- Age at onset: Unknown
- Stuttering severity (SSL; SSR; TSS - 40%)
- Stuttering frequency: 7% (SLD)
- TOCS ORS: (High end of) Mild Speech Fluency Rating, (significantly) Greater than Typical Disfluency-related Consequences (raw score of 22)
- KIDDYCAT: Not administered

**Language and Stuttering?**  
Yes, aspects of the former does impact the latter

**Example of language issues and stuttering:**  
3 yr 1 mo male who stutters

- Total disfluencies = 8% (Within-word = 6%)
- Most common type = sound prolongation
- Expressive vocabulary (EVT) = 87th percentile
- Receptive vocabulary (PPVT-3) = 23rd percentile
- Expressive language (TELD-3) = 79th percentile
- Receptive language (TELD-3) = 55th percentile
- Syntax Screening (NIST) = 25th percentile
- Articulation (GFTA-2) = 83rd percentile
- Speech reaction time (picture naming) = 1284 ms (slow speech reaction time)
- Temperament = not significantly different than CWNS; actually more positive than most CWNS!

**MAIN CONCERN:** Statistically significant difference between expressive and receptive vocabulary abilities. Such differences relate to language dissociations which we have observed in at least 3 published studies.

**What is a dissociation?** See the next slide:

**One example of a dissociation between speech sound articulation and receptive language:**  
CWS = 45, CWNS = 45 (after Anderson, Pellowski & Conture, 2005)
**Caregiver Interview**: Some basic areas to address whether in person, over phone, on Facetime or Skype

- Caregiver(s) main concern(s) with child
- Age at onset (if both parents provide, note each estimate)
- Interval since onset (Time Since Onset, TSO)
- Changes in frequency and type since onset
- Child’s apparent awareness/child’s concern
- Parents and family members reactions and responses, that is, what do they do to help?
- Family history of speech, language, voice and hearing problems, particularly stuttering
- Family history of learning disabilities, ADHD, psycho-social adjustment concerns
- Child’s developmental history (including health)
- CHAOS and Life Situation Checklist

**Basic Parental Question**: Did I cause my child to stutter?

- Parents, brothers and sisters, relatives and friends do not cause children to stutter
- Children do not “catch” stuttering like they do a cold, sickness or disease
- Children do not start to stutter because they are copying or imitating someone else
- Stuttering most likely occurs because of a complex interaction between the child’s environment and the skills/abilities a child brings to their environment

**Parents: Should show more and tell less**:

- “Our primary task as parents...is to convey (to our children) a sense that the world is an imperfect place in which it is possible, nevertheless, to be happy...”
- “We can only accomplish this by example. What we say pales in comparison with what our children see us do”


**Potentially Stressful Life Events**

(after Guitar, 1998, p. 69)

- The child’s family moves to a new house, neighborhood, or city
- The child’s caregivers remodel, fix or otherwise renovate part of the child’s house, possibly including but not restricted to child’s bedroom (Conture addition).
- The child is on vacation and something unusual happens (e.g., a 2 foot snowfall restricts family from leaving vacation house) (Conture addition).
- The child’s parents separate or divorce.
- A family member dies.
- A family member, or the child, has a medical procedure (e.g., surgery), is hospitalized or gets sick (Conture partial addition).
- A parent loses his or her job.
- A baby is born or another child is adopted.
- An additional person comes to live in the house.
- One or both parents go away frequently or for a long period of time.
- A change in routine, excitement, or anxiety occurs (e.g., holiday, visit, start of school, etc.).

**Basic Parental Question**: What can I do to encourage my child to talk?

- Praise the child for sharing his ideas if he or she asks, tell him that stuttering doesn’t bother you, it’s okay to stutter
- Ask him or her for their opinion about things, for example, a television show, a picture in a book, what he or she had for lunch
- Focus on child’s message/content, not format

**Assessing Temperament**

- **Overall Temperament**:
  - *Children’s Behavior Questionnaire* (CBQ; Rothbart, 1996; short and very short forms - Putnam & Rothbart, 2006)
  - *Behavioral Inhibition* (one aspect of temperament):
    - Latency to the child’s 6th spontaneous comment (e.g., Choi et al., 2013)
    - *Short behavioral inhibition scale* (SBIS, e.g., Ntourou, Oyler, Conture, & Walden, 2018)
**Behavioral Inhibition and Stuttering**

Longer latencies to the 6th spontaneous comment (i.e., greater BI) are associated with higher stuttering frequency (Choi, Conture, Walden, Lambert, & Tumanova, 2013).

