

The neural signature of self-concept development in adolescence in relation to romantic relations and sexuality in youth

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Original study: The goal of this study is to have a theoretically based understanding of how sub processes of self-concept development emerge in relation to each other. The primary objective is to test a neuroscientific model of self-concept...

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

Summary

ID

NL-OMON44873

Source

ToetsingOnline

Brief title

Self-concept

Condition

- Other condition
- Developmental disorders NEC

Synonym

autism, high functioning autism

Health condition

typische adolescenten

Research involving

Human

Sponsors and support

Primary sponsor: Universiteit Leiden

Source(s) of monetary or material Support: NWO

Intervention

Keyword: Adolescence, Neuroscience, Self-concept, Social comparison

Outcome measures

Primary outcome

Age- and puberty related change in brain structure and function related to the construct of self-concept.

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 task-related brain activity during cognitive and emotional information processing.

Pubertal assessment

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

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

Addendum Gap Year:

This study is focused on studying the changes in behavioral measures and brain function and structure related to the selfconcept training of the Gap Year Program.

Behavioral measures:

Tasks and questionnaires focused on diverse aspects of self-concept. For example, self-knowledge, self-esteem and self-concept clarity. See for more information section 8.3 "study procedures" of the protocol.

MRI scans:

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

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Addendum ASD:

Addendum Gap Year:

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

Current Amendement (extra questionnaire):

Behavioral measure:

In this addendum, we would propose to add a questionnaires on *Romantic relations and sexuality in youth*, which is based on a subset of questions by Graaf et al., (2017). Romantic relations and sexuality in youth: This questionnaire measures romantic relations and sexuality using a shortened version of the *Seks onder je 25e* questionnaire (Graaf et al., 2017). We aimed

to measure a number of aspects of romantic relations and sexuality, and selected 27 items accordingly. These aspects include: experience in romantic relations, sexual identity, sexual orientation, sexual experience and behavior, pleasure and attitude. The questionnaire is administered to participants of 12 years of age. In addition, sexual experience is only assessed in individuals that are older than 13 years of age and have indicated to have had a romantic relationship.

Secondary outcome

see above.

Study description

Background summary

Original study:

Self-concept changes dramatically in adolescence, including an increase in self-other comparison and a rise in self-consciousness. These self-concept changes pose vulnerabilities as well as opportunities for adolescents. There has been a great and longstanding interest in self-concept development in adolescence, but it has been difficult to measure this construct because self-concept is not observable in behavior and self-report is sensitive to response bias. Recently, with the use of brain imaging techniques it was discovered that self-related thoughts can be robustly assessed using neural responses to self-related cues. The aim of the current set of studies is to examine changes in brain structure and function in relation to these changes in self-concept development during adolescence. The key question of this study concerns: When and how do changes in self-concept emerge in adolescence and which factors facilitate (healthy, positive) self-concept development? Testing for linear versus non-linear brain developmental patterns will be a turning point in our understanding of self-concept development by revealing the interactive determinants of self-knowledge and prosocial development.

Addendum Gap Year:

Adolescence is an important inflection point in life, where individuals gain independence from their caregivers and develop into adults who pursue individual goals. Our understanding of this inflection period has benefited

from two decades of research on brain development, in which it was discovered that the developing brain in adolescence is much more plastic than previously thought, with huge implications for treatment and intervention. Whereas previously research has focused mostly on the determinants of adolescent emerging disorders (depression, anxiety, schizophrenia), there is a growing interest for understanding high stake societal issues which affects all adolescents. One prominent area where research on self-concept development will prove crucial is in the domain of healthy, positive academic career development. In the Netherlands, many adolescents are struggling with the question of how to make future-oriented academic choices that fit their identity. More than 30% of first-year higher education students drop out of their studies in their first year. This is a considerable concern as it has important consequences for both the adolescent and society as a whole. This dropout occurs in all levels of secondary education and is not related to intelligence prosocial economic background. Several programs have been launched to reduce this dropout with limited success. Most programs aimed at providing more detailed information to students about job perspectives. A neglected area, however are the questions of whether and how adolescents are able to make future-oriented choices that fit with their identity. That is to say, none of the programs focus on the role of self-concept development in academic outcomes, even though scientific studies have shown that self-knowledge and self-esteem are the best predictors for academic achievement, over and above academic competence. Until recently, it has been difficult to measure this construct because self-concept is not observable in behavior and self-report is sensitive to response bias. Recently, with the use of brain imaging techniques it was discovered that self-related thoughts can be robustly assessed using neural responses to self-related cues. Thus, there is promising potential to examine the role of (the neural characteristics) of self-concept in relation to academic failure and success. Participants for this study will be recruited in collaboration with the Foundation Gap Year program ("Stichting Breekjaai"). The Gap Year program provides training programs for adolescents who have dropped out of higher education and experience difficulties with academic and career choices. Participants of this program follow a 12-month self-concept training where they learn more about personal development and start working on improving their self-esteem and decision-making.

