

It's Just that Simple: Parental Language Complexity in Early Childhood Stuttering

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1. Introduction/Purpose

Parents of children who stutter (CWS) are often given advice to aid their children's fluency (see extensive discussion in Bloodstein, et al., 2021). One standard advisement, derived from the Demands and Capacities Model (DCM) is to simplify the complexity of their speech and use language more closely related to their child's own language skills (Bloodstein et al., 2021). This advisement can be found frequently on the Internet. Despite this, there is very little research that provides evidence for the practice.

Previous cross-sectional research found no differences in language complexity between groups of mothers of CWS and children who do not stutter (CWNS) at stuttering onset (e.g., Miles & Bernstein Ratner, 2001). However, differences between CWNS, children who persist in stuttering (CWS-P), and children who recover from stuttering (CWS-R) have not been thoroughly investigated. In this study, we ask whether parental language complexity differs between children who do and do not stutter (CWS/CWNS) and between cohorts of children who later recover or persist in stuttering.

2. Methods

For this study, transcripts from the Illinois International Stuttering Research Project (IISRP; Yairi & Ambrose, 2005) available at FluencyBank (fluency.talkbank.org) were used. From this corpus, only Sample 1 baseline data were analyzed, which consisted of 82 participants: 30 CWNS, 11 CWS-P, and 41 CWS-R. For each of the samples, mother-child dyads were recorded in play with toys. Of importance, these interactions were recorded prior to any advisement given to parents regarding how to interact with their CWS, and also prior to wide use of the Internet as a source of developmental information by parents. Therefore, parents likely had only limited exposure to sources of advice about helping their CWS. For this study, only language between mothers and their children was analyzed, given prior findings that mothers and fathers have different ways of interacting with their children (Bernstein Ratner, 1988).

In order to analyze these data, CLAN KidEval was computed for mothers' and children's utterances. Children's language indices were subtracted from those of their mothers to create a difference score for multiple measures of language complexity, including mean length of utterance in words (MLU-W), mean length of utterance in morphemes (MLU-M), verbs per utterance, Developmental Sentence Score (DSS), and the Index of Productive Syntax (IPSyn).

3. Results

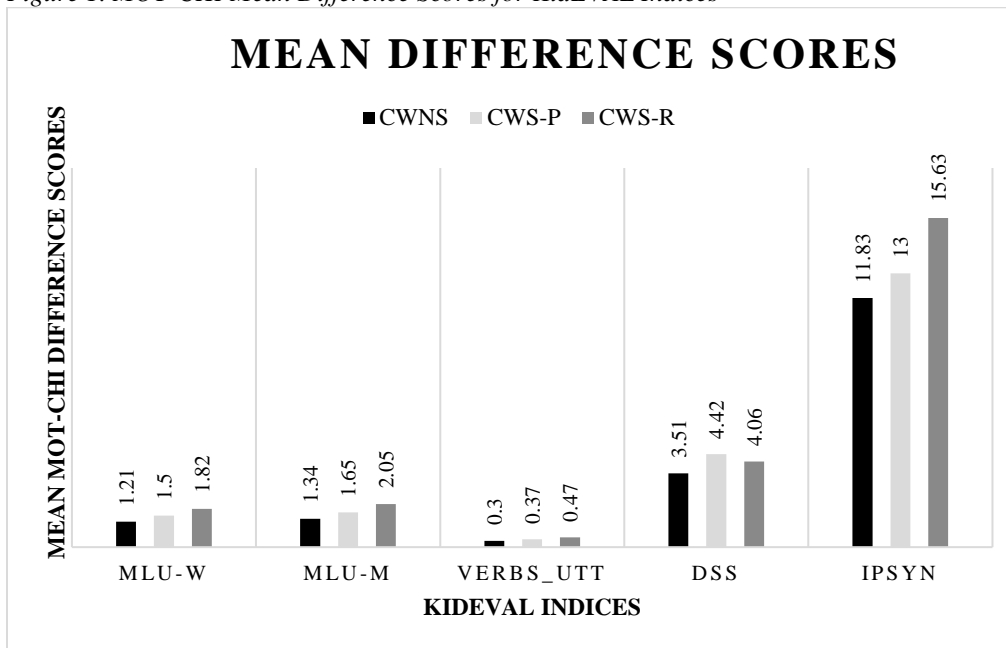
To assure that age differences among groups were not likely to impact our analyses, we first performed a one-way Analysis of Variance after assuring that the age distribution met assumptions for parametric statistics. Mean ages of the groups were 42.7 months (CWNS), 37.9 months (CWS-per), and 38.6 months (CWS-rec). $F(2, 79) = 2.59$, $p = .08$. While the CWNS group was the oldest by almost 6 months, Tukey-Kramer post-hoc testing revealed no significant age differences among groups, and the two CWS groups differed by only an average of one month in age. To examine language complexity scores, which did violate assumptions of homogeneity of variance, we conducted a Kruskal-Wallis one-way ANOVA on ranks, corrected for ties, and significance was set at $p=0.01$ for multiple comparisons. The mean difference between children and their mothers in MLU-W was 1.21 for CWNS, 1.50 for CWS-P, and 1.82 for CWS-R ($p = 0.052$, n.s.). The trend was for recovered children to receive the most complex input, relative to their own language. The mean difference between dyads in MLU-M was 1.34 for CWNS, 1.65 for CWS-P, and 2.05 for CWS-R ($p = 0.056$, n.s.). The mean difference between dyads in verbs per utterance was 0.3 for CWNS, 0.37 for CWS-P, and 0.47 for CWS-R ($p = 0.014$, n.s.). Once again, the trends were for recovered children to receive the most complex input in both cases. The mean difference between dyads for DSS