**Assessing and interpreting behavioral inhibition**

- **Subjectively**, to produce 6 spontaneous comments (after subtracting time spent producing speech disfluencies) CWS took on average ~4.15', compared to ~2.30' for CWNS:
  - **Objectively**:
    - First, there was no significant between-group (CWS vs. CWNS) difference in BI
    - Second, when extremely high versus low inhibited children were selected, there were more CWS with higher BI and fewer CWS with lower BI when compared to their CWNS peers,
    - Third, more behaviorally inhibited CWS, when compared to less behaviorally inhibited CWS, exhibited more stuttering.
  - **Take home message**: The time to produce 6 spontaneous comments is one relatively quick and efficient way to assess behavioral inhibition during a stuttering assessment that may provide information related to the stuttering of the child.

**What is behavioral inhibition?**

Behavioral inhibition is a temperamental characteristic that is expressed as initial avoidance, distress, or subdued emotion when a person is exposed to unfamiliar people, places, and situations (Kagan, Snidman, & Arcus, 1998).

Can be measured by latency to the 6th spontaneous comment (Kagan et al., 1998).

**Short Behavioral Inhibition Scale (SBIS; Ntourou, Oyler, Conture, & Walden, 2018)**

- **What**: An evidence-based five-question screening test used to assess behavioral inhibition tendencies in young children who do and do not stutter.
- **Parent-Report**: Parents are asked to circle responses that describe their child from birth to 4 years of age compared to other children of the same age.
  - **Age range**: 3.0-6.0 years of age
  - **5 items scored from 1 to 5**: Totals range from 5-25
    - Lower scores indicate lower levels of behavioral inhibition and higher scores indicate lower levels of behavioral inhibition or a more expressive temperament.
  - **SBIS Questions relate to**:
    - Responses to unfamiliar people or situations
    - Reactions to the environment or changes in it
Caregiver Form: SBIS

(SBIS; Ntourou, Oyler, Conture, & Walden, 2018)

1. Arrives immediately from unfamiliar people or objects
   1. avoids
   2. remains present
   3. average
   4. approaches
   5. extremely/characteristic
2. Stays close to the parent
   1. avoids
   2. remains present
   3. average
   4. approaches
   5. extremely/characteristic
3. Takes a period of time to warm up to or to interact with unfamiliar people
   1. avoids
   2. remains present
   3. average
   4. approaches
   5. extremely/characteristic
4. Sticks play and vocalizing when unfamiliar person approaches
   1. avoids
   2. remains present
   3. average
   4. approaches
   5. extremely/characteristic
5. Stays alone and away from other children or caregiver/teacher when in group
   1. avoids
   2. remains present
   3. average
   4. approaches
   5. extremely/characteristic

Short Behavioral Inhibition Scale

Examiner Information: SBIS (Ntourou, Oyler, Conture, & Walden, 2018)

1. Sum the five scores from the Caregiver’s Form. This summation constitutes the child’s SBIS score.
2. Minimum possible SBIS score = 5; Maximum possible SBIS score = 25
3. As a group, children who stutter (CWS) score significantly lower on the SBIS than peers (children) who do not stutter (CWNS), suggesting that, as a group, CWS tend to be more behaviorally inhibited.
4. The SBIS Means and (Standard Deviations) for the two (CWS vs. CWNS) talker groups are as follows: CWS (n = 206) CWNS (n = 221)
   17.37 (4.20) 18.39 (3.96)

• Important Note: The SBIS is to be used as an augment to NOT replacement for a comprehensive assessment of temperament re childhood stuttering.
After Clark, E., original Vanryckeghem & Brutten, 2007 study)
KiddyCAT, regardless of age or gender
Children's Self-
affect.

16. My words come out easily.
15. I don't find it easy to talk.
14. I don't worry about the way I talk.
13. I don't talk like other kids.
12. It is hard for me to talk to people.
11. I talk well most of the time.
10. I find it easy to talk to most everyone.

9. My parent like the way I talk.
8. People sometimes finish my words for me.
7. I like the way I talk.
6. My classmates don't think I talk funny.

4. People worry about the way I talk.
3. Sometimes words will stick in my mouth when I talk.
2. I don't mind asking the teacher a question in class.

