

Normal Disfluency and Syntactic Complexity in Child Speech

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Typically developing children between the ages of 2;0-6;0 exhibit a phenomenon in which their speech is disfluent, containing stuttering-like repetitions and pauses (Ambrose and Yairi, 1999). These disfluencies, labelled Normal Disfluencies (ND), disappear on their own without need for clinical intervention (Reilly et al. 2013). Study of ND has long been the domain of speech pathologists, and hardly pursued by linguists, even those studying language acquisition. Due to the practical and clinical nature of speech pathology, most research on ND has been quantitative, attempting to correlate ND in childhood to speech disorders in adulthood, rather than qualitatively probing the possible linguistic causes for the phenomenon.

Most studies of ND use disfluency counts as a metric to predict early stuttering in children (Yairi 1997). In fact, in the prediction of stuttering, disfluency counts are the most important index in measuring stuttering severity and predicting whether the stuttering will continue into adulthood (Conture, 2001).

These sorts of studies do not often address the question as to the cause of ND, especially in children that eventually recover and speak fluently. From a speech pathology perspective, it was argued that ND results from psychological causes such as nervousness or excitement (Andrews et al. 1983), or a sensory-motor cause (Büchel and Sommer, 2004). However, studies on both approaches are inconclusive in the sense that they fail to reach significant results (Tumanova et al., 2011; Andrews et al., 1983).

An elicitation study conducted by Haynes and Hood (1978) found a significant relationship between syntactic complexity and disfluent productions. Based on Lee (1974), they assume that more complex structures increase the chances that the child will deal with a high grammatical load, causing a breakdown in speech production. In my research I continue this line of thought, highlighting several problems and confounds in Haynes & Hood's study as well as how I tried to control for them.

The material used was samples of spontaneous speech from two Hebrew acquiring children ages 2;0 to 3;3, either recorded during play sessions with a researcher, or provided by the parents. I examine three types of syntactic structures, each beginning in a phonologically identical manner, thus neutralizing any effects possibly caused by the child's phonological faculty. I compared lexical items (LEX) beginning with /je/ (1), as well as subordinate (COMP) and relative (REL) clauses beginning with the complementizer /je-/ (2) and (3) respectively. A total of 413 productions were examined. Of these, 53 were lexical, 89 relative complementizers, and 271 were subordination complementizers.

(1) Lexical item beginning with /je/

osim	femen	me-ze
make.Msc.PI	oil	from-it
'You make oil out of it.'		

(2) Subordinate complementizer /je-/

ani	xofev	je-ze	tov
I	think	that-it	good
'I think that it's good.'			

(3) Relative complementizer /je-/
 ha-ij je-halax la-yam
 the-man that-went to.the-sea
 'The man who went to the sea'

Of all 413 productions, 370 were fluent while 43 were disfluent. A chi-square test found a statistically significant effect for type of utterance ($p < 0.001$). Additionally, a significant effect was found between Lex type productions and a unified group of complementizer productions, Comp and Rel ($p < 0.05$). Further, a significant difference was found within the clausal production group, between Comp type utterances and Rel type utterances ($p < 0.001$). Finally, no correlation was found between age and disfluent productions, though this may be due to the relatively small age range compared to the ranges in which ND occurs. Figure 1 shows the distribution of fluent and disfluent productions across all categories.

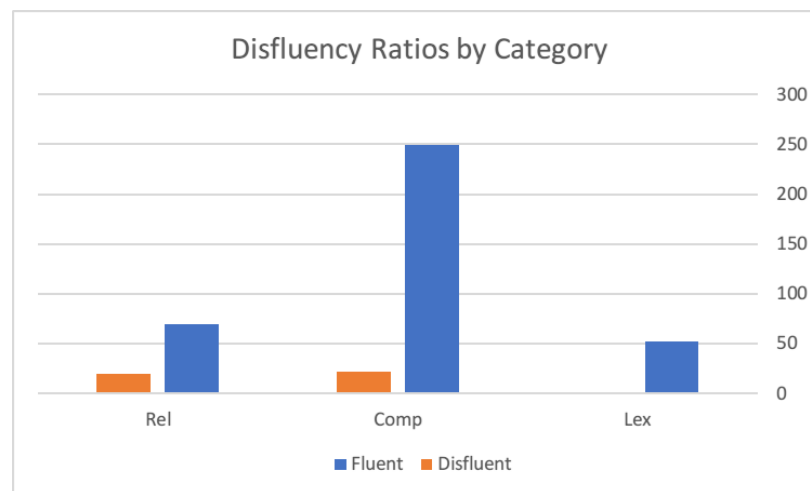


Figure 1. Disfluency rates in all categories

These initial results reveal that not only does syntactic complexity have a relation to ND, but that more complex structures lead to a breakdown of speech more often. Relative clauses, which require more complex processing than subordinate clauses (Durrelman et al., 2016), had significantly higher rates of disfluency. This leads to the possible conclusion that disfluency can be used as an indicator for syntactically complex processing in children, however further research comparing more structures across a wider age range is required.

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