Using Interactive Virtual Reality Exposure to Understand Social Information Processing (SIP) and Aggressive Behavior Problems in Youth.

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The research questions are: 1. Is SIP and behavior measured in VR more predictive of aggression in real-life than SIP and behavior as measured through hypothetical vignettes? It is expected that SIP and behavior as measured in VR is more predictive...

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

Summary

ID

NL-OMON46001

Source
ToetsingOnline

Brief title
VR-SIP-2

Condition

- Developmental disorders NEC

Synonym
Aggression

Research involving
Human

Sponsors and support

Primary sponsor: Universiteit Utrecht

Source(s) of monetary or material Support: VICI

Intervention

Keyword: 8-12 years), Aggression, Children (boys, Social Information Processing, Virtual Reality

Outcome measures

Primary outcome

Agression

Social information processing

Temperament

Schemata

Executive functioning

Parenting

Secondary outcome

N.A.

Study description

Background summary

Aggressive behavior problems are among the most common psychological problems in children (Romeo, Knapp & Scott, 2006) Aggressive behavior of children has a negative impact on the child, environment, and society at large (Dodge, Coie, & Lynam, 2006). Furthermore aggressive behavior in childhood is predictive of a broad range of problems later in life, such as school drop-out, unemployment, delinquency, and various forms of psychopathology (Coie & Dodge, 1998; Curry, Stabile, Manivong & Roos, 2010). Therefore it seems important to acquire more insight into the underlying mechanisms of aggressive behavior in childhood. More insight in underlying mechanisms of aggression provides the opportunity to improve current therapies for aggressive children and thereby prevent negative developmental outcomes. One underlying mechanism that plays a role in the development of aggression is social information processing (SIP). SIP-models propose that between a social stimulus and a behavioral response several social

information processing steps take place; (1) the encoding of cues, (2) the interpretation and mental representation of cues, (3) establishing interactional goals, (4) the generation of responses, (5) the evaluation of responses, (6) the enactment of a response (Crick & Dodge, 1990; Crick & Dodge, 1994). SIP-models state that biases in SIP are related to aggressive behaviors and empirical research supports this. Aggressive children attribute more hostile intentions to others, establish non-relational interactional goals, generate more aggressive responses and evaluate aggressive responses and their outcomes more positively than healthy controls (Crick & Dodge, 1996; Dodge, Lochman, Harnish, Bates, & Pettit, 1997; Lochman & Dodge, 1998; Orobio de Castro, Merk, Koops, Veerman & Bosch, 2005; Orobio de Castro, Veerman, Koops, Bosch, & Monshouwer, 2002; Erdley & Ascher, 1996; Orobio de Castro, Verhulp & Runions, 2012; Van Nieuwenhuijzen, De Castro, Van Aken & Matthys, 2009). A limitation of prior studies into SIP biases underlying aggressive behaviors of children seems to be the methodology applied to measure SIP. Studies so far mostly presented hypothetical vignettes where an ambiguous social situation is being described (e.g. auditorial, video, scripts). Participants are asked to imagine this situation would happen to them and to describe how they would behave, think and feel. An important limitation of this methodology is that measures SIP are based on hypothetical social situations and not on actual real-time social situations. However, in real life, aggressive behaviors are often characterized by strong emotions and empirical research demonstrates that strong emotions result in more deviant SIP (Reijntjes et al., 2011; Dodge & Somberg, 1987; De Castro, Slot, Bosch & Koops, 2003). Based on the prior it could be questioned whether SIP measured through the traditional methodology (vignettes) is similar to SIP underlying real-time aggressive behaviors. To acquire more insight in SIP underlying aggressive behaviors it seems therefore necessary to measure SIP during real-time social situations, where emotional involvement is high. A method to SIP underlying real-time behaviors could be Virtual Reality Exposure (VRE). In VRE participants encounter specific situations that are problematic in real-life. VRE is already used with various phobias and psychotic disorders (Kampmann et al., 2016; Pot-Kolder, Veling, Geraets & Van der Gaag, 2016; Parsons & Rizzo, 2008). In the current study participants will encounter daily social situations through VRE that elicit variance in (aggressive) behaviors and SIP. Theory and empirical findings suggest that behavior and SIP are being steered by an interplay between other factors as schemata, executive functioning and temperament (e.g. Anderson, Bushman, 2002; Hobson, Scott, & Rubia, 2011, Blair, Peschardt, Budhani, Mitchell, & Pine, 2006; de Castro et al., 2005; Calvete & Orue, 2010). The goal of the current study is to validate behavior and SIP in VR, in a sample differing in aggressive behavioral problems, to aggressive behavioral problems, daily aggressive behavior and various factors that based on the literature correlate with different forms of aggressive behavior. In this way, this study aims to distinguish specific groups in VR based on behavior, SIP, emotions, schemata, executive functions, temperament and contextual factors (parenting). In addition, this study will examine whether SIP and behavior measured in VR is more predictive of real-life aggressive behavior than SIP and behavior as

measured through hypothethical vignettes.

Study objective

The research questions are:
1. Is SIP and behavior measured in VR more predictive of aggression in real-life than SIP and behavior as measured through hypothetical vignettes?