Remember, circle "False" if you think it is right. If you think it is wrong and you feel that the sentence is wrong and you think the sentence is right, circle "True." If you think the sentence about your
attitudes toward speaking)?
attitude toward speaking)?

We have a question for you about
We begin to suspect that a child is either stuttering or at risk for
developing a stuttering problem if (s)he meets (1), (2), and (3) with each of (4)-(9)
adding further support for diagnostic follow-up and/or treatment
(1) Stuttering Frequency: Produces THREE (3) or more stuttered disfluencies per 100
words of conversational speech (i.e., sound/ syllable repetitions and/or sound prolongations)
(2) SSIS: (2) Exhibit 11 or above on the Stuttering Severity Instrument for young children-3
(3) Caregiver's Concern: Parents and/or other people in the child's environment express
concern that the child either stutters or is a stutterer.
(4) Little or no measurable change/decrease in sound/ syllable and word repetitions, and
sound prolongations from first to second to third, etc. assessments
(5) SBIS/S score = 13 and lower
(6) Noticeable gaps or unresponsiveness between speech-language subcomponents
(7) Poor Phonological development
(8) Exhibits a SD/DT ratio of 65% and greater
(9) Has a TSO = 12 months (liberal) to 24 months (conservative)

Children's Attitudes About Talking-Revised (CAT-R)* (Denil & Brutten (ISR, 1999).
Based on refresher:
REFRESHER: Takeaway messages from parents
description of their two twin son's (Zach and Nick)
temperamentally-related behaviors
Zach (blue):
• Laid back
• Easy going
• Adaptable
• Outgoing
• Distractable
• Attention diverted in 5 minutes
• Less inhibited
• Funny
• Happy-go-lucky

Nick (red):
• Intense
• 100% all day every day
• Does everything fast
• Moves fast
• Talks fast
• Hyper-focused
• Hears nothing around him
• Stays with what he's doing
• Verbal
• Often
• Early

Based on the refresher:
We have a question for you about
Zach (blue) and Nick (red)
Which child, do you think, scored higher
on the KiddyCAT (i.e., had more
awareness of difficulties and negative attitudes toward speaking)?

KiddyCAT* at Age 3:0

*Circumference Attitude Test for Preschool and
Kindergarten Children Who Stutter (Vanryckeghem &
Brutten, 2006; Plural Publishing)
Recommendations

Prior to meeting with the client and/or parents:
- [Evaluate the child’s risk]
- Determine priorities
  - stuttering
  - concomitant delay/disorder
  - reactions
- Decide what you would recommend

Meet with the client or parents:
- Summarize results
- Answer questions:
  - [Is my child stuttering?] How severe is my stuttering?
  - Does s/he, Do I need therapy?
  - If so, what kind of therapy, how often, where, with whom, etc.?
- Provide information requested
- Allow them to make a decision about the next step

Links to Video/Pictorial/News Sources

- [http://www.stammeringcentre.org/stammering-information-programme-dvd (Michael Palin Centre for Stammering – London, UK)]
- [http://www.youtube.com/user/AZMelly#feature=mhum] (A.Z. Melly’s presentation on stuttering)
- [http://www.friendswhostutter.org/videos.asp (FRIENDS)]
- [http://campourtime.org/campour-time-news/video/ (Camp Our Time)]
- [http://www.tennessean.com/article/20110723/NEWS/307230045/Middle-TN-stutterer-support-group-best-nation-odyssey-mold-newswell (TN makes the news – Best Chapter of 2013!)]
- [https://sites.google.com/site/nashvillensa/ (Website: Nashville, TN Area NSA Chapter)]

Selected Websites

- Stuttering Foundation of America
  - [www.stutteringhelp.org/]
- National Stuttering Association
  - [http://www.nsastutter.org/]
- The Stuttering Homepage
  - [http://stammeringcentre.org/mpc-home/]
- Toastmasters International
  - [http://www.toastmasters.org/]
- FRIENDS: The Association for Children Who Stutter
  - [http://www.friendswhostutter.org/]
- Celebrate Calm
  - [http://www.celebratecalm.com/]
- Camp Our Time
  - [http://campourtime.org/]

Three Basic Goals for Treating Stuttering in Children:

1. Change Home/School Speaking Environment
2. Change Child’s Thoughts/Beliefs About Speaking
3. Change Time/Tension of Child’s Speech-Language Production
Within the context of the 3 treatment goals, concomitantly considering the impact of temperament and emotions on stuttering onset, development and behavior can help:

• Decrease clients’ reactions that may be initiating instances of instances of stuttering and/or interfere with effective communication

• Provide approaches that address emotion-related reactions to instances of stuttering

Some Clinical approaches that consider temperament and emotion

• Vanderbilt Family-Centered, Indirect Treatment Program (Richels & Conture, 2007)
  • Rationale for program stems from empirical evidence on communicative/linguistic/emotional factors on stuttering in young children as well as data pertaining to outcome.

