Speech planning and monitoring in Parkinson's disease: a speech motor control perspective

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To identify which speech control mechanisms in PD patients are impaired and to what extent by comparing PD patients in various stages of the disease and adult control speakers.

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Movement disorders (incl parkinsonism)
Study type	Observational non invasive

Summary

ID

NL-OMON55196

Source
ToetsingOnline

Brief title
Speech planning and monitoring in PD

Condition

- Movement disorders (incl parkinsonism)

Synonym
Parkinson's disease

Research involving
Human

Sponsors and support

Primary sponsor: Rijksuniversiteit Groningen
Source(s) of monetary or material Support: NWO-programma Promoties in de geesteswetenschappen

Intervention

Keyword: articulation, Parkinson's disease, speech, speech motor control

Outcome measures

Primary outcome

The main study parameter is the change in speech patterns (both acoustic and articulatory) before, during and after an auditory feedback perturbation.

Secondary outcome

Secondary study parameters include the acoustic characteristics of vowel and consonant production; tongue tremor detection; and coordination of articulators.

Study description

Background summary

Parkinson*s disease (PD) is common neurodegenerative disease characterized by a loss of dopaminergic cells in the substantia nigra. Besides common motor symptoms, patients also often encounter speech problems (i.e., hypokinetic dysarthria), with symptoms that include monopitch, monoloudness, reduced loudness, speech rate acceleration, inappropriate pauses, slurred speech, and imprecise articulation. These speech problems range from mild to severe, but can severely impact the patients* daily lives.

Despite an increasing interest in parkinsonian speech, it remains unclear whether the underlying problem originates in patients being unable to plan their speech production or in them being unable to monitor the incoming sensory (especially auditory and tactile) information. Furthermore, it is unclear how disease progression changes the nature and severity of these problems. We aim to study the underlying mechanisms of speech production is by using auditory feedback perturbations. We expect that PD patients will show different adaptation patterns compared to adult control speakers.

Study objective

To identify which speech control mechanisms in PD patients are impaired and to

what extent by comparing PD patients in various stages of the disease and adult control speakers.

Study design

In order to decrease the burden on the participant, the study will take place in two sessions. During the first session, articulation will be recorded with an ultrasound tongue imaging (UTI) device, while during the second session, articulation will be recorded with an electromagnetic articulography (EMA) device. In both sessions, the participant will perform several speech tasks, some under normal feedback conditions, others while the auditory feedback is perturbed. The data from PD patients will be compared to data from adult control speakers.

Study burden and risks

There are no known risks or benefits associated with participation in this study.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

- 40 years or older
- native speaker of Dutch

Only for the PD group:
- diagnosed with idiopathic Parkinson's disease

Exclusion criteria

- a score of 2 or higher on part 1.1 (cognitive impairment) or part 1.2 (hallucinations and psychosis) of the MDS-UPDRS
- history of neurological or psychological disorders
- self-reported signs of depression
- self-reported severe swallowing problems
- stuttering or other pre-existing speech problems (not occurring as a result of Parkinson's disease)
- non-removable metal on, in or close to the head (e.g., piercings, dental braces, medical devices such as DBS electrodes)
- pacemaker

Study design

Design

Study type:	Observational non invasive
Intervention model:	Other
Allocation:	Non-randomized controlled trial
Masking:	Open (masking not used)
Control:	Active
Primary purpose:	Diagnostic

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	04-10-2022
Enrollment:	100
Type:	Actual

Ethics review

Approved WMO

Date:	06-05-2021
Application type:	First submission
Review commission:	METC Universitair Medisch Centrum Groningen (Groningen)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

ID: 25067
Source: NTR
Title:

In other registers

Register	ID
CCMO	NL72589.042.21
Other	NL9381 (Netherlands Trial Register)