

Cognitive distortions as predictor of antisocial behaviour in children

Masterthesis

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Abstract

The aim of this study was to investigate the reliability and validity of the How I think Questionnaire (HIT- Q), adapted to children in the age of 7 to 9 years old. The main hypothesis was that children between 7 and 9 years old demonstrate some cognitive distortions and that these distortions are predictive of antisocial behaviour. A group of 156 children from the second (N= 75) and the third grade (N= 88) participated in the study. The results showed that the children showed on average a low prevalence of cognitive distortions and that these distortions are predictive of self- reported antisocial behaviour. Another hypothesis was that there is a domain shift from the moral towards the non- moral domain in the evaluation of hypothetical situations concerning antisocial behaviour. New storyboards, consisting of pictures and stories were made that were suitable for children of the investigated age-group. No domain shift was found, except for a domain shift for boys concerning one hypothetical situation about oppositional behaviour.

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Introduction

According to social- cognitive theories, people act upon their interpretation of social events and antisocial behaviour is based on deficiencies in interpreting these events, that is, cognitive distortions (Nas & Brugman, 2008). Cognitive distortions are inaccurate or biased ways of attending to or conferring meaning upon experiences. They are rationalizations that serve to neutralize conscience, potential empathy, and guilt, and thereby prevent damage to the self-image when an individual engages in antisocial behaviour (Barriga & Gibbs, 2001). In this way cognitive distortions play a role in protecting the self from blame or negative self-concept and facilitate aggression or other antisocial behaviour (Barriga & Gibbs, 2001).

Until now research on cognitive distortions using questionnaires has only been carried out on adolescents and adults. It is however recommendable to find out whether using this methodology cognitive distortions can already be identified at a younger age. This allows an early identification of children at risk for antisocial behaviour and opens the possibility for early prevention. The present study aims to investigate whether children between 7 and 9 years old show the same cognitive distortions as have been found in older children and adolescents and whether there is a relationship between these distortions and antisocial behaviour. Furthermore, it will be examined whether a domain- shift occurs from the moral domain to the conventional and personal domain. In hypothetical situations, children who report antisocial behaviour are expected to judge the same behaviour as less moral than children who do not report such behaviour.

Longitudinal analyses show that stable aggression from early childhood through adolescence is a significant predictor of later negative outcomes, like bullying and serious delinquency. Aggressive behaviour in elementary school also derails youth off mainstream academic tracks (White & Loeber, 2008). The present study is important because it is of great value to identify predictors of antisocial behaviour at an early stage. This allows an early identification of children at risk for antisocial behaviour and opens the possibility for early prevention.

Antisocial behaviour

Antisocial behaviour is conceptualized as outward behaviour that either directly or indirectly harms others through the violation of important moral or social norms and includes aggressive and delinquent acts (Nas, Brugman & Koops, 2008). Antisocial behaviour includes

aggressive, oppositional and delinquent behaviour. Longitudinal investigations have demonstrated that children engage in a variety of forms and functions of aggressive behaviour, and that aggression is one of the best known predictors of future social, psychological, behavioural and academic problems, including peer rejection, delinquency, depression, substance use, and poor school achievement (Crick, Ostrava & Werner, 2006; Heilbronn & Grinstein, 2008).

Crick and Werner (2006) found that antisocial behaviour (physical and relational aggression) in elementary school children predicted future social- psychological adjustment problems. One important distinction is whether aggression is physical or relational in form. Whereas physical and verbal aggression involve overt behaviours that harm others through inflicting or threatening physical harm relational or indirect forms of aggression include behaviours that harm others through damage to relationships or feelings of acceptance, friendship, or group inclusion. Examples are threats to end a friendship unless a peer complies with a request, spreading false rumours and social exclusion as retaliatory behaviour (Crick, Ostrava & Werner, 2006; Heilbronn & Grinstein, 2008; Murray- Close & Ostrava, 2009). Relational aggression contributes unique information, relative to physical aggression, in the prediction of future adjustment. Evidence from numerous studies demonstrates that relationally aggressive children are at risk for serious adjustment difficulties. Additionally, the combination of relational and physical aggression appears to be an extra risk factor for adjustment difficulties. Several studies have shown that physical as well as relational aggression are relatively stable over time (Crick & Werner, 2006).

Apart from the division of aggression into physical and relational aggression, aggression can further be divided in proactive and reactive aggression. Proactive aggression is understood as aggressive behaviour that is directed toward attaining a specific, self- serving goal. Reactive aggression is conceptualized as a response to antecedent conditions of provocation or frustration that tend to be interpersonal and hostile. Reactive aggression is related to hostile attribution bias, poor social skills, peer rejection and victimization. In contrast, proactive aggression is associated with delinquency and psychopathy (Heilbron & Prinstein, 2008; Murray- Close & Ostrov, 2009).

