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SSCD and externalizing behaviour: A comparison between children in special and mainstream education.

Renske Kranenburg (3160394)

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Department of Developmental Psychology

Faculty of Social Sciences

Utrecht University

Supervisor: dr. prof. Daan Brugman

Second supervisor: dr. Liesbeth Aleva

Abstract

This study partially replicates the 2010 study by De Bunt who found a mediator effect for self-serving cognitive distortions (SSCD) in the relationship between moral evaluation and externalizing behaviour with children between 7 and 12 years in a residential setting. The current study expects that similar results can be found in a clinical sample of children with less severe externalizing behaviours. Results will give a further theoretical advance in our knowledge of the development of externalizing behaviour. This knowledge will enable researchers to improve prevention and intervention methods for alleviating this behaviour. Furthermore, the role of empathy will be explored. The sample included 31 children in special primary school and 31 children in mainstream education, both aged 7 to 12. Although relationships between moral evaluation and externalizing behaviour and SSCD and externalizing behaviour are found, no mediation effect of SSCD or empathy is found in this clinical sample. Therefore, theories considering the development of externalizing behaviour do not have to be revised. Possible explanations for these findings are discussed.

Introduction

Externalizing problem behaviours are the most common and persistent forms of childhood maladjustment (Campbell, 1995). It consists of aggressive and oppositional defiant behaviours (Achenbach & Rescorla, 2001). Since externalizing behaviour is a risk factor for delinquent behaviour in adolescence, it is important to extend our understanding of its development. Several dynamic factors, such as emotion regulation, parenting style and moral evaluation, have already been found to play a role in the development of this behaviour (Astor, 1994; Wenar & Kerig, 2005). Deficits in moral evaluation are found to play a significant role (Blair, Monson, & Frederickson, 2001). Recently, a further examination of the relationship between moral evaluation and externalizing behaviour has been conducted. Results showed that self-serving cognitive distortions play a significant role in this relationship (De Bunt, 2010). The present study will further contribute to the research on the link between self-serving cognitive distortions and externalizing behaviour. Where most research focused on adolescents, the current sample will follow up De Bunt's cross sectional research and consists of children aged 7 to 12. Where De Bunt focused on children in a clinical residential setting, this clinical sample consists of children in special education. The comparison group includes children in mainstream education. If the mediating role of cognitive distortions on the relationship between moral evaluation and externalizing behaviour can be replicated in a sample of children with less significant externalizing behaviours, this will give a further theoretical advance in our knowledge of the development of this behaviour. By conducting this research we might ultimately be able to improve prevention and intervention methods for alleviating externalizing behaviour. Modern theories emphasize the role of empathy in shaping pro-social and anti-social behaviour (Hoffman, 2000; Narvaez & Rest, 1995). Therefore, the present study will investigate the role of empathy on the relationship between moral evaluation and externalizing behaviour and the relationship between self-serving cognitive distortions and externalizing behaviour.

Moral Evaluation

Turiel (1983) defined three domains of social knowledge which would also be present in young children: the moral, conventional and personal domain. The moral domain covers the welfare of others, fairness and a sense of duty. A transgression in this domain could be hitting or lying. The conventional domain covers social rules which are intended to maintain social organization. Examples of transgressions include refusing to follow social rules. Social rules are created by social groups and define situations and the kinds of behaviour appropriate to them (Becker, 1991). The

personal domain covers acts or decisions that affect the individual and are a personal choice. These could be preferences in clothing and hairstyle (De Bunt, 2010; Smetana, 2006).

Research implicates that children as young as three years old, feel that transgressions in the moral domain are more serious and less acceptable than transgressions in the conventional and personal domain (Tisak, 1993). Therefore, it may be less threatening for an individual's self-esteem to interpret his or her own delinquent act as a conventional or personal transgression rather than a true moral transgression (Leenders & Brugman, 2005). Astor (1994) found that children with externalizing behaviour show lower moral domain scores than typical children on acts of reactive aggression. Furthermore, Blair and his colleagues (2001) found that children, aged 8.5 to 16, who are more behaviourally disturbed perform more poorly on the moral/conventional distinction, than children who are less behaviourally disturbed. They also found that children who had a low score on the moral/conventional distinction showed significantly greater levels of behavioural disturbance than children who had a high score on the moral/conventional distinction (Blair, Monson & Frederickson, 2001). Most recently, De Bunt (2010) showed a significant association of moral evaluation with externalizing behaviour in children aged 7 to 12 years.

Cognitive distortions

Cognitive distortions are defined as inaccurate ways of attending to or conferring meaning on an experience. This interpretation of an experience may contribute to the emotional and behavioural consequences of that experience (Barriga, Landau, Stinson, Liao, & Gibbs, 2000). Self-serving cognitive distortions (SSCD) are specifically associated with externalizing behaviours (Barriga et al., 2000).

