

Spectral/Cepstral Analysis of Phonation in Parkinson's disease before and after Voice Treatment

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The aim of this study is to examine Spectral /Cepstral analyses derived from sustained /ah/ vowels produced by speakers with idiopathic Parkinson disease (PD) before and after Lee Silverman Voice Treatment (LSVT). Ten speakers with IPD were audio-recorded before and after LSVT. LSVT is an intensive behavioral voice treatment developed for idiopathic PD which has demonstrated successful therapeutic effects targeting increased vocal effort and loudness for functional communication. Sustained vowels were analyzed for cepstral peak prominence (CPP), CPP Standard Deviation (CPP-SD), Low/High Spectral Ratio (L/H SR), and Cepstral/Spectral Index of Dysphonia (CSID), using the Analysis of Dysphonia in Speech and Voice (ADSV) program. Statistical analyses indicated that both CPP and CSID improved significantly following LSVT with similarly strong effect sizes. Increased CPP, which is a measure of voice periodicity, reflected more well defined F0 and harmonic structure after LSVT. However, CPP SD and L/H SR measures did not improve significantly following treatment. The present results demonstrate that in addition to increased vocal intensity following LSVT, speakers with IPD demonstrated improved periodicity and voice quality as reflected by cepstral/spectral analysis.