

Typology of speech disruptions and grammatical classes in children

Abstract

The aim of present research was to verify the influence of grammatical classes on the occurrence of speech disruptions of stuttering and fluent children. Participants were 80 children, speakers of Brazilian Portuguese language, with ages between 4.0 and 11.11 years, divided in two groups: GI - 40 stuttering children and GII - 40 fluent children, paired by age and gender with GI. The data indicate that as for the grammatical class, speech disruptions were more frequent in function words for both groups, mainly for the articles.

Introduction

Several studies suggest that disruptions in functional words happen mostly when they precede content words in the speech of fluent and stuttering children. Results confirm the hypothesis proposed to the study, that disruptions in functional words are used as a delaying tactic when the following content word is not ready for execution (Au-Yeung et al., 1998; 2003; Howell et al., 1999; Dworzynski et al., 2003).

The purpose of this study was to verify the influence of word class in the speech disruptions of fluent and stuttering children, native speakers of the Brazilian Portuguese language.

The research hypotheses were:

H.1. – Word class - both groups present more speech disruptions in function words than in content words.

H.2. – The distribution of stuttering-like disfluencies (SLD) and other disfluencies (OD) between content and function words is the same for both groups.

Method

Participants of this research were 80 children aged 4.0-11.11 years, native speakers of the Brazilian Portuguese language, divided in two groups: GI with 40 stuttering children (29 male and 11 female); GII with 40 fluent children (29 male and 11 female).

A child was included in GI if he/she met the following criteria:

- a) presented fluency scores off the confidence interval for the reference values of the age group according to the Fluency Profile Assessment (Andrade, 2004)
- b) received a total overall score of 11 or above (i.e., a severity equivalent to at least “mild”) on the Stuttering Severity Instrument (SSI-3 - Riley, 1994)

A child was included GII if he/she met the following criteria:

- a) presented fluency scores within the confidence interval for the reference values of the age group according to the Fluency Profile for Stuttering Assessment (Andrade, 2004);
- b) received a total overall score of 11 or below (i.e., a severity equivalent of less than “mild”) on the SSI-3.

A case history was obtained, followed by a speech screening test and the recording of a self-expressive speech sample elicited by a picture stimulus. All participants were audio and videotaped. Data collection sessions lasted approximately 10 minutes. Briefly, each speech sample contained the minimum of 200 fluent syllables/100 fluent words (Andrade, 2000).

After speech sample were gathered, these were transcribed and speech disruptions were classified according to their typology (SLD or OD) and grammatical class.

Speech samples (including disruptions) were classified referring to their grammatical class (nouns, article, adjective, numeral, pronoun, verb, adverb, preposition, conjunction and interjection). After this classification the disruptions were divided in content and function words, according to the criteria adopted by Howell et al. (1999) and Shapiro & Caramazza (2002).

For the statistical analysis of data, parametric tests were used (Paired-T test; Independent-T test; ANOVA and Tukey Test) with a significance level of 5%.

Results

Analyzing the total number of words produced in all of the speech samples, it was observed, for both groups, a prevalence of content words in comparison to function words. This difference was statistically significant (GI – 2831 content words and 1773 function words – $p < 0.001^*$ and GII 2826 content words and 1748 function words – $p < 0.001^*$).

Although the speech samples presented a higher number of content words, results indicate that speech disruptions occur mostly on function words for both groups. This difference was also statistically significant (GI: 491 speech disruptions in content words and 630 speech disruptions in function words $p = 0.007^*$ – GII: 91 speech disruptions in content words and 216 speech disruptions in function words $p = 0.001^*$).

Regarding content words, both groups presented more speech disruptions in verbs ($p < 0.001^*$).

As for content words, results indicate that for both groups speech disruptions occurred mostly in articles ($p < 0.001^*$).

Analyzing SLDs and ODs separately, results indicate that for both groups ODs occurred mostly in function words (ODs – GI: 146 speech disruptions in content words and 371 in function words, $p < 0.001$ – GII: 77 speech disruptions in content words and 201 in function words, $p < 0.001$).

Regarding SLDs, an even distribution of this type of speech disruptions between content and function words was observed (SLDs – GI: 345 speech disruptions in content words and 259 in function words, $p=0.084$ – GII: 14 speech disruptions in content words and 15 in function words, $p=0.814$).