Gibbs (1993) specified SSCD into four categories: assuming the worst, minimizing/mislabeled, self-centered and blaming others. According to Gibbs, Potter and Goldstein (1995) a further differentiation can be made between primary and secondary SSCD. Primary SSCD are defined as self-centered attitudes, thoughts, and beliefs. These make up the 'self-centered' category. Secondary SSCD serve to support the primary SSCD in which the remaining categories 'blaming others', 'minimizing/mislabeled' and 'assuming the worst' are involved. Secondary distortions are thought to 'neutralize' conscience or guilt and thus prevent damage to the self-image as a consequence of externalizing behaviour (Barriga & Gibbs, 1996).

Liao, Barriga and Gibbs (1998) were the first to successfully prove that there is a cognitive process underlying externalizing behaviour. They found a significant positive relationship between SSCD and antisocial behaviour in adolescents. Higher levels of SSCD were associated with more self-

reported externalizing behaviour. Delinquents revealed higher levels of SSCD and externalizing behaviour than a control group of students (Liau, Barriga & Gibbs, 1998). Barriga, Morrison, Liau and Gibbs (2001) also found that the relationship between moral cognition and externalizing behaviour was partially mediated by SSCD. However, this research included a sample of adolescents. Additionally, Gibbs (2003) linked moral evaluation with cognitive distortions. He reported that a low moral judgment stage does not necessarily lead to antisocial behaviour, unless it is combined with a high degree of cognitive distortions. It is thought that cognitive distortions block the development of moral judgment. This could be a consequence of the idea that one does not consider oneself as responsible for one's delinquent behaviour (Gibbs, 2003).

SSCD, moral evaluation and externalizing behaviour

Recently, De Bunt (2010) replicated the study of Barriga and his colleagues (2001) in a sample of children aged 7 to 12 years in a residential treatment institution and compared them with a matched control group. Results showed a full mediation effect for the relationship between moral evaluation and externalizing behaviour, although only for the clinical sample. Moral evaluation was not associated with externalizing behaviour in the comparison group. However, SSCD were significantly related with externalizing behaviour in both samples (De Bunt, 2010). Furthermore, De Bunt (2010) found that first primary SSCD, then secondary SSCD, fully mediated the relationship between moral evaluation and externalizing behaviour. Again, this mediation was only found in the clinical sample. According to De Bunt (2010) these results provide support for the theoretical function of primary SSCD and secondary SSCD. Rationalizations as blaming others, minimizing/mislabelling acts and assuming the worst (secondary SSCD) explain the relationship between self-centered attitudes (primary SSCD) and externalizing behaviour (De Bunt, 2010).

The primary aim of the present study is to partially replicate the findings of De Bunt with a different sample. The sample will include children aged 7 to 12 in special primary school and a control group of children aged 7 to 12 in mainstream school. This population is chosen because of the expectation that children in special primary school will show more externalizing behaviour than a control group. In the Netherlands children aged 4 to approximately 12 years are educated in a mainstream school, a special primary school or special school. Most of them attend mainstream schools (95%) while 3% attends special primary schools and 2% will go to a special school. Special primary schools educate children who show moderate learning- and/or behavioural difficulties. Special schools educate children with more severe difficulties, for example a mental handicap or severe social, emotional and/or behavioural difficulties (Van der Veen, Smeets & Derriks, 2010). In addition to a different sample, a new variable will be added in this study, namely empathy.

Empathy

There is broad consensus that empathy constitutes an affective response congruent to another's emotions or life situation (Hoffman, 1987) that involves active mental efforts to comprehend another's experience (Wispé, 1986). This means, that empathy constitutes of both an affective and cognitive component. Empathy should be differentiated from the concepts of sympathy and 'Theory of Mind' (ToM). Respectively, sympathy constitutes affective components and ToM consists of mainly cognitive components (Koning & Van Strien, 2005). The development of empathy starts early and is already seen in some form at the age of two. After an extended literature research Zahn-Waxler and Radke-Yarrow (1990) concluded that children at the age of two have the possession of a pattern of cognitive skills that promote the development of empathy and sympathy. During elementary school these skills develop into empathic competence.

Empathic behavioural responses tend to engage pro-social behaviours and/or inhibit anti-social behaviours (Barriga, Sullivan-Cosetti, & Gibbs, 2009). Some research studied the relationship between empathy and externalizing behaviour. Results showed no significant relationships for the toddler age between aggression and deficits in empathy. However, this could be due to the difficulty of measuring empathic skills at this age. Empathic skills are still developing at this age and toddlers are not (yet) able to articulate emotions. For children in elementary school who show aggression at a young age deficits in their empathic skills are found. The same relationship seems to be present for adolescents, though this is an unstable relationship. Furthermore, externalizing behaviour is evidently correlated with empathic deficits in adults (Koning & Van Strien, 2005).

