Prosodic Prominence in Parkinsonian Speech: A dynamical approach
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Morbus Parkinson
- Neurodegenerative disorder of the nervous system
- Progressive death of dopaminergic cells in the brain
- Problems with motor and non-motor functions [1, 5, 7]
- Motor: rigidity, tremor, bradykinesia, postural instability
- Cognition: executive functions, cognitive flexibility, memory, attention
- Speech: signs related to Hypokinetic Dysarthria [1, 2, 5, 6, 7]

How does the Parkinson’s disease affect prosodic prominence?

Discussion: Regulation Strategies in a Dynamical System
Hyper- and Hypoarticulation [4]

Supraglottal System
- Reduced F0-range
- Reduced modulation of F0
- Reduced vowel space
- Reduced loudness
- Articulatory undershoot
- Reduced F0
- Spreatiniation

Subglottal System
- Executive dysfunction (TMT) is associated with intensity overshoot (p = 0.04422)

Glottal System
- Executive dysfunction (TMT) is associated with tonal overshoot (F0-range (p = 0.01811)
- Tonal height (p = 0.00866)

Production Study
Participants
- 19 Patients with idiopathic Parkinson
- 13 male, 6 female, aged 50 – 80 years
- 19 gender & age matched healthy controls

Assessments
- Motor: UPDRS III
- Cognition: TMT, BTA
- Speech: reading passage

Contrastive Focus Task
- Either noun or adjective in focus condition
- 1368 Tokens = 8 nouns x 2 adjectives x 38 speaker x 2 focus conditions

Conclusion
Patients
- mainly mild dysarthria
- part of the group show motor and executive dysfunctions
- could produce prosodic prominence (modulation of duration, intensity & F0)

The regulation of the dynamic speech system is not balanced (H&H model [4])
- patients have problems to control forces when highlighting prominent elements via intonational and articulatory cues
- undershoot: reduced vowel space (supraglottal system)
- overshoot: too much effort of the glottal and subglottal system

References