Examining conversational speech intelligibility in individuals with hypophonia and Parkinson's disease

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Speech intelligibility supports effective and efficient spoken language and often is a consequence of hypokinetic dysarthria associated with PD. A relatively unexplored area in the study of speech intelligibility in the dysarthrias is the measurement of intelligibility in speakers with PD and hypophonia without a prominent articulatory deficit. The purpose of this study was to evaluate speech intelligibility in quiet conditions as well as to determine the impact of background noise (BGN) on conversational speech intelligibility in participants with PD and in control participants. Thirty individuals with hypophonia and PD and 15 age matched controls participated in this study. Results revealed non-significant differences between PD and control participants when conversational intelligibility was assessed in a no BGN condition ($t(43) = 1.447$, $p = .155$ ns). Significant results were found when conversational intelligibility was assessed in the presence of four intensity levels of BGN. These results revealed that control and PD participants differed significantly in conversational speech intelligibility in various levels of multi-talker BGN. Overall, results of this study suggest that even mild to moderate speakers with hypophonia demonstrate significant deficits in conversational speech intelligibility in even the least intense BGN conditions. Furthermore, this hypophonic speech intelligibility deficit is exacerbated to a greater extent with increasing levels of BGN. Assessing speech intelligibility in noise and based on conversational speech samples potentially provides the most ecologically valid estimate of one's intelligibility and may be relevant in order to obtain a valid indicator of the disability associated with hypophonia in PD.