Barriga and his colleagues (2009) studied the relationship between empathy and moral judgment maturity. They defined moral judgment maturity as a well-documented worldwide age trend towards a deeper and more sophisticated understanding of moral decisions and the justifications given for basic moral values and actions (Barriga, Sullivan-Cosetti & Gibbs, 2009). This means, higher moral judgment maturity links with higher rates of pro-social behaviour, and lower moral judgment maturity links with higher rates of anti-social behaviour. Their results showed that adolescents who show anti-social behaviour and who display deficits in empathy will also tend to exhibit delays in moral judgment maturity (Barriga, Sullivan-Cosetti & Gibbs, 2009). The relationship between empathy and self-serving cognitive distortions was also studied. SSCD were hypothesized to serve as a function to 'neutralize' empathy. Results point out that delinquent youths with little empathy tend to engage in extensive use of SSCD. If a person retains a positive self image as a 'good' person despite of repeated atrocious acts, this may be attributable to the tendency to exclude possibly distressing empathic emotions through strategies as self-centredness, blaming others, minimizing/mislabelling or assuming the worst. (Barriga, Sullivan-Cosetti & Gibbs, 2009).

Numerous studies have used the IECA self-report questionnaire to assess empathy. This questionnaire measures the affective component of empathy. Since this is the only questionnaire that measures empathic tendencies in young children and adolescents, this study will define empathy as affective empathy which is 'the possibility to differentiate and identify emotional states of others that is congruent with the way the other person feels' (Feshbach, 1997; Hoffman, 1987). Affective empathy differs from sympathy in the capacity to experience emotions corresponding to the emotions of someone else for that other person in contrast to experiencing concern in response to negative impacts on others' wellbeing (Maiborn, 2009).

Current research

This study will try to partially replicate the findings of De Bunt (2010) with a sample of children in special primary school.

First the relationship between moral evaluation and externalizing behaviour will be studied. It is hypothesized that SSCD will have a mediating role in this relationship. Next, a distinction will be made between primary and secondary SSCD and their influence on the relationship between moral evaluation and externalizing behaviour. Hypothesized is that moral evaluation is negatively associated with primary SSCD and externalizing behaviour. Primary SSCD are expected to be positively associated with secondary SSCD and secondary SSCD are expected to be positively associated with externalizing behaviour.

Furthermore the role of empathy will be explored. It is hypothesized that a lack of empathy plays a mediating role in the relationship between both moral evaluation and externalizing behaviour and SSCD and externalizing behaviour.

If SSCD mediate the relationship between moral evaluation and externalizing behavior, this presents evidence for an elaborate cognitive process model of externalizing behaviour, even in children aged 7 to 12 in special education.

Methods

Participants

Approximately 150 children of two Dutch elementary schools were approached. One of them was a mainstream school and one was a special primary school. Active consent was obtained from school and the parents or guardians. With respect to the last group, parents were tend not to give consent when their child was involved in other treatments or research. Furthermore, children of immigrant parents who constitute a substantial part of the clinical group did not receive consent to

participate in this study. The total sample includes a total of 41 males and 21 females aged 7 to 12 years ($N= 62$, $M = 9.78$, $SD = 1.09$). None of the participants dropped out during the study. After a matching procedure by age both groups contain 31 children. The clinical sample consists of 31 children ($M_{age}= 9.90$, $SD_{age}= 1.19$). The sample includes 22 boys ($M_{age}= 9.95$, $SD_{age}= 1.29$) and 9 girls ($M_{age}= 9.78$, $SD_{age}= 0.97$). In this clinical group 9 children have received a DSM-IV diagnosis. The most common diagnosis is attention deficit disorder. The comparison group consists of 31 children ($M_{age}= 9.65$, $SD_{age}= .98$). Of these children, 19 are boys ($M_{age}= 9.42$, $SD_{age}= 1.02$) and 12 are girls ($M_{age}= 10.00$, $SD_{age}= .85$).

Measures

How I Think Questionnaire (adapted version). Barriga and Gibbs (1996) developed the 'How-I-Think' questionnaire (HIT-Q) for adolescents aged 12-17 in order to assess SSCD. The HIT-Q has been translated and validated for a Dutch sample of adolescents (Nas, Brugman, & Koops, 2008). Of the original 39 items that measure SSCD 24 items were selected that were relevant to children under the age of 12. In addition, eight new items were added. All these items represent the different cognitive distortion categories: egocentric bias (*'Sometimes you have to lie to get what you want'*), blaming others (*'People are always trying to start fights with me'*), minimizing/mislabeling (*'Only a coward would ever walk away from a fight'*) and assuming the worst (*'I can't help losing my temper a lot'*). Items are rated on a 6-point Likert scale ranging from 1 'completely agree' to 6 'completely disagree'. Scores of four (slightly agree) or higher indicate the presence, and scores of three (slightly disagree) or lower indicate the absence of cognitive distortion.