• Demands and Capacities Model (DCM)-method (e.g., treatment approaches based on the DCM; Adams, 1990; Starkweather & Gottwald, 1990)
  • For a recent example of an empirically tested treatment approach that considers linguistic, emotional, and cognitive capacities and vulnerabilities, see the RESTART-DCM treatment approach (see Sonnevile-Koedoot, Stolk, Rietved, Franken, 2015).

• Palin Parent Child Interaction Approach (Kelman & Nicholas, 2008)
  • Rationale for program stems from a multi-factorial model of stuttering that includes psychological factors. Program supports parents work with their children, dealing with feelings, behavior management approaches, etc.

Treatment: Goal #1: Changing Environmental Events

Treatment
Changes in PARENTAL or HOME SPEAKING ENVIRONMENT

Why? Any environmental event that increases the chance that the child will RUSH the PLANNING FOR and/or EXECUTION OF speech and language production

Is it possible that:
Parents are Concrete and non-changeable?
Children are Plastic and total changeable?

Key
Help parents understand the difference between Cause, Aggravation, Perpetuation/ Maintenance

MOTHER-CHILD CONVERSATIONAL INTERACTIONS: THEIR INFLUENCE ON CHILD’S STUTTERING

Now Available Through Stuttering Foundation of America (SFA)
Reproduced with permission “Fridge Magnet,” SFA #107

Listen While Others Are Talking

Wait Your Turn While Others Are Talking

Be Quiet While Others Are Talking

Talk less and listen more.

After Richels & Conture, 2007, Fig. 5-7
Some things parents (and clinicians) can do to help children who stutter:

- Reduce the number of questions you ask, but still ask questions when needed
- Speak in an unhurried way, pausing frequently
- Make it clear to your child that you are listening to him or her
- Set aside a few minutes each day when you give your child undivided attention
- Help all family members learn to take turns
- Let the child talk for him or herself
- Let the child know you accept him as he is

Some more things parents can do to help their child:

- Relatively slower and more relaxed speech: This can be very effective when combined with some time each day for the child to have one parent's undivided attention. A few minutes can be set aside at a regular time when you are doing nothing else but listening to your child talk about whatever is on his mind. Try to remember that showing (i.e., slowing and relaxing your own speaking style) is far more helpful than telling the child to slow down.
- Pause a second or two: When your child talks to you or asks you a question, try to pause a second or so before you answer. This will help make talking to your child less hurried, more relaxed.
- Be patient, accepting: Try not to be upset or annoyed when stuttering increases. Your child is doing his best as he copes with learning many new skills all at the same time. Your patient, accepting attitude will help him immensely.
- Reassure the child: If your child is frustrated or upset at times when his stuttering is worse, reassure him. Some children respond well to hearing, "I know it's hard to talk at times...but lots of people get stuck on words...it's okay." Other children are most reassured by a touch or a hug when they seem frustrated.

Parents helped to learn to take time to give the child his or her time to achieve the ultimate goal of treatment:

Communicating whatever the child wants, whenever the child wants, with whomever the child wants, using whatever reasonable manner the child wants.

Does this treatment work? Following are two outcome studies, both measuring stuttering but one also measuring temperamental-related behaviors:

Adapted from Conture, 2006, Fig. 3.4
After Conture (2001), Fig. 3.3

Study 1: N = 26 children who stutter
• After 12 weeks (approx. 3 months)
  • 19 (45%) improved
  • 10 (24%) no change
  • 13 (30%) worsened

Interestingly, temperamental variables significantly predicted change in frequency of stuttered and non-stuttered disfluency


Treatment Outcome
• Based on temperamental characteristics, some CWS may be at:
  1. Greater risk for persistent stuttering
  2. Less able to benefit from the positive effects of treatment
• Evidence?
  • Richels and Conture (2010) assessed the utility of temperament in predicting short- and long-term treatment outcome.

