

Rate and precision of oral-motor movements in speech vs. non-speech tasks

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Abstract

Traditionally, assessment tools and treatment protocols for dysarthria involve nonspeech oral-motor exercises in order to predict and to re-establish movement parameters assumed to be necessary for articulation. However, the adequacy of their use has to be questioned given the existing evidence that speech and nonspeech movements of the vocal tract organs involve distinct sensory-motor control systems.

The present study aims to further scrutinize speech vs. voluntary nonspeech oral-motor movements in 120 healthy and 80 neurologically impaired participants with different etiologies involving cortical, basal ganglia, or cerebellar damage. We used a comprehensive battery of speech-/ nonspeech stimuli which were closely paralleled to each other, thus allowing for relatively direct comparisons of movement parameters such as rate and precision in speech and nonspeech contexts.

Preliminary results revealed dissociations between speech and nonspeech performances in several participants. This seems to confirm the assumption of distinct sensory-motor control systems underlying motor actions in the different domains. Speaking, as a highly specialized motor skill, must thus be distinguished from the new and artificial nonspeech tasks commonly used in the clinical management of dysarthria.

Objective

to investigate speech vs. voluntary nonspeech oral-motor movements in patients with brain damage