Besides the cognitive distortions subscales, the adapted version contains six anomalous response (AR) items, e.g., *'I have sometimes said something bad about a friend'*, to measure socially desirable responding. This version also contains six positive fillers, e.g., *'Everyone has the right to be happy'*, to counteract the negative content of the distortion items and camouflage them. Cognitive distortions items were averaged for a score on total SSCD, primary SSCD and secondary SSCD. Three items were excluded because of a negative or extremely small item-total correlation, one item reflecting assuming the worst, *"I can't help losing my temper often"*, one item reflecting egocentric bias, *"If I really want something, I don't care how I get it"* and one item reflecting blaming others, *'If I made a mistake, it's because I got mixed up with the wrong crowd'*. Cronbach's α was .93 for total SSCD, .78 for primary SSCD, and .91 for secondary SSCD.

The AR scale can be considered a measure of social desirability. These measures are typically composed of true or false items (e.g., Verardi, Dahourou, Ah-Kion, Bhowon, Tseung, Amoussou-

Yeye, & Rossier, 2010). AR items were therefore recoded into a binary scale (ARbinary), where scores of five or lower indicate 'false' and a score of six indicates 'true'. Because of an extremely low item-total correlation, the item '*Sometimes I get bored*' was excluded. Cronbach's α for the ARbinary was .78. In the clinical sample, the ARbinary ($M = 3.38, SD = 1.15$) showed a moderate correlation with total SSCD ($r = .63, p = .00$, two-tailed), primary SSCD ($r = .59, p = .00$, two-tailed), secondary SSCD ($r = .62, p = .00$, two-tailed) and externalizing behaviour ($r = .56, p = .05$, two-tailed). In the comparison group the ARbinary ($M = 3.47, SD = .68$) showed a moderate correlation with total SSCD ($r = .38, p = .04$) and primary SSCD ($r = .40, p = .04$).

Self-report externalizing behavior (adapted version). To measure externalizing behaviour, a self-report measure was adapted from earlier research (Høst et al., 1998; Leenders & Brugman, 2005). Because of the question of interest and the age group, items referring to physical and relational aggression were included, as well as items referring to oppositional defiant behavior, resulting in a 12 item scale. An example of an item referring to physical aggression is "*hit or kick someone*". For each item, children were asked "*Have you ever ...?*", answered on a 3-point scale 0 (*never*), 1 (*sometimes*), 2 (*often*), to measure the prevalence of externalizing behaviour. Cronbach's α for this scale was .84. A composite score was calculated by averaging the items.

Moral evaluation. To assess moral evaluation, children were read six illustrated stories representing hypothetical moral transgressions. An example of a story: "*Max and Joe are playing with marbles. Pete walks up to them. He punches Joe in the stomach*". For each transgression, children were asked about acceptability, "*Is it right or wrong to do ... ?*", answered in two categories, *wrong* or *right*, and seriousness, "*How bad is it to do ... ?*", answered on a 4-point scale from 1 (*not bad*) to 4 (*very bad*). The acceptability and seriousness categories were averaged to compute a score on moral evaluation, created in such a way that a high score reflected a (correct) moral evaluation and a low score a non-moral (conventional/personal) evaluation. The item judgment situation for the third story was excluded, because of zero variance. Cronbach's α for moral evaluation was .72.

Index of Empathy for Children and Adolescents (IECA). Bryant (1982) developed this questionnaire to assess affective empathy in children and adolescents. The test is designed to assess emotional responsiveness, rather than accuracy of cognitive insights (De Wied, Maas, Van Goozen, et al., 2007). Children were shown 22 items which they have to answer with 'yes' or 'no'. An empathic answer was scored 1 and a non-empathic answer was scored 0. After De Wied and her colleagues (2007) took a closer look at the internal structure of this test, they found a two-factor structure

including a seven item scale called Empathic Sadness and a five item scale labeled Attitude. They concluded that researchers should continue working with the Empathic scale, since this scale is relevant to affective empathy in that it seems to measure children's responsiveness to another person's sadness (De Wied et al., 2007). Although the scale needs to be enlarged with items covering a broader range of emotions, this seems to be the only measure of affective empathy at this moment (De Wied et al., 2007). Therefore, the items from the Empathic Sadness scale are used in this study to measure empathy. One example of an item is '*Seeing a boy who is crying makes me feel like crying*'. Cronbach's α for empathy in this study was .68.

Procedure

All measures were completed, individually, in a fixed order: HIT-Q, Self-report Externalizing Behaviour, IECA. After finishing a questionnaire children were read two stories to measure moral evaluation. All items were read out loud to each child. On average, children completed all measures in 30 minutes.