Empirical findings underline that boys are more verbally and physically aggressive than girls (Heilbron & Prinstein, 2008). However, in a recent study on young children of about four years of age, Murray- Close and Ostrov (2009) found no differences in physical aggression between boys and girls. Results from a nation wide longitudinal study of Canadian

children revealed that the typical pattern of physical aggression was one of occasional and declining use over time. The mean physical aggression scores generally declined with age and were lower for girls. One sixth of all children followed a stable trajectory of physical aggression. In this group, there were twice as many boys than girls. Toddlers who used physical aggression more frequently were at high risk to remain on a high trajectory throughout the school years. This finding is in line with the severity hypothesis, postulating that the more extreme the antisocial behaviour, the more stable it is over time. Thus the trajectories identified in the school years appear to have their roots in the preschool years. They did not identify a group of children with increasing rates of aggression, which suggests that there are very few cases of children who are not physically aggressive during the preschool years and then become physically aggressive as they grow older (Cote, Vaillancourt, LeBlanc, Nagin & Tremblay, 2006). Crick and Grotpeter (1995) have found that girls are more likely to use relational strategies to harm a target. However, other findings are contradictory about whether girls are more relationally aggressive than boys, with some studies finding evidence for this proposition, some finding no such gender differences and still others finding that boys are more socially aggressive than girls (Heilbron & Prinstein, 2008). Barriga and Landau (2000) found no effect for ethnic status; caucasians and African Americans did not differ in their level of cognitive distortion or problem behaviour. This finding contrasts with previous research that has revealed higher rates of social and behavioural problems in African American youths than in Caucasian youths. Their explanation for the findings is that the results reflect an oversimplicity in the analysis. Other studies revealed that higher rates of problematic behaviour are moderated by family income, socioeconomic status and gender. It seems too simplistic to merely compare ethnic groups without considering these important variables.

The four- category typology of self- serving distortions.

Gibbs (Barriga & Gibbs, 1996; Barriga, Morrison, Liao & Gibbs, 2001) has divided the construct of self- serving cognitive distortions into primary cognitive distortions (i.e., self-centered) and secondary cognitive distortions (i.e. blaming others, minimizing/ mislabelling, and assuming the worst). Primary cognitive distortions stem from egocentric bias. Egocentric bias is usually found most prominently among young children. Because it generally tends to decline with age, the prominence of primary distortion in juvenile offenders may be indicative of developmental delay. Developmental delay in delinquents' moral judgment and social

perspective taking has been found fairly consistent. The secondary cognitive distortions reduce the stresses from the consequences of the primary distortions. They serve to rationalize behaviour by neutralizing empathy or guilt and reducing cognitive dissonance between antisocial behaviour and self- concept.

One explanation for the existence of self- serving cognitive distortions is the cognitive dissonance theory. Cognitive dissonance was defined by Festinger as an uncomfortable inner state that comes forth as a result of inconsistencies between a person's actions, beliefs, attitudes or feelings. The higher the cognitive dissonance, the higher the motivation in the individual to reduce it, for instance by re- interpreting one's behaviour or changing one's attitudes. This could provide an explanation for the cognitive distortions found in the thinking of adolescents, and that these moral cognitive changes partly take place as a result of delinquent behaviour (Leenders & Brugman, 2005). In Sykes and Matza's sociological approach, self- serving cognitive distortions are seen as misinterpretations that enable delinquents to 'neutralize' the empathy or guilt they would otherwise feel from their transgressions. These justifications, or neutralizing techniques, are rationalizations that precede behaviour and make criminal conduct possible. Through the use of these devices, the individual is freed to engage in delinquency without serious damage to his self- image. (Barriga, Morrison, Liao & Gibbs, 2001; Copes, 2003).

Within social cognitive learning theory, Bandura (1991) posited that self- serving cognitive distortions serve as 'mechanisms of moral disengagement' of antisocial behaviour from self- evaluation (Barriga, Gibbs, Potter & Liao, 2001; Barriga, Morrison, Liao & Gibbs, 2001). Social cognitive theory adopts an interactionist perspective to moral phenomena. Within this conceptual framework, personal factors in the form of moral thought and affective self- reactions, moral conduct, and environmental factors all operate as interacting determinants that influence each other bidirectionally. What is immoral can be made acceptable through cognitive reconstruction. In this process, detrimental conduct is made personally and socially acceptable by portraying it in the service of moral purposes (Bandura, 1991). Self- sanctions can be disengaged by reconstructing conduct, disregarding or misrepresenting injurious consequences, and blaming and devaluing the victims. These mechanisms of moral disengagement have been examined most extensively in the expression of violent conduct. Cognitive restructuring of behavior is an effective psychological mechanism for disengagement of moral self- sanctions. Perceptions of causal responsibility are reduced if the harmful consequences of actions are viewed as unintended, unforeseeable, or

the actions arose from the dictates of the situation. Additional ways of weakening self-restraining behaviour operate through disregard or misrepresentation of the consequences of action. When people choose to pursue activities harmful to others, they avoid facing the harm they cause or minimize it. People are especially prone to minimize injurious effects when they act alone and thus, cannot easily escape responsibility. As long as the detrimental results of one's conduct are ignored, minimized, distorted or misbelieved, there is little reason for self-censure to be activated. Blaming the victim or environmental circumstances is still another mechanism that contributes to personal advantage. In this process people view themselves as faultless victims and their detrimental conduct as justified by forcible provocation.

Victims are not entirely faultless because, by their behaviour, they can be blamed for bringing suffering on themselves. By blaming others, not only are one's own actions excusable but one can even feel self-righteous in the process. That attribution of blame can give rise to devaluation and moral justification illustrates how the various disengagement mechanisms are often interrelated and work together in weakening internal control. The described disengagement devices will not instantaneously transform a considerate person into an unprincipled, insensible one. Rather, the change is usually achieved through gradual reduction of self-sanctions in which people may not fully recognize the changes they are undergoing. Initially, individuals perform questionable acts that they can tolerate with little self-censure. Through repeated performance their discomfort decreases, the acceptability of antisocial conduct progressively increases until eventually acts originally regarded as objectionable can be performed without much distress. Such mechanisms operate in everyday situations in which decent people routinely perform activities having injurious human effects to further their own interests or for profit (Bandura, 1991).

