



Self-Perceptions of Vocal Effort and Fatigue in Parkinson's Disease: Exploring Communication Scenarios and speech tasks.



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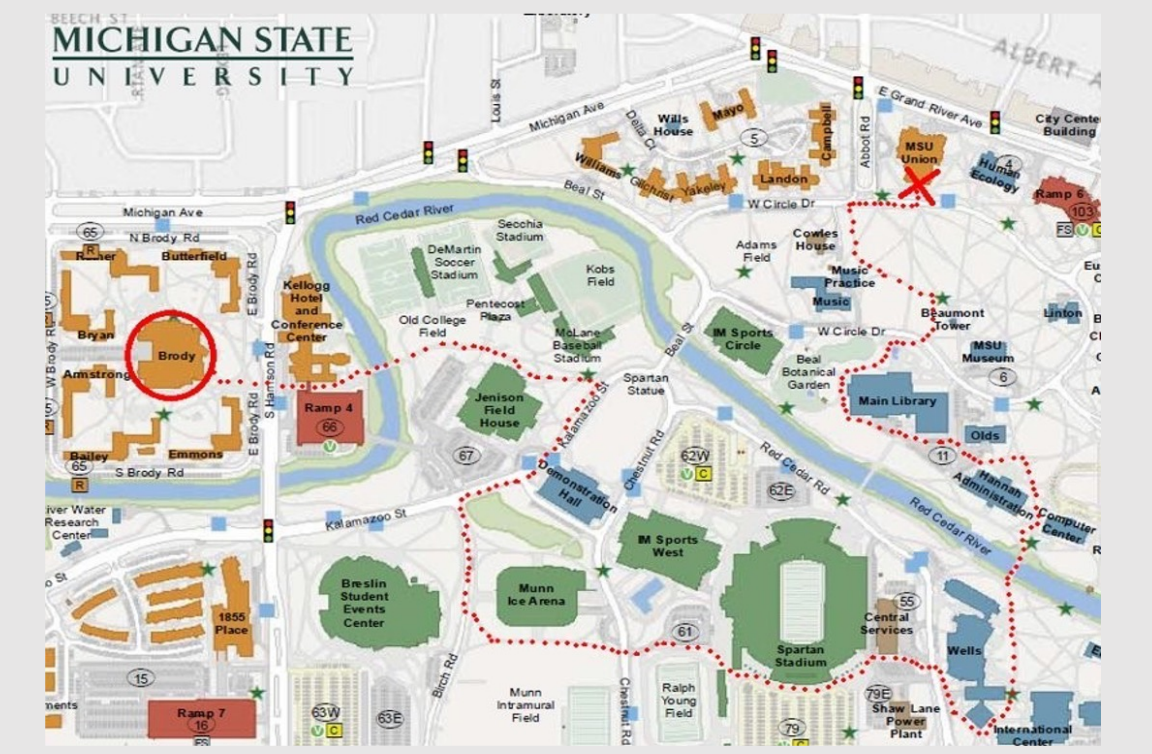
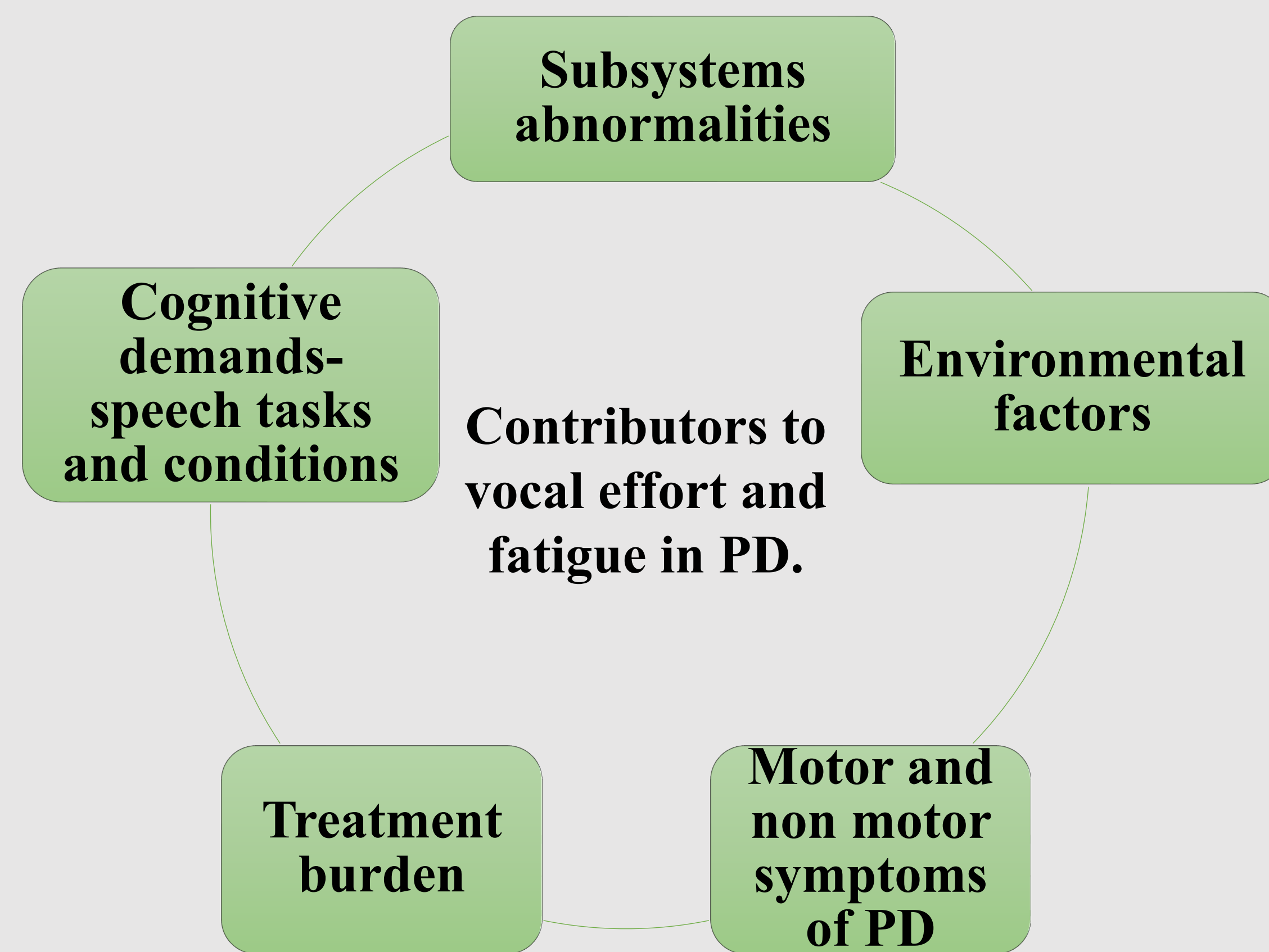