Introducing individual differences in temperament to treatment: Early to mid-stages of treatment (speculation based on empirical data to date):
• (1) Within-normal limits CBQs: Approximately 60-70% of CWS probably temperamental considerations less than major import.
• (2) Extreme Negative Affect CBQs: Approximately 15% of CWS behavioral inhibition of major concern
• (3) Extreme Surgency CBQs: Approximately 15% of CWS behavioral uninhibited of major concern
• It appears probable that (1) will recover, especially with treatment; however, (2) and (3) more apt to require temperamental-focused augmentation to treatment to maximize treatment benefit

Short Behavioral Inhibition Scale (SBIS; Ntourou, Oyler, Conture, & Walden, 2018)
• What: An evidence-based five-question screening test used to assess behavioral inhibition tendencies in young children who do and do not stutter.
• Parent-Report: Parents are asked to circle responses that describe their child from birth to 4 years of age compared to other children of the same age.
  • Age range: 3.0-6.0 years of age
  • 5 items scored from 1 to 5; Totals range from 5-25
    • Lower scores indicate higher levels of behavioral inhibition and higher scores indicate lower levels of behavioral inhibition or a more expressive temperament
• SBIS Questions relate to:
  • Responses to unfamiliar people or situations
  • Reactions to the environment or changes in it
Caregiver Form: SBIS (SBIS, Ntouros, Ouyer, Couture, & Walden, 2018)

1. Minimally immediately from unfamiliar people or objects
   - 1: exactly repeats
   - 2: momentary cessation
   - 3: average pauses
   - 4: approaches never
   - 5: approaches easily

2. Stays close to the parent
   - 1: difficult to separate
   - 2: hesitant to separate
   - 3: average distance
   - 4: approaches readily
   - 5: approaches never

3. Takes a period of time to warm up to or to interact with unfamiliar people
   - 1: does not warm up
   - 2: momentary hesitancy
   - 3: average behavior
   - 4: approaches readily
   - 5: approaches never

4. Stays and play and vocalizing when unfamiliar person approaches
   - 1: immediately stops play
   - 2: momentary hesitation
   - 3: average reaction
   - 4: engages with person
   - 5: engages and easily moves

5. Stays alone and away from other children either or care giver/teacher when in a group
   - 1: isolates at first
   - 2: quieter and hesitant
   - 3: average presence
   - 4: engages with children
   - 5: engages very easily

Primary temperament instrument

- SBIS: Total score – 20 out of 25

Secondary temperament instrument

- CBQ: Total score – 15 out of 25

Informal observations and parent report of temperamentally-related behavior – At first visit, Kenneth easily separates from his mother, explores the room and plays with toys before the examiner enters. Although he focuses on the toys, he responds to the examiner. He quickly warms up and interacts with the examiner and engages in conversations. He is quick to warm up. At the next visit, Kenten easily separates from his mother, explores the room and plays with toys before the examiner enters. Although he focuses on the toys, he responds to the examiner. He quickly warms up and interacts with the examiner and engages in conversations. He is quick to warm up.

Examiner Information: SBIS (Ntouros, Ouyer, Couture, & Walden, 2018)

1. Sum the five scores from the Caregiver’s Form. This summation constitutes the child’s SBIS score.
2. Minimum possible SBIS score = 5; Maximum possible SBIS score = 25
3. As a group, children who stutter (CWS) score significantly lower on the SBIS than peers (children) who do not stutter (CWNS), suggesting that, as a group, CWS tend to be more behaviorally inhibited.
4. The SBIS Means and (Standard Deviations) for the two (CWS vs. CWNS) talker groups are as follows:

<table>
<thead>
<tr>
<th></th>
<th>CWS</th>
<th>CWNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n = 206)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.37 (4.20)</td>
<td>18.39 (3.96)</td>
<td></td>
</tr>
</tbody>
</table>

Important Note: The SBIS is to be used as an augment to NOT replacement for a comprehensive assessment of temperament related stuttering.