Gibbs and Potter (Alvaro, Barriga, Gibbs, Potter & Liau, 2001) have defined a four-category typology of self-serving cognitive distortions:

1. **Self-Centered:** According status to one's own views, expectations, needs, rights, immediate feelings, and desires to such a degree that the legitimate views, etc., of others (or even one's own long-term best interest) are scarcely considered or are disregarded altogether.
2. **Blaming others:** Misattributing blame to outside sources, especially another person, a group, or a momentary aberration (he was drunk, high, in a bad mood, etc.) or misattributing blame for one's victimization or other misfortune to innocent others.

3. Minimizing/ Mislabelling; Depicting antisocial behaviour as causing no real harm or as being acceptable or even admirable, or referring to others with a belittling or dehumanizing label.
4. Assuming the worst: Gratuitously attributing hostile intentions to others, considering a worst- case scenario for asocial situation as if it were inevitable, or assuming that improvement is impossible in one's own or others' behaviour.

Results of several studies show correlations between cognitive distortions and antisocial behaviour (Barriga & Gibbs, 2001). Nas, Brugman and Koops (2008) found that delinquent adolescents exhibit more cognitive distortions than nondelinquent adolescents. In these studies and in studies reported below, the 'How I Think Questionnaire (HIT- Q) has proven to be a reliable and valid measure. The HIT- Q was developed by Barriga et al. (1996) to provide a reliable and valid measure of self- serving cognitive distortions. It is based on the four- category typology of cognitive distortions (Gibbs et al., 2001). The structure of the HIT was supported in two ways: accurate classification of items by judges suggested that the items could be reliably categorized according to their face validity (Barriga & Gibbs, 2001) and confirmatory analyses suggested that the items clustered in accordance with the intended four- scale cognitive distortion design (Barriga & Gibbs, 2001; Brugman, Nas & Koops, 2008). Convergent validity was demonstrated through correlations with antisocial behaviour as measured through self- report, parental report, and institutional records (Barriga & Gibbs, 2001).

Nas et al. (2008) found positive correlations between cognitive distortions and externalizing behaviour, aggression (proactive and reactive), moral orientation toward punishment after a transgression and attitude toward delinquency. They also found that intelligence moderated the relationship between cognitive distortions and delinquency. Only in the group above mean intelligence a relationship was found between cognitive distortions and delinquency. Because heightened levels of self- serving cognitive distortion can be construed as reflecting an immature or inadequate moral orientation, self- serving cognitive distortion should inversely relate to various aspects of moral maturity or adequacy. Negative correlations were found by Nas et al. (2008) between cognitive distortions and perception of moral atmosphere, social skills and empathy with the victim after a transgression.

In a study by Barriga et al. (2008), self- serving cognitive distortions were associated with externalizing behaviour whereas self- debasing cognitive distortions were associated

with internalizing behaviour. Within the externalizing domain, self- serving distortions with overt behavioural referents were linked to aggressive behaviour, while self- serving distortions with covert behavioural referents were linked to delinquent behaviour. Within the aggression domain, distortions with opposition- defiance referents related to verbal aggression whereas distortions with physical aggression referents related to physically aggressive behaviour. Apparently, different cognitive distortions are predictive of different kinds of behaviour. In analyses of divergent validity, no correlations were found between cognitive distortions and age and intelligence (Barriga & Gibbs, 2001; Nas, Koops & Brugman, 2008) No correlations were found either with socioeconomic status, and academic achievement (Barriga & Gibbs, 2001). In discriminant validity analyses, the questionnaire generally displayed a lack of consonance with gender and race (Barriga & Gibbs, 2001). Although the questionnaire subscales represent empirically divisible and rather differentiable cognitive distortions and behavioural referents, the subscales highly correlate with one another. According to Barriga et al. (2001), this reflects the notion that that self- serving cognitive distortions may be consolidated into a holistic worldview that can be characterized as a 'criminal mind.

In the study by Barriga et al. (2008) however, self- serving cognitive distortions were associated with externalizing behaviour whereas self- debasing cognitive distortions were associated with internalizing behaviour. Within the externalizing domain, self- serving distortions with overt behavioural referents were linked to aggressive behaviour, while self- serving distortions with covert behavioural referents were linked to delinquent behaviour. Within the aggression domain, distortions with opposition- defiance referents related to verbal aggression whereas distortions with physical aggression referents related to physically aggressive behaviour. The identification of distinctive cognitive patterns underlying verbal aggression on the one hand and physical aggression on the other hand, represents a remarkable degree of measurable differentiation within antisocial mind- sets. These findings suggest that abandoning the concept of a unitary criminal mind in favour of multiple criminal mind- sets should help to develop treatment strategies for specific criminal populations.

Domain shifts

Antisocial behaviour can be viewed as a situation in which features of several domains are present: aspects of the moral domain are present (hurting or harming other people), as are aspects of the conventional domain (breaking rules, the risk of punishment), and aspects of

the personal domain (personal choice). It may be less threatening for an individual's self-esteem to interpret his or her own antisocial act as a conventional or personal transgression than a true moral transgression, since a moral transgression is considered to be more serious and less acceptable than a non-moral transgression (Turiel, 2008). Because moral transgressions are considered more serious than non-moral (i.e., conventional or personal) transgressions, it is less threatening to self-esteem to interpret one's own antisocial acts as a non-moral transgression rather than a moral transgression. This 'domain shift' could be a way of reducing cognitive dissonance. Leenders and Brugman (2005) found that is expected that adolescents who reported a certain category of antisocial behaviour evaluated hypothetical transgressions in the same category as more non-moral than adolescents who did not report that category of antisocial behaviour. This 'domain shift' only took place in hypothetical situations concerning antisocial behaviour that was reported by the adolescent and at the same time did not take place in hypothetical situations concerning antisocial behaviour that was not reported by the adolescent, but occurred in his or her peer group. These findings are in accordance with the cognitive dissonance explanation of the domain shift and make a social interaction explanation less plausible. After all, 'nonmoral thinking' could also be a result of social interaction with antisocial peers, regardless of the fact whether the child did or did not commit antisocial behaviour.

