

Relationship between formant transition and intelligibility in quiet versus noise in Parkinson's disease

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Speech production models posit an interaction between cognitive linguistic factors and articulation; however, most studies focus on the independent contributions of lexical and motor factors. The impact of lexical factors on speech production and perception in dysarthria only recently has been examined. Chiu and Forrest (2017) demonstrated that word frequency impacts F2 slope in typical and PD speakers. Less frequent words were more difficult for listeners to identify in quiet and in noisy environments (Chiu & Forrest, in review). The current study investigated the interaction of F2 slope, lexical factors, and intelligibility in quiet versus noise in PD and typical speakers.

Twelve Parkinson speakers and 12 healthy controls read sentences with high and low word frequency. Ninety-six young listeners transcribed the sentences in quiet, and a separate group of 96 listeners transcribed the sentences presented in noise. Multi-level regression was performed to examine the relationship between F2 slope and perceptual accuracy in quiet and noise.

Preliminary results indicate a positive relationship between formant transition and intelligibility in noise for Parkinson speakers. This relationship, however, is absent for highly frequent words presented in quiet.