The Effects of Loudness and Noise on Speech Intelligibility in Parkinson Disease

A. Halpern, J. Spielman, L. Ramig, A. Sharpley, I. Panzer

This study examined the effects of loudness vs. articulation training on speech intelligibility in individuals with Parkinson disease (PD), using the Diagnostic Rhyme Test (DRT). Previous studies have documented increased vocal intensity and improved articulatory precision following intensive voice treatment (LSVT). However, these changes have not been compared to changes following intensive articulation treatment. Moreover, single word intelligibility measures in PD have been difficult to evaluate, due to a ceiling effect in quiet environments. In this study, 14 subjects with PD were minimized to participate in 16 sessions of LSVT, or 16 sessions of intensive articulation treatment. Subjects were recorded while reading a ½ DRT word list pre and post treatment. Sound files were analyzed by trained listeners in both noise and non-noise conditions.

The results indicate that speech intelligibility improved more when treatment was focused on increasing loudness (LSVT) rather than articulation, thus highlighting the role of loudness in improving speech intelligibility. Based on these results, the DRT in noise appears to provide a means to quantify the increase in intelligibility that LSVT patients have subjectively reported.