Behavioural and physiological measures of the effects of dopamine on novelty processing

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Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Other condition
Study type	Observational invasive

Summary

ID

NL-OMON34312

Source
ToetsingOnline

Brief title
Dopamine and novelty responses

Condition

- Other condition

Synonym
psychosis, schizophrenia

Health condition

geen

Research involving
Human

Sponsors and support

Primary sponsor: Vrije Universiteit
Source(s) of monetary or material Support: NWO MAGW

Intervention

Keyword: Dopamine, EEG, Memory, Novelty

Outcome measures

Primary outcome

Measures of interest are the P3a and N2 ERP components to the sounds, the von

Restorff effect in verbal learning, novelty preference as expressed by a

preponderance of fixations on novel versus seen polygons.

Secondary outcome

geen

Study description

Background summary

Several pieces of evidence have suggested that mesocortical dopamine (DA) plays a role in the processing of novel stimuli (Duzel, Bunzeck, Guitart-Masip, & Duzel, 2010). For example, gene polymorphisms related with high levels of DA correlate with enhanced frontally expressed P3 ERP component, a psychophysiological marker of novelty processing (Garcia-Garcia, Clemente, Dominguez-Borras, & Escera, 2010). However, these studies are mainly correlational, and no study has yet been done in which dopamine levels were manipulated to assess the effect on novelty processing.
Apomorphine is an agonist of both the D1 and D2 receptor families, which are abundant in areas important for cognition. If an increase in DA release affects novelty processing, it is thus likely that administration of Apomorphine will have similar effects.

Study objective

The present project aims to determine the role of DA transmission in novelty-related responses, both behavioral and psychophysiological. Such

findings can yield new insights into pathologies in which a disruption of novelty processing is a central feature (e.g. schizophrenia).

Study design

Counter balanced within-subject (placebo controlled) design, in which healthy participants will undergo a battery of cognitive tests, once after administration of Apomorphine, and once after administration of a placebo. The battery consists of a verbal learning task, in which words are presented visually while standard and novel sounds are presented in the background, and a visual paired comparison task in which participants can choose to look at either novel polygons or at already seen polygons.

Study burden and risks

Participants will visit the EEG laboratory of the Faculty of Psychology (Van der Boechorststraat 1 building), on two separate occasions with 7 days in between to avoid carryover and reduce practice effects.

Pre-Testing: A personality questionnaire will be filled out before the first session by the internet, as a requirement for registration in the study. Before the intake of the drug, people will be tested with a memory span task, to determine their baseline level.

Day 1: First EEG recording. Half of the participants will receive Apomorphine (0.005 mg/kg) + domperidone (40 mg per 80 kg), and the other half placebo, in a double blinded way. Participants will be asked to perform two tasks: an audiovisual task to evaluate the Von Restorff effect, and a visual paired comparison task.

Day 2: Second EEG recording. Same as day one, but the groups receiving placebo and drug will be inverted.

None of the measurements causes any significant risk to health or long-term well-being of the participants. It has been reported that, even at low doses, Apomorphine can induce nausea, vomiting and weariness (Schellekens, et al., 2010; Schellekens, et al., 2009). For this reason, the pretreatment with domperidone will be administered (Costa, et al., 2003; Muller, et al., 2002). Domperidone, a peripheral D2 antagonist, has no reported long-term effects, either in experimental conditions or in long lasting treatments for Parkinson*s disease (Braun, Cawello, Boekens, & Horstmann, 2009).

Contacts

Public
Vrije Universiteit

Vd Boechorststraat 1
1081 BT Amsterdam
NL
Scientific
Vrije Universiteit

Vd Boechorststraat 1
1081 BT Amsterdam
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

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

Inclusion criteria

Personality questionnaire filled out
18*30 years old
Informed consent
Normal intelligence

Exclusion criteria

Diagnosis of Psychopathology
Smoking or self*reported drug abuse
Use of medication
Pregnancy

Study design

Design

Study type:	Observational invasive
Intervention model:	Crossover
Masking:	Double blinded (masking used)
Control:	Uncontrolled
Primary purpose:	Other

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	11-03-2011
Enrollment:	26
Type:	Actual

Ethics review

Approved WMO

Date:	10-01-2011
Application type:	First submission
Review commission:	METC Amsterdam UMC

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
CCMO	NL33629.029.10