Analysis

Firstly, differences between the clinical sample and the control group will be measured with the MANOVA-method. Then, a simple mediation analysis will be made by using the bootstrapping-method. This is a non-parametric resampling procedure (Preacher & Hayes, 2008). This method will be used since this study contains two groups with small sample sizes. Results will be more reliable through the use of this resampling method. Furthermore, with this method confidence intervals (CI) are given to estimate statistical significance. When zero was not contained in the CI an indirect effect was considered, this means that a mediating effect exists (Roelofs, Huibers, Peeters, Arntz, & van Os, 2008). To test the hypothesis concerning the function of primary and secondary SSCD a multiple step mediation model will be conducted (Hayes, Preacher & Myers, 2010). With this model the effect of the mediator on the dependent variable can be mediated through a second mediator. In this case it is thought that the mediating effect of primary SSCD on the relationship between moral evaluation and externalizing behaviour is mediated through secondary SSCD. Finally, simple mediation analyses will be performed to see if a lack of empathy has a mediating influence in the relationship between moral evaluation and externalizing behaviour and in the relationship between SSCD and externalizing behaviour.

Results

Group differences

Table 1 shows the descriptive statistics and intercorrelations of all variables. Since moderate correlations appeared for ARbinary with several factors a MANCOVA is performed. Results indicate multivariate differences between the clinical sample and the comparison group ($F(5,55) = 10.75, p < .05$; Wilk's Lambda = .51 ; partial $\eta^2 = .49$). Independent-samples t test show that there is no significant difference between the clinical sample and the comparison group when looking at self-reported externalizing behaviour ($t = -1.1, df = 60, p = .13$, one-tailed), primary SSCD ($t = -1.00, df = 60, p = .16$, one-tailed), moral evaluation ($t = .435, df = 60, p = .33$, one-tailed) and empathy ($t = 1.42, df = 60, p = .08$, one-tailed). A significant difference between the clinical sample and the comparison group is found for secondary SSCD ($t = -2.51, df = 60, p = .008$, one-tailed). Small to large effects are present for all differences.

Table 1: Psychometric Properties and Intercorrelations of the Major Study Variables.

Measure	M	SD	1.	2.	3.	4.	5.	6.	7.
Clinical sample (N=31)									
1. Ext.beh.	1.60	.52	—						
2. ME	1.80	.36	-.58**	—					
3. Empathy	.36	.28	.03	.36*	—				
4. SSCDtotal	2.37	.98	.45*	-.55**	-.40*	—			
5. SSCDprimary	2.40	1.04	.34	-.41*	-.43*	.96**	—		
6. SSCDsecondary	2.35	1.01	.52**	-.64**	-.33	.96**	.83**	—	
7. ARbinary	3.38	1.15	.56*	-.30	.16	.63**	.59**	.62**	—
Comparison group (N=31)									
1. Ext. beh	1.47	.38	—						
2. ME	1.84	.20	-.36*	—					
3. Empathy	.46	.25	-.01	.23	—				
4. SSCDtotal	2.00	.47	.43*	-.62**	-.34*	—			
5. SSCDprimary	2.15	.56	.39*	-.60**	-.25	.93**	—		
6. SSCDsecondary	1.83	.48	.40*	-.52**	-.39*	.90**	.68**	—	
7. ARbinary	3.47	.68	.31	.17	-.02	.38*	.40*	.28	—

Note. Ext.beh.=externalizing behaviour; ME=moral evaluation; SSCD=self-serving cognitive behaviour
 * $p < .05$ ** $p < .01$

Research questions

The first research question in this study considers the influence of SSCD on the relationship between moral evaluation and externalizing behaviour. First, the results of the correlational analysis show a negative significant relationship between moral evaluation and externalizing behaviour for both groups (clinical sample: $r = -.575, N = 31, p < .001$, one-tailed; comparison group: $r = -.359, N = 31,$

$p < .05$, one-tailed). Both relationships show a small effect size (clinical sample: *cohen's d* = -.21; comparison group: *cohen's d* = -.14). To study the influence of SSCD a simple mediation analysis has been performed (see table 2).

As expected, the results in table 2 show that moral evaluation is negatively associated with externalizing behaviour (c') and total SSCD (a). Despite an expected positive association between total SSCD and externalizing behaviour (b), this relationship was not significant. In the clinical sample, no significant mediating effect has been found for total SSCD on the relationship between moral evaluation and externalizing behaviour ($a*b$). The confidence interval includes zero, indicating a non-significant effect. Similar results are found for the comparison group.

Table 2: Total, Direct, and Indirect Effects of Moral Evaluation (IV) on Externalizing Behavior (DV) through Self-Serving Cognitive Distortions (M).

