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Differential fluency in bilinguals who stutter: Questioning neuro-cognitive assumptions

Abstract

Introduction: Differential stuttering in balanced bilinguals offers a particular challenge to assumptions of a neuro-cognitive basis to stuttering. What is of interest in these cases is that differential fluency in the *same* speaker using two languages is not explained by assumptions of dysfunctional auditory feedback, or defective cognitive processing of speech communication. Instead, one should consider the parallels between stuttering and spasmodic dysphonia (Ludlow & Louks, 2003), where varying demands on glottal-aperture control influences blocking. This report presents cases of Arabic-French bilinguals with the view that differential stuttering in these individuals can be predicted by the degree to which voicing is controlled directly by glottal actions (as in Arabic), or indirectly by way of the passive effects of intra-oral pressure (Boucher & Lamontagne, 2001). This principle can also account for the absence of stuttering, as reported by these individuals, during prayer recitations.

Methods and Results: Three compound Arabic-French bilinguals with a history of stuttering since childhood (but who received no therapy) were videotaped during an interview on five conversation themes. On each theme, the interviewer changed language (though “switching” was avoided). Two native speakers transcribed the videotapes and calculated blocking rates (reliability of 97%). Blocking frequency was higher for Arabic than French across themes and speakers.

These observations were complemented by comparisons using automated acoustic measures of voice breaks in Arabic and French normal speech and prayer recitation. For native speakers of each language, Arabic presents much higher percentages of voice breaks than French, and for both languages speech has higher percentages than prayer recitation.

Discussion: Boucher and Lamontagne (2001) showed that speakers make use of an indirect control of voicing when producing oral constrictions in speech. In this indirect mode, pressure rises affect transglottal flow and modulates vocal-fold vibration without modifying glottal opening or tonus. A direct control of voicing during oral openings creates instability in vocal-fold tension, aggravating the likelihood of stuttering. This principle explains a number of fluency-enhancing effects (as in prayer). Moreover, such effects are compatible with a view that stuttering involves a deficient inhibition of laryngeal reactivity, which is further supported by functional similarities with focal dystonias like spasmodic dysphonia.

References

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