This study

Until now research on self-serving cognitive distortions and antisocial behaviour using questionnaires has mostly been done on adolescents. It is however recommendable to study whether cognitive distortions can already be identified at a younger age using a questionnaire. This allows an early identification of children at risk for antisocial behaviour and opens the possibility for early prevention.

A study on cognitive distortions has been done on children between 9 and 12 years old (Van der Velden, 2008), and resulted in a comparable picture as found for adolescents. They found boys to report more aggressive behaviour and to show more self-serving cognitive distortions than girls. Children from a minority background showed more aggression than children from a Dutch background. Self-serving cognitive distortions were predictive of aggressive behaviour and counted for 39.4 % of variance in aggressive behaviour. The results also showed a domain-shift. Children who showed a specific type of aggression, for example

physical aggression, showed more conventional and personal justifications for this type of aggression than children who didn't report this kind of aggression.

The present study is firstly aimed to investigate whether children between 7 and 9 years old show the same self-serving cognitive distortions as were found in older children and adolescents and whether there is a relationship between these distortions and antisocial behaviour. It will also be investigated whether sex and ethnic background differences exist in cognitive distortions and in self-reported antisocial behaviour. Boys are expected to show more cognitive distortions than girls and children from an ethnic minority background are expected to have more cognitive and different cognitive distortions than children from a Dutch background.

Secondly the aim is to investigate the reliability and validity of an adapted version of the HIT-Q using a Dutch sample of children between 7 and 9 years old. The original version of the HIT-Q was modified to become understandable for children in the age of 7 to 9 years. The validity will be investigated by determining whether a relationship exists between cognitive distortions and antisocial behaviour. It is expected that antisocial behaviour in young children can be predicted by main levels of cognitive distortions and age. Interaction effects are expected to exist between cognitive distortions on the one hand and sex, age, ethnic background and judgment of hypothetical stories on the other hand. Other interaction effects that are expected to be found are those between self-reported antisocial behaviour and sex, ethnic background, age, and judgment of hypothetical stories.

The assumption is that children in our young age group are well enough aware of their thoughts to be able to answer the questions of the adapted HIT-Q. The adapted HIT-Q was pretested in children to get a first impression whether this assumption holds. Furthermore, it will be examined whether a domain-shift occurs from the moral domain to the conventional and personal domain. In hypothetical situations, children who report antisocial behaviour are expected to judge the same behaviour as less moral than children who do not report such behaviour. The domain shift is not expected to occur in hypothetical situations concerning antisocial behaviour that is not reported by the child, but occurs in his or her peer group. It will also be investigated whether self-serving cognitive distortion predicts judgment of hypothetical stories. Children with more self-serving cognitive distortions are expected to judge hypothetical antisocial behaviour as less serious and less moral. Finally, it will be established whether self-serving cognitive distortion and domain-shift are related. The more cognitive distortions exist, the larger the domain-shift is expected to be.

Method

Participants

Participants came from elementary schools in 6 cities in the Netherlands. 17 schools were asked to participate in the study and 7 gave their permission. The respondents were 81 boys and 75 girls ($M = 103$ months, $SD = 9$). They came from the second ($N = 75$; $M = 96$ months; $SD = 5$) and the third grade ($N = 88$; $M = 109.5$ months; $SD = 6.4$). 66.7% came from a Dutch cultural background, while 33.3% had an ethnic minority background.

Administration

All questionnaires, were administered orally. The reason for an oral administration was the young age of the respondents. It could have been difficult for them to understand the written form of the self-report questionnaire. The children were assured that the information provided would only be used for research purposes, and that the data processing would occur anonymously. All parents of the children from the participating schools received a letter asking them whether they had objections against the participation of their children. If they had any objections, they could fill out a form. From the 304 parents that were approached, 37 (12%) did not give permission for participation. Of the residual 267 children, 156 children were randomly selected.

Measures

The How I Think Questionnaire (HIT-Q) was developed by Barriga et al. (1996, 2001) to provide a reliable and valid measure of self-serving cognitive distortion. It has been used to investigate cognitive distortions in adolescents. Because of the young age of the participants, an adapted version was made to adapt the language to the age of the children who participated in this study. The original HIT-Q is comprised 54 items, 39 of which can be clustered in the four types of cognitive distortion as defined by Gibbs (2001). In addition, each of the 39 items refers to one of the antisocial behaviour categories derived from the Conduct Disorder and Oppositional Defiant Disorder syndromes listed in the DSM-IV-TR (American Psychiatric Association, 1994). These categories are: opposition-defiance, physical aggression, lying and stealing.

The opposition-defiance and physical aggression subscales constitute the Overt Scale (OV) which reflects behavioural referents that usually involve direct confrontation of a victim. The Lying and Stealing subscales constitute the covert scale (COV), which reflects

antisocial behaviours that typically do not involve direct confrontation of a victim. The remaining 15 items are positive fillers and anomalous responding items. The positive fillers consist of prosocial items. In addition to camouflage the distortion items and to encourage full use of the response scale, the positive filler items serve to counterbalance the negative content of the distortion items, thus rendering the scale less abrasive. The anomalous responding items are designed to screen for social desirable, incompetent, or otherwise suspect responses. Because of the young age of our respondents, two behavioural referent categories (i.e., Lying, Stealing) were not used, since delinquent behaviour is not often observed at this young age. Moreover, eight relational aggression items were included in the questionnaire (see Appendix 1). Research has shown that the assessment of relational aggression, in addition to physical aggression, is necessary to capture adequately the aggressive behaviours of both genders (Crick & Grotpeter 1995, 2002), and studies provide evidence that similar to overt aggression, relational aggression is significantly related to social information- processing biases (Crick & Werner, 1998).

