

Disfluency incidence in 6-year old Swedish boys and girls with typical language development

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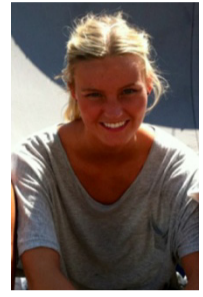


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ABSTRACT

This paper reports the prevalence of disfluencies in a group of 55 (25F/30M) Swedish children with typical speech development, and within the age range 6;0 and 6;11. All children had Swedish as their mother tongue. Speech was elicited using an "event picture" which the children described in their own, spontaneously produced, words. The data were analysed with regard to sex differences and lexical ability, including size of vocabulary and word retrieval, which was assessed using the two tests *Peabody Picture Vocabulary Test* and *Ordracet*.

Results showed that girls produced significantly more unfilled pauses, prolongations and sound repetitions, while boys produced more word repetitions. However, no correlation with lexical development was found. The results are of interest to speech pathologists who study early speech development in search for potential early predictors of speech pathologies.

Keywords:

Speech disfluency, children, lexical development, sex differences

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INTRODUCTION

- Disfluency in adult speech has been devoted a numbers of studies over the past decades
- Disfluency in children not devoted the same number of studies
- Studies of non-pathological child speech mainly occurs in control groups in studies of stuttering and other pathologies.
- The development of speech disfluency in child speech is to a large extent unknown,
- Contradictory and inconsistent results have been reported and several theories have been forwarded, focusing on different aspects of language acquisition.

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PREVIOUS RESEARCH (1)

- Disfluency studies in the speech of children commenced already in the seminal papers by Davis (1939, 1940),
- Later studies have appeared at intermittent intervals, using different test and control groups, and to complicate matters further present the reader with the problem of the fast and complicated language and speech development in the young child
- Problem: comparing a three-year-old with a five-year-old does not amount to the same thing.
- Or, to use the words of Bornstein, Hahn and Haynes (2004: 268):
At virtually every age, children vary dramatically in terms of individual differences in their language abilities".

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PREVIOUS RESEARCH (2)

- Studies of disfluency rates in adult speech have established that around 6% of spontaneously produced speech exhibits some kind of disfluency (Fox Tree, 1995; Oviatt, 1995; Brennan & Schober, 2001; Bortfeld et al., 2001; Eklund, 2004).
- Studies of general disfluency rates in children have presented similar figures, e.g. Guitar (2013) who reported that preschool children were observed to produce around seven disfluencies per one hundred words
- However, the percentage of disfluencies in children tend to vary more.
- It has also been reported that disfluency rates are higher as a function of age, with younger children being more disfluent than older children (Gordon & Luper, 1989).

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PREVIOUS RESEARCH (3)

- Levin and Silverman (1965) compared fluency and hesitation in 48 children who told two stories and two different situations: to an audience and to a microphone when no one was present.
- Using the schemata developed by Trager (1958) and Mahl (1956) they found that speech production was consistent over the different conditions
- That stressful hesitations were responsive to whether the children were speaking in public or privately.
- Levin, Silverman and Ford (1967) compared speech disfluency in 24 children, six each from kindergarten, second, fourth and sixth grade.
- The children were shown simple physical demonstrations and were then asked to provide descriptions and explanations of these demonstrations.
- For children of all ages, explanations exhibited more words, more pauses and hesitations, lower speech rate and also longer pauses.

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PREVIOUS RESEARCH (4)

- Westby (1974) found that highly "dysfluent" children made significantly more grammatical errors than fluent children, irrespective of whether or not the children exhibited stuttering or typical development.
- Haynes and Hood (1978:79), studying 5-year-olds, found "a significant relationship between linguistic complexity and disfluency in children".
- Muma (1971) reported no significant relation between disfluency and syntax in a group of highly fluent and highly disfluent 4-year-olds.
- Pearl and Bernthal (1980), studying 3- and 4-year-olds, reported significantly more disfluencies in passive sentences than in any other sentence type.
- Similar results, this time for 5-year-olds, were reported by McLaughlin and Cullinan (1989).
- It has also been shown that speech disfluency in children has a tendency to be subject to clustering (Sawyer & Yairi, 2010; Colburn, 1985)
- Especially frequent when language development begins and reaches a level where (rudimentary) sentences are being produced (Colburn, 1985).

