Temperament, Emotion and Stuttering: Evidence, Assessment and Treatment

Robin M. Jones, PhD. and Edward G. Conture, Ph.D.
Vanderbilt University Medical Center
robin.m.jones@vanderbilt.edu
& edward.g.conture@vanderbilt.edu

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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 presentation to the Fullerton Fluency Conference, a cooperative offering from the Center for Children Who Stutter, California State University, Fullerton, CA, and the California Speech-Language-Hearing Association.
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• Non-financial:
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Learner Outcomes
Friday 10/19/2018

1. After this course, participants will be able to define and describe temperamental characteristics as well as emotional processes from a theoretical as well as an empirical perspective.
2. After this course, participants will be able to describe a holistic model of developmental stuttering, including the possible contribution of temperament/emotion to developmental stuttering.
3. After this course, participants will be able to identify key findings (based on caregiver reports) from research on temperament and emotion in children who stutter.
4. After this course, participants will be able to identify some of the key aspects of assessment and treatment of childhood stuttering, with reference to individual differences in children’s emotional/temperamental characteristics.

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)

USA

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)

Motivation
To move the association between Temperament and Stuttering
From the realm of the theoretical to
The reality-based world of fact, empirical evidence, and clinical assessment and treatment
General Purpose

• To provide evidence-base information about temperament in young children and its association to as well as implications for the diagnosis and treatment of childhood stuttering.

Specific Purpose(s)

The specific purpose(s) of this presentation are as follows:

1. Childhood stuttering: Definitions and descriptions: What is it, who does it, how much do they do it, and some of the processes thought to cause it?
2. Temperament, The construct: A brief, selective overview of (a) the construct of temperament, (b) definitions and description, (c) relevant theory, and (d) individual differences in emotion reactivity and regulation.
4. Assessment of childhood stuttering: A synopsis of assessing childhood stuttering, including measurement of emotional and temperamental processes.
5. Treatment of childhood stuttering: A synopsis of one time-tested treatment approach to children, including consideration of children’s temperamental characteristics.

Key acronyms:

• CWS — Children who stutter
• CWNS — Children who do not stutter

Outline: Temperament and Stuttering

Friday 10/19/2018

I. GENERAL AND SPECIFIC PURPOSES
II. DEFINITIONS AND DESCRIPTION OF CHILDHOOD STUTTERING
III. DEFINITIONS AND DESCRIPTION OF EMOTION, TEMPERAMENT, EMOTIONAL REACTIVITY AND REGULATION
IV. TEMPERAMENT: A VERY BRIEF HISTORY
V. POSSIBLE RELATIONS AMONG EMOTION, TEMPERAMENT, AND STUTTERING
VI. ROTHBART’S (2011) THREE TEMPERAMENTAL FACTORS AND RELATED 15 MEASURABLE SCALES
VII. TWO MODELS OF CHILDHOOD STUTTERING INVOLVING EMOTIONAL/TEMPERAMENTAL PROCESSES
VIII. RESEARCH FINDINGS (2003-2018) RE TEMPERAMENT AND STUTTERING: AN ORIENTATION TO OUR MULTI-METHOD APPROACH
IX. RESEARCH FINDINGS (2003-2018) RE TEMPERAMENT AND STUTTERING: EVIDENCE FROM CAREGIVER REPORTS
X. SYNOPTIC OF ASSESSMENT OF CHILDHOOD STUTTERING
XI. SYNOPTIC OF TREATMENT OF CHILDHOOD STUTTERING
XII. SELECTED REFERENCES

Okay, what is this presentation about?

• First, childhood stuttering
• Second, theory and evidence regarding emotion and temperamental processes in young children
• Third, theory and evidence that emotion and temperament (both to be subsequently defined in this section) may or may not be associated with childhood stuttering.
• Fourth, how during the process of assessing/diagnosing childhood stuttering clinicians may consider and measure children’s emotion and temperament.

Possible association of temperament, emotion and stuttering

Stuttering is known to change over time, within and between situations.

Emotion also changes over time, within and between situations.

Therefore, changes in emotion may be associated with changes in stuttering.