The HIT- Q, adapted for children of the age- group in this study, exists of 40 items, 28 of which can be clustered in the four types of self-serving cognitive distortions (Cronbach's $\alpha = .84$). In addition, the 28 items refer to 3 types of antisocial behaviour: physical aggression, opposition- defiance and relational aggression. The residual 12 items consist of 6 anomalous responding items to measure social desirability and six adjusted positive fillers, composed of prosocial statements to counterbalance the negative effect of the distortion items (see Appendix 1). All items were adjusted to make them understandable for the age of the participating group of children. A small pilot ($n = 8$) was first done to check whether the questions could be well understood by the children. In the pilot, it appeared to be difficult for children of this age to respond to the items according to a Likert scale format. Therefore an answering form was developed on which the children could point to the answer that matched best with their point of view (see Appendix 1).

Self- report list and Judgment of Own behaviour. The self- report list contains 12 items, from which 8 were selected from self- report questionnaires from earlier studies (Høst et al., 1998). These 8 items have also been used by Van der Velden. (2008). Four items are related to physical aggression and four items to relational aggression. Because the administered HIT- Q (Table 1) contains items with an oppositional behavioural referent, 4 items were added to the self- report list. These items cover oppositional behaviour and are based on the criteria for

oppositional behaviour disorder as mentioned in the DSM-IV-TR. Of the items with the same behavioural referent, two reflect proactive aggression and two reflect reactive aggression. In every item a specific behaviour was described and the children could indicate whether they had ever displayed this behaviour on a 3- point scale (never, sometimes, often). They also had to indicate whether they had displayed this behaviour on their own or together with others, and whether friends had shown the same behaviour as well. All items have been adapted to the age of the studied children, and in the pilot it was checked whether the questions were understandable for the target group. The twelve items of the list and the answering form are presented in Appendix 2 (Cronbach's alpha = .78).

Hypothetical Situations List. The hypothetical situation list is based on the Hypothetical Situations List used by Van der Velden (2008), but new storyboards, consisting of pictures and stories were made that were suitable for children of the investigated age- group. In this list the stories refer to physical and relational aggression. In this study, two stories, referring to oppositional behaviour, were added. The list consists of 6 storyboards describing six hypothetical situations with illustrations depicting the corresponding stories. Two stories are related to each of the three types of behaviour as mentioned in the adapted HIT (physical aggression, oppositional behaviour and relational aggressive behaviour). Of the two stories with the same behavioural referent, one reflects proactive aggression and one reflects reactive aggression. For every story, the children had to choose whether they approved or disapproved with the action of the person in the story and then had to explain their answer. Next, they had to give their opinion on the severity of the action of the person in the story, on a 4- point scale, ranging from very serious to not serious at all. Finally, the children were asked to explain why they thought they approved or didn't approve of the behavior depicted in the story. Their answer was coded according to the type of explanation they gave. The answers were coded according to three categories; moral, conventional or personal (Turiel 1983, 2008). The justification was scored as moral when it referred to hurting or harming other people, and as conventional when it referred to breaking rules or the risk of punishment. Finally, the justification was scored as personal when it referred to aspects of the personal domain (personal choice). The stories and storyboards are presented in Appendix 3 (Cronbach's alpha = .52). Within the scope of this study, it was not feasible to find another who was available to score the justifications of the hypothetical stories. For this reason, the interrater reliability could not be established.

Results

Mean differences in cognitive distortions and self-reported antisocial behaviour

The mean scores and correlations on the HIT-Q are displayed in Table 1. Since all mean scores exceed zero, children of the investigated group show cognitive distortions in all four categories and all three behavioral referents (see Table 1). Using three separate MANOVA's, we investigated whether there were differences on the four cognitive distortions of the HIT-Q, the three behavioural referents of the HIT-Q, and the self-reported behavioural subscales.

There appeared to be no significant gender differences between the subscales of the HIT questionnaire nor on the self-reported aggression scales using a Wilks' Lambda correction for the multivariate analysis of variance ($F_{9,146}=1.55$; $p = 0.13$). The only significant univariate result is on *physical aggression* ($F_{1,154}=1.19$; $p = .009$; $M_{\text{boys}} = 1.52$; $M_{\text{girls}} = 1.34$), but this difference disappears after correcting for capitalization of chance. No significant ethnic differences were found either between the subscales of the HIT questionnaire nor on the self-reported aggression scales using a Wilks' Lambda correction for the multivariate analysis of variance ($F_{9,146}=1.66$; $p = 0.10$). The only significant univariate result are on *Assuming the Worst* ($F_{1,154}=3.20$; $p = .006$; $M_{\text{dutch}} = 2.59$; $M_{\text{ethnic}} = 2.29$) and on *HIT- Opposition- defiance* ($F_{1,154}=2.30$; $p = .03$; $M_{\text{dutch}} = 2.31$; $M_{\text{ethnic}} = 2.57$), but these differences disappear after correcting for capitalization of chance. We also investigated interactions on the subscales between gender, group, age, and ethnic background, but none of the bivariate interactions appeared to be significant ($p > .10$).