It is expected that SIP and behavior as measured in VR is more predictive of aggression in real-life than SIP and behavior as measured through hypothetical vignettes.

2. Is it possible to distinguish meaningful groups based on SIP, emotions, behavior, schemata, executive functioning, temperament and parenting?

We expect that based on the above mentioned factors (behavior, SIP, temperament, schemata, executive functioning, parenting) three specific profiles can be distinguished:

We expect that there will be a group of non-aggressive children where non-agressive behaviors and non-deviant SIP correlate with a lack of the tendency to experience strong or cold emotions, no hostile- and instrumental schemata, intact executive functioning en positive parenting.
In addition to the expectation that we will distinguish a non-aggressive group without deviant SIP en aggressive behavior, it is expected that:

There will be a group of agressieve children where aggressive behaviors and SIP correlate with deficits in cool executive functions, the tendency to experience strong emotions, hostile schemata and harsh parenting.

There will be a group of aggressive children where aggressive behaviors and SIP correlate with no deficits in cool executive functons, deficits in hot executive functions, callous and emotional temperament, sensation seeking tendencies, instrumental schemata and a lack of parental supervision.

Study design

To test the hypotheses children from regular (n=50) and special education (n = 100) will be recruited. SIP will be measured in Virtual Reality and through vignettes (hypothetical stories). In addition, several questionnaires and tasks will be assessed.

The assessment for children will consist of three assessment-days of 30-45 minutes each. On the first assessment-day for children, questionnaires and executive functioning tasks will be assessed. This to measure temperament (Callous & Unemotional Traits, Sensation Seeking), schemata and executive

functioning (working memory, inhibition, reward- and punishment sensitivity/insensitivity). On the second- and third assessment-day for children SIP in VR and through vignettes will be assessed. For half of the participants SIP measurements through vignettes will be a week before the SIP measurements in VR, for the other half of the participants SIP measurements through vignettes will be a week after the SIP measurements in VR. In addition, parents and teachers will be asked to fill in several questionnaires. Parents will fill in questionnaires about the presence of aggressive behavior, temperament (negative emotionality) and parenting style. This will take up to 15 minutes maximum. Also teachers will be asked to fill in several questionnaires. This to measure the presence of different forms of aggressive behavior. This will take approximately 5-10 minutes.

Study burden and risks

Virtual Reality-environments will consist of common social situations. Therefore Virtual Reality-environments will elicit frustrations or mild aggression that is similar to frustrations and mild aggression in real-life. Previous research demonstrated that real-time mild provocations and social dilemma's elicit mild aggressive behaviors without ethical boundaries are being violated (Matthys et al., 1995; Matthys et al., 1995; Van Nieuwenhuijzen et al., 2005; Kempes, de Vries, Matthys, van Engeland, & van Hooff, 2008). In these studies and our VR-pilot study, participants stated they really enjoyed participating (and spontaneously mentioned they were eager to participate in again). Experimenters will be vigilant for any form of excessive aggression and take action when this is required. This will be done through an aggressive behaviors protocol that was accepted by the METC in 2005 (05-191 titled: **Conflict management in 6-8 year old aggressive Dutch boys: do they reconcile?*). Virtual Reality-environments could elicit "cyber sickness". Cyber sickness consists of symptoms of nausea, drowsiness, impaired visual perception and concentration deficits and is caused by a discrepancy between sensory perception and the vestibular system / (LaViola Jr., 2000). It is important to note that approximately 30% of participants exhibit any symptom of cyber sickness (Chen et al., 2011). However, research shows that participants build a tolerance against cyber sickness and that the quality and adjustment of the Virtual Reality-hardware and software could reduce symptoms of cyber sickness. (Kennedy, Stanney & Dunlap, 2002; Rebenitsch & Owen, 2016; Kennedy & Fowlkes, 2000). In addition, since participants are able to freely move in the Virtual Reality-environments and quality of the used hard- and software is high, the discrepancies between sensory perception and the vestibular system will be minimal. . Experimenters will be monitor symptoms of cyber sickness and if it is required temporarily pause the session. The session will be proceeded only when symptoms are almost not present and participants are willing to. Children with motion sickess will not participate in our study. The presence of motion sickness will be assessed prior to the study. In our previous VR-pilot study using the same VR-scenario's, none of the children exhibited cyber sickness. In addition, in the VR pilot-study it was never required to interrupt ot intervene

as a result of extreme aggressive behavior or escalating situations.

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Children (2-11 years)

Inclusion criteria

Boys 8-12 years.
50 participants recruited in regular education and 100 boys recruited in special education for children with disruptive behavior problems.
Teacher Report Form (TRF) score above the 90th percentile on the subscale aggression for participants recruited in special education.

Exclusion criteria

Pervasive Autism Spectrum problems as indicated by a score above the 95th percentile on the subscale Autism of the Sociale-Emotionele Vragenlijst (SEV). Low intelligence as indicated by IQ < 80 in school records and Motion sickness.

Study design

Design

Study phase:	2
Study type:	Observational non invasive
Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Diagnostic

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	11-12-2018
Enrollment:	150
Type:	Actual

Ethics review

Approved WMO

Date:	24-10-2018
Application type:	First submission
Review commission:	METC Universitair Medisch Centrum Utrecht (Utrecht)

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	NL67120.041.18