Addendum ASD:

Adolescents learn about themselves through their peers. Adolescents with high functioning autism become more concerned about friendships and they want to fit in. However, in this period they often notice for the first time that they are different. This affects their self-esteem: young people with high functioning autism who view themselves as being different from others, report higher levels of depressive symptoms. As adolescents with high functioning autism experience more trouble with relating to their peer group, it might be harder for them to maintain a positive self-concept at this developmental stage. Therefore, it is important to investigate self-concept in adolescents with high functioning

autism.

The goal of this study is to examine the structure and function of the brain in relation to self-concept in adolescents with high functioning autism. The main question of this study is: What are the neural processes underlying self-concept in adolescents with high functioning autism?

Current Amendment (extra questionnaire):

Adolescence is an important developmental stage in the exploration of romantic and sexual awareness, cognition and behavior. Interest in intimate relations and sexuality intensifies during the onset of puberty, and are often a key aspect of adolescents' lives. Yet, adolescent sexuality has been primarily studied in the context of risky behavior and subsequent potential public health issues. However, the exploration of intimate relationships and sexual behaviors during adolescence are not inherently risky. Nevertheless, most studies focused on risk factors associated with first intercourse in adolescence and herewith aim to target protective factors to delay its onset. For example, educational programs promote responsible sexual decision-making in young people. However, adolescent sexual development is multifaceted and encompasses more than sexual intercourse, moreover most sexually active teenagers engage in (first-time) sexual behaviors within the context of a romantic relationship (Manning et al., 2000, 2005). However, how romantic and sexual awareness, sexual behavior and sexual cognition, interact and evolve over time through important life transitions such as puberty and what neural mechanisms are involved is largely unknown.

Connecting sexuality of early adolescence with elements of adult sexuality is challenging. In addition, the literature on adult sexual development is biased towards sexual (dis)functioning. Though, sexual health is not merely the absence of illness or sexual problems, but also encompasses physical, mental, emotional, and social well-being in relation to sexuality. This is shown for example by studies that indicate that sexual experience was positively associated with body image and sexual subjectivity in adolescence. In addition, longitudinal studies showed that both early and late sexual onset are related to mental health issues, poorer peer relationships, and higher adjustment difficulties (see review Boislard et al., 2016). E.g. sexual precocity has been associated with externalizing symptoms in boys (Boislard et al., 2013) and internalizing symptoms in girls, such as low self-esteem (Spencer et al., 2002). These studies highlight the need for a better understanding of mechanisms involved in romantic and sexual maturation and their interaction with developmental changes in other domains including social behavior, affective processes and self-concept. Particularly longitudinal research is needed to investigate how trajectories of these domains run parallel to one another and how various stages and events in these trajectories are intertwined. This is what we aim to investigate with the addition of the questionnaire *Romantic relations and sexuality in youth* proposed i

Study objective

Original study:

The goal of this study is to have a theoretically based understanding of how sub processes of self-concept development emerge in relation to each other. The primary objective is to test a neuroscientific model of self-concept development by relating self-concept changes to neuroscience discoveries in a comprehensive study including children, adolescents and adults.

Besides, we are also interested in:

Testing the moderating role of environmental support factors including parent and peer relations in the development of self-concept.

And testing for differences between adolescents who do and who do not experience academic choice difficulties.

Addendum Gap Year:

The goal of this study is to understand what characterized adolescents who have difficulties with making academic choices. Furthermore, we test the hypothesis that self-concept training, as observed in a naturalistic environment, will be beneficial for the development of self-knowledge and positive self-evaluation.

Participants will be included who are taking part in a training program developed in the Netherlands for adolescents who have dropped out of higher education, named the 'Gap year' program. The current study will evaluate the program quantitatively focusing on individual differences between adolescents in relation to self-concept and academic choice.

Finally, this study will make the additional step of relating these outcomes to individual differences in brain activity. The brain-based evaluation of the training will provide a more detailed indication of the underlying processes (behaviorally and neural responses) that are changing by the training.

Addendum ASD:

The goal of this study is to have a theoretically based understanding of self-concept in adolescents with high functioning autism. The primary objective is to test a neuroscientific model of self-concept by relating self-concept to neuroscience discoveries.

Besides, we are also interested in:

Relating these results to individual differences in perspective taking and tendency to empathize.