II. DEFINITIONS AND DESCRIPTION OF CHILDHOOD STUTTERING

— A varying effect may not be accounted for by reference to an unvarying cause” (Johnson, W. & Associates, 1959, p. 57)
Childhood Stuttering

What is It?

- Stuttering = a developmental communication disorder where the forward 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 associated with or occurring before, during and/or after instances of stuttering

Persistence, prevalence, incidence, and impact of Childhood Stuttering

Childhood Stuttering: Persistence Comes and goes for some (recover) and for others comes and stays (persists) ~70-80% of children “grow out of stuttering”

Childhood Stuttering, Prevalence: Approximately 1% prevalence among young children.

Childhood Stuttering, Incidence: Approximately 5% incidence, that is, stuttering occurring sometime during the life span.

Childhood Stuttering, Impact: Significantly impacts children’s academic, emotional, and social abilities as well as their later vocational potential and achievements

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)

<table>
<thead>
<tr>
<th>CWNS: Children who do not stutter</th>
<th>CWS: Children who stutter</th>
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Less expected, CWS and CWNS also significantly differ re non-stuttered disfluencies (e.g., revisions) (Tumanova et al. 2014)

Some basic info about Childhood Stuttering

- Onset of stuttering: Starts in childhood and develops over time.
- Variability of Stuttering: Variable but not random: its occurrence varies from sentence to sentence but tends to occur at certain places within an utterance, especially the beginning.
- Gender and Stuttering: More apt to occur boys than girls (3 boys for 1 girl on average, closer to 2 boys for 1 girl below 3 years of age)
- Genetics and Stuttering: Runs in families, just as does depression, ADHD, temperament, etc.; however, the “genetic roots” of stuttering are not simple like eye or hair color.
Childhood Stuttering:
What is its associated non-speech, physical concomitant or accessory behavior? And what could these events be related to?

(1) Motoric Overflow?
(2) Cognitive/Linguistic planning?
(3) Emotional Reaction?
(4) Some combination of (1), (2), and/or (3)?

Photos after Conture & Kelly (1991), Journal of Speech and Hearing Research.

Polylith vs. Monolith
More than one variable contributes: First thing we're guessing is that more than one variable contributes to the "cause" of stuttering and that such variables more than likely interact among each other

Causal Matrix: Second thing we're guessing, is that we talking about a causal matrix or causal nexus rather than a one-size-fits-all cause

Polylith: The "cause" is probably more like a polylith, e.g., a wall made of stones of differing weights, shapes, colors and material, with no one-size-likely-to-fit-all.

Versus

Monolith: The "cause" is less likely to be a monolith, or a wall made of one size, weight, shape, color and material, with one-size-likely-to-fit-all

Assumption 1: The "distal" causes of stuttering most likely involve those that are (1) inherited (genetic) (2) environmental (experiential), and (3) represent interactions between (1) and (2)*


(1) Environmental (experiential)
(2) Inherited (genetic)
(3) Interactions between (1) & (2)


Assumption 2: When we are talking about "the cause" of stutter, I believe we are talking plural (causal matrix) rather than singular (cause)


Assumption 3: 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

III. DEFINITIONS AND DESCRIPTION OF EMOTION, TEMPERAMENT, EMOTIONAL REACTIVITY AND REGULATION
Temperament (an umbrella term for a constellation of individual differences): Definition

**Temperament (Latin):**
- Comes from *temperamentum* (Latin) or “mixture”, which comes from *temperare* or "mingle in due proportion".


**Temperament definition:**
- "Temperamental…refers to stable individual differences that appear from birth onward and that presumably have a strong 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**

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).

