

3aSCb28. Temporal and spectral characteristics of fricatives in dysarthria

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Abstract:

Imprecise production of fricatives has been noted in various types of dysarthria, but their acoustic properties have not been fully investigated. Using durational measures and spectral moment analysis, this study examines the acoustic characteristics of alveolar and post-alveolar voiceless fricatives produced by speakers with cerebral palsy (CP) in three different intelligibility levels. The following questions are addressed: (1) Are fricatives longer in CP-associated dysarthric speech, compared to controls? (2) What is the evidence of reduced acoustic distinctions between alveolar vs. post-alveolar fricatives? and (3) Are the intelligibility levels associated with acoustic measures of fricatives? Duration and the first three spectral moments were obtained from word initial fricatives produced by 18 American English native speakers (9 speakers diagnosed with spastic CP and 9 controls). Results showed that speakers with CP exhibited significantly longer duration of fricatives and a reduced distinction between alveolar versus post-alveolar fricatives compared to control speakers. A reduced place distinction in dysarthric speech was mostly due to lower first moments and higher third moments compared to normal speech. The group difference was greater for alveolar fricatives than for post-alveolar fricatives. Furthermore, as the intelligibility level decreased, durational increase and the degree of place overlap were consistently greater. 11 2114