“Kenneth” (not real name)

Male, 3 years 10 months: Central Tendency (CBQ)

**BACKGROUND INFORMATION**

- Birth order: Unknown
- Stuttering (at time of initial diagnostic): 9 (percentile rank) – 15 months
- AGE AT ONSET: 1/11
- STUTTERING FREQUENCY: 2.50 (SD: 4.50)
- TOCS ORS: Mild Speech Fluency Rating (85), Greater than Typical/Individual mean values
- KES/RT: 1/2, Typical negative attitudes to speech for children
- VAP: Language (standardized score = 95)
- ARTICULATION/PROMETHEUS: GATA SS = 110 (95)
- VOCABULARY: PPVT (Receptive) SS = 116 (86%); EVT (Expressive) SS = 143 (86%)
- LANGUAGE: TELD (Receptive) SS = 116 (86%); TELD (Expressive) SS = 139 (95%)

**Profile of Behaviorally INHIBITED Children**

- Children Who Stutter
  - Slow-to-warm up
  - Do not respond well to change
  - Build tolerance for novelty or change
  - May stutter more when dealing with novelty, change, or difference
  - Will talk less or even little in the clinical setting until comfortable

- Children in General
  - Under stress, inhibited children practice avoidant coping (e.g., expression of negative emotions; adult proximity seeking).
  - Parents of shy, inhibited children are less likely to try to promote a sense of independence in their child, thereby increasing their child’s inhibitory tendencies (e.g., Wachs, 2008)

Helping the Behaviorally INHIBITED CWS

- (Help parents) prepare him/her for “newness”
  - Start early
  - Take small steps
  - Follow the child’s lead
- Build rapport (in therapy) before increasing “talking” demand
  - Comment rather than question (“I wonder…”)
  - Begin with “side-by-side” activities that don’t require talking, thereby decreasing the emotional “stressor”
  - Gather data regarding extra-clinic talking and stuttering

“Jasper” (not real name)

Male, 3 years 11 months: High Negative Affect and Low Effortful Control (CBQ)

**BACKGROUND INFORMATION**

- Birth order: Unknown
- Stuttering (at time of initial diagnostic): 6 (percentile rank) – 15 months
- AGE AT ONSET: 10/3/18
- STUTTERING FREQUENCY: 2.00 (SD: 3.50)
- TOCS ORS: Moderate Speech Fluency Rating (75), Not Greater than Typical/Individual mean values
- KES/RT: Determined to be unreliable and not collected
- VAP: Language (standardized score = 95)
- ARTICULATION/PROMETHEUS: GATA SS = 113 (95)
- VOCABULARY: PPVT (Receptive) SS = 77 (96%); EVT (Expressive) SS = 98 (96%)
- LANGUAGE: TELD (Receptive) SS = 116 (95%); TELD (Expressive) SS = 110 (95%)

**Profile of Behaviorally INHIBITED Children**

- Under stress, inhibited children practice avoidant coping (e.g., expression of negative emotions; adult proximity seeking).
- Parents of shy, inhibited children are less likely to try to promote a sense of independence in their child, thereby increasing their child’s inhibitory tendencies (e.g., Wachs, 2008)

Helping the Behaviorally INHIBITED CWS

- (Help parents) prepare him/her for “newness”
  - Start early
  - Take small steps
  - Follow the child’s lead
- Build rapport (in therapy) before increasing “talking” demand
  - Comment rather than question (“I wonder…”)
  - Begin with “side-by-side” activities that don’t require talking, thereby decreasing the emotional “stressor”
  - Gather data regarding extra-clinic talking and stuttering

“Jasper” (not real name)

Male, 3 years 11 months: High Negative Affect and Low Effortful Control (CBQ)
Treating apparent over or under use of a finite resource: Self-control/self-Regulation:

• “An inmate in an insane asylum protested that he was sane and demanded a hearing before a judge. The hearing was granted and the inmate gave a brilliant half-hour defense of his sanity. The judge was impressed and told the inmate that all he had to do was sign a document and he was a free man. The inmate signed his name as ‘Jesus Christ’ (James, 1892)” (Kaplan & Berman, 2010, p. 43).

**Self-control/self-regulation:** Appropriate decoupling from the environment

“...stayed in front of a great, famous sculpture by a great, famous sculptor and didn’t like it...this was for me) a triumphant break-through: I see the world and see that I am free before it. I am not at the mercy of historical opinion and what I want to turn away from, I turn away from, what I want to approach, I approach” (p. 243).


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**Therapy:** Helping Child develop Inner Strengths: *Self-Control*

- **Turn-Taking:**
  - Help your child practice waiting.
  - Praise your child for waiting.

- **Persistence:** Encourage your child to keep on trying even when it is challenging or frustrating.