Table 1: Means and standard deviations for the HIT and Self- reported Antisocial behaviour.

	M	SD	Correlations											
			1.	2.	3.	4.	5.	6.	7.	8.	9.	10		
1. Self- Centered	2.02	0.82	-											
2. Blaming Others	2.08	0.76	.454**	-										
3. Minimizing/ mislabeling	1.92	0.75	.593**	.516**	-									
4. Assuming the Worst	2.39	0.66	.447**	.580**	.482**	-								
5. HIT- Physical aggression	1.83	0.62	.643**	.729**	.708**	.652**	-							
6. HIT- Opposition- defiance	2.40	0.72	.666**	.712**	.671**	.732**	.616**	-						
7. HIT- Relational aggression	2.13	0.75	.741**	.617**	.670**	.633**	.599**	.586**	-					
8. SR Physical aggression	1.43	0.42	.254**	.382**	.154	.253**	.343**	.225**	.296**	-				
9. SR opposition- defiance	1.93	0.34	.362**	.462**	.207**	.393**	.412**	.326**	.442**	.600**	-			
10. SR Relational aggression	1.55	0.40	.067	.276**	.004	.238**	.187*	.186*	.105	.416**	.389**	-		

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Behavioural relations

Three regression analysis were done with as dependent variables the behavioural subscales: *physical aggression, relational aggression and oppositional- defiant behavior*. Predictors were the behavioural subscales of the HIT-Q: *physical aggression, relational aggression and oppositional- defiant behaviour*. See Table 2 for the standardized regression coefficients, standard errors and significance values. For the dependent variable *self- reported physical aggression*, the standardized regression coefficient of *HIT- Physical aggression* is the only significant predictor, see Table 2. For the dependent variable *self- reported relational aggression*, both *SR Relational aggression* as well as *SR Physical aggression* are significant predictors, see Table 2. Note that *SR Relational aggression* has a higher standardized regression coefficient compared to *SR opposition- defiance, and SR Physical aggression*, see Table 2. For the dependent variable *SR opposition- defiance* non of the predictors are significant, see Table 2.

Table 2: Regression analysis results for the total group with the behavioural scales.

Dependent variable	Scale	<i>B</i>	<i>SE</i>	<i>p</i>
<hr/>				
Self- reported Physical aggression ($R^2= 13$)				
	HIT- Physical aggression	.271	.071	.010
	HIT- Opposition- defiance	-.031	.060	.762
	HIT- Relational aggression	.152	.057	.132
<hr/>				
Self- reported Relational aggression ($R^2= 27$)				
	HIT- Physical aggression	.225	.063	.022
	HIT- Opposition- defiance	.011	.054	.911
	HIT- Relational aggression	.301	.051	.002
<hr/>				
Self- reported Opposition defiance ($R^2= 05^*$)				
	HIT- Physical aggression	.139	.059	.203
	HIT- Opposition- defiance	.133	.050	.218
	HIT- Relational aggression	-.055	.047	.601

*Note R^2 value is not significant ($p>.05$)

Cognitive distortions

Another regression analysis was done with *overall self-reported antisocial behavior* as dependent variable and the four different cognitive distortion-subscales of the HIT-Q as predictors: *Self-centered*, *blaming others*, *minimizing*, and *assuming the worst*. Only *blaming others* and *minimizing* are significant predictors, see Table 2. It is interesting to note that the direction of the relation between *overall self-reported antisocial behavior* and *minimizing* is in the opposite direction than was expected.

The same regression analysis was done, but now separately for Dutch children and children from an ethnic minority background, see Table 4. For Dutch children *blaming others* and *assuming the worst* are significant, while for ethnic minority children *self-centered*, *blaming others*, and *minimizing* are significant. It is interesting to note that the negative relation between *overall self-reported antisocial behavior* and *minimizing* is in the opposite direction only for the ethnic minority children.

Finally, the regression analysis was done separately for boys and girls, see Table 5. For boys *blaming others* and *assuming the worst* are significant while for girls *self-centered* and *blaming others* are significant predictors, see Table 5.

Table 3: Regression analysis results for the total group with the cognitive distortion subscales.

Dependent variable	Scale	<i>B</i>	<i>SE</i>	<i>p</i>
Self-reported Aggression ($R^2 = .27$)				
	HIT Self-centered	.170	.034	.059
	HIT Blaming others	.419	.038	.000
	HIT Minimizing	-.236	.039	.012
	HIT Assuming the Worst	.162	.043	.072

Table 4: Regression analysis results with the cognitive distortion subscales on self-reported aggression for Dutch and Ethnic minority separately.

Group	Scale	<i>B</i>	<i>SE</i>	<i>p</i>
Dutch ($R^2 = .37$)				
	HIT Self- centered	.067	.037	.487
	HIT Blaming others	.386	.044	.001
	HIT Minimizing	.061	.046	.530
	HIT Assuming the Worst	.221	.048	.026
Ethnic minority ($R^2 = .34$)				
	HIT Self- centered	.462	.063	.010
	HIT Blaming others	.352	.064	.025
	HIT Minimizing	-.867	.074	.000
	HIT Assuming the Worst	.368	.090	.051

Table 5: Regression analysis results with the cognitive distortion subscales on self-reported aggression for boys and girls separately.