	Clinical sample				Comparison group			
	B	SE	p	BC CI	B	SE	p	BC CI
IV to M (a)	-1.45	.41	.002		-1.24	.37	.002	
M to DV (b)	.09	.10	.38		.24	.16	.15	
Total effect (c)	-.83	.22	<.001		-.68	.33	.05	
Direct effect (c')	-.70	.26	.01		-.38	.38	.33	
Indirect effect ($a*b$)	-.12	.14		[-0.47;0.11]	-.30	.22		[-0.98;0.00]

Note. Results based on 5000 bootstrap samples. BC CI = Bias-corrected 95% confidence interval. Clinical sample: Adjusted $R^2 = .30$. Comparison group: Adjusted $R^2 = .13$.

The second research question includes a further distinction between primary SSCD and secondary SSCD. Expectations are that moral evaluation will be negatively associated with primary SSCD and externalizing behaviour, primary SSCD will be positively associated with secondary SSCD and secondary SSCD will be positively associated with externalizing behaviour. Furthermore, primary SSCD are hypothesized to mediate the relationship between moral evaluation and externalizing behaviour through secondary SSCD.

Results for the clinical sample show (table 3) that moral evaluation is negatively related to externalizing behaviour (c'). Moral evaluation is also negatively associated with primary SSCD (a_1). Primary SSCD are positively related to secondary SSCD (a_3) and secondary SSCD are positively related to externalizing behaviour (b_2). Where a significant effect was expected for a mediating role of primary SSCD in the relationship between moral evaluation and externalizing behaviour through secondary SSCD, this effect was not significant in the clinical sample ($a_1*a_3*b_2$). The confidence interval include zero, indicating a non-significant effect. For the comparison group similar results are found.

Table 3: Total, Direct, and Indirect Effects of Moral Evaluation (IV) on Externalizing Behavior (DV)

through Primary (M_1) and Secondary (M_2) Self-serving Cognitive Distortions (Multiple-step Mediation).

	Clinical sample				Comparison group			
	B	SE	p	PCI	B	SE	p	PCI
IV to M_1 (a_1)	-1.09	.48	.03		-1.34	.43	.004	
IV to M_2 (a_2)	-1.09	.27	.0004		-.46	.38	.24	
M_1 to M_2 (a_3)	.66	.10	.000		.51	.14	.001	
M_1 to DV (b_1)	-.16	.13	.24		-.02	.17	.92	
M_2 to DV (b_2)	.29	.16	.08		.28	.18	.15	
Total effect (c)	-.83	.22	.0007		-.68	.33	.05	
Direct effect (c')	-.47	.29	.12		-.39	.38	.32	
Indirect effects								
M_1 (a_1*b_1)	.17	.21		(0.17;-0.20)	.22	.24		(-0.43;0.55)
M_2 (a_2*b_2)	-.32	.25		(-0.87;0.11)	-.13	.15		(-0.50;0.07)
M_1 & M_2 ($a_1*a_3*b_2$)	-.21	.18		(-0.65;0.08)	-.19	.18		(-0.69;0.01)

Note. Results based on 5000 bootstrap samples. PCI = Percentile 95% confidence interval

When simple mediation analyses are performed with primary and secondary SSCD as separate mediators, results show a mediating effect for secondary SSCD in the comparison group (table 4). This effect was not significant in the clinical sample. Furthermore, primary SSCD does not seem to play a mediating role in the relationship between moral evaluation and externalizing behaviour in both samples. The confidence intervals include zero, which indicates a non-significant effect.

Table 4: Total, Direct, and Indirect Effects of Moral Evaluation (IV) on Externalizing Behavior (DV) through Primary and Secondary Self-Serving Cognitive Distortions (M) separately (simple mediation).

	Clinical sample				Comparison group			
	B	SE	p	BC CI	B	SE	p	BC CI
<i>Primary SSCD</i>								
IV to M (a)	-1.09	.48	.03		-1.34	.43	.004	
M to DV (b)	.03	.09	.71		.12	.14	.39	
Total effect (c)	-.83	.22	<.001		-.68	.33	.05	
Direct effect (c')	-.79	.24	.003		-.51	.38	.19	
Indirect effect ($a*b$)	-.03	.12		[-0.25;0.18]	-.17	.20		[-0.76;0.10]
<i>Secondary SSCD</i>								
IV to M (a)	-.18	.40	<.001		-1.14	.39	.007	
M to DV (b)	.14	.10	.16		.27	.15	.09	
Total effect (c)	-.83	.22	<.001		-.68	.33	.05	
Direct effect (c')	-.57	.28	.05		-.38	.36	.30	
Indirect effect ($a*b$)	-.26	.19		[-0.73;0.06]	-.32	.21		[-0.86;-0.02]

Note. Results based on 5000 bootstrap samples. BC CI = Bias-corrected 95% confidence interval.

Primary SSCD: Clinical sample: Adjusted $R^2 = .29$. Comparison group: Adjusted $R^2 = .09$.

Secondary SSCD: Clinical sample : Adjusted $R^2=.33$. Comparison group: Adjusted $R^2=.16$.

