

A novel investigation of GMP theory: Syllable stress as a motor class variable  
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Generalized motor program (GMP) theory predicts a single motor program directs a class of similar movements. Several units of speech have been proposed as motor programs; however, evaluation of motor class within speech motor control is not documented in the literature. The purpose of this study was to examine syllable stress production as a potential motor class within GMP theory.

Fifteen subjects with normal speech and hearing produced complex nonwords with specific syllable stress patterns in a motor learning paradigm. Following training, reaction times were measured during an old-new judgment task where subjects listened to trained and untrained nonwords that varied in syllable stress position (motor class variable) and phonetic composition (similarity variable). It was predicted that reaction times would be significantly faster for novel nonwords within the same motor class compared to nonwords outside the trained motor class regardless of phonetic composition.

Preliminary results revealed no significant difference in reaction times between within-class versus outside-class novel nonwords. This suggests that syllable stress patterns may not be a motor class in speech production. Furthermore, transfer performance was dependent on phonetic similarity, and not motor class as postulated by GMP theory. Additional investigations are warranted to further understand transfer characteristics within GMP theory, as well as to further specify motor class variables associated with speech production.