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Speech disfluencies of preschool-age children who do and do not stutter

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I've travelled a bit to be able to be here



Purpose

- To present research evidence on speech characteristics of preschool-age children who do and do not stutter, parental concern about stuttering and implications of both for stuttering classification.
- **CWS** = children who stutter
- **CWNS** = normally fluent children
- **Preschool-age** = younger than 6 years of age

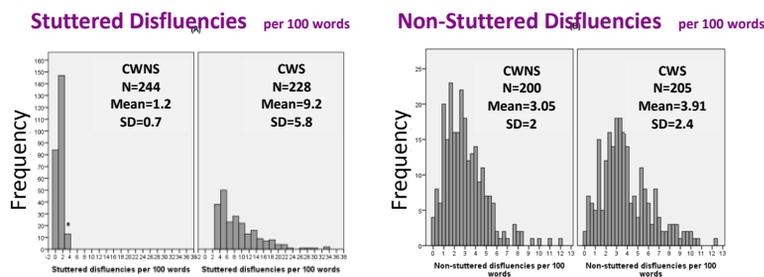
Outline

- How disfluent are preschool age children?
- When do parents become concerned about stuttering in their child?
Tumanova, Conture, Lambert, & Walden, 2014, JCD
- How can we measure parental concern?
- Why do some kids whose parents are concerned about stuttering show little stuttering during speech pathologist's diagnostic assessment?
Tumanova, Choi, Conture, & Walden, in preparation

How disfluent are preschool-age children?

- 472 children participated (age range 31-71 months)
- 228 CWS (56 girls and 172 boys, M (age) = 47.47 months)
- 244 CWNS (119 girls and 125 boys, M (age) = 50.47 months)
- 300-word conversational speech samples were analyzed for frequency of
 - (a) **Stuttered disfluencies** (i.e., sound-syllable repetitions, sound prolongations and monosyllabic whole-word repetitions)
 - (b) **Non-stuttered disfluencies** (i.e., phrase repetitions, revisions and interjections)
 - (c) **Total disfluencies** or (a) + (b).
- Speech-sound articulation (GFTA), receptive and expressive vocabulary (PPVT and EVT) and receptive and expressive language scores (TELD) along with age and gender were used as covariates to assess their impact on dependent variables (e.g., stuttered disfluencies)

Findings



- CWS produce significantly *more non-stuttered disfluencies* than CWNS
- Non-stuttered disfluencies significantly predict talker group classification ($p < 0.001$) with *64% of CWNS* and *51% of CWS* correctly classified.
- Regardless of talker group, *boys*, when compared to girls, produced significantly more non-stuttered and total disfluencies.
- Standardized scores on tests of speech and language did not influence disfluency frequency.

Implications

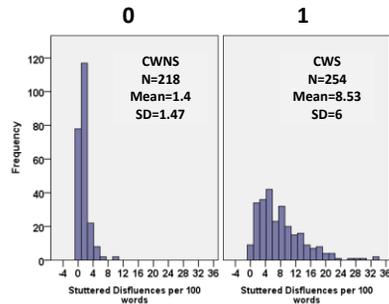
- Differences in speech disfluencies between CWS and CWNS are not isolated to instances of stuttering, the entirety of their speech fluency differs.
- Frequency of non-stuttered disfluencies could be employed to augment the existing 3% SD classification criterion.
- Boys' speech fluency, regardless of talker group is more vulnerable to break-down, a finding consistent with the observation that boys are less likely to recover from stuttering than girls.

When do parents become concerned about stuttering in their child?

- Same 472 children and their parents participated
- **Parents** of 254 children were **concerned**
 - 184 boys, 70 girls, *M (age)* = 48 months
 - average of **8.53%** stuttered disfluencies; (range: .33 – 33.67%)
 - average of **3.51%** normal/other disfluencies; (range: 0 – 12.33%)
- **Parents** of 218 children were **NOT concerned**
 - 105 boys, 113 girls, *M (age)* = 50 months
 - average of **1.44%** stuttered disfluencies; (range: 0 – 10.67%)
 - average of **2.87%** normal/other disfluencies; (range: 0 – 11%)
- Is stuttering frequency associated with parental concern for stuttering?

Findings

Stuttered Disfluencies per 100 words



- Children whose parents were concerned about stuttering produced significantly more stuttered disfluencies than children whose parents were NOT concerned ($p < .0001$).
- Stuttered disfluencies predict CWS/CWNS talker group classification ($p < 0.0001$) with 90.8% of children whose parents are NOT concerned about stuttering and 82.3% of children whose parents ARE concerned correctly classified.

