STUTTERING AND SYLLABLE STRESS

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Eighteen adult stutterers read two lists each of 16 bisyllabic words. In one list, stress appeared on the first syllable; in the second, the "same" words carried second syllable stress. There proved to be no significant difference in proportion between stressed and unstressed syllables associated with stuttering. This investigation appears to dispute the proposition that stressed syllables provide the focal points of stuttering (Wingate, 1976).

INTRODUCTION

There exists a considerable body of literature on the loci of stuttering in the speech of stutterers. Among these reports, Wingate (1976) has demonstrated a positive relationship between word length and stuttering. He attributes this effect to the physical variables required in complex coordinations: The prosodic features of juncture, stress, and intonation make difficult demands on the stutterer's management of suprasegmental aspects of speech.

In his 1967 study, Wingate used two word lists (personal communication), one consisting of 30 bisyllabic words and a second list composed of 30 pairs of monosyllabic words, each pair of which was phonetically "equivalent" to a two-syllable one from the first list. Examples of these items are: fancy matched with fan sea; roaster matched with row stir. On examination, of the 30 bisyllabic words, 25 carry first-syllable stress; 4, second-syllable stress, and 1 is ambiguous (digest). Since subjects showed significantly higher frequency of stuttering in the two-syllable condition of which 83% were words carrying first-syllable stress, the association between stuttering and stressed syllables seemed to be confirmed. Arguing from word length to syllable stress, Wingate holds that "stuttering locus is clearly a function of linguistic stress; it occurs almost exclusively in association with stressed syllables." (Wingate, 1976, p. 257). The purpose of the present study was to investigate the relationship of stress in bisyllabic words to frequency of stuttering.
METHODS

Subjects
Eighteen adult stutterers, 14 male and 4 female, ages 18 to 42, participated. Ten subjects were referred by certified speech pathologists working in the greater Philadelphia area. All were paid a fee from a biomedical research support grant, which also covered the cost of advertising.

Stimuli
A list of 16 two-syllable words contained words in which syllable stress could be shifted from syllable one to syllable two. Though the words changed meaning or connotation, they remained words in common usage and maintained substantial phonetic similarity. Examples from the total of 32 words are: address matched by address; and contract matched by confracf. (See appendix for a full list.)

Regarding the relationship of grammatical class to locus of stuttering, there is general agreement that word length is dominant over grammatical function (Brown and Moren, 1942; Wingate, 1967). With respect to the effect of word familiarity on stuttering frequency, all but one of the stimulus words appear in the list of familiar 2000 words compiled by Thorndike and Lorge. However, there is only one listing for each word and no indication of syllable stress. Distribution of frequency of lax (short) and tense (long) vowel nuclei in the stressed syllables revealed eight each of tense first and second syllables and eight each of lax first and second syllables. Since unstressed syllables tend to be lax by nature, usually appearing as a schwa-like vowel, the unstressed syllables were not included in the tense/lax count.

PROCEDURE
Each of the 32 words was displayed in three- to five-word sentences typed on a card. Below the sentence appeared the word to be spoken aloud. Examples: ‘Give me your address’ Say: ADDress; ‘Address the crowd’ Say: adDRESS.

The 32 cards were presented to subjects in random order with randomized delay times of 1–5 sec. Subjects were instructed to read the sentence silently, to note where the stress was to be placed, and then to say the stimulus word aloud as indicated. Subjects had two sample trials. All subjects were videotaped on a Panasonic videotape recorder on 3/4 in.

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1 Awarded by the College of Liberal Arts, Temple University, 1980.
2 Nouns converted to verbs in the shift from syllable one to syllable two, except in one instance (August), which changed to an adjective. In any case, changes in word class are regarded as only weakly related to stuttering (Quarrington et al., 1962; Soderberg, 1967).
cassette tape and sound-recorded on a Sony audio-cassette tape recorder. When a subject misplaced the stress, the card was set aside and re-presented for one more trial at the end of the series.

RESULTS

One hundred twenty-two tokens of stuttering were collected from 10 subjects, 6 male and 4 female. Of the 10, 1 was moderate and 9 severe, as judged by referring speech pathologists. When subjects failed to produce two different stress patterns for a stimulus word, the pair was excluded from the tally. Of all words stuttered, 21.3% were discarded, leaving a total of 94 words. The number of tokens of stuttering dropped includes 12 occurrences of stuttering on both the first and second syllables in a single stimulus word. Counts of stuttering events were taken by the experimenter from video tapes on two separate occasions, 1 yr apart; agreement was 94% (Table 1).

There proved to be no significant difference in proportion between stressed and unstressed syllables associated with stuttering. Each subject displayed instances of stuttering on both types of syllables with no one pattern predominating, except in one subject who stuttered once on a stressed syllable and four times on unstressed ones. It is interesting to note that 5 subjects exhibited 12 instances of stuttering on both syllables in a single utterance, with one stutterer exhibiting four of these. Occurrence of stuttering on syllables in initial position in the word was 47% for unstressed and 44% for stressed syllables, with only nine occurrences of stuttering on second syllables.3

DISCUSSION

The subjects who stuttered in this investigation, stuttered on unstressed syllables approximately as often as on stressed syllables. A few stuttered on both within the same word. Apparently, stutterers find the coordi-

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3 Although the original study did not set out to examine consonant-initiated versus vowel-initiated data, it should be noted that more breakdowns occurred on consonants than on vowels. Of 180 vowel-initiated syllables, stuttering occurred 29.4% of the time. Stuttering frequency for 140 consonant-initiated syllables was 42.8% of the time. These findings serve to support those studies that report initial consonants to be more difficult than initial vowels (Johnson and Brown, 1935; Brown, 1938).
nations needed to initiate and maintain the production of unstressed syllables as taxing as stressed ones. This study also found that the location of stuttering events occurs at the beginning of an utterance at a frequency of 91%, a finding consistent with the literature on this phenomenon (Bloodstein, 1981, p. 230).

These observations suggest that loci of stuttering are strongly associated with initiation of phonation, a proposition that has received considerable attention in recent years (Adams and Hayden, 1976; Adams and Reis, 1971). It follows, then, that smooth activation of the phonatory mechanism would better benefit clinical management of stuttering than emphasis on linguistic stress and suprasegmental speech events. Corrective techniques to achieve successful onset of voicing and promotion of steady-state vocalization have been found to provide a reasonable basis for effective motor control of fluency (Weiner, 1978). An electroglottographic study of a variety of patterns of rapid vocal fold vibration during stuttering (Weiner, 1983) further examines a phonation-based view of the nature of stuttering.

REFERENCES


**APPENDIX**

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