Title: Slow and Steady Wins The Race: The Influence of Speaking Rate on Outcomes of SPEAK OUT!® Therapy Program for Individuals with Parkinson's Disease

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Summary: Dysarthria affects over 90% of people with Parkinson's disease (PwPD), reducing speech intelligibility and quality of life SPEAK OUT!® targets dysarthria by training speakers to "speak with intent," but treatment outcomes vary widely across individuals. Variability may stem from heterogeneous speech symptoms. This study examined whether baseline speaking rate predicts treatment response, measured by self-reported communicative effectiveness. Identifying speech features that predict treatment outcomes may support adapting SPEAK OUT!® to better match individual speech profiles in PwPD.

Methods:

Participants**:**

54 PwPD (24 F; 30 M; average age = 71.93 years old [SD = 9.09]). All data was collected via telehealth.

Measures**:**

Communicative Effectiveness Survey (CES): self-perceived communicative success across everyday situations (higher scores = higher communicative effectiveness). Speech Intelligibility Test (SIT): participants read 11 phonetically balanced sentences. Speaking rate (syllables/second) was extracted automatically from SIT audio recordings.

Data Processing:

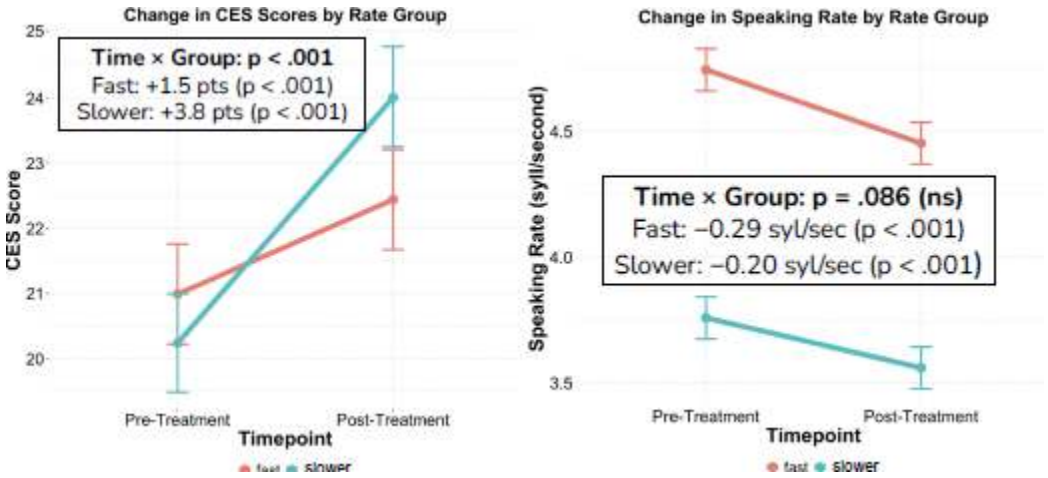
Pre- and post-treatment CES and SIT speaking-rate values were averaged across their respective sessions.

Participants were split at median baseline speaking rate into:
Fast group: M = 4.75 syll/sec (SD = 0.95)

Slower group: M = 3.76 syll/sec (SD = 0.84) -- control speaking rate: 3-3.3 syll/sec.

Analysis: Linear mixed-effects models tested group differences in pre- to post-treatment changes in speaking rate and CES scores.

Results:



Discussion: SPEAK OUT!® improved self-rated communicative effectiveness in PwPD. Individuals with slower baseline speaking rates showed disproportionately greater treatment gains (i.e., CES scores). Slower speakers may have greater awareness of their speech difficulties, making them more responsive to intent-based treatment. Results highlight potential for baseline speech profiles, such as speaking rate, to guide individualized therapy planning. Future work will examine mechanisms underlying rate-related treatment differences to support adapting SPEAK OUT!® to individual speech profiles.