Behavioral and neural correlates of delay and effort discounting in adolescents with ADHD

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Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Developmental disorders NEC
Study type	Observational non invasive

Summary

ID

NL-OMON36926

Source
ToetsingOnline

Brief title
Impulsivity in adolescents with ADHD

Condition

- Developmental disorders NEC

Synonym
Attention-Deficit/Hyperactivity Disorder (ADHD)

Research involving
Human

Sponsors and support

Primary sponsor: Radboud Universiteit Nijmegen
Source(s) of monetary or material Support: NWO (VIDI-subsidie toegekend aan Dr. Anouk Scheres)

Intervention

Keyword: ADHD, fMRI, impulsivity, reward sensitivity

Outcome measures

Primary outcome

We will measure behavioral responses (choices, subjective values of delayed/effortful rewards) and brain activity using fMRI during a task in which participants have to: (1) choose between a small immediate monetary reward and a larger delayed monetary reward (TD) (2) choose between a small monetary reward that requires little effort and a larger monetary reward that requires more effort (ED).

Secondary outcome

We will measure behavioral responses during a task in which participants have to choose between a small immediate food reward and a larger delayed food reward, and between a large immediate monetary loss and a smaller delayed monetary loss.

Study description

Background summary

Adolescents with ADHD prefer smaller immediate rewards over larger delayed rewards, as reflected in steep discounting during temporal discounting (TD) tasks. An important theoretical model of ADHD proposes that the main mechanism underlying this impulsive behavior is delay aversion. Strong support for this theory, however, is still lacking, because decreased sensitivity to reward may play a role in preferences for small immediate rewards. We will, therefore, compare behavioral and neural responses of adolescents with ADHD during temporal discounting with responses during effort discounting (ED). In this latter condition, participants will exert more or less physical effort in order to gain a larger or smaller reward, respectively. For this purpose we will use

real monetary rewards and real delays and physical effort. Hyperactivity/impulsivity has been found to be associated with steep discounting in a real TD task, but not in a hypothetical one, implicating the importance of real rewards and delays in studies on impulsivity and ADHD. To summarize, the primary aim of this study is to examine whether impulsivity in adolescents with ADHD is related to delay aversion or to alterations in reward sensitivity, and to understand the neural pathways underlying impulsive behavior.

Study objective

The primary aim of this study is to examine whether impulsivity in adolescents with ADHD is related to delay aversion or to alterations in reward sensitivity, and to understand the neural pathways underlying impulsive behavior. We will (1) compare behavioral and neural responses of adolescents with ADHD-C and healthy controls during temporal discounting with responses during effort discounting; (2) examine the neural correlates of temporal discounting in adolescents with ADHD-C and healthy controls using real monetary rewards and delays; (3) examine discount rates for food rewards in adolescents with ADHD-C compared to healthy controls; and (4) examine discount rates for gains versus losses in adolescents with ADHD-C compared to healthy controls.

Study design

Cross-sectional explorative observational study

Study burden and risks

During a first visit, participants will complete a short intelligence test and a few questionnaires (approx. 1.5h). During a second visit (approx. 2h), participants will have a practise session in a mock scanner before performing the TD/ED task in the MRI scanner (time in scanner, depending on choices: 2x 10-20 min in total). Outside the scanner participants will perform the TD task with food rewards (max. 10 min) and with monetary losses (max. 20 min). The risks of MRI scanning are negligible and the burden for participants is minimal.

Contacts

Public
Radboud Universiteit Nijmegen

Montessorilaan 3
Nijmegen 6525 HR

NL
Scientific
Radboud Universiteit Nijmegen

Montessorilaan 3
Nijmegen 6525 HR
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adolescents (12-15 years)
Adolescents (16-17 years)

Inclusion criteria

ADHD-Combined Type (patients) or no psychiatric illness (controls)
age: 12-17 years

Exclusion criteria

IQ<70
use of psychoactive medication that cannot be discontinued
MRI contraindications

Study design

Design

Study type:	Observational non invasive
Intervention model:	Other

Allocation:	Non-randomized controlled trial
Masking:	Open (masking not used)

Primary purpose: Basic science

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	19-09-2013
Enrollment:	60
Type:	Actual

Ethics review

Approved WMO

Date:	15-02-2013
Application type:	First submission
Review commission:	CMO regio Arnhem-Nijmegen (Nijmegen)

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	NL42830.091.12

Study results

Date completed:	07-07-2014
Actual enrolment:	66