The last research question studies the influence of empathy on the relationship between moral evaluation and externalizing behaviour, but also its influence on the relationship between total SSCD and externalizing behaviour. Table 5 and 6 show the results for both simple mediation analyses.

When studying the influence of empathy on the relationship between moral evaluation and externalizing behaviour, the results show again that moral evaluation is negatively related to externalizing behaviour (c'). As expected, moral evaluation is positively related to empathy (a). Furthermore, a positive association between empathy and externalizing behaviour is found (b), though this association is not significant. These results do not show a mediating effect of empathy on the relationship between moral evaluation and externalizing behaviour ($a*b$). Similar to the findings in the clinical sample no significant results are found for a mediating effect of empathy in the comparison group.

Table 5: Total, Direct, and Indirect Effects of Moral Evaluation (IV) on Externalizing Behavior (DV) through Empathy (M).

	Clinical sample				Comparison group			
	B	SE	p	BC CI	B	SE	p	BC CI
IV to M (a)	.28	.13	.05		.29	.23	.22	
M to DV (b)	.51	.29	.10		.12	.27	.66	
Total effect (c)	-.83	.22	<.001		-.68	.33	.05	
Direct effect (c')	-.97	.27	<.001		-.72	.34	.05	
Indirect effect ($a*b$)	.15	.15		[-0.04;0.64]	.02	.09		[-0.10;0.27]

Note. Results based on 5000 bootstrap samples. BC CI = Bias-corrected 95% confidence interval. Clinical sample: Adjusted $R^2 = .31$. Comparison group: Adjusted $R^2 = .07$.

Lastly, a correlation analysis shows a positive significant relationship between total SSCD and externalizing behaviour for both groups (clinical sample: $r=.428$, $N=31$, $p<.05$, one-tailed; comparison group: $r=.404$, $N=31$, $p<.05$, one-tailed). Through a simple mediation analysis the influence of empathy on this relationship is studied. Results for the clinical sample show that total SSCD is positively related to externalizing behaviour (c') and negatively to empathy (a). Empathy is positively associated with externalizing behaviour (b). These results show that empathy is not mediating the relationship between total SSCD and externalizing behaviour ($a*b$). The confidence interval includes zero, which indicates a non-significant effect. For the comparison group similar results are found.

Table 6: Total, Direct, and Indirect Effects of Total SSCD (IV) on Externalizing Behavior (DV) through

Empathy (M).

	Clinical sample				Comparison group			
	B	SE	<i>p</i>	BC CI	B	SE	<i>p</i>	BC CI
IV to M (<i>a</i>)	-.12	.05	.02		-.20	.09	.05	
M to DV (<i>b</i>)	.46	.34	.18		.24	.39	.27	
Total effect (<i>c</i>)	.23	.09	.02		.33	.14	.02	
Direct effect (<i>c'</i>)	.29	.10	.01		.38	.15	.18	
Indirect effect (<i>a*b</i>)	-.06	.06		[-0.25;.03]	-.06	.07		[-0.22;0.04]

Note. Results based on 5000 bootstrap samples. BC CI = Bias-corrected 95% confidence interval.

Clinical sample: Adjusted $R^2 = .26$. Comparison group: Adjusted $R^2 = .10$.

Discussion

The current study was a replication of the study performed by De Bunt (2010). De Bunt found a mediating effect of SSCD on the relationship between moral evaluation and externalizing behaviour in children between 7 and 12 years in a residential setting. This study included a clinical sample of children in special primary education and a matched control group of children in mainstream education. Both samples included children aged 7 to 12. Furthermore, the role of empathy on the relationship between moral evaluation and externalizing behaviour and SSCD and externalizing behaviour was studied.

Despite the expected negative relationship between moral evaluation and externalizing behaviour, and in contrast to De Bunt's study, no mediating effect is found for total SSCD in this relationship. A positive association between total SSCD and externalizing behaviour was found for both samples; however, these positive relationships were not found to be significant. With regard to the associations of primary and secondary SSCD with moral evaluation and externalizing behaviour similar results are found as in De Bunt's study in 2010. Moral evaluation related negatively with externalizing behaviour and primary SSCD. Positive associations were found between primary SSCD and secondary SSCD and secondary SSCD and externalizing behaviour. However, no mediating effect seems to exist for primary SSCD on the relationship between moral evaluation and externalizing behaviour through secondary SSCD. Through a simple mediation analysis of primary and secondary SSCD as separate mediators results showed a mediation effect for secondary SSCD in the comparison group. Furthermore, no mediating effects are found when analyzing the role of empathy in the relationship with both moral evaluation and externalizing behaviour and SSCD and externalizing behaviour. Moral evaluation related positively with empathy and empathy related positively with externalizing behaviour. This last relationship showed no significant effect. Finally, correlational analysis showed a positive significant relationship between SSCD and externalizing behaviour. No mediating effect was found for empathy in this relationship, in spite of a negative association

between SSCD and empathy and a positive association between empathy and externalizing behaviour.

