LINGUISTIC ANALYSIS OF STUTTERING PATTERNS OF BILINGUAL STUTTERERS

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ABSTRACT

Linguistic analysis of Bilingual Stutterer's speech has been attempted here. The method consisted of collecting large sample of speech and analyzing it for the linguistic differences in the stuttering patterns, between the two languages studied. The results are suggestive that stuttering may be purely a motor phenomenon. Several new areas of research in the field have been suggested.

Key words: Stuttering, Zipf's Law, Stops, Fricatives, Nasals, Vowels.

1. INTRODUCTION

It is generally agreed that the use of a second language has some influence on the first language. Stuttering being, perhaps the most prevalent speech problem, there is need to study the possible influence of languages on stuttering patterns, as evident in a bilingual speaker. Hass[1] quotes: "Linguistic analysis and comparison should be able to tell us more exactly what to teach or to treat, in any particular case; and also what is more important and what is less".

Apart from this general consideration, a study of the possible influence of languages and language interference on stuttering is important for two reasons:

(1) Data regarding this are not available. In the past, in stuttering research, the emphasis was more on the behavioural aspects of stuttering. Data of this type may possibly help in suggesting new rehabilitative techniques for the treatment of stuttering; or in improving the present techniques.

(2) Most of the people in India, are exposed to more than one language. As a consequence it is likely that a majority of the stutterers come from this group. This is especially true in urban areas.

There have not been many studies in the past which attempted a linguistic analysis of stuttering. However, Hahn[2, 3] has studied the relation between stuttering, in oral reading and phonetic and grammatical factors. He has shown that it is possible to arrange the sounds in a ranking of difficulty and accordingly he says / g /, / d /, / th /, / l / and / ch / are affected in that order in his study. Similarly, he has observed adjectives, nouns, adverbs and verbs as affected in that order. Here an attempt is made to analyze the differences that may exist in the stuttering patterns between two languages.

2. METHOD

Two adult male stutterers were selected. Average age of the subjects was 26 years. Criteria employed for selection were that their mother-tongue should be Kannada and that they should also know English. Only Kannada and English languages were studied here. Both the subjects selected here, knew only Kannada and English and both of them had not received any therapy for their problem before the test session. Educational background, language background of the subjects and the linguistic background of the family of these subjects were all similar.

The author of this paper, who is a bilingual in Kannada and English and who is also of the same social group as the subjects, conducted an informal interview in a quite normal and natural conversational set up.

The subjects were asked five questions in each language to elicit their spontaneous speech and also were asked to read a passage in both the languages. Different questions were asked in Kannada and English and they were questioned in Kannada to get Kannada responses and in English to get English responses. The subjects were also encouraged to give their views on some day-to-day topics spontaneously in the two languages. Their speech was recorded for further analysis.

Any hesitation, repetition and prolongation of sounds and syllables was considered as a moment of stuttering. No attempt was made to analyse the secondaries.

The subjects speech was analyzed and compared for the following factors:

(1) Stuttering frequency.

(2) Nature of the sounds affected.

(3) Relative frequency of occurrence of sounds affected [This was later compared with the data obtained by B. S. Ramakrishna *et al.*[4] for normal speech].

(4) Comparison between languages (English and Kannada).

3. Results and Discussion

Table I gives the number of words analyzed, speaking and reading, rate and the stuttering frequency of the two subjects studied. In both the cases repetitions were more, compared to prolongations and hesitations. Although no attempt was made to analyze the secondaries, a non-verbal response like click was observed in subject 2, as it was predominant. The number of clicks was even more than number of repetetions in this case. When judged in terms of primaries, subject 2 seems to be more fluent than subject 1. But subject 2 had more disfluent factors in his speech. It is also evident from Table I that the speaking rate of both the subjects in a

TABLE I

Showing the stuttering frequency and rate of speech

		Subject 1		Subject 2	
		English	Kannada	English	Kannada
Number of words:	Speaking	961	431	906	475
	Reading	212	135	212	135
	Total	1173	566	1118	610
Rate: words/ minute	Speaking	103·50	93·05	109·00	96·39
	Reading	169·60	101·30	110·60	67·50
Stuttering Frequency:	Number of Blocks	136	59	85	36
	Percentage	11·60	10·42	7·60	5·90

given language is almost the same, but the reading rate of subject 2 is far lower than that of subject 1 in both the languages. In both the subjects, the difficulty seems to be more in English than in Kannada.