Implications

- Frequency of stuttered disfluencies represents one, robust means to differentiate CWS from CWNS
- A criterion of 3% stuttered disfluencies has a strong, clinically meaningful association with parental concern.

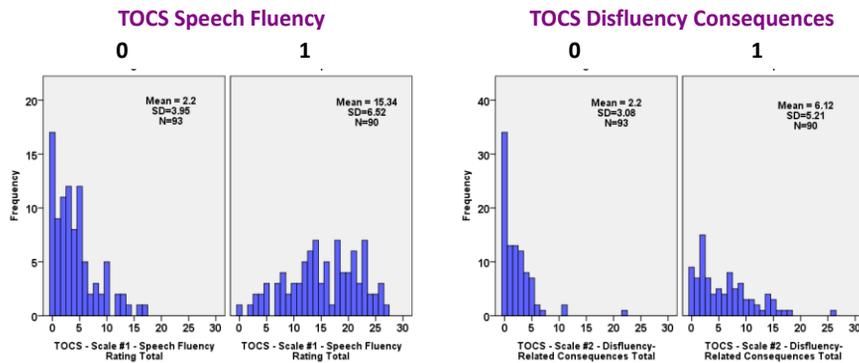
How can we measure parental concern?

- Parental concern can be hard to document in a consistent and replicable way.
- Test of Childhood Stuttering (TOCS; Gillam, Logan, & Pearson, 2009) has been designed to assess speech fluency skills and stuttering-related behaviors in children 4 through 12 years of age.
- TOCS includes two observation rating scales:
 - The speech fluency rating scale (TOCS1)
 - The disfluency-related consequences rating scale (TOCS 2)
- Do parents who express concern about their child's fluency exhibit higher scores on TOCS rating scales?
- Do children whose parents give higher scores on TOCS scales stutter more during diagnostic assessment?

How can we measure parental concern?

- 183 children and their parents participated.
- **Parents** of 90 children were **concerned** about stuttering (CWS; 25 girls; 65 boys)
 - Average score of **15.34** on **TOCS 1**
 - Average score of **6.12** on **TOCS 2**
- **Parents** of 93 children were **NOT concerned** (CWNS; 43 girls; 50 boys).
 - Average score of **2.2** on **TOCS 1**
 - Average score of **2.2** on **TOCS 2**

Findings



- “Concerned” parents exhibited significantly higher scores on TOCS speech fluency rating scale ($p < .0001$) and TOCS disfluency related consequences scale ($p < .0001$) than parents of CWNS.
- Children whose parents gave a higher score on TOCS speech fluency scale stuttered more during evaluation ($p < .0001$).

Implications

- TOCS subscale scores are highly related to parental concern about stuttering and frequency of stuttered disfluencies in children’s speech.
- TOCS speech fluency subscale is one reasonable way to assess caregiver concern and their judgment of severity of stuttering for both clinical and research purposes.

Why do some kids whose parents are concerned about stuttering show little stuttering during diagnostic assessment?

1. Is mean length of utterances (**MLU**) during the child-examiner conversation associated with the frequency of **stuttered disfluencies** produced?
2. Is **MLU** during the child-examiner conversation associated with the **TOCS fluency rating score**?

Method

- 85 children and their parents participated (61 boys, 24 girls, M (age) = 46 months).
- Parents of all children expressed concern about their child's stuttering, completed TOCS scale 1
- Mean Length of Utterances of the 300 word speech sample was calculated.
- Participants' mean length of utterance was 4.92 (STD=1.13).
- Question 1: Controlled for age, gender, TOCS scores
- Question 2: Controlled for age, gender

Findings

- Children who produced higher MLU (longer, more complex utterances) exhibited more stuttered disfluencies ($p = 0.012$).
- Children whose parents reported higher scores on TOCS fluency rating scale produced lower MLU (simpler, shorter utterances) in their conversation with the examiner ($p = 0.044$).

Implications

- For preschool-age children suspected of stuttering, MLU may function as a suppressor of the relation between parental judgment of child's stuttering severity and clinician's judgment of stuttering severity (i.e., child's frequency of stuttering during fluency assessment).
- Children who produce short utterances during fluency assessment may need to be followed up for further evaluation.

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