The effect of dopamine on reading motivation and achievement.

Published: 07-10-2014
Last updated: 21-04-2024

The main goal of the study is to investigate if small amounts of dopamine could influence engagement during reading, comprehension of the story and vocabulary learning and to investigate if the effect of dopamine is different for carriers of the...

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

Summary

ID

NL-OMON40768

Source
ToetsingOnline

Brief title
Dopamine & Reading

Condition

- Other condition

Synonym
not applicable

Health condition

Er wordt geen medische aandoening onderzocht

Research involving
Human

Sponsors and support

Primary sponsor: Universiteit Leiden
Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: Dopamine, DRD4, Reading, Reading motivation

Outcome measures

Primary outcome

Task engagement, reading comprehension, word learning and reading resistance

Secondary outcome

N.a.

Study description

Background summary

Research showed a strong decreai in reading omtivation from fourth grade on (Chall & Jacobs, 2003). On the age of fifteen, half of the Dutch students indiciate that they never read for pleasure. At this moment it is still unclear which biological processes underlie this decline in reading motivation. Dopamine functioning influences motivation and reward-related behavior (Tripp & Wickens, 2008). Reduced levels of dopamine are associated with less pleasure feelings and an increase in dopamine levels causes people to perceive or experience neutral events as more positive or rewarding (Berridge et al., 1998). Additionally, subjects with higher levels of dopamine show improved attentional functioning and learning (Breitenstein et al, 2006; Knecht et al., 2004). Taking this into account, the efficiency of the dopamine system could play an important role in the decline of reading motivation. This research may contribute to the understanding of the influence of dopamine on reading motivation and engagement.

Study objective

The main goal of the study is to investigate if small amounts of dopamine could influence engagement during reading, comprehension of the story and vocabulary learning and to investigate if the effect of dopamine is different for carriers of the long or short variant of the DRD4 gene. Additionally, the effect of

dopamine on how participants value reading is investigated.

Study design

The study will have a randomized, double-blind placebo-controlled experimental design. A total of 80 participants, half of them carriers of the long variant of DRD4 and the other half carriers of the short variant, will, after genotyping, be selected from a group of about 120 students. All 80 participants will be submitted to both experimental conditions (dopamine and placebo).

Intervention

One hour after intake participants will read one of two passages from the novel *A Clockwork Orange* by Anthony Burgess in Dutch translation, including about 30 non-words. During reading EEG is used to measure task engagement (Pope et al., 1995). After reading the text, participants are asked questions about the story and non-words in the text and complete two measures of reading resistance.

Study burden and risks

Participants have to visit the university for a maximum of three times. Once for DNA sampling and twice for the experimental sessions (1x Sinemet, 1x placebo). Administration of a single dose of Sinemet is found to be safe and without side effects.

Contacts

Public
Universiteit Leiden

Wassenaarseweg 52
Leiden 2333AK
NL
Scientific
Universiteit Leiden

Wassenaarseweg 52
Leiden 2333AK
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

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

Inclusion criteria

- 18 years or older
- Women
- Right-handedness

Exclusion criteria

- Serious reading problems (dyslexia)
- Medical illness, indicating a risk in using haloperidol (e.g., cardiac illness, depression, thyroid disorders, glaucoma)
- Current or recent use (<2 weeks before participation) of psycho-pharmacological medication (other than contraceptives), psychotropic drugs or drugs that might interfere with haloperidol.
- Known drugs allergies
- Pregnancy or lactation

Study design

Design

Study phase:	4
Study type:	Interventional
Intervention model:	Crossover
Allocation:	Randomized controlled trial

Masking:	Double blinded (masking used)
Control:	Placebo
Primary purpose:	Other

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	03-02-2015
Enrollment:	80
Type:	Actual

Medical products/devices used

Product type:	Medicine
Brand name:	Sinemet 125
Generic name:	Sinemet 125
Registration:	Yes - NL outside intended use

Ethics review

Approved WMO Date:	07-10-2014
Application type:	First submission
Review commission:	METC Leids Universitair Medisch Centrum (Leiden)
Approved WMO Date:	19-12-2014
Application type:	First submission
Review commission:	METC Leids Universitair Medisch Centrum (Leiden)

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
EudraCT	EUCTR2014-001352-36-NL
CCMO	NL49379.058.14