Fear Conditioning during specific conditions in Antisocial Adolescents: A Neuroimaging Study.

No registrations found.

Ethical review	Positive opinion
Status	Recruiting
Health condition type	-
Study type	Interventional

Summary

ID

NL-OMON21639

Source
Nationaal Trial Register

Brief title
N/A

Health condition

Disrupted Behavior Disorder (DBD)
Oppositional Defiant Disorder (ODD)
Conduct Disorder (CD)

Sponsors and support

Primary sponsor: VUmc
Source(s) of monetary or material Support: This study was funded by a Netherlands Organisation for Scientific Research (NWO) Brain & Cognition grant (056-23-010) to Arne Popma.

Intervention

Outcome measures

Primary outcome

Differental BOLD-response in the fear conditioning brain network during fear conditioning and during reward/punishment sensitivity.

Secondary outcome

Fear conditioning level (CS+ vs CS- differentiation in skin conductance level, pupil dilatation, self-reported arousal and emotional valence).

-Reward/punishment sensitivity (reaction time).

-Risk taking behavior (number of pumps in risk taking behavior task).

-Connectivity between brain structures through Diffusion Tensor Imaging (DTI) techniques and resting-state fMRI

- brain structure through structural MRI.

Study description

Background summary

Antisocial behaviour in juveniles has been recognized internationally as a mental health priority. In the Netherlands, the Research and Documentation Centre (Wetenschappelijk Onderzoeks- en Documentatie Centrum; WODC) of the Ministry of Justice has recently written an extensive report stressing the need for innovative, and specifically neurobiological, research approaches to increase insight into the underlying mechanisms of antisocial behaviour.

Antisocial behaviour in juveniles is highly prevalent and is related to poor current general functioning as well as a series of negative outcomes in adulthood, such as criminal behaviour, social isolation, unemployment, and psychiatric disorders, including depression, anxiety disorders and substance abuse. Moreover, such behaviour constitutes a major public health problem, as children with antisocial behaviour problems cost society at least ten times as much as well developing children.
Only a few studies have investigated brain functioning in antisocial groups. The majority of these studies have been performed in adults. Evidence from these studies suggests that deficient functioning of certain brain structures involved in fear processing and reward/punishment sensitivity is related to antisocial behaviour. Only a few studies in children and adolescents suggest this deficient brain functioning also occurs in children and adolescents with DBD. Only one study showed impaired fear conditioning in adolescents (age between 14 and 18 years) with antisocial behaviour. There are no studies investigating the influence of specific experimental conditions on the brain functioning of children or adolescents.
The current proposal aims to contribute to the relatively new field of neurobiological research

on antisocial behavior by carrying out tasks that include innovative elements and make use of new techniques in a relatively large sample of DBD adolescents. Present study will use fMRI tasks addressing specific aspects of fear processing that have not been studied so far in antisocial juveniles. Subsequently, the effect of different experimental conditions during fear conditioning and reward/punishment sensitivity will be tested. Moreover, DTI will be employed to study the connectivity between relevant brain structures involved in fear processing. By doing so, our research could provide an additional value to contemporary research by unraveling the neurobiological mechanisms underlying antisocial behavior in adolescents. This to lower the chance of developing chronic and severe antisocial behaviour problems. Finally, an additional advantage of studying antisocial juveniles, as compared to studying antisocial adults, is the lower risk of confounding artifacts caused by effects of long-term psychotropic medication or drug use in adults.

Countries of Recruitment: The Netherlands.

Study objective

1. DBD adolescents will show diminished fear conditioning as compared to HCs in the basic condition, and this phenomenon is associated with altered function, connectivity and structure of brain areas known to be involved in fear conditioning.

2. DBD adolescents show more sensitivity to reward and less sensitivity to punishment as compared to HCs in the basic condition, and these differences are related to functional differences in brain activation patterns.

3. In DBD adolescents, fear conditioning will be potentiated in the methylphenidate condition compared to the placebo and basic condition.

4. In DBD adolescents, methylphenidate will increase sensitivity to punishment and decrease sensitivity to reward as compared to the placebo condition and the basic condition.

5. DBD adolescents will show higher levels of risk taking behavior compared to HCs.

6. High levels of risk taking behavior will be correlated with increased sensitivity to reward and decreased sensitivity to punishment for DBD adolescents and HCs in the basic condition.

Study design

during (f)MRI scan (1 hour)

Intervention

Methylphenidate

Contacts

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Eligibility criteria

Inclusion criteria

DBD:

- Male

- Diagnosed with DBD (ODD or CD) by psychiatrist

- Age 14-18 year

HC:

- Male

- Age 14-18 years

- SES, IQ, and age similar to an adolescent in the basic condition. SES in the same category, IQ within a window of 5 points and age within a range of 1 month.

Exclusion criteria

DBD:

- Standard exclusion criteria (NIH) for MRI are the presence of pacemakers, aneurysm clips, artificial heart valves, ear implants, metal fragments or foreign objects in the eyes, skin or body.

- Contra-indications for using methylphenidate (see page 30).

- Unable to stop methylphenidate for 72 hours.

- Use of psychotropic medication

- Pervasive developmental disorder, Tourette's syndrome, current or lifetime history of psychosis, neurologic disorder, history of head trauma, actual steroid use an IQ less than 80.

HC:

- Standard exclusion criteria (NIH) for MRI are the presence of pacemakers, aneurysm clips, artificial heart valves, ear implants, metal fragments or foreign objects in the eyes, skin or body.

- ODD, CD, ADHD, Pervasive developmental disorder, Tourette's syndrome, current or lifetime history of psychosis, neurologic disorder, history of head trauma, actual steroid use an IQ less than 80.

- A history of serious antisocial behavior.

- Use of psychotropic medication.

Study design

Design

Study type:	Interventional
Intervention model:	Parallel
Allocation:	Randomized controlled trial
Masking:	Double blinded (masking used)
Control:	Placebo

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	01-07-2013
Enrollment:	83
Type:	Anticipated

IPD sharing statement

Plan to share IPD: Undecided

Ethics review

Positive opinion

Date:	23-07-2013
Application type:	First submission

Study registrations

Followed up by the following (possibly more current) registration

ID: 39929
Bron: ToetsingOnline
Titel:

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

No registrations found.

In other registers

Register	ID
NTR-new	NL3917
NTR-old	NTR4088
CCMO	NL39716.000.12
ISRCTN	ISRCTN wordt niet meer aangevraagd.
OMON	NL-OMON39929

Study results

Summary results
N/A