- Great book to read re persistence:

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**Jasper** (not real name)

Male, 3 years 11 months: *High Negative Affect and Low Effortful Control (CBQ)*

**Background Information**

- **Birth order:** Unknown.
- **Mutation (at time of initial diagnostic; % + percentile rank):**
  - TSO: 24 months.
- **AGE AT ONSET:** 2;0
- **STUTTERING FREQUENCY:** 41-60%ile (21), Not Greater than Typical Disfluency-related Consequences (5)
- **KIDDYCAT:** determined to be unreliable and not finished

**Speech-language (standard score = SS):**

- **ARTICULATION/PHONOLOGY:** GFTA SS = 113 (76%)
- **VOCABULARY:** PPVT (receptive) SS = 77 (6%); EVT (expressive) SS = 94 (34%)
- **LANGUAGE:** TELD (Receptive) SS = 102 (55%); TELD (Expressive) SS = 84 (14%)

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**Therapy: Helping Child develop Inner Strengths: **Confidence**

- **Mistakes:** Show child that “Mistakes are okay”.

- **Specific Praise:** Be a “Strengths Detective” (e.g., “Specific Praise, Kelman & Nicholas, 2008)

- **Break Tasks into Small Steps:**
  - Make tasks more “bite-size”.
  - Offer 2 or 3 manageable choices.

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**Clinical considerations regarding children’s temperament-related effortful control**

- Issues to possibly address in treatment plan for childhood stuttering, for children with apparently less well developed emotional regulation:
  - **Self-Control/self-regulation**
  - **Confidence**
  - **Resilience**

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** Informal observations and parent report of temperamentally-related behavior**

- Jasper took about two minutes to warm up. At first, he only responds by nodding or shaking his head. He does not always follow the examiner’s prompting and seems content to play on his own.
Therapy: Helping Child develop Inner Strengths: Resilience

- Under stress, children high in self-regulation:
  - Redirect their attention as needed
  - Respond flexibly and adaptively
- RESULT? Greater Resilience

Therapy: Incorporating into Treatment of Stuttering: Resilience Training

- What is resilience?
  - The capacity of complex and dynamic systems to withstand and rebound from significant difficulty and/or distress.
  - Positive outcomes despite serious threat to adaptation or development.

- Temperament → Resilience
  - Bi-directionally impact one another.

(Masten, 2001; 2007; Chen, 2012)

How are temperament and emotion related to resilience?

Temperament as a risk factor
- Impulsivity, inhibition, negative emotionality can serve as developmental risk factors

Temperament as a building block of resilience
- Self-regulation, sociability, task orientation can serve to increase children’s resilience

Interplay between temperament and resilience
- Each temperament trait itself is not inherently a vulnerability or protective factor; the function arises in the interplay of individual and context. (Masten, 2014)

Promoting Resilience

- Skills that promote resilience can be learned. (Seligman, 2007; Reivich & Shatte, 2002; RIRO, 2014)
- See “Reaching In…Reaching Out” for resources and information on promoting resilience
- http://www.reachinginreachingout.com

Promoting Resilience: Outside Supports (Parents)

- Educate parents: Help parents learn about their children’s temperament characteristics and implications.
- Explore parenting styles: Help parents explore their parenting styles.
- Identify stressors: Help parents better identify stressors and their implications for parent-child relations.
- See next slide for some common childhood stressors that may be associated with onset, development and maintenance of childhood stuttering
Potentially Stressful Life Events
(after Guitar, 1998, p. 69)

- The child’s family moves to a new house, neighborhood, or city
- The child’s caregivers remodel, fix or otherwise renovate part of the child’s house, possibly including but not restricted to child’s bedroom (Conture addition).
- The child is on vacation and something unusual happens (e.g., a 2 foot snowfall restricts family from leaving vacation house) (Conture addition).
- The child’s parents separate or divorce.
- A family member dies.
- A family member, or the child, has a medical procedure (e.g., surgery), is hospitalized or gets sick (Conture partial addition).
- A parent loses his or her job.
- A baby is born or another child is adopted.
- An additional person comes to live in the house.
- One or both parents go away frequently or for a long period of time.
- A change in routine, excitement, or anxiety occurs (e.g., holiday, visit, start of school, etc.).

