Learning by social and material reward in children with ASD and children with ADHD:
A neurophysiological study

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The main objective of this study is to determine how children with ADHD and ASD differ from each other in learning from social and material reward. The secondary objectives are: 1) To determine how predictability of the rewards influences learning…

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

Summary

ID

NL-OMON41211

Source
ToetsingOnline

Brief title
Learning by reward in ASD and ADHD

Condition

- Developmental disorders NEC

Synonym
ADHD, ASS, attention deficit hyperactivity disorder, Autisme, autisme spectrum stoornis

Research involving
Human

Sponsors and support

Primary sponsor: Rijksuniversiteit Groningen

Source(s) of monetary or material Support: Ministerie van OC&W,Hersenstichting

Intervention

Keyword: Attention Deficit Hyperactivity Disorder, Autistic Spectrum Disorder, neurophysioloy, reward learning

Outcome measures

Primary outcome

Performance on learning tasks of the groups are compared (accuracy and reaction times).

Secondary outcome

Reward-related Event Related Potentials (ERPs) and Evoked Cardiac Responses (ECRs) of the groups are compared. The following potentially confounding factors are taken into account in the analyses: intelligence, child-reported motivation, (social) cognitive functions of the child, parent-reported behaviour and motivation of the child.

Study description

Background summary

Attention Deficit Hyperactivity Disorder (ADHD) and Autism Spectrum Disorder (ASD) are relatively prevalent neuropsychiatric developmental disorders that cause impairments in several life domains, including the academic and social functioning. Even though in clinical practice there is much overlap between the disorders, scientific explanatory models assume that these disorders differ in their sensitivity to social and material reward.
Several models of ADHD hypothesise a central motivation deficit, which can explain the attentional problems and the hyperactive, chaotic and impulsive behaviour of children with ADHD. In research this motivational deficit is apparent in a preference for immediate over delayed rewards. Therefore, adding an adequate reward and penalty schedule has a stronger positive effect in these children compared to healthy controls, i.e. they appear more dependent on external rewards.

Even though the present models of ASD hypothesise a general deficit in empathy to explain the social, emotional, and communication problems, recently reward sensitivity gained more interest. The social motivation theory of ASD hypothesises that individuals with ASD are less sensitive to social reward, which causes them to appreciate and approach social stimuli (such as facial expressions or social play) to a lesser extent. However, only little is known about reward sensitivity in ASD. Some studies suggest intact material reward sensitivity, but a reduced social reward sensitivity, whereas others suggest a generally reduced reward sensitivity.

Study objective

The main objective of this study is to determine how children with ADHD and ASD differ from each other in learning from social and material reward. The secondary objectives are: 1) To determine how predictability of the rewards influences learning from social and material reward in these disorders; 2) To determine which neurophysiological mechanisms underlie learning from social and material reward in these disorders?

Study design

Four factorial design: mixed between-subject (group: ADHD, ASD, control group) and repeated measures design (reward type: material, social, no reward; learning phase: first section, second section; reward predictability: consequent, inconsequent).

Study burden and risks

The investigator will meet the child and parent/caregiver once for an intake (45 min) and once for the experiment (3 hours). During the intake, a short intelligence test is assessed in the child and the parent completes behavioural questionnaires. During the experiment, learning tasks are assessed in the child with material, social and no reward, and two short social cognition tests (3 hours). During the experiment the child wears EEG and ECG equipment (a cap and sticky electrodes). The physiological measurements are not painful and bear no risks for the child. In the meantime the parent completes additional behavioral questionnaires (45 min) and gives the social reward (play with the child for max. 30 min). The assessments will require a certain amount of concentration from which the child and parent can recover after short breaks. The risks of this study are negligible and the burden can be considered minimal. Patients will have no direct benefit from the study.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Children (2-11 years)

Inclusion criteria

All participants:
* Age: 8, 9, 10, 11 years
* Intelligence score of IQ >< = 80
* Child agrees on participation
* Parents/caregivers are willing to sign informed consent;ADHD group:
* Clinical DSM-classification of ADHD made by a psychologist or psychiatrist at health care institution (e.g. *GGZ instelling*, hospital)
* Research screening diagnosis of ADHD (assessed in intake with the Disruptive Behaviour Disorder rating scale);ASD group:
* Clinical DSM-classification of ASD made by a psychologist or psychiatrist at health care institution (e.g. *GGZ instelling*, hospital)
* Research screening diagnosis of ASD (assessed in intake with the Social Communication Questionnaire)

Exclusion criteria

Control group:
* Presence of any clinical DSM-classification made by a psychologist or psychiatrist at health care institution (e.g. *GGZ instelling*, hospital)
* Screening diagnosis of ADHD (assessed in intake with the Disruptive Behaviour Disorder rating scale)
* Screening diagnosis of ASD (assessed in intake with the SRS)
- Any cerebral neurological diseases;ADHD group:
* Clinical DSM-classification of ASD made by a psychologist or psychiatrist at health care institution (e.g. *GGZ instelling*, hospital)
* Screening diagnosis of ASD (assessed in intake with the Social Communication Questionnaire)
* Any cerebral neurological diseases;ASD group:
* Clinical DSM-classification of ADHD made by a psychologist or psychiatrist at health care institution (e.g. *GGZ instelling*, hospital)
* Screening diagnosis of ADHD (assessed in intake with the Disruptive Behaviour Disorder rating scale)
* Any cerebral neurological diseases

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:	Basic science

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	25-06-2015
Enrollment:	75
Type:	Actual

Ethics review

Approved WMO Date:	04-07-2014
Application type:	First submission
Review commission:	METC Universitair Medisch Centrum Groningen (Groningen)
Not approved Date:	15-12-2015
Application type:	Amendment
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

No registrations found.

In other registers

Register	ID
CCMO	NL48558.042.14