Overall, when looking at these results expectations are not met in this study. Although separate relationships are found between the different variables, no mediating effects could be established for children in special primary education. An explanation for these results might be found in the choice of research samples. Special primary schools are schools for students with moderate learning and behavioural difficulties. One of the trends in Europe is the focus on inclusion of students with specific or special educational needs in mainstream schools (Van der Veen, Smeets & Derriks, 2010). With this new trend mainstream schools have to provide for all children, regardless of any perceived difference, disability or other social, emotional, cultural or linguistic difference (Florian, 2008). Instead of referring a child with difficulties to special schools, mainstream schools include these children and receive a budget to finance additional support (Van der Veen, Smeets & Derriks, 2010). As a result the differences between children in mainstream and special primary education have become smaller. In addition, the initial difference between mainstream education and special primary education is smaller than the difference between mainstream education and special education and mainstream education and a residential setting. Normally it is expected that children in special education and in a residential setting display more severe difficulties. Results from the Teacher Report Forms (TRF) show that 20 out of 31 children in the clinical sample score (sub)clinical for the externalizing scale. In addition, nine children in the clinical sample received a DSM-IV diagnosis in contrast with 36 out of 40 children in the clinical sample of De Bunt's study. This indicates that the current clinical sample displayed less severe externalizing behaviour which might explain the differences between the results of the current study and the study conducted by De Bunt.

Another possible explanation might be found in the intelligence levels of the current clinical sample and the one in the study of De Bunt (2010). The average intelligence level in the earlier study was 96.07, which indicates an average intelligence. In contrast, the average intelligence level in the current clinical sample was between 70 and 75 which indicates a borderline intelligence level. This difference might influence the level of insight these children have into their own cognitions and their capability of reporting on them. In turn, this could influence the results of the current study.

Finally, an explanation might be found in the consent given by parents or guardians. Possibly, parents with children in special primary education who display more aggressive and oppositional defiant behaviours tend not to give their consent for their participation in this study. Parents might not want to be confronted with the behaviour of their child. This could have a negative effect on the results, because the clinical sample does not show an accurate representation of this sample.

One limitation of this study is the fact that most measures are on a basis of self-report. Therefore, results might be less valid since children have the possibility to answer in a social desirable way. When looking at the averaged scores of the ARbinary scale of the HIT-Q one can see that children in both samples do not tend to answer in a social desirable way. Respectively $M=3.38$ for the clinical sample and $M=3.47$ for the comparison group, where scores of three or lower indicate social desirable answers. However, definite conclusions cannot be made because the other measurements do not have a scale to control for social desirability. Another limitation is the small sample size. It is possible that certain non-significant relationships might be significant in a larger sample size. Furthermore, through a larger sample size results are more valid and there is a greater possibility to generalize the results.

The results of the current study suggest that cognitive distortions do not play a mediating role in the relationship between moral evaluation and externalizing behaviour in a sample with children from special primary education. For now, this means that theories concerning the development of externalizing behaviour and the role of cognitive distortions do not have to be adjusted. However, cognitive distortions do seem to have a positive relationship with externalizing behaviour. This might suggest that cognitive distortions do play a role in the development of this behaviour in children with moderate learning and/or behavioural difficulties. Future research should further study what this role exactly is.

As mentioned earlier, the intelligence level of children might play an important role in this clinical sample. Therefore, future research should investigate the influence of intelligence in the development of externalizing behaviour. A further suggestion for future research is to conduct a comparison study between children in a residential setting and children from special primary education with similar intelligence levels. With this study the role of intelligence in the development of externalizing behaviour can be further specified. In addition, future research should investigate if low intelligence levels have an influence on the measurement of cognitive distortions. As a consequence the HIT-Q might need to be adjusted to become a valid measure of cognitive distortion in children with a lower intelligence level than average. In regard to the gathering of participants it is important for future research to find a way to stimulate parents of children with more severe externalizing behaviour to give their consent. For example, through personal contact with parents researchers have the possibility to explain that results will be published anonymously and will not be displayed individually. This might appease parents and makes them more tend to give informed consent for the participation of their child. When this can be achieved, a more accurate representation of this clinical sample might commence. This will stimulate results to become more reliable.

The aim of the current study was to make a further contribution to the research on SSCD and the development of externalizing behaviour in children aged 7 to 12 in special primary education. No mediation effects are found, which indicates that there is no cognitive component to externalizing behaviour in this clinical sample. As suggested the lower intelligence levels in this clinical sample might be an explanation for these results. Future research should further investigate the influence of lower intelligence levels in the development of externalizing behaviour and the role of cognitive distortions.

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