Figure 1: Map description task (Hunter et al., 2022)

Background

- Parkinson's Disease (PD) is a progressive neurodegenerative condition characterized by four cardinal signs: bradykinesia, resting tremor, rigidity, and postural instability (Antony et al., 2013).
- Perceptually, individuals with PD exhibit characteristic speech and voice features, including reduced loudness, mono pitch, mono loudness, decreased stress, breathiness, hoarseness, imprecise articulation, short rushes of speech, and dysfluency, collectively categorized as hypokinetic dysarthria (Darley et al., 1969).
- Voice-related issues often precede other symptoms, with additional deficits emerging as the condition progresses (Logemann et al., 1978; Sapir et al., 2002). Hypophonia, characterized by a soft, monotonous voice, is a common symptom of voice impairment in PD.
- Global speech treatments like LSVT LOUD® and SPEAK OUT!® benefit individuals with Parkinson's disease by enhancing speech loudness and clarity but necessitate substantial vocal effort, precise articulation, and control, thereby increasing cognitive and physical demands compared to typical speech patterns (Stipanic, 2023 & Richardson, 2022).



Purpose

1. Identify factors influencing PD individuals' perceptions of vocal effort and fatigue across communication scenarios through quantitative interviews, focusing on the role of speech subsystems and the impact of different communication settings.
2. Establish the empirical relationship between self-perceived vocal effort in various speech tasks and conditions through controlled laboratory studies, examining the effect of cognitive demand and comparing PD individuals with healthy controls.

Methodology

Eligibility Criteria:

- Speak English as your first or dominant language.
- Have been diagnosed with PD
- Have had speech therapy within the past 5 years.
- Are at least 60 years of age
- Have **not** received a diagnosis of dementia nor are being treated for dementia
- Have **not** been diagnosed with atypical parkinsonism (ex: MSA, PSP)
- Have **not** received deep brain stimulation surgery.

Study 1

- Qualitative study
- 15 participants with PD (10 M, 5 F)
- Semi-structured interviews and standardized questionnaires (Vocal Handicap Index-10, Vocal Fatigue Index)
- 45-60 minutes interview
- Compensation: \$20 Gift card from Amazon
- Analysis: Nvivo software (Jackson, 2019); Thematic analysis.(Braun & Clarke, 2006) .

Study 2

- Cross-sectional study design eliciting speech across three tasks and three conditions
- 15 participants (10 M, 5 F) each in PD and HC groups
- **Speech tasks: Monologue, Reading, Map description**
- **Speech conditions: Habitual, Noise, Clear speech**
- Outcome measures: Vocal effort, vocal fatigue, NASA-TLX
- Compensation: \$20 Gift card from Amazon
- Analysis: Descriptive analysis and mixed effects linear models.

Hypothesized results

The self-perceived vocal effort will be greater in/during :

Study 1

- Various speech subsystems (respiratory, articulatory and laryngeal) during speech
- Communication in noisy environments
- Cognitively more difficult situations
- Interactions with unfamiliar individuals
- Phone conversations.

Study 2

- Speech tasks: Map description > Monologue > Reading
- Speech conditions: Clear speech > Noise > Habitual
- The PD and HC groups will both report increased vocal effort due to age-related changes, with the PD group experiencing higher vocal effort than the HC group.

Interested in more information about Parkinson's speech research?



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References