*Emotion (SELF)REGULATION:
- Self-regulation: Processes that act on reactive tendencies, increasing or moderating them
- Measured/observed by: Intensity, direction (i.e., increase vs. decrease), and duration of regulatory response
  - For example, caregiver report of effortful control, coded behavior observation of attention regulation (e.g., shifting away from stimulus), and physiological measure of parasympathetic activity

Emotion Reactivity and Regulation: Definition

**Emotion REACTIVITY:**
- Reactivity: Disposition to emotional, motor and attentional reactions
- Measured/observed by: Latency to reaction, reaction intensity (e.g., peak intensity), duration of the reaction
  - For example, caregiver report of negative affect, coded behavior observation of negative affect, and physiological measure of sympathetic activity

**Emotion (SELF)REGULATION:**
- Self-regulation: Processes that act on reactive tendencies, increasing or moderating them
- Measured/observed by: Intensity, direction (i.e., increase vs. decrease), and duration of regulatory response
  - For example, caregiver report of effortful control, coded behavior observation of attention regulation (e.g., shifting away from stimulus), and physiological measure of parasympathetic activity

**Video “case study” examples of a:**

**Relatively non-talkative child**

**versus**

**Relatively talkative child**

Assumption 4: We assume that children’s temperament actively filters their environment

"Nearly all temperament theories presume a biological basis to individual differences in early appearing, enduring behavioral tendencies considered to be temperamental." Saudino (2005)
Emotional Reactivity and Regulation: Measurement

- Measures may be based on:
  - Caregiver reports, e.g., Children’s Behavior Questionnaire (CBQ)
  - Coded behavior observation of positive/negative reactivity or attention regulation (e.g., shifting away from stimulus, number or duration of regulatory attempts), and/or
  - Psychophysiology: Measures of sympathetic and parasympathetic nervous system activity
  - Cortical Activity, e.g., Late Positive Potential

Each of these sources of evidence can be measured by means of latency, intensity, frequency, and/or duration of reactive or regulatory behaviors/processes

IV. TEMPERAMENT: A BRIEF HISTORY

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

Temperament: A Brief History (3 slides adapted from Rothbart, 2011)

Galen (2nd Century): Observed consistent differences in infants and young children, leading him to argue that children differ from one another from their earliest days

- **Choleric**: Touchy, aggressive and active (predominance of yellow bile) - Characters played by Joe Pesci
- **Melancholic**: Moody, tendency to fear and sadness (predominance of black bile) - Characters played by Woody Allen
- **Sanguine**: Sociable and easygoing (predominance of blood) - Bill Clinton
- **Phlegmatic**: Calm, even tempered and slow to emote (predominance of phlegm) - Labrador Retriever

Temperament: Brief History Cont’

Twentieth Century

- **Holland**:
  - Heyman and Wiersma (1906): Three broad factors (anterdate Rothbart’s: surgency (activity), negative affect (emotivity) and primary-secondary function (effortful control):
    - **Activity**: Express or act out what is thought or desired
    - **Emotivity**: Show bodily symptoms, to be fearful or shy
    - **Primary-Secondary Function**: React immediately versus postponed,

- **USA**
  - Cattell (1957) discusses notion of “press” (situational dependence): The extent to which the environment creates a press upon (i.e., tends to elicit) those characteristics
  - If there is no “press” for fear, the trait of fearfulness will not be relevant to the situation (Rothbart, 2011, p. 26)
  - Evidence of temperamental disposition requires: Press + Disposition
  - The potential for expression of the disposition exists regardless of whether situations press for the trait

In 2018, what do we know about temperament, especially that of children?

- Temperament appears to be a biological/constitutional set of behaviors/proclivities, that are there from birth, but are “open” to environmental influences.
- The way that people behave and react to situations is influenced in part by their temperament.
- Children’s temperament influences:
  - their level of activity
  - their level of fear, frustration, sadness and discomfort
  - how readily they approach new people and situations
  - their ability to pay attention, focus on and complete a task, and manage impulses
  - their social competence and mental health

V. POSSIBLE RELATIONS AMONG EMOTION, TEMPERAMENT, AND STUTTERING

“What is life without a dream?” (Rostand, 1895)

“What is research, without a theory?” (Conture, 2001)
Relation of temperaments to other processes:

Based on current findings: Temperament, emotion, and emotion reactivity and regulation interact with children’s experience, speech-language development/disorders, and other variables, for example, gender.

The number and nature of such interactions remain unclear, but basic and applied research findings are providing increased clarity.

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)

After Conture, Kelly & Walden (2013).