Kannada was taken as the primary language of both the subjects, for two reasons:

(1) Kannada was the mother-tongue of both the subjects and

(2) No special language tests were administered to prove otherwise.

Even though Kannada was their primary language, the speaking and reading rate is less than that of English, in both the subjects. This may probably suggest that the subjects are normally preoccupied in reading more in English than in Kannada, thus exhibiting a greater proficiency in reading English than Kannada as evidenced by a faster reading rate. Examinations with the subjects proved that the above assumption is correct. The higher speaking rate and reading rate in English probably is also one of the causes of increased disfluency in English than in Kannada. Further research on this is needed. [Speaking rate and reading rate are calculated in terms of number of words/minute and accordingly number of words/minute was greater in English than in Kannada. This may be probably because number of syllables/words in Kannada is more than in English. This possibility has not been checked here and future research can attempt to incorporate this factor].

Percentage of disfluency for English and Kannada for a given subject are apparently close but not quite so that is, although in subject 1, the values are above 10 and in subject 2, the values are below 8 (above 5) still in each subject the difference in percentages is more than 1·5 in one subject and 1·7 in the other case. It is probably due to the fact that the sample of speech studied was too small and too specific in nature. If (1) the sample is increased and (2) the nature is also varied over a wide range, it is quite likely that the percentages of a given case, for the two languages would be much closer.

Tables II and III give the sounds affected, frequency of occurrence of these sounds for subject 1 and subject 2 respectively. They are also compared with the frequency of occurrence of these sounds in normal speech. It is evident from these tables that in both the subjects, vowels, stops, fricatives and nasals are affected. However, in subject 1 flaps are affected in English, whereas in the case of subject 2 they are affected in Kannada.

TABLE II

Showing the sounds affected, and the comparison of this with the frequency of occurrence of these sounds in normal speech—Subject 1

English				Kannada			
Sound affected	Frequency	%	Normal %	Sound affected	Frequency	%	Normal %
d	19	13·965	3·43	*k*	9	15·246	2·66
s	14	10·290	4·55	*m*	7	11·858	2·00
i	10	7·350	7·94	*n*	6	10·164	4·90
a	9	6·615	1·26	*i*	5	8·470	7·30
t	8	5·880	7·13	*g*	4	6·776	3·22
g	7	5·145	0·74	*s*	3	5·082	2·21
m	7	5·145	2·78	*o*	3	5·082	1·06
h	7	5·145	1·81	*a*	3	5·082	18·79
r̃	7	5·145	6·88	*e*	2	3·388	4·00
k	5	3·675	2·71	*u*	2	3·388	6·28
f	5	3·675	2·23	*t*	2	3·388	0·95
v	5	3·675	2·28	*d*	2	3·388	3·43
l	5	3·675	3·74	*c*	2	3·388	0·66
n	4	2·940	7·24	*p*	1	1·694	1·29
e	3	2·205	3·44	*b*	1	1·694	1·20
Ai	3	2·205	1·59	*bh*	1	1·694	..*
p	3	2·205	2·04	*th*	1	1·694	4·50
d	2	1·470	4·01	*j*	1	1·694	0·25
ɛ	2	1·470	2·35	*v*	1	1·694	3·85
æ	2	1·470	*	*h*	1	1·694	1·35
u	2	1·470	0·69				
o	2	1·470	*				
b	2	1·470	1·81				
c	1	0·735	0·52				
y	1	0·735	2·28				
z	1	0·735	*				
26	136	100·00		20	59	100·00	

*: Data not available.