Discussion

Hypothesis 1 – Confirmed.

Results indicate that although speech samples presented a higher number of content words, speech disruptions occurred mostly in function words for both groups. This result agrees with findings of the international literature (Howell et al., 1999; Au-Yeung et al., 2003; Dworzynski et al., 2003, Graham et al., 2004).

According to Au-Yeung et al. (2003) the repetition of function words occur when these precede content words in the speech of either fluent or stuttering children; disruptions in function words are used as a delaying tactic when the following content word is not ready for execution.

Analyzing the occurrence of speech disruptions in each individual grammatical class, it very similar behavior was observed for fluent and stuttering children. Both groups presented a predominance of speech disruptions in verbs (content words) and articles (function words).

Regarding verbs, the high occurrence of speech disruptions may be explained by the fact that this is a very complex and dynamic grammatical class. The complexity of verbs is observed morphologically as well as syntactically. (Honincthun & Pillon, 2005).

Speech disruptions in function words, especially in articles, may have the purpose to delay the following content word until it is ready for production (Howell et al., 1999; Au-Yeung et al., 2003; Dworzynski et al., 2003).

Hypothesis 2 – Partially confirmed.

The cross analysis of the occurrence of SLDs and ODs according to grammatical class (content and function words) led to an interesting finding. According to the obtained results, it was observed that ODs occurred more frequently (twice as much) in function words. As for SLDs, their occurrence in content and function words was the same.

This result suggests that the grammatical aspect represented by the distinction between content and function words does not seem to have a direct influence on the occurrence of SLDs. This type of speech disruption seems to be more related to motor aspects involved in speech (Andrade, 2002).

References

ANDRADE, C.R.F. de. Protocolo para a avaliação da fluência da fala. *Pró-fono Revista de atualização científica*, 12(2): 131-134, 2000_b.

ANDRADE, Claudia Regina Furquim de. História natural da gagueira – estudo III: vocabulário, fonologia e pragmática. *Pró-fono Revista de atualização científica*, v. 14, nº 3, p. 371-382, 2002.

ANDRADE, Claudia Regina Furquim de. Fluência In: ANDRADE, Claudia Regina Furquim de; BÉFI-LOPES, Débora Maria; WERTZNER, Haydée Fiszbein; FERNANDES, Fernanda Dreux Miranda. *ABFW – Teste de Linguagem Infantil: nas áreas de fonologia, vocabulário, fluência e pragmática*. 2. ed. Barueri: Pró-Fono, 2004. cap. 3, 71-94.

AU-YEUNG, J.; HOWELL, P.; PILGRIM, L. Phonological words and stuttering on function words. *Journal of Speech, Language, and Hearing Research*, 41:1019-1030, 1998.

AU-YEUNG, James; GOMEZ, Isabel Vallejo; HOWELL Peter. Exchange of disfluency with age from function words to content words in Spanish speakers who stutter. *Journal of Speech, Language, and Hearing Research*, v. 46, p. 754-766, 2003.

DWORZYNSKI, Katharina; HOWELL, Peter; NATKE, Ulrich. Predicting stuttering from linguistics factors for German speakers in two age groups. *Journal of Fluency Disorders*, v. 28, p. 95-113, 2003.

GRAHAM, Corrin G.; CONTURE, Edward G.; CAMARATA, Stephen M. Childhood Stuttering on Function and Content Words. On-line proceedings of Asha Convention, 2004. Disponível em URL: <<http://convention.asha.org/handouts.cfm>>. Acesso em: 29 nov. 2004.

HONINCTHUN, Peggy; PILLON, Agnesa. Why verbs could be more demanding of executive resources than nouns: Insight from a case study of a fv-FTD patient. *Brain and Language*, v. 95, p. 36-37, 2005.

HOWELL, Peter; AU-YEUNG, James; SACKIN, Stevie. Exchange of stuttering from function words to content words with age. *Journal of Speech, Language, and Hearing Research*, v. 42, p. 345-354, 1999.

RILEY, Glyndon D. *A Stuttering Severity Instrument for children and adults*. Austin: Pro-Ed, 1994.

SHAPIRO, K.; CARAMAZZA, A. The role and neural representation of grammatical class: a special issue of the *Journal of Neurolinguistics*. *Journal of Neurolinguistics*, v. 15, p.159-170, 2002.