Stuttering and fluent children: influence of word extension

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Abstract

The purpose of this study was to verify the influence of word extension on the speech disruptions of stuttering and fluent children. Participants of this study were 80 children, with ages between 4.0 and 11.11 years, who were divided in two groups: GI – 40 children (29 male and 11 female) with the diagnosis of stuttering; GII – 40 children, paired by age and gender with the participants of GI. The disrupted words were classified as monosyllables, disyllables and polysyllables. The results indicate that GI and GII presented more speech disruptions in monosyllabic words.

Summary

Introduction
Among the several linguistic aspects investigated in stuttering, the extension of the disrupted word has been the central issue of several studies with divergent results.

According to Bloodstein (1995), words that are longer in extension are more complex in terms of articulation and therefore could be more susceptible to disruptions.

According to Van Lieshout et al. (1996), disruptions in longer words occur because they need more time to be programmed.

Schiefer (2004) presented a study with 19 stuttering Brazilian adults and concluded that the polysyllabic words present more speech disruptions.

Hakim & Ratner (2004) presented a study with stuttering and fluent children, investigating their speech performance during the repetition of non-words. Among the investigated aspects, the authors point that there was no variation in the occurrence of speech disruptions regarding word extension.

Dworzynski et al. (2003) investigated the performance of 32 stuttering German children in relation to a series of linguistic aspects, including word extension. The results indicate that speech disruptions were more frequent in shorter and functional words.
The purpose of the present study was to verify the influence of word extension on the speech disruptions of stuttering and fluent children. The hypothesis of the research is that speech disruptions will be more frequent in longer words for both groups of children.

Method

Participants of this research were 80 children, aged 4.0-11.11 years, 58 male and 22 female, native speakers of the Brazilian Portuguese language, divided in two groups: the research group (GI) consisted of 40 stuttering children (29 male and 11 female) and the control group (GII) consisted of 40 fluent children (29 male and 11 female).

All participants had no history of other communication disorders, hearing, neurological, psychological, or intellectual problems.

A child was included in the research group (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 of at least “mild”) on the Stuttering Severity Instrument – 3 (SSI-3 – Riley, 1994).
A child was included in the control group (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 Assessment (Andrade, 2004);

b) received a total overall score of 11 or below (i.e., a severity equivalent of at least “mild”) on the Stuttering Severity Instrument – 3 (SSI-3 – Riley, 1994).

All participants were videotaped. Data collection sessions lasted approximately 10 minutes. Briefly, each speech sample contained the minimum of 200 fluent syllables/100 fluent words (Andrade, 2004).

After parents signed the informed agreement protocol, a case history was obtained, followed by a speech screening test and the recording of a self-expressive speech sample that was elicited by a picture stimulus.

After gathering the speech samples of each participant, these were transcribed and analyzed. All of the words in each speech sample, including those that were disrupted, were classified according to their extension and divided as monosyllabic, disyllabic, trissyllabic and polysyllabic words. The Houaiss Dictionary (2003) was used as a reference for syllabic division.
For the statistical analyses of the data, parametric (Paired T-test, independent T-test, ANOVA and Turkey) and non-parametric tests (Friedman and Mann-Whitney) were used, with a significance level of 5%.

Results

Table 1. Total number of produced words classified according to extension

<table>
<thead>
<tr>
<th></th>
<th>monosyllabic</th>
<th>disyllabic</th>
<th>trisyllabic</th>
<th>polysyllabic</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T  A  SD  M</td>
<td>T  A  SD  M</td>
<td>T  A  SD  M</td>
<td>T  A  SD  M</td>
<td>ANOVA  Friedman</td>
</tr>
<tr>
<td>GI</td>
<td>2117 52.9 8.4 53.3</td>
<td>1618 40.4 7.0 40.5</td>
<td>716 17.9 4.8 17.4</td>
<td>153 3.8 2.3 3.4</td>
<td>P&lt;0.001* P&lt;0.001*</td>
</tr>
<tr>
<td>GII</td>
<td>2075 51.8 10.4 51.3</td>
<td>1621 40.5 5.8 39.6</td>
<td>651 19.2 4.2 15.3</td>
<td>177 4.4 1.9 4.6</td>
<td>P&lt;0.001* P&lt;0.001*</td>
</tr>
</tbody>
</table>

Legend: T – total; A – average; SD – standard deviation; M – median.

Table 1 shows that monosyllabic words were more frequent in both groups, presenting a statistically significant difference when compared to disyllabic, trisyllabic and polysyllabic words.

Table 2. Number of disrupted words classified according to extension

<table>
<thead>
<tr>
<th></th>
<th>monosyllabic</th>
<th>disyllabic</th>
<th>trisyllabic</th>
<th>polysyllabic</th>
<th>P-Valor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T  A  SD  M</td>
<td>T  A  SD  M</td>
<td>T  A  SD  M</td>
<td>T  A  SD  M</td>
<td>ANOVA  Friedman</td>
</tr>
<tr>
<td>GI</td>
<td>670 16.7 11.4 11.5</td>
<td>280 7.0 5.7 6.0</td>
<td>139 3.4 3.8 3.0</td>
<td>32 0.8 1.2 0</td>
<td>P&lt;0.001* P&lt;0.001*</td>
</tr>
<tr>
<td>GII</td>
<td>212 5.3 4.1 4.0</td>
<td>80 2.0 1.4 2.0</td>
<td>13 0.3 0.6 0</td>
<td>2 0.05 0.2 0</td>
<td>P&lt;0.001* P&lt;0.001*</td>
</tr>
</tbody>
</table>
Table 2 shows that speech disruptions were more frequent in monosyllabic words in both groups, presenting a statistically significant difference when compared to the other word extension classifications.

Table 3. Comparison between the number of disrupted words according to their extension regarding the total number of produced words

<table>
<thead>
<tr>
<th></th>
<th>monosyllabic</th>
<th>disyllabic</th>
<th>trisyllabic</th>
<th>polysyllabic</th>
</tr>
</thead>
<tbody>
<tr>
<td>GI</td>
<td>670/2117</td>
<td>280/1618</td>
<td>139/716</td>
<td>32/153</td>
</tr>
<tr>
<td></td>
<td>31.6%</td>
<td>17.3%</td>
<td>19.4%</td>
<td>20.9%</td>
</tr>
<tr>
<td>GII</td>
<td>212/2075</td>
<td>80/1621</td>
<td>13/651</td>
<td>2/177</td>
</tr>
<tr>
<td></td>
<td>10.2%</td>
<td>4.9%</td>
<td>1.9%</td>
<td>1.1%</td>
</tr>
</tbody>
</table>

Table 3 shows that even though the monosyllabic words were more frequent in number, they were also more frequently disrupted when compared to the other classifications of word extension.

Discussion

The hypothesis that words longer in extension would present a greater number of speech disruptions was not confirmed.

The results indicate that the speech disruptions presented by GI and GII occurred predominantly in monosyllabic words, even though this was the most frequent type of word in the analyzed speech samples. This result suggests that articulatory complexity and programming time, usually related to the production of
longer words, do not seem to have an influence over the speech disruptions presented by the children of this study.

One possible explanation for this result, according to Au Yeung (1998, 2003) and Howell (1999), is that speech disruptions occur predominantly in functional words, being articles the most disrupted grammatical class (Juste 2006). For the Brazilian Portuguese language, articles are usually words of smaller extension. Analyzing the other functional words (conjunctions, prepositions, pronouns and interjections), a greater occurrence of monosyllabic words can be observed (Rosa, 2003).

References