was 3.51 for CWNS, 4.42 for CWS-P, and 4.06 for CWS-R ($p=0.570$, n.s.), and finally the mean difference between dyads for IPSyn was 11.83 for CWNS, 13.00 for CWS-P, and 15.63 for CWS-R ($p=0.139$, n.s.). In sum, although no significant differences were found, several trends were observed: CWS-R had mothers who used the most complex language relative to the child's language, as demonstrated by MLU-W, MLU-M, and verbs per utterance when compared to CWNS and CWS-P (see Table 1 and Figure 1).

Table 1. CLAN KidEVAL Test Statistics converted to χ^2

Measure	χ^2	p-value
MLU-W	5.92	0.052
MLU-M	5.77	0.056
Verbs per Utterance	8.49	0.014
DSS	1.12	0.570
IPSyn	3.95	0.139

Figure 1. MOT-CHI Mean Difference Scores for KidEVAL Indices



4. Discussion

Per the DCM, one might hypothesize that CWS-P might have received the most complex language input from their parents and that this linguistic demand on the child played some role in their stuttering. However, in contrast to this prediction, the data show that children who recover from stuttering heard slightly more complex language input from their mothers (relative to their own language) in MLU-Words, MLU-Morphemes, and verbs per utterance, an index of sentential embedding. In addition, as can be seen from Figure 1, the means among groups on the Index of Productive Syntax (IPSyn) suggest a similar pattern, although differences among groups were not significant. Our analysis used dyad-by-dyad difference scores, rather than group means, to ensure that the relative complexity of input for each individual child was measured. Thus, these findings suggest that advice to parents that they simplify their language when speaking to their CWS may not be evidence-based. Moreover, since children's language development is highly dependent on rich parental input (see review by Schwab & Lew-Williams, 2016) this advice might actually have the potential to adversely impact the language development of CWS.

The next step in this project is to analyze data from Sample 3 of the IISRP data, one year after the initial intake sample (Sample 1). The files from Sample 3 include parent-CWS interactions after parents were given advice regarding how to speak to their CWS. We plan to repeat similar methods as used for Sample 1 of this data, as well as compare mothers' language input between Sample 1 and Sample 3 to evaluate whether they made the suggested changes given to them after their intake session. This analysis will allow us to further investigate advice to simplify language complexity when speaking to a CWS and discover if it plays any role in the persistence or recovery of early childhood stuttering.

Disclosures

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