TEMPERAMENT, EMOTIONAL STRESS AND CHILDHOOD STUTTERING

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I: Background
   - Empirical studies
   - Background theory:
     - Dual Diathesis-Stress (DD-S) model of stuttering

II: Present Research
   - Emotional diathesis, emotional stress and childhood stuttering (Choi, 2014)

III: Implications
Temperament: What is it?

- An umbrella term for a number of related but different traits.

Temperament is:

- Biologically- or Constitutionally-based
- Observable shortly after birth/in early infancy
- Relatively consistent across situations
- Moderately stable over time
- “Open to” (modifiable by) environmental influences

Picture in upper right corner: Melancholic, Phlegmatic Choleric, and Sanguine temperaments developed by Galen A.D. 131-200
Rothbart’s (2011) model of temperament

**Surgency = positive emotional reactivity**  
**Negative affectivity = negative emotional reactivity**
Two major research questions

Q1. **Between-Group** analysis: What are the differences, if any, in temperament between preschool-age CWS and CWNS?

Q2. **Within-Group** analysis: Within the group of CWS, what is the association, if any, between temperament and stuttering frequency?
Extant empirical evidence: Association of temperament and childhood stuttering (converging lines of evidence)

**Between-Group** analyses indicate that CWS, compared to CWNS, display:

a) Higher emotional reactivity (i.e., great emotional arousal)
b) Lower emotion regulation
c) Lower attention regulation
d) Difficulty adapting to environmental change
e) More negative emotional expression

**Within-Group** analyses indicate that in CWS (relatively small number of studies have been conducted):

a) CWS’ decreased behavioral regulatory strategies is related to their increased stuttering
b) Increased emotional reactivity associated with decreased emotional regulation is related to increased stuttering
Advanced understanding of the relation between temperament and childhood stuttering

“A simple relationship may be understood better by further asking not only “whether” but also “when” or “how” the relationship exists.” (Hayes, 2013)

Research Question 1: “When” does the relationship exist?

Hypothesis:
More temperamental reactivity, more stuttering only under stress condition

“Stress is thought to activate a diathesis”
(DD-S model, Conture & Walden, 2012)
Temperament and Stuttering

Background theory:
Dual Diathesis-Stressor model of stuttering (DD-S model; Conture & Walden, 2012)

**Diathesis**: a vulnerability associated with a given process.

**Stress**: endogenous and/or exogenous factors that interfere with the system’s physiological and/or psychological homeostasis.

Research Question 2: “How” is temperament associated with stuttering?

Hypothesis:
More temperamental reactivity, more stuttering through sympathetic activity
Methods

- **Participants:** 49 preschool-age CWS (38 male, 11 female)
- **Dependent variable:** Frequency of stuttered disfluencies measured during each picture-assisted narrative task.
- **Mediator variable:** Sympathetic activity indexed by tonic skin conductance level
- **Independent variables:** Positive emotional reactivity (based on Surgency factor of CBQ), negative emotional reactivity (based on Negative Affectivity factor of CBQ), and three stress conditions (baseline, positive and negative films presented in a counter-balanced order):
  - **Baseline condition**
  - **Negative stress condition**
  - **Positive stress condition**

Tonic skin conductance level (SCL) was acquired using the Biopac MP150 system (Biopac Systems, USA)
Salient Findings
Re: Main effect of emotional reactivity and indirect effect through sympathetic activity

1) More positive reactivity, more stuttering regardless of stress condition
2) More positive reactivity, higher tonic SCL
**Salient Findings**
Re: Interaction effect of emotional reactivity and stress condition and indirect effect through SCL

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**Emotional Reactivity X Stress Condition**

- Negative Reactivity X Positive Stress Condition

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**Narrative SCL**

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**Stuttering**

\[ p = .021 \]

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More negative emotional reactivity, more stuttering only under positive stress condition

*Note: *refers to a significant slope coefficient*
General Implications

- Certain temperamental characteristics—positive and negative emotional reactivity—are related to changes in CWS’s stuttering frequency.
- The strength of relation between temperament and stuttering may vary depending on conditions.
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Questions?