

## Grammatical factors in stuttering

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### Abstract

An analysis of the distribution of stuttering on grammatical parts of speech, content and function words was undertaken, both in monolingual and bilingual stutterers. The two languages analyzed were English and Kannada (a Dravidian language). Both oral reading and spontaneous speech were analyzed. Results indicated that there was more stuttering on content words than on function words; more stuttering occurred on nouns, adjectives and verbs in both the languages; the difference between monolingual and bilingual stutterers and between the two languages of a bilingual stutterer was only quantitative indicating that stuttering was not language related. In general, the results support Bloodstein's anticipatory struggle hypothesis in stuttering.

**Key words:** Stuttering, content and function words, information, anticipatory struggle hypothesis.

### 1. Introduction

The anticipatory struggle hypothesis has been described by Bloodstein<sup>1</sup> as one in which the stutterers stutter because they believe in the difficulty of speech, anticipate failure and struggle to avoid it. In other words, the stutterer scans the utterance for linguistic cues associated with past stuttering. According to the research done mostly in oral reading, a higher incidence of stuttering has been generally found on longer than shorter words<sup>2-6</sup>, earlier than later words in a sentence<sup>7</sup>, words starting with consonants than vowels<sup>7-12</sup>, less familiar words than more familiar words<sup>14-17</sup>, higher than lower information words<sup>13</sup>, words of heavier than lighter stress<sup>7</sup>, and content than function words<sup>8-10, 17-20</sup>. It is inevitable that words more frequently stuttered may have more of these linguistic cues associated with them.

The purpose of the present study was to explore the grammatical effect (content vs. function words) on stuttering with respect to two modes of speaking (oral reading vs. spontaneous speech) and two languages (English vs. Kannada). Although the two modes of speaking in two different languages provided a cross check of the findings, the bilingual analysis was also undertaken to determine if there is universality of features of stuttering over the languages, that is, to find out whether stuttering is language related.

## 2. Method

Ten monolingual stutterers (those who knew only Kannada and were not exposed to any other language) and ten bilingual stutterers (those who knew both Kannada and English languages and were not exposed to any other language), all males, served as experimental subjects\*. The monolingual stutterers ranged in age from 17 to 34 years (mean age 24.8 years) and the bilingual stutterers from 19 to 32 years (mean age 25.6 years). All these subjects had undergone speech therapy some time during the course of their problem. Subjects in the bilingual group were required to pass an achievement test in English. This was done to make sure that the subjects selected were sufficiently proficient in the usage of English language.

### 2.1. Reading material

The oral reading material was a 149-word English passage and a 122-word passage in Kannada. English passage was the translation of the Kannada passage. The words in these passages were broadly classified into content words which included nouns, verbs, adjectives, and adverbs and function words which included articles, pronouns, prepositions, conjunctions and auxiliaries. Personal pronouns were also included under function words following Francis<sup>21</sup>. The Kannada passage contained 71% content words and 29% function words while the English passage was composed of 55% content words and 45% function words. All the words in these passages occurred in the 1000 most familiar words of their respective languages<sup>13</sup>. Thus it was assumed that the task difficulty across the languages was equal.

### 2.2. Collection of spontaneous speech

Subjects were asked to speak on topics of general interest and to cover as wide an area as possible. They were even asked to speak on their profession and the subject of their specialization. Spontaneous speech was obtained under two conditions. In one situation the subjects spoke spontaneously for 15 minutes. During the discourse, the subjects were given encouragement in the form of additional questions. In another situation, the subjects were briefed on some topics on which they later spoke for 10 minutes. The two samples were clubbed together for analysis.

### 2.3. Procedure and reliability of measures

The passages in each language were typed as a single paragraph and were presented to the subjects to be orally read by them. The subjects were instructed to read these

\*The monolingual and the bilingual stutterers give us three different groups—(i) monolingual stutterers—Kannada group (MSG), (ii) bilingual stutterers—Kannada group (BSK) and (iii) bilingual stutterers—English group (BSE). Note that the BSK and the BSE groups are only language groups, but include the same subjects.

passages in their habitual reading rate and style. The two passages were randomly presented in the case of bilingual subjects. The subjects read these passages and also spoke in the presence of two listeners—the experimenter and another listener accompanying the subject. All the readings were recorded for further analysis.

The assessment of the stuttering instances was done by the experimenter alone. To check the experimenter's reliability, later a speech pathologist assessed a portion of the spoken and read material taken at random and marked the instances of stuttering. A correlation of 0.96 was obtained between the two judgements. The experimenter's reliability was further checked by correlating his first set of judgements with that of a second judgement of a portion of speech taken at random. A correlation of 0.97 was obtained between the two sets of readings. Only those instances of stuttering marked by the experimenter were considered for analysis. Only repetitions and prolongations of sounds and syllables were considered for analysis.

