



Predicting stuttering from linguistic factors for German speakers in two age groups

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Abstract

Brown's factors [J. Speech Disorders 10 (1945) 181] predict the likely loci of disfluency in English-speaking adults who stutter. A word is more likely to be stuttered for these speakers if it is a content word, starts with a consonant, is positioned at the beginning of a sentence, and if it is a long word. These same factors were examined in native German-speaking children and adults who stutter. Speech data of 15 German adults and 17 children were coded according to Brown's factors. For the adult group, it was predicted that words starting with consonants would not lead to as much of an increase in disfluencies compared with English samples, because of cross-linguistic differences in syllable onset properties. It was predicted that stuttering would be more likely in later sentence positions in German because in German the verb is usually near the end of a sentence. There were no obvious reasons to expect differences on the two remaining factors, content words and word length. With children, it was hypothesised that Brown's factors that specify level of linguistic difficulty would not be such a good predictor of stuttering rate. Specifically, it was predicted that the difference in stuttering rate between function and content words would be lower in children. For the adults both word type (content/function) and word length increased stuttering rate significantly, whereas changes in stuttering rate for the other two factors were non-significant. It was also found that when word difficulty (based on a combined measure of all factors) increased, stuttering rate rose. With children, only the word-length factor was significant, and stuttering rate was not governed to the same extent by overall word difficulty. Conclusions are drawn as to the effect of linguistic and motor influences on stuttering.

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Educational objectives: The reader will learn about and be able to describe: (1) how linguistic factors affect stuttering rates in German; (2) the different patterns of adults and children who stutter and how language might influence this pattern; and (3) how to interpret these findings in light of a current theory of fluency failure.

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The original impetus for research into linguistic variables associated with speech disfluency was triggered by [Brown \(1945\)](#). In this, the final article of a series of papers, he summarised his findings and identified four basic factors that determined whether words will be spoken disfluently by adults who stutter. The factors are: (1) word class (this has subsequently been interpreted as showing that content words are more prone to stuttering than function words); (2) word length (long words are more difficult); (3) sentence position (words that appear in early positions are more likely to be stuttered); (4) phone the word starts with (words starting with consonants are more difficult than those that start with vowels).²

The investigation of stuttering events in general (such as Brown's) was criticised recently by [Smith \(1999\)](#). She pointed out that this approach misled researchers into thinking that stuttering is a static, rather than a dynamic, process, using the analogy of researchers investigating volcanoes by studying only the shape of the landform and type of eruptive material. The research reported here does not dispute the fact that stuttering is a multifactorial phenomenon, and Smith's criticism highlights the need to approach it from many angles, such as the study of disfluent events. One reason to carry out cross-linguistic, or comparative research is to find out whether stuttering occurs in linguistic structures irrespective of their motor form; or whether difficult motor outputs lead to stuttering independent of the linguistic unit in which they occur. Some dissociation between motor and linguistic aspects can be achieved because the levels of motor complexity on different linguistic units differs between languages. Even though use of other languages allows scope for separating motor properties from the linguistic units in which they occur in English, no previous studies have made such comparisons. The main concern of the present study is why disfluency occurs on certain words, and in particular the degree to which linguistic and motor factors affect disfluency.

[Bloodstein \(1995\)](#) pointed out that little work on the subject of Brown's factors has been done in languages other than English apart from the factors which have been found to operate in Norwegian ([Preus, Gullikstad, Grøtterød, Erlandsen, & Halland, 1970](#) as cited in [Bloodstein, 1995](#)) and Kanada — a Dravidian language

² Brown's factors originally included linguistic stress and word initial position (see [Brown, 1938](#)) which he did not acknowledge in his 1945 review. These two further factors are beyond the scope of the present investigation. Please refer to [Wingate \(1979, 1988\)](#) for discussion of the relationship between word stress and stuttering in English and to [Natke, Sandrieser, Pietrowsky, and Kalveram \(2001\)](#) for a recent investigation of syllabic stress effects in German preschool children who stutter.

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