Title: Maintenance of SPEAK OUT! outcomes for Parkinson's disease: 7 years of "intent"

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Summary: The SPEAK OUT!® Therapy Program targets increased loudness, clear articulation, breath support, vocal quality, intonation, and facial expression for individuals with Parkinson's disease (PD). The effectiveness of the program was first demonstrated in a peer-reviewed publication in 2020 (Behrman et al., 2020). That study reported speech benefits of 40 individuals with idiopathic PD who completed four weeks of SPEAK OUT! therapy. Following therapy, the authors reported significant increases in mean intensity, variation of intensity, variation of fundamental frequency, and cepstral peak prominence. The participants from this original study have been followed for seven years, and we now report a longitudinal perspective of the benefits of the SPEAK OUT! Therapy Program.

Methods: From the 40 participants reported in Behrman et al. (2020), 12 participants are still alive and active in the SPEAK OUT! Therapy Program. These participants completed additional speech assessments at 1 year, 2 years, and 7 years following their initial enrollment in the original study. Each assessment included sustained vowel production, reading "The Caterpillar Passage", spontaneous speech monologue, and patient-reported outcomes using the Voice-Related Quality of Life instrument.

Results: Participants who remained in the SPEAK OUT! Therapy Program maintained improvements in intensity, fundamental frequency, and cepstral peak prominence. After 7 years of treatment, the improvements from baseline were still significant in vocal intensity ($t = 5.493$, $p < 0.001$), standard deviation of fundamental frequency ($t = 3.836$, $p = 0.003$), and CPPS ($t = -3.531$, $p = 0.005$).

Discussion: This longitudinal study reports outcomes of individuals in the SPEAK OUT! Therapy Program after 7 years of participation. This presentation will highlight the detailed acoustic changes from baseline to 1 year, 2 years, and 7 years later. These data contribute to the evidence that

SPEAK OUT! is an effective program for treating hypokinetic dysarthria secondary to idiopathic PD.