Group	Scale	<i>B</i>	<i>SE</i>	<i>p</i>
Boys ($R^2 = .32$)				
	HIT Self- centered	.103	.051	.401
	HIT Blaming others	.339	.060	.009
	HIT Minimizing	-.167	.059	.175
	HIT Assuming the Worst	.302	.066	.019
Girls ($R^2 = .27$)				
	HIT Self- centered	.313	.044	.025
	HIT Blaming others	.454	.046	.002
	HIT Minimizing	-.205	.050	.180
	HIT Assuming the worst	-.116	.055	.394

Domain shift

The justifications of the hypothetical stories were coded according to the type of explanation. Subsequently, due to the low frequency of personal explanations (see table 6), the conventional and personal categories were combined, which gave rise to two new categories, i.e. a category of moral explanations versus a category of non- moral explanations.

Table 6: Frequencies of justifications of hypothetical stories

Story	moral	conventional	personal
Story 1	49	106	1
Story 2	15	137	4
Story 3	66	85	5
Story 4	27	120	9
Story 5	66	85	5
Story 6	36	102	17

To investigate whether a domain shift takes place, a multivariate analysis of variance was conducted to compare moral versus non-moral explanations to hypothetical situations on self-reported behavioural subscales: *physical aggression*, *relational aggression*, *oppositional-defiant behavior* and the *overall self-reported antisocial behavioural scale*. These MANOVA's were repeated for each of the six hypothetical situations. It appeared that neither the Wilk's Lambda tests, nor the univariate F-tests reached significance (all $p > .05$).

The analyses were repeated with gender and ethnicity, separately, as grouping variables besides moral versus non-moral explanations to explore differences in the *overall self-reported antisocial behavioural scale*. We were especially interested in interaction effects. However, we only found an interaction effect for the hypothetical situation about 'cleaning your room' (story nr. 6) ($F_{1,151}=3.91$; $p = .049$). In Figure 1 it can be seen that on average only boys who gave a non-moral explanation score higher ($M = 1.72$) on self-reported antisocial behaviour compared that boys who gave a moral explanation ($M = 1.52$).

Finally, a correlational analysis was conducted between *self-reported antisocial behaviour* and *judgment of seriousness* of the transgressions in the hypothetical stories. No significant correlation was found.

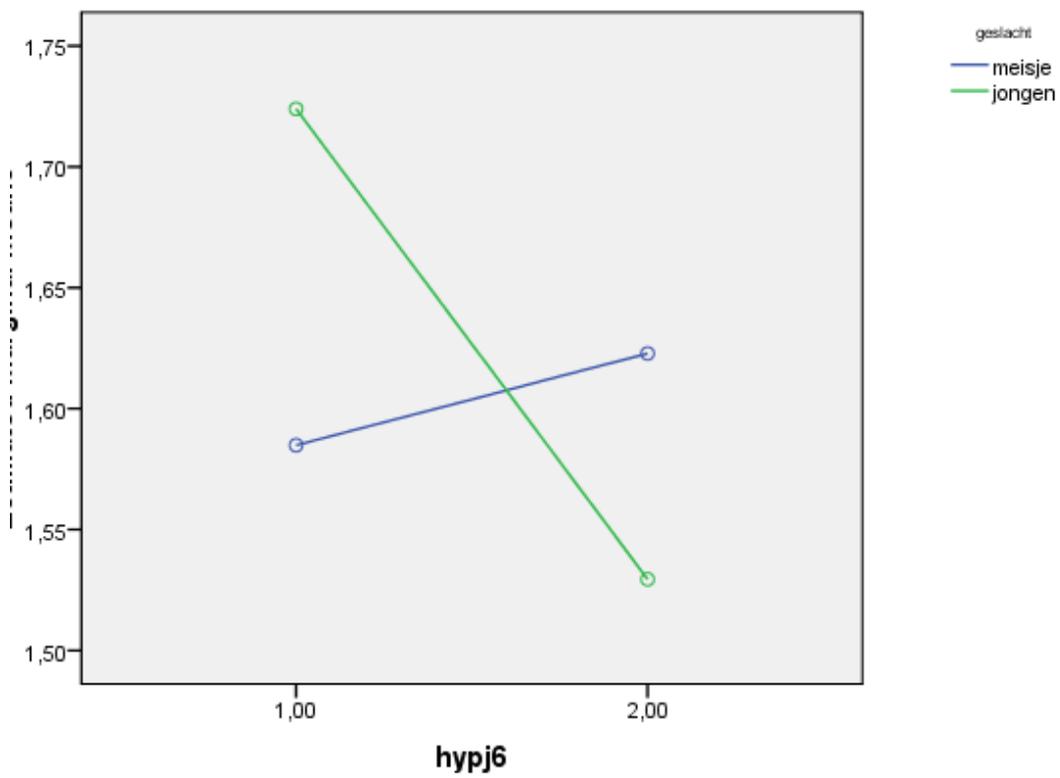


Figure 1. Interaction between gender and moral- nonmoral judgment of hypothetical situation 6

Discussion

The main aim of this study was to find out whether children between 7 and 9 years old show cognitive distortions and if this were the case, whether they were predictive of self-reported antisocial behaviour. The results demonstrated that the studied group showed cognitive distortions. No differences in cognitive distortions were found between girls and boys. This does not confirm the hypothesis that a difference exists. A possible explanation of this finding could be that differences between boys and girls in cognitive distortions do not yet exist at this age. These results are contradictory to those of van der Velden (2008), who did find a difference in cognitive distortions between boys and girls, with more cognitive distortions for boys. This discrepancy might be caused by the fact that the sample investigated in her study, consisted of older children (10- 12 years). Sex- differences in cognitive distortions might therefore first develop at an age older than nine years. Differences in cognitive distortions were neither found between Dutch children and children with an ethnic minority background.

