

Speech and manual reaction time as a function of dopaminergic medication in Parkinson's disease

A. McAllen, K. Spencer, K. France, O. Shulein

For the past 30 years, simple reaction time paradigms have been used to improve our understanding of limb motor control in Parkinson's disease (PD), specifically, the ability to use advance information to complete the programming phases of movement prior to execution. The extension of this paradigm to speech reaction time provides a window into hypothesized speech motor programming deficits. To begin to understand the presence and nature of these deficits, 44 participants with idiopathic PD completed speech and manual simple reaction time tasks while optimally medicated and during a 15 hour withdrawal period. Neuropsychological, speech/language and motor variables also were measured. Participants with PD were divided among those with hypophonia only (n=19), mild dysarthria (n=9) and no speech decline (n=16). Results from the participants with PD and 30 control participants suggest that numerous, complex processes underlie even "simple" reaction time performance. Speech motor programming and initiation are implicated as possible areas of disruption in individuals with IPD, particularly as speech impairment increases. Moreover, dopaminergic medication seemed to have differential effects upon cognitive performance for those with atypical reaction time patterns. Effects of cognitive variables upon motor programming and initiation are intriguing and necessitate further study.