### 3. Results and discussion

#### 3.1. *Stuttering on content and function words*

The difference in mean stuttering between content and function words was analysed by *t*-scores and the results are given in Table I. The mean stuttering on content and function words was calculated with respect to the total number of content and function words occurring in speech and reading material. The table shows that the stutterers exhibited significantly more stuttering on content words than on function words, both in spontaneous speech and oral reading tasks. The results from oral reading in the English language are in agreement with those of earlier investigations<sup>7-8, 19-20</sup> and from spontaneous speech with those of Hejna<sup>10</sup>.

Table I

Mean percentage of stuttering on content words (CW) and function words (FW) and the *t*-scores for the significance of difference

	Oral reading			Spontaneous speech		
	MSG	BSK	BSE	MSG	BSK	BSE
CW's	27.93	25.17	29.61	24.18	22.96	28.49
FW's	15.46	8.47	10.14	9.56	10.71	13.69
<i>t</i>	2.54	2.40	5.33	4.28	3.12	5.51
S/NS	0.05	0.05	0.01	0.01	0.01	0.01

We can give three explanations for the higher stuttering on content words than on function words :

(1) We have previously observed more stuttering on high information words than on low information words<sup>13</sup>. The majority of the content words carry high information and, therefore, they may be stuttered more. However, recorded research has not accorded high degree of importance to the information load or word uncertainty in its influence on stuttering. St. Louis<sup>22</sup> states—'while information load may seem to be a parsimonious explanation of most of the linguistic factors of stuttering, its basis solely on sequential probability does not allow explanatory hypothesis of why high or low probability words attract different amounts of stuttering than others'.

(2) Higher stuttering on content words may also be explained on the basis of word fear or 'specific word anxiety'<sup>23</sup>. Since this feature characterizes advanced stuttering more than it does incipient stuttering, the content and function word difference with respect to stuttering might be accounted for, as the stutterer is more likely to anticipate or avoid difficulty on meaningful and thus content words.

(3) We have also observed more stuttering on consonants than on vowels<sup>13</sup>. As there are more content words starting with consonants than with vowels, it is possible that phonetic factors are responsible for higher stuttering on content words than on function words.

### 3.2. *Stuttering on grammatical parts of speech*

The difference in mean stuttering on a finer eight way classification of grammatical parts of speech was analyzed through analysis of variance and for those differences which were significant, Critical Differences (CD)<sup>24</sup> for the 0.05 significance level were calculated. Table II shows the mean stuttering on different parts of speech.

The difference between the parts of speech with respect to stuttering was significant for all the three stuttering groups, both in oral reading and spontaneous speech tasks. Further, an analysis of means, differences in means and CDs showed that Kannada stutterers stuttered more on verbs in spontaneous speech while the stutterers in the English language group stuttered more on nouns. In general, we found that the decreasing order of difficulty of stutterers on the grammatical parts of speech in the Kannada language was verbs, nouns, adjectives, prepositions and pronouns and in the English language nouns, adjectives, verbs, pronouns and prepositions. Whether the difficulty of stutterers on the grammatical parts of speech was related to some other factors like phonetic factors was not analyzed here. However, we observed that the intersubject variability of stutterers in their difficulty on grammatical parts of speech was less than the intersubject variability of stutterers in their difficulty on individual sounds<sup>13</sup> which is in agreement with Brown's<sup>1</sup> results. The higher stuttering on nouns, adjectives and verbs might be due to the relatively greater importance of these words in speech. We are unable to explain the somewhat higher stuttering on prepositions and pronouns.

Table II

Mean percentage of stuttering on different parts of speech and the results of the analysis, of variance

	Oral reading			Spontaneous speech		
	MSG	BSK	BSE	MSG	BSK	BSE
Noun	27.17	24.35	31.67	7.18	7.89	10.64
Verb	32.78	27.22	21.30	8.23	8.39	8.21
Adjective	27.14	27.14	32.39	7.14	6.96	9.49
Adverb	10.00	5.00	8.89	4.31	2.10	4.21
Pronoun	10.91	21.82	20.91	5.61	6.01	6.21
Preposition	18.50	17.00	14.52	5.25	4.27	4.41
Conjunction	12.50	17.50	2.50	4.10	4.21	1.10
Article			8.57			2.57
F	3.94	2.51	9.19	2.24	2.89	3.14
S/NS	0.01	0.05	0.01	0.05	0.05	0.01
CD*	9.09	9.69	6.99	3.12	3.98	2.86
Most Stuttered	Verb	Verb	Adjective	Verb	Verb	Noun

\* Critical difference (CD) is for 0.05 level of significance.

In general, our results seem to support Bloodstein's anticipatory struggle hypothesis which states that stutterers scan the utterance for cues which influenced stuttering in the past. Such anticipation will lead to fragmentation of speech in the form of stuttering.

Our results on the distribution of stuttering on the grammatical parts of speech were not qualitatively different in the two languages employed here. This suggests that the features of stuttering are not language related. Further, the similar results obtained from the monolingual and the bilingual stutterers suggest that the linguistic background of the speakers may not be an important variable in stuttering.

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