TABLE III

Showing the sounds affected, and the comparison of this with the frequency of occurrence of these sounds in normal speech—Subject 2

English				Kannada			
Sound affected	Frequency	%	Normal %	Sound affected	Frequency	%	Normal %
s	12	14·124	4·55	*a*	5	13·870	18·79
f	9	10·593	2·23	*e*	4	11·096	4·00
d	9	10·593	3·43	*i*	4	11·096	7·30
Ai	7	8·239	1·59	*k*	4	11·096	2·66
i	5	5·855	7·94	*m*	4	11·096	2·00
e	5	5·855	3·44	*o*	2	5·548	1·06
p	5	5·855	2·01	*g*	2	5·548	3·22
t	5	5·855	7·13	*bh*	2	5·548	1·20
m	5	5·855	2·78	*v*	2	5·548	3·85
b	4	4·708	1·81	*u*	1	2·274	6·28
v	4	4·708	2·28	*p*	1	2·274	1·29
l	3	3·531	3·74	*t*	1	2·274	0·95
n	2	2·354	*	*c*	1	2·274	0·66
o	2	2·354	7·24	*l*	1	2·274	3·12
ɛ	1	1·177	2·35	*n*	1	2·274	4·90
æ	1	1·177	*	*h*	1	2·274	1·35
u	1	1·177	0·69				
ɔ	1	1·177	1·63				
a	1	1·177	1·20				
d	1	1·177	4·31				
z	1	1·177	*				
h	1	1·177	1·81				
22	85	100·00		16	36	100·00	

* Data not available.

This may be due to the fact that the sample of speech studied was too specific in nature.

In subject 1, in English Alveolar stop d, Alveolar fricative / s / and short vowels / a / and / i / are most affected. In subject 2, the pattern is

more or less the same. Here the labiodental fricative / f / is the other sound which is affected mostly. However, in Kannada there is some difference between the two subjects. In subject 1, consonants [stops / k /, / g /; nasals / m /, / n /; fricative / s /] are more affected than vowels, whereas in subject 2, vowels are most affected [short vowels / a /, / i /, / e /] followed by stops and nasals [The classification of sounds here is according to IPA chart, Ref: Gleason[5]. With the present data and sample of speech studied, plausible reason can be given for this observation.

It can also be seen from Tables II and III that the number of sounds affected are more in subject 1 than in subject 2 in both the languages. This may be because, as stated earlier, subject 2 had many clicks (defined as a maladjusted non-verbal response, a secondary symptom) in his speech. It is probable that where subject 1 had a stuttering block (any one of the hesitations, prolongations and repetitions) subject 2 produced a click. Though these clicks were not considered for analysis here, it may not be out of place to mention here that these clicks were totally unrelated to any type of sound and that they have occurred before all types of sounds, not depending on the linguistic material. They have occured at random, but always before a word and they were more in English than in Kannada.

Comparison of the frequency of affected sounds with the frequency with which they occur in normal speech shows that in general, mostly those sounds which have a lower percentage of occurrence in normal speech are most affected in both the languages and in both the subjects. However, there is no one to one relationship. A few exceptions are there. Retroflex / t / and / d /, slit fricative / v /, trill / r /, nasal / n / in English and vowels / a / and / u /, Alveolar / th /, slit fricative / V / in Kannada in the case of subject 1 and in the case of subject 2, vowels / i / and / o /, retroflex / t / and / d / in English and vowels / a /, / u /, nasal / n / and lateral / l / in Kannada are exceptions. These sounds have a high percentage of occurrence in normal speech but are affected less in the speech of the subjects of the present study. These are probably due to some irregularity in the speech sample, and the fact that, in both the subjects, in both the languages, almost the same sounds are exceptions, further justifies the assumption made above.

And also in both the languages, the long vowels and the aspirated consonants are more affected, although they are used much less frequently than the short vowels and the corresponding unaspirated consonants. This together with the above observation warrant further research on the

relation between stuttering and Zipf's 'principles of least effort'. One particular factor that can be studied is whether there will be more stuttering on long vowels which consume more time and aspirated consonants which demand more effort on the part of the speaker.

The results of this study are suggestive that stuttering may be a purely motor phenomenon and does not vary between languages. However, there is a need to study this on more subjects, thus obtaining a more representative and larger sample of speech, which should also be more varying in nature.

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