The Neural Basis of Prosocial Development in Adolescence

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

Summary

ID

NL-OMON44316

Source
ToetsingOnline

Brief title
BRAINLINKS

Condition

- Other condition

Synonym
n/a

Health condition

Geen aandoening

Research involving
Human

Sponsors and support

Primary sponsor: Universiteit Leiden
Source(s) of monetary or material Support: European Research Council

Intervention

Keyword: Adolescence, Neuroscience, Prosocial Behavior

Outcome measures

Primary outcome

Age- and puberty related change in brain structure and function related to the construct of prosocial behaviour.

MRI scans:

Structural MRI will be used to gain information on gray and white matter properties (volume, density, and cortical thickness). DTI will be used to gain specific information on white matter microstructure and fibertracking.

Functional MRI will be used to gain information on taskrelated brain activity during cognitive and emotional information processing.

Pubertal assessment:

Participants will fill in a self-report form of pubertal maturation.

Second, the participants will provide saliva to test for testosterone, DHEA, and estradiol levels.

In addition, behavioral tasks and questionnaires will be used to assess

prosocial development.

Daily diaries will be used to assess adolescents' experience during the

naturalistic test-retest study.

Also, measures will be acquired of participants' intelligence, sleep (with

motion-loggers), and relationship with their parents.

Secondary outcome

See above

Study description

Background summary

Despite the great value humans place on prosocial behavior (i.e. actions that benefit others, often at cost to oneself), science has long been puzzled by its existence (Simpson & Willer, 2008). Even though theories of kin selection (Hamilton, 1964) and reciprocal actions (Trivers, 1971) could partially explain the occurrence of prosocial behavior, they cannot explain why much prosocial behavior is directed at unrelated strangers (Simpson & Willer, 2008). Recent studies have suggested that adolescence may be an important period for the development of prosocial behavior (Güro*lu, van den Bos, & Crone, 2014). Adolescence is the period between ages 10-22 years during which most individuals shift from egocentric motivations to other-oriented behavior, and develop mature social goals. New insights have built upon an integrative account of how interactions between brain and behavior lead to long-term development of prosocial behavior (Crone & Dahl, 2012). In the present project, we aim to advance our understanding of the development of prosocial behavior by testing a new perspective on adolescent development, which argues that changes in emotional reactivity in response to prosocial actions pose opportunities for positive prosocial development. Specifically, we propose that the interaction between emotional reactivity and social cognitive control (i.e. the ability to take perspective of others) may result in adolescents* increased engagement in prosocial behavior.

Study objective

The aim of this proposal is threefold: (i) test a neuroscientific model of prosocial development by relating neuroscience discoveries to changes in several dimensions of prosocial development in a comprehensive study including

children, adolescents and adults, (ii) test the moderating role of context (e.g. environmental support factors including parent and peer relations) and individual differences (e.g. in personality), and (iii) test for prosocial experience effects in an naturalistic test-retest study aimed at fostering prosocial development in adolescence.

Study design

Lab visits:
This study uses a comprehensive longitudinal design combining neural activity responses with behavioural assessments. Participants will perform computerized tasks related to prosocial behaviour and we will measure brain activation using functional Magnetic Resonance Imaging (fMRI) while they are performing the tasks. We will use structural MRI and Diffusion Tensor Imaging (DTI) to measure underlying brain anatomical processes. In addition, we will measure cognitive functioning on a battery of tasks outside of the scanner. We will also collect hormone measures from saliva samples. All measurements are non-invasive.

Naturalistic test-retest study:
During 6 weeks, one group will once daily choose one of ten prosocial actions to carry out during the day, and will write a reflection about this early in the evening. The control group will once daily choose one academic action from a list to carry out during the day, and will also write a reflection about this early in the evening.

Study burden and risks

There are no known risks associated with participating in the proposed measurements. MRI is a non-invasive technique involving no catheterizations or introduction of exogenous tracers. Numerous children and adults have undergone magnetic resonance studies without apparent harmful consequences. Some people become claustrophobic while inside the magnet and in these cases the study will be terminated immediately at the subject's request. The only absolute contraindications to MRI studies are the presence of intracranial or intraocular metal, or a pacemaker. Relative contraindications include pregnancy and claustrophobia. Subjects who may be pregnant, who may have metallic foreign bodies in the eyes or head, or who have cardiac pacemakers will be excluded because of potential contraindications of MRI in such subjects. Although there is no direct benefit to the participants from this proposed research, there are greater benefits to society from the potential knowledge gained from this study. This knowledge about normal development is critical to aid in the understanding of cases of abnormal development, as seen in children with autism spectrum disorder, depression, schizophrenia, Attention Deficit Hyperactivity Disorder, Obsessive-Compulsive Disorder, Tourette*s syndrome, or traumatic brain injury. Secondly, the integrative knowledge on prosocial behaviour gained by this study is important not only for theory development, but also to

eventually tailor societal programs (e.g., education, training) to the needs of adolescents.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adolescents (12-15 years)
Adolescents (16-17 years)
Adults (18-64 years)
Children (2-11 years)
Elderly (65 years and older)

Inclusion criteria

- Native Dutch speaker
- For adolescents: Starting ages between 9- 17 years at the first session (T1) and between 10-18 years at the second session (T2)

Exclusion criteria

- Participants with a previously diagnosed intellectual disability (IQ < 70).
- Participants with a history of neurological or psychiatric disorder/disease or current use of psychotropic medications.
- Contraindications for MRI, including metal implants, heart arrhythmia, and claustrophobia.
- Females who are pregnant
- Participants will additionally be prescreened for head trauma, premature birth, learning disabilities, and history of neurological or psychiatric illness and/or use of psychotropic medications.

Study design

Design

Study type: Observational non invasive

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Other

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	14-02-2018
Enrollment:	360
Type:	Actual

Ethics review

Approved WMO

Date:	08-02-2018
Application type:	First submission
Review commission:	METC Leiden-Den Haag-Delft (Leiden)
	metc-ldd@lumc.nl

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	NL62878.058.17

Study results

Date completed:	07-07-2022
Actual enrolment:	294