Theory: (1) Social-, (2) Bio-psychological or (3) Their Bi-directional Interaction

- Social-oriented Theory: Child Passive
  - "Environmental influences were seen as almost entirely responsible for personality differences; particularly the child’s history of rewards or punishments." (Rothbart, 2011, p. 30) Individual differences thought almost entirely related to parental rewards and punishments

- Biological-oriented Theory: Child Active
  - Effective Experience (Escalona, 1968): "…events in children’s lives are experienced only as they are filtered through the individual child's nervous system, so that the environmental event is not the same for all. (Rothbart, 2011, p. 30) Individual differences thought mainly related to constitution or biology
  - In large part, researchers into temperament, especially early researchers, were … "reacting against the idea that individual differences were wholly the result of parental influences and environmental influences were seen as almost entirely responsible for personality differences… (Rothbart, 2011, p. 30)

- Interaction between bio-psychological and social forces: Child Active and Passive (bi-directional middle ground)
  - Influence of socialization is bidirectional…variations in children’s behavior elicit differences in parents’ and teachers’ behavior which influence child’s behavior which...

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 way to think about association between Emotional Reactivity (arousal) & Emotional Regulation (coping): Adaptive Outcomes

<table>
<thead>
<tr>
<th></th>
<th>High Regulation</th>
<th>Low Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Reactivity</td>
<td>Adaptive Outcome</td>
<td>Less Adaptive Outcome</td>
</tr>
<tr>
<td>Low Reactivity</td>
<td>Less Adaptive Outcome</td>
<td>Adaptive Outcome</td>
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</tbody>
</table>

"My point is, life is about balance. The good and the bad. The highs and the lows. The pina and the colada.” – Ellen DeGeneres
**Temperament: One modern-day, widely-cited Model (Rothbart, 2011)**

- For purposes of this talk, we've selected:
- Rothbart's (2011) psycho-biological model of temperament, because of its:
  1. (1) inclusiveness,
  2. (2) currency,
  3. (3) empirical support and
  4. (4) frequent citations within the literature regarding temperamental contributions to childhood development

- Our talk will focus on preschool-age children, the age group when stuttering begins for the vast majority of people who stutter


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

“...THE CHILD’S EFFECTIVE EXPERIENCE...HER [SYBIL 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)

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**Rothbart’s (2011) model of temperament**

- **Temperament**: 
  - Reactivity
  - Self-Regulation
  - Surgency

- **Negative Affectivity**
  - High-intensity Pleasure
  - Perceptual Sensitivity

- **Effortful Control**
  - Attention focusing
  - Inhibitory control
  - Low-intensity Pleasure

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**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).


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**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.

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**Three broad factors arising from factor analysis of CBQ:**

- **Surgency**: Disposition to the positive emotions, rapid approach to potential awards and high activity level (similar to extraversion)
- **Negative affect**: Fear, angry, frustration, discomfort, sadness and slowness to recover from distress
- **Effortful control**: Inhibitory control, attention focusing, low-intensity pleasure, and perceptual sensitivity.
Caregiver report studies:
Some selected, norm-based tests of 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, 1418-1438.

- **Short Behavioral Inhibition Scale (SBIS):** Oyler, 1996; Ntourou, Oyler, Conture, & Walden, 2018.

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

Our two - 1 early (2006) and 1 more recent (2012) - models of emotion, temperament and childhood stuttering

**VII. CHILDHOOD STUTTERING AND EMOTIONAL/TEMPERAMENTAL PROCESSES: TWO MODELS**

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

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

- **Surgency/Extraversion:**
  - Positive Emotionality
  - Activity
- **Effortful Control:**
  - Attentional Control
  - Inhibitory Control
  - Activational Control
- **Negative Affectivity:**
  - Negative Emotions

Model 1:
Communication-Emotional Model of Stuttering
One theoretical account of childhood stuttering (Conture et al., 2006) that suggests that emotional reactivity, emotional regulation and their interaction are associated with the onset and the development of childhood stuttering.

**DISTAL CONTRIBUTORS**

**PROXIMAL CONTRIBUTORS**

**EXACERBATION**

**OVERT BEHAVIOR**

Stressors: can take various forms, for example, (1) daily life hassles (e.g., heavy traffic makes you late for work), (2) acute (e.g., car accident with injuries) events, or (3) chronic (e.g., frequent migraine headaches) events.