Promoting Resilience:
Balancing Reactivity and Self Regulation

- Flexibly regulating emotion helps to “check” more extreme/inflexible reactivity.
- How do we help young CWS do this?
  - Addressing Reactivity:
    - Acknowledging:
    - Feelings
    - Stuttering/talking difficulties
  - Enhancing regulation:
    - Preparing for change
    - “Looking before leaping”
    - Slight pausing before speaking
    - Planning/taking “small steps”

Promoting Resilience:
More Adaptive Long-Term Outcomes

**Promoting Active flexible coping strategies** in children to successfully deal with early stresses may predispose the child to use active flexible coping when faced with stress later in life (buffering).

**Promoting resilience** in children (and parents) may help them respond positively to what they are experiencing now and in the future.

Concluding Remarks

“Won’t you be….

Goodness-of-fit between adult (this includes clinicians’) cognitive, communicative, emotional, and social processing and that of young children; doesn’t need to be ideal, just more compatible, more often, with children’s experience and developing “processing speed”

Concluding Remarks

**Therapy:** Clinician’s Understanding of: **Goodness of fit**

- Strive for *goodness of fit* between the child in treatment and the type of treatment applied.
- “Goodness of fit” results when environmental expectations (e.g., parental performance requirements) are in accord with the child’s expressed temperament (e.g., emotional vulnerability).
- Example: Indirect vs. Direct treatment for emotionally reactive vs. less reactive children
- Caveat: Empirical studies are necessary prior to making more firm recommendations

Free Online Resources for Building Resilience

[www.reachinginreachingout.com](http://www.reachinginreachingout.com)

- Parent Section
  - Resiliency building strategies for parents & children
  - Parent videos & success stories
  - Children’s booklists
  - Posters & Tip sheets
- Professional Section
  - Guidebook
  - Skills videos
  - Articles & resources
  - Resiliency Newsletter
  - Resiliency Activity Modules
  - Evaluation results
  - Information about training events

From: Jennifer Pearson; RRO; ASHA, 2015
Concluding Remarks

Therapy: Clinician’s understanding of possible association between: Temperament and Childhood Stuttering

• Prediction of Treatment Outcome: A child’s temperament may help better predict a child’s treatment outcome.

• Knowledge of Temperament Permits Adjustments to Treatment: Trying to understand a child’s temperament and his/her reactions to treatment may also inform the clinician’s decision to adjust a treatment regimen when necessary (e.g., progress is not being made or relapse has occurred).

Informational recommendations:

• Much more information is needed regarding:
  • The relation between emotion reactivity and regulation and the impact this relation has on stuttering.
  • Consider that:
    • Emotion regulation may be one key piece to the puzzle, that is, our attention to reactivity may make us overlook regulation (over or under), to the detriment of effective diagnosis and treatment.
    • All forms of self-control/self-regulation (e.g., dieting, anger management, persistence) “draw on a common resource” (Muraven & Baumeister, 2000) – possibly glucose – which is of limited supply and can be readily depleted.
  • The child’s effective experience:
    • “Her (Sybil Escalona’s) idea that events in children’s lives are experienced only as they are filtered through the individual child’s nervous system so that an environmental event is not the same for all” (Rothbart, 2011, p. 30)

Summary: Therapy

Some Basic Goal(s)

1. Normal Disfluency not Total Fluency
2. Change Outside not merely Inside Clinic
3. Provide child with speech that is USABLE in everyday communication situations
4. Where appropriate, help child and child’s caregivers better adapt to child’s strong negative affect or strong surgent temperamental proclivities.

K.I.S.S.

When in doubt, with parents or children: Keep it Simple Stupid (K.I.S.S.). In essence, what won’t get done/completed are the following: elaborate home work assignments, expectations of 24/7 monitoring of speech fluency (Dial 1-800-GETREAL), turning in all written assignments at beginning of each treatment session, etc.

What might get done: Break down all outside-of-school assignments to essentials, for example, one particular time/place per day, one activity, for finite period.

Keep in mind: Fifteen minutes/day 5-6 days per week is better than 1 hour on Sunday, the day before Monday’s treatment session.

Above all: Keep on Keeping On:

SLPs can and do make positive differences in the lives of children who stutter and their families;

Try to learn what our positive contributions are and become involved in making them

“The only thing I knew how to do was to keep on keeping on…” Bob Dylan

Great presentation, Ed and Robin…I haven’t slept that well in weeks!

The End
Children Who Stutter: Preliminary Findings. (pp. 27–44).