As far as self- reported antisocial behaviour is concerned, literature data are inconsistent about differences between boys and girls. In this study, no gender differences were found. No differences in self- reported antisocial behaviour between children from a Dutch background and children from an ethnic minority background were found either. The difference between the two groups might be obscured because of the simplicity of the analysis, in which several variables, like socioeconomic status and family income, were not included. No interactions were found on the (sub)scales between gender, group, age and ethnic background.

Results showed that cognitive distortions are predictive of self- reported antisocial behaviour. For the total group cognitive distortions accounted for 27% of self- reported antisocial behaviour. This is slightly more than findings of Barriga et al. (2001), who, in a sample of 88 males and 105 females between 16 and 19 years old, found that self- serving cognitive distortions accounted for 21% of the variance in antisocial behaviour. For boys, it was demonstrated that cognitive distortions accounted for a larger part of self- reported antisocial behaviour (32%), than for girls (27%). When looking at the contribution of the various subscales of the HIT, it appears that for boys, the cognitive distortions ‘HIT Blaming Others’ and ‘HIT Assuming the Worst’ accounted for most of the variance in self- reported antisocial behaviour, while for girls the cognitive distortions ‘HIT Self- Centered’

and 'HIT Blaming Others' accounted for most of the variance in self-reported antisocial behaviour. For children from a Dutch background, cognitive distortions accounted for 37% of the variance in self-reported antisocial behavior, compared to 34% for ethnic minority children. When looking at the contribution of the various subscales of the HIT, it appears that for Dutch children, the cognitive distortion 'Blaming Others' accounted for most of the variance in self-reported antisocial behaviour, while for ethnic minority children, the cognitive distortions 'Self-Centered', 'Blaming Others' and 'Assuming the Worst' all accounted for self-reported antisocial behaviour to the same extent.

It is interesting to note that for children from a minority background, the relationship between the subscale *minimizing* of the HIT and self-related antisocial behaviour is in the opposite direction than expected. This means that the more minimizing distortions are shown, the less antisocial behaviour is reported. A plausible explanation is, that the minimizing items in the questionnaire were formulated too difficult for these children, causing them to be interpreted in the opposite direction and answered accordingly. By looking at the raw data, this assumption was confirmed. Children who report little cognitive distortions on the other subscales, report higher scores on the minimizing scale and vice versa. In the pilot study, this problem was not recognized, although the minimizing items already appeared to be the most difficult to be adapted for younger children. Given the fact that adapting the HIT-Q to the investigated age-group was already quite difficult, this makes it doubtful whether it is feasible at all to adapt the HIT-Q to even younger children.

No domain shift was found in this study, except for a domain shift for boys concerning one hypothetical story (no. 6). Various explanations can be provided to explain these findings. Children of this age may not be capable to give a well-founded line of reasoning why they approve or disapprove of the transgressions depicted in the hypothetical stories. This already became obvious during interviewing; many were not capable to give an adequate explanation, also not during further in-depth questioning. Furthermore, one of the theoretical explanations behind the domain shift is that it occurs to preserve self-esteem. A domain shift might not be present yet at this young age, because these children don't feel need to preserve their self-esteem. Finally, the domain shift found by van der Velden (2008) was rather small. If the younger age of the children in this study leads to an even smaller domain shift, it could well be possible that the sample was too small to find a domain shift.

There was one hypothetical story for which a domain shift was found for boys. This story (story 6) concerns a situation about cleaning one's room. Boys who gave a non-moral

explanation scored higher on self-reported antisocial behaviour compared to boys who gave a moral explanation. That a domain shift is found only for this story, might be attributed to the fact that boys that score higher on self-reported antisocial behaviour, more feel the urge to act tough. They are therefore sooner inclined to give a conventional or personal explanation than a moral explanation (it is tougher to refer to the risk of punishment or personal choice than to refer to respect for one's mother as a reason for cleaning).

One of the strengths of the current study is that children of several schools, spread across the Netherlands, were investigated. This offers a better generalizability with respect to the average child in the Netherlands. A limitation of this study is that both the answers on the HIT- Q and on the 'Self- reported List and judgment of own behaviour' are based on self-reported behaviour. These measures are thus not obtained independently. Another limitation is the lack of empirical evidence regarding the direction of the relationship between cognitive distortions and antisocial behaviour. To establish this, longitudinal research is required. To use the adapted HIT- Q in further studies, it is necessary to adapt the minimizing items of the HIT-Q, to make them more understandable for children in the investigated age- group. Furthermore, the hypothetical situations list could be adapted, to achieve a higher reliability. It is also recommendable to include other variables, such as a questionnaire for the parents, like CBCL or SEV (Social Emotional Questionnaire). Cognitive distortions appear to be sensitive for interventions; it has proven to be feasible to considerably reduce cognitive distortions by means of education and counseling. That cognitive distortions were found in the investigated age- group, and that they are predictive of self- reported antisocial behaviour, renders the possibility of intervention at an age as young as 7 years. With respect to interventions it is important to realize that for different groups (boys versus girls; children from a Dutch background versus ethnic minority children) different cognitive distortions predict antisocial behaviour. These differences should be taken into account in intervention programs.

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Appendices

Appendix 1: Dutch adapted version of the HIT-Q and answering form

Aangepaste HIT (Kinderen 7 – 9 jaar)

Type:

Pro: Proactive

- Pos. Filler : Positive Filler
- Soc. Des.: Social Desirability
- Phys. Agr.: Physical Agression
- Opp. Beh.: Oppositional Behavior.
- Rel. Agr.: Relational Agression

Re: Reactive

Cognitive distortion:

- S: Self- Centered
- B: Blaming Others
- M: Minimizing/ Mislabeling
- A: Assuming the Worst