Brain activation during sentence processing in Parkinson's disease: an event related fMRI-study.

No registrations found.

Ethical review	Not applicable
Status	Recruitment stopped
Health condition type	-
Study type	Observational non invasive

Summary

ID

NL-OMON27976

Source
NTR

Brief title
N/A

Health condition

To test our hypothesis we developed six conditions by crossing two within subject factors in a 2x2x3 factorial design. The first factor is word order with two levels: active and passive. The second factor is grammaticality with three levels: no violation, an inflectional morphology violation, and a transitivity violation condition. On the basis of these six conditions we created a set of materials that will be used in two different experiments. We will first conduct an event related fMRI-experiment and analyze the brain activations during a semantic relatedness task. After this scanning procedure we will also conduct an off-line behavioral experiment to collect accuracy and latency data on the grammaticality judgments.

Sponsors and support

Primary sponsor: University of Groningen, Faculty of Arts, Neurolinguistics
Source(s) of monetary or material Support: Stichting Internationaal Parkinson Fonds
Hoofdweg 667A
2131 BB Hoofddorp

Intervention

Outcome measures

Primary outcome

For the fMRI analysis data, a main effect of group is expected. The level of activation in the BG will be reduced in the PD patient group compared to the healthy control group. For the within subject factors we expect to find a main effect of grammaticality. In the healthy elderly subject group, we expect that the processing of the grammatical incorrect sentences will activate the BG more compared to the processing of the grammatical correct sentences. For the behaviourally data, we expect to find slower reaction times (RTs) for the processing of non-canonical ungrammatical sentences (i.e. passive sentences with a violation) in both subject groups. However the RTs will be significantly more affected in the PD group compared to the healthy elderly subject group.

Secondary outcome

N/A

Study description

Background summary

Linguistic research has revealed that some Parkinson's disease (PD) patients demonstrate difficulties with the comprehension of syntactically complex or rather long sentences. However, it remains unclear whether cognitive limitations such as working memory (WM), attention, and information processing speed (IPS) account for the comprehension difficulties of PD (e.g. Grossman et al., 1992; Grossman et al., 2000; Grossman et al., 2002; Lee et al., 2003); or whether the impaired sentence comprehension is due to a specific grammatical processing deficit (Lieberman et al., 1992; Natsopoulos et al., 1993; Natsopoulos et al., 1991). Up until today, relatively little is known about the involvement of the BG and/or fronto-striatal system in sentence comprehension. PD is one of the disorders of the basal ganglia. In order to evidence the involvement and the function of the BG in linguistic processes, we can study this group of patients while performing language tasks. We hypothesise that whenever the structure of a sentence deviates from the predicted syntactic structure (because of for example and error), the BG are involved in order to inhibit the irrelevant structure and to switch to a revision process.

Objective:

The primary goal of this study is to understand the sentence comprehension difficulties in Dutch speaking PD patients. Secondly, we developed the two experiments to test the

hypothesis that the BG are involved and play a particular role in syntactic processing.

Study objective

We hypothesise that basal ganglia are involved in sentence processing whenever a sentence structure deviates from the predicted structure and this in order to inhibit the irrelevant structure and to switch to a revision process.

Study design

N/A

Intervention

No interventions. It is observational research with the use of FMRI (no use of invasive techniques).

Contacts

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Eligibility criteria

Inclusion criteria

1. Idiopathic Parkinson's Disease (PD)

2. Hoehn and Yahr Stage 1 to Stage 3

3. Normal vision and hearing

4. Able to give informed consent

5. Older than 40 years

6. Dutch as first language

7. Right-handed

8. Normal structural MRI scan

Exclusion criteria

1. Not optimally medicated

2. Neurostimulator

3. Implanted pump (e.g. apomorphine)

4. Dementia (MMSE-score < 25)

5. Depression (MADRS > 18)

6. Another neurological disease

7. Another akinetic-rigid disorder

8. Another movement disorder

9. No normal structural MRI scan

Study design

Design

Study type:	Observational non invasive
Intervention model:	Other
Masking:	Open (masking not used)
Control:	N/A , unknown

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	01-12-2006
Enrollment:	32
Type:	Actual

Ethics review

Not applicable

Application type:	Not applicable

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

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

No registrations found.

In other registers

Register	ID
NTR-new	NL771
NTR-old	NTR782
Other	: N/A
ISRCTN	ISRCTN18548326

Study results

Summary results

Presentations on conferences and articles in scientific journals.