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THE PRESENT STUDY

- The present study focused on speech disfluency in a group of 6-year-old children without any diagnosed speech pathology
- Focus on three parameters:
 - General mapping of disfluency in 6-year-old girls and boys;
 - Sex differences with regard to disfluency production; and
 - Possible correlation with lexical development, including an analysis of vocabulary size and lexical retrieval.
- 55 children, 25 girls and 30 boys between 6;0-6;11 years old.
- All children had Swedish as their mother tongue.
- Lexical ability was examined using the two tests *Peabody Picture Vocabulary Test* (PPTV) (Dunn & Dunn, 1997) and "Ordracet" (Eklund, 1996)
- Interlabeller reliability was found to be .94.

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RESULTS

Summary results are presented in Table 1:

Table 1. Summary statistics for all disfluencies broken down by type, number, proportion/percentage and position in sentence/word. All disfluency figures are given as disfluencies/words. Girls and boys are presented in separate columns. Statistical significance is calculated performing χ^2 tests of proportion, two-tailed. In cases where the difference is significant, the more disfluent group is specified using ♀ for girls and ♂ for boys.

	Girls n=25	Boys n=30	Statistical Significance
Total number of words	3377	4000	-
Total number of disfluencies	575 (17.0%)	670 (16.6%)	-
Unfilled Pauses	328 (97%)	360 (53.7%)	$p < 0.01$ (♀)
Filled Pauses - All Positions	113 (33.0%)	153 (22.8%)	n.s.
Filled Pauses - initial	58 (17%)	75 (11.2%)	n.s.
Filled Pauses - medial	55 (16%)	78 (11.6%)	n.s.
Filled Pauses - final	0 (0%)	0 (0%)	-
Segment Prolongations - All Positions	81 (24.3%)	49 (7.2%)	$p < 0.01$ (♀)
Segment Prolongations - initial	36 (10.7%)	13 (1.9%)	$p < 0.01$ (♀)
Segment Prolongations - medial	32 (9.5%)	13 (1.9%)	$p < 0.01$ (♀)
Segment Prolongations - final	13 (3.8%)	24 (3.6%)	n.s.
Sound Repetitions - All positions	5 (1.5%)	6 (0.9%)	n.s.
Sound Repetitions - initial	2 (0.6%)	6 (0.9%)	n.s.
Sound Repetitions - medial	3 (0.9%)	0 (0%)	$p < 0.05$ (♀)
Sound Repetitions - final	0 (0%)	0 (0%)	-
Syllable Repetitions - All positions	6 (1.8%)	12 (1.8%)	n.s.
Syllable Repetitions - initial	6 (1.8%)	12 (1.8%)	n.s.
Syllable Repetitions - medial	0 (0%)	0 (0%)	-
Syllable Repetitions - final	0 (0%)	0 (0%)	-
Word Repetitions	23 (6.8%)	56 (8.4%)	$p < 0.05$ (♂)
Truncations	19 (5.6%)	34 (5.1%)	n.s.

- Average disfluency rate: 15.6%
- Girls produced significantly more unfilled pauses, prolongations, sound repetitions in medial position and word repetitions
- Boys exhibited more word repetitions
- No correlation between disfluency rate and lexical ability, vocabulary or word retrieval

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DISCUSSION AND CONCLUSIONS

- Palpable lack of consistency in the previous results reported in the literature, across most variables.
- Fast and complex development of language and speech in young children makes comparisons between different and across studies difficult
- Comparing our results with previously reported studies highlights this phenomenon in that we both replicate results and present results that run counter to previous studies
- It is our belief, and a limitation of the present study, that disfluency in young children must be studied in a way that is solidly based in general theories on child language acquisition.
- Similar to many previous studies, the present study included a small group of children with a given, and our results need to be corroborated or contested and future studies of children of the same or similar ages.
- We do hope, however, that the present study helps shed a little bit more light on disfluency incidence in young children.

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