

Disfluencies in non-stuttering adults across sample lengths and topics

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Abstract

Data on disfluencies in the speech of non-stuttering adults are relevant to several aspects of the assessment and treatment of adults who stutter. Currently, very few sources provide relevant data. In the existing literature on normally fluent speakers, there is no consistency in sample length or topic or in which types of disfluency are counted. Many studies report incomplete data, making it difficult to compare new results to previous ones. The purpose of this study was to assess the effect of sample length and topic on fluency levels in the speech of non-stuttering adult men. Monologues produced by 25 English-speaking men with no reported communication disorder were analyzed for the presence of disfluencies. The group means for total disfluencies were between 6 and 8 *per 100* syllables for all samples. A within-subjects Length (3) by Topic (3) ANOVA found a significant interaction (Length by Topic), however, the clinical importance of this result is minimal. The mean number of within-word disfluencies (also called stuttering-like disfluencies or SLDs) was below 1.5 per 100 syllables for all samples, although there was some variation across individual speakers. The data presented will be useful to clinicians and to researchers interested in disfluencies in spontaneous speech.

Learning outcomes: Readers will be able to (1) identify several methodological problems in studies of disfluency including counting methods and descriptions of participants; (2) identify the range of within-word disfluencies (also called SLDs) and other disfluencies in this study and other similar ones; (3) know whether topic/type of speech or sample length is more likely to affect disfluency levels in non-stuttering adults.

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1. Introduction

Disfluencies in the spontaneous speech of adults have been studied by psychologists, psycholinguists, criminologists, neurologists, and speech language pathologists. What the psychology literature often calls “hesitation phenomena” reveal something about of the planning and production of speech and language (e.g., Levelt, 1998; Postma & Kolk, 1993) and recent work shows that interjections affect language comprehension by listeners (Corley, MacGregor, & Donaldson, 2007; Fox Tree, 2001). Patterns of pauses and interjections have been studied for what they

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reveal about malingering or lying (e.g., Coppens, Hungerford, & Nicholas, 2000; Davis, Markus, Walters, Vorus, & Connors, 2005). A change/increase in disfluencies beyond that seen in normal aging (e.g., De Andrade & de Oliveira Martins, 2007; Searl, Gabel, & Fulks, 2002; Walker, Roberts, & Hedrick, 1988; Yairi & Clifton, 1972) is one symptom of some neurological conditions (Jokel, De Nil, & Sharpe, 2007).

In clinical work with adults who stutter, stuttering severity can be measured, in part, by comparisons between the client's speech and the disfluency patterns of non-stuttering speakers. Similarly, in treatment, one benchmark in setting appropriate targets for natural-sounding speech is to use the range of disfluencies seen in the speech of non-stuttering adults.

Following early work by Webster (1974, 1980), and influenced, perhaps, by the series of studies of children's disfluencies done by Yairi and Ambrose (2005), 3%SS has been widely adopted as a definition of 'within normal limits' in adult speech (Conture, 2001), or as an acceptable treatment outcome for both children and adults (Boberg & Kully, 1994; Caron & Ladouceur, 1989; Ingham, 1999; Langevin & Boberg, 1993; Mallard & Kelley, 1982; Miltenberger, Wagaman, & Arndorfer, 1996). Yaruss (1998, p. 231) has said that a mean stuttering-like disfluency level of 1% and mean non-stuttered disfluency level of 3% indicated that adult "clients completed the program with speech that could be judged as within normal limits". Kully, Langevin, and Lomheim (2007) use "less than 1% stuttering" (p. 219) as one criterion for successful completion of some stages of treatment for adults. Langevin and Boberg (1993) used a benchmark of less than 3% stuttering as one measure of the long-term success of treatment.

Given the importance of disfluencies in assessing and treating stuttering, we have surprisingly little data on disfluencies in normal adult speech during tasks similar to those used in clinical assessments.

1.1. Studies of disfluencies in adult speech

There are 3 studies that present data on the full range of disfluency types in adult speech, using tasks similar to those used in clinical assessments. Their findings are summarized in Table 1.

Using these figures as benchmarks for normal speech is problematic due to a number of shortcomings in these studies. These include:

- (a) Limited range of ages and educational levels: This limits the external validity (generalizability) of their findings. Johnson (1961) and Lutz and Mallard (1986) tested only university students. Johnson's participants were all taking psychology or speech classes. Lutz and Mallard do not report the field of study of their student participants. Given that students tend to select their classes/majors based upon the verbal and cognitive abilities needed for different fields of study and different professions, psychology students cannot be said to be representative of "college students" nor of the general, non-student population. Duchin and Mysak (1987) tested a wide range of ages, but did not report the education or occupations of their subjects.
- (b) Subject descriptions are incomplete: Bilingualism and regional dialects can affect many aspects of speech, including features such as voice onset time and features of plosive consonants that are relevant to the field of stuttering (e.g., Flege, 2001; Flege, Frieda, & Nozawa, 1997). There is no indication of whether any of Lutz and Mallard's 50 volunteers were bilingual, or even if they were all native English speakers. Since 48 were from Texas, many of them may have spoken a regional dialect of English. Duchin and Mysak (1987) and Johnson (1961) report

Table 1
Previous studies of adults' normal speech disfluencies in monologues or conversation.

Authors	Disfluencies counted	N (men)	Mean age (years)	Topic	Sample size	Disfluencies
Johnson 1961	8 types	25	19.6	Job Studies	5 min	6.5/100 words (mean)
Lutz and Mallard 1986	9 types	25	20	Studies, Family, Hometown	250–1062 syllables	2.6/100 syllables (median)
Duchin and Mysak (1987)	8 types	75	21–91 in 5 groups	Summer Family Job	unknown	7.55/100 words, 7.4 for 21–30 year olds

Notes: Johnson counted interjections, revisions, phrase, whole word and part word repetitions, prolongations, incomplete phrases, and broken words. Lutz and Mallard counted interjections of words or phrases, interjections of fillers or sounds, revisions, phrase, whole word and part word repetitions, prolongations, dysrhythmic phonations, and incoherent sounds. Duchin and Mysak counted interjections, revisions, phrase repetitions, whole word and part word repetitions, prolongations, incomplete phrases, and dysrhythmic phonations.

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