Diathesis (vulnerability) a Greek term referring to vulnerabilities or dispositions resulting from genetic, psychological, biological, or situational factors.

Diathesis-Stress Model is a psychological theory that attempts to account for (1) behavior resulting from an interaction between predispositional diathesis (vulnerability) and stress from life experiences and (2) the fact that not all individuals who experience significant stress exhibit psychopathology/disorders.

Stress: factors that interfere with the system’s physiological and psychological homeostasis, the tendency to maintain a balanced state optimal for functioning. Stressors: can take various forms, for example, (1) daily life hassles (e.g., heavy traffic makes you late for work), (2) acute (e.g., car accident with injuries) events, or (3) chronic (e.g., frequent migraine headaches) events.

Unintended consequences of home activities: Some children become stressed.

Drawing by: Teresa Burns Parkhurst (Sept. 10, 2018). The New Yorker, p. 84

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).
• A family member, or the child, has a medical procedure (e.g., surgery), is hospitalized or gets sick (Conture partial addition).
• Routine, prolonged periods of anticipation (e.g., preparing child, starting Sept 4 [day after Labor Day], by talking about and decorating for, Halloween that occurs on Oct 31) (Conture addition).
• The child’s parents separate or divorce.
• A family member dies.
• 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.).

VIII. RESEARCH FINDINGS (2003-2018) RE TEMPERAMENT, EMOTION AND CHILDHOOD STUTTERING: An Orientation to our MULTI-METHOD APPROACH: (1) Caregiver reports; (2) Coded behavioral observations; and (3) Psychophysiological measures

For today’s (Friday, 10/19/18) presentation, we will only be discussing caregiver reports re the association between temperament and childhood stuttering.
IX. 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”

Caregiver report studies:
Some selected, norm-based tests of temperament/emotional reactivity and regulation:


- Short Behavioral Inhibition Scale (SBIS); Oyler, 1996; Ntourou, Oyler, Conture & Walden, 2018.

BSQ Caregiver Report (Cross-Sectional):
Question: Do CWS (n = 31) differ from CWNS (n = 31) regarding temperamental characteristics measured using the Behavioral Style Questionnaire (BSQ)?

Answer: Yes, for some temperamental characteristics. They were less adaptable to change, hypervigilant (i.e., less distractible), and less rhythmic in daily routines (i.e., irregular biological functions).

BSQ Caregiver Report (Cross-Sectional):
Question: Do CWS (n = 65), compared to CWNS (n = 56), differ in emotional reactivity, emotion regulation, and attention regulation measures derived from the BSQ?

Answer: Yes. CWS exhibited higher emotional reactivity, lower emotion regulation, and lower attention regulation.

CBQ Caregiver Report (Cross-Sectional): Association between “Measured” and “Unobservable” (latent) variables from the CBQ


(Karrass, Walden, Conture, Graham, Arnold, Hartfield, & Schweik, 2006).
Do CWS (n = 68) differ from CWNS (n = 68) regarding composite temperamental factors (age range = 3:04 – 8:11)?

Answer: Yes. CWS exhibit greater reactivity (i.e., negative affect) and lower emotional regulation (i.e., effortful control) (Eggers, De Nil, & Van den Bergh, 2010).

CBQ Caregiver Report (Cross-Sectional):

Question: Is negative emotional reactivity associated with more stuttering for CWS (n = 47) in a positive compared to a neutral emotion condition?

Answer: Yes. CWS with higher negative emotional reactivity exhibit more stuttering during a narrative after a positive, compared to a neutral, emotionally arousing condition. (Choi, Conture, Walden, Jones & Kim, 2016)

CBQ Caregiver Report (Cross-Sectional):

Question: Is positive emotional reactivity associated with more stuttering for CWS (n = 47), across all conditions (neutral, positive, negative emotion)?

Answer: Yes. CWS’s positive reactivity is positively correlated with their stuttering frequency across all conditions. $\beta = 0.576, p < .001$

Does temperament impact other aspects of CWS’s speech and language (e.g., vocabulary)?