And testing for differences between adolescents with and without an autism spectrum disorder. For this, we will compare the results of this study with the results of the typically developing adolescents (the participant group from the original study).

Current Amendment (extra questionnaire):

The goal of this study is to explore typical development of romantic relations and sexuality in youth. Furthermore, this study will enable us to link developmental changes in romantic relations and sexuality to individual differences in self-concept such as self-esteem and body image. Also, this study allows us to investigate the underlying neural mechanisms and developmental changes in romantic relations and sexuality.

Study design

Original study:

This study will rely on the newest paradigm development and will be the first using an integrative multi-method (i.e., self-report, biological markers and brain imaging) approach.

This study uses a comprehensive longitudinal design combining neural activity responses with behavioural assessments. Participants will perform a computerized task related to self-knowledge and prosocial behavior 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. At Least we will collect sleep data, using a watch that detects motion during the sleep.

To this end, we will acquire fMRI and sMRI data and behavioural responses of participants aged 10-22 years (n=300) in three separate sessions, 1 year apart in the time period 2016-2021.

Addendum Gap Year:

This study will use an integrative multi-method (i.e., self-report, biological markers and brain imaging) approach for studying the neural characteristics of the development of self-concept in relation with academic choice in adolescents. We will make use of an existing self-concept training program of the Gap Year Program.

The training program provided by Gap Year makes use of the theoretical rationale that perspective taking (evaluating or talking about the self and one's life in relation to expectations of others) is important in the development of social-cognitive self-knowledge, and enhances self-understanding by forming links between elements of one's life and the self through communication with significant others and friends.

The program is an intensive one year program in workgroups by experienced educators/coaches. The program consists of five phases: (1) Awareness of the self and behavioral patterns ("Who am I?"), (2) Breaking with old self-descriptions ("What do I think is actually important?"), (3) Experiencing new directions and exploring possibilities for self-concept development by participating in volunteerwork ("What are my strengths?"), (4) Making new

decisions based on these new experiences ("What do I want?") and (5) Building new self-concepts which guide future academic choices ("What do I need?"). In collaboration with the Gap Year Program, we will recruit 50 adolescents in the age range of 16 - 24 years before they start their training program. To test for training effects, we will measure fMRI, structural MRI and behavioral responses before the start of the training program (baseline), halfway through the program (6 months) and after the program (12 months). At follow up (15 months) there will be another behavioral measurement. Participants will perform a computerized task related to self-knowledge and self-evaluation 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. At last, we will collect sleep data using a watch that detects motion during sleep.

Addendum ASD:

This study will rely on the newest paradigm development and will be the first using an integrative multi-method (i.e., self-report, biological markers and brain imaging) approach. The study will investigate the neural characteristics of the self-concept in adolescents with high functioning autism.

Together with the Bergen Bosch school, we will recruit 50 participants between 10 and 18 years old. The Bergen Bosch school is a school specialized in educating children with an autism spectrum disorder. The school has repeatedly expressed its interest in participating in scientific research and will be actively involved in the recruitment of participants.

This study combines neural activity responses with behavioural assessments. Participants will perform a computerized task related to self-knowledge and prosocial behavior 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. At least we will collect sleep data, using a watch that detects motion during the sleep.

Current Amendment (extra questionnaire):

The addendum is based on a self-report questionnaire *Romantic relations and sexuality in youth *, which will be administered digital.

Study burden and risks

There are no known risks associated with participating in the proposed measurements. MRI is a non-invasive technique.

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

- Dutch Speaking
- Right-handed
- In the right age-range
- Diagnosis in the autism spectrum
- Normal of above-normal intelligence

Exclusion criteria

- Left-handed
- A psychological or neurological disorder
- Current use of neurotrophic medication
- Presence of chronic illness
- MRI contradictions (which include metal implants, heart arrhythmia, claustrophobia, and possible pregnancy (in adult females))
- 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: Recruiting

Start date (anticipated): 04-06-2016

Enrollment: 300

Type: Actual

Ethics review

Approved WMO

Date: 19-04-2016

Application type: First submission

Review commission: METC Leiden-Den Haag-Delft (Leiden)

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Approved WMO
Date: 20-01-2017
Application type: Amendment
Review commission: METC Leiden-Den Haag-Delft (Leiden)
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Approved WMO
Date: 01-12-2017
Application type: Amendment
Review commission: METC Leiden-Den Haag-Delft (Leiden)
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Approved WMO
Date: 05-11-2018
Application type: Amendment
Review commission: METC Leiden-Den Haag-Delft (Leiden)
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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	NL54510.058.16