The following study investigated the relation between vocabulary and temperament in young children who stutter

(1) Standardized speech-language tests

(2) Caregiver reports of temperament

What have we 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
  - Compared to CWNS, CWS-persistent and CWS-recovered exhibit a inverse relation between negative affect and receptive vocabulary
Parting thoughts: recommendations: Emotion reactivity, regulation, and childhood stuttering

• 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)

X. SYNOPSIS OF 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?

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”)

A + B = Total Disfluencies

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) & Phonology: Khan-Lewis 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

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; CAL; LCB)
• Oral-Motor
• Temperament (e.g., SBIS, CBQ-VSF)
• Other
For pre-literate/pre-reader children: Narrative, e.g., Wordless Storybook (FWAY)

Selected Assessment Tools re Temperament/Emotional Reactivity and Regulation:


- Short Behavioral Inhibition Scale (SBIS); Oyler, 1996; Ntou rou, Oyler, Conture, & (KIDD®; 2003):

HOW CAN I OBTAIN THE ROTHBART TEMPERAMENT MEASURES (E.G., CBQ)? INFO BELOW TAKEN FROM:

https://research.bowdoin.edu/rothbart-temperament-questionnaires

We do not charge researchers to use our temperament measures. Dr. Rothbart believes that the free exchange of scientific information is essential to research improvement. Access permission to the questionnaires can be repaid by sharing with us the results of your studies.

To request access to the questionnaires, please complete and submit the request form, providing your email, name, institutional affiliation, and a brief description of your intended study, including age ranges and which questionnaire(s) you plan to review or use. Sam's email reply will arrive within 48 hours and provide access codes and information on how to obtain copies of the measures.

You may also contact Sam Putnam by email at sputnam@bowdoin.edu or by postal mail at Department of Psychology, Bowdoin College, 334 College Street, Brunswick, ME 04011.

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)

CBQ-VSF (Very Short Form):

- Parent-report
- Age Range: 3 months through Adult
- Forms: Parent; Teacher
- 7-point scale (1=extremely untrue of your child; 7 = extremely true of your child)
- Examples:
  - “Is slow & unhurried in deciding what to do next”
  - “Likes to go high & fast when pushed on a swing”
  - “Is very difficult to soothe when s/he becomes upset”

Short Behavioral Inhibition Scale (SBIS; Ntouro, 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’s Form: SBIS (Ntourou, Oyler, Conture, & Walden, 2018)

### 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 learning disabilities, ADHD, psycho-social adjustment concerns
- Child’s developmental history (including health)
- CHAOS and Life Situation Checklist

### Examiner Information Form: 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). This finding suggests that, as a group, CWS tend to be more behaviorally inhibited
4. SBIS Means and (Standard Deviations) for the two talker groups (CWS vs. CWNS) are as follows:

<table>
<thead>
<tr>
<th></th>
<th>CWS (n = 206)</th>
<th>CWNS (n = 221)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBIS</td>
<td>17.37 (4.20)</td>
<td>18.39 (3.96)</td>
</tr>
</tbody>
</table>

**Important Note:** The SBIS is to be used as an augment to NOT replacement for a comprehensive assessment of temperament re childhood stuttering.
XI. SYNOPSIS OF TREATMENT OF
CHILDHOOD STUTTERING,
INCLUDING REFERENCE TO
TEMPERAMENT AND EMOTION

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

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

Helping the Behaviorally UNINHIBITED CWS
• Help parents model and teach child about turn-taking in conversation
  • Start with simple turn-taking game with visual cues (e.g., a microphone or object to hold)
  • Use movement (e.g., “musical chairs”)
  • “Play” with the concept of fast and slow
• Introduce “thinking” pauses before speaking
  • Model pausing to think before answering a question
  • Find “clues” and put them together before solving a word “puzzle”
• Build linguistic and conversational complexity gradually as child becomes better at pausing and taking turns
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 surgent temperamental proclivities.

Summary: Therapy

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 homework 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

Summary: Therapy

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

Selected References

Temperament and emotion:

Temperament and Resilience:

Questions? comments?
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