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## **Nice traits or nasty states : dispositional and situational correlates of prosocial and antisocial behavior in childhood**

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# Chapter 1

General introduction



## General introduction

Prosocial behavior and antisocial behavior are thought to be influenced by situational demands (e.g. Anderson & Carnagey, 2009; Van IJzendoorn, Bakermans-Kranenburg, Pannebakker, & Out, 2010) and have also been associated with dispositional factors (Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000; Crick, 1996). However, how situational and dispositional factors together influence prosocial and antisocial behavior in children is largely unknown. The current thesis will therefore study the situational and dispositional correlates of prosocial and antisocial behavior in childhood with a special focus on their interplay.

### *Prosocial behavior*

Prosocial behavior is manifested by children as young as 18 months old (and maybe younger) and is thought to be associated with several beneficial outcomes, also for the young benefactor, such as higher academic achievement, attentional regulation, and better social adjustment (e.g. Caprara et al., 2000; Crick, 1996; Eisenberg et al., 1996; Warneken & Tomasello, 2006). Although prosocial behavior in general is defined as voluntary behavior intended to benefit another (Eisenberg, Fabes, & Spinrad, 2007), different types of prosocial behavior can be distinguished, such as helping, sharing, comforting, and donating, and these distinct categories are not necessarily related (Dunfield, Kuhlmeier, O'Connell, & Kelley, 2011; Warneken & Tomasello, 2006; Warneken & Tomasello, 2009). While a common genetic factor underlying various types of prosocial behavior has been identified in one study (Knafo-Noam, Uzefovsky, Israel, Davidov, & Zahn-Waxler, 2015), another study did not find such a factor (Krueger, Hicks, & McGue, 2001). Besides, unique genetic contributions and distinct underlying social-cognitive mechanisms, likely reflected in different neurobiological correlates, differentiate between types of prosocial behavior (Dunfield & Kuhlmeier, 2013; Knafo-Noam et al., 2015; Paulus, 2014; Paulus, Kühn-Popp, Licata, Sodian, & Meinhardt, 2013). The motivation behind such types of prosocial behavior can also differ. Prosocial behavior can be altruistic, especially when the costs for the benefactor are high (Svetlova, Nichols, & Brownell, 2010; Van IJzendoorn et al., 2010) but it can also be self-serving, for example because of positive reputational effects for the benefactor (Griskevicius, Tybur, & Van den Bergh, 2010).

Although both situational and dispositional characteristics have been identified as precursors of various types of prosocial behavior, these have been scarcely studied together in children. The answer to the question whether distinct types of prosocial behavior have different predictors is largely unknown. The overarching aim of this thesis is to study both situational and dispositional correlates of several types of prosocial, and also antisocial, behavior. We hope that our series of studies will help to unravel whether both dispositional and situational factors contribute to prosocial and antisocial behavior, or that one of these factors may be overridden by the other.

### *Precursors of prosocial behavior*

One line of research suggests that prosocial behavior is driven by characteristics of the individual and thus stems from a dispositional trait. For example, higher levels of inhibition, empathy, and guilt, and lower levels of temperamental anger have been associated with more prosocial behavior in children (Aguilar-Pardo, Martínez-Arias, & Colmenares, 2013; Batson & Ahmad, 2001; Carlo, Roesch, & Melby, 1998; Eisenberg et al., 2002; Krevans & Gibbs, 1996; Moore, Barresi & Thompson, 1998; Ongley & Malti, 2014). Other factors, such as parenting, have also been thought to shape a child's prosocial personality (Carlo, McGinley, Hayes, Batenhorst, & Wilkinson, 2007). For example, parental warmth and positive, noncoercive discipline were associated with higher levels of prosocial behavior whereas coercive, punitive discipline was associated with lower levels of prosocial behavior (Carlo, Mestre, Samper, Tur, & Armenta, 2011; Knafo & Plomin, 2006).

In contrast with studies focusing on prosocial behavior as stemming from a dispositional trait, other studies indicate that prosocial behavior is more likely to depend on the situation (e.g. Van IJzendoorn et al., 2010). One such situational factor is the costs of a prosocial act: lowering the net costs increases the incidences of helping (Perlow & Weeks, 2002). Modelling of prosocial behavior by another person was also found to increase prosocial behavior in adults (Kallgren, Reno, & Cialdini, 2000). Correspondingly, being observed by peers or cameras increased prosocial behavior (Engelmann, Herrmann, & Tomasello, 2012; Van Rompay, Vonk, & Franssen, 2009). Even the simple display of a pair of eyes on the wall causes people to act more prosocial (Powell, Roberts, & Nettle, 2012). Familiarity might also increase prosocial behavior. Children were found to be more likely to defend a familiar victim of bullying than an unfamiliar victim (Chaux, 2005; Oh & Hazler, 2009).

While situational factors thus may explain part of the variance in prosocial behavior, and possibly even override influences of dispositional factors (Van IJzendoorn et al., 2010), dispositional factors might influence a child's sensitivity to situational cues. This is congruent with the interactionist perspective proposing that behavior is a result from the interaction between the characteristics of a person and characteristics of the situation (Endler & Parker, 1992). For example, prosocial behavior in people with a high need for approval increased when they were observed by others, and a similar result of being observed was found for people low on autistic traits: their prosocial behavior increased while they were being observed, whereas no such effect was found for people higher on autistic traits (Izuma, Matusmoto, Camerer, & Adolphs, 2011; Van Rompay et al., 2009). Therefore the current study investigates both dispositional and situational factors as contributors to prosocial behavior, and also focuses specifically on their interplay.

## *Antisocial behavior*

Prosocial behavior is often contrasted with antisocial behavior (e.g. Boxer, Tisak, & Goldstein, 2004; De Bruyn & Cillessen, 2006). Antisocial behavior in childhood can manifest as for example aggression, rule-breaking behavior, and bullying (Niv, Tuvblad, Raine, & Baker, 2013; Olweus, 1994) and is associated with negative outcomes for the self and others, such as poorer school performance, delinquency, relational problems, violence, and the continuation of antisocial behavior (Brame, Nagin, & Tremblay, 2001; Broidy et al., 2003; Côté, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006; Pouwels & Cillessen, 2013; Van Lier & Crijnen, 2005).

Antisocial behavior was found to be negatively associated with prosocial behavior (e.g. Carlo et al., 2014; Hardy, Bean, & Olsen, 2015; Hastings, Zahn-Waxler, Usher, Robinson, & Bridges, 2000) and an intervention promoting prosocial behavior decreased externalizing problems in children (Vliek, Overbeek, & Orobio de Castro, 2014). Although such results together with the terminology 'antisocial' and 'prosocial', and the opposite effects of such behavior on others suggests that prosocial and antisocial behavior are two ends of the same continuum, these constructs have also found to have a distinct etiology, unique (personality) correlates, and they appeared not always strongly negatively related to each other (Krueger et al., 2001). Also, negative associations that were found between prosocial and anti-

social behavior are often rather small (e.g. Carlo et al., 2014; Hardy et al., 2015). Furthermore, in contrast to prosocial behavior which is suggested to depend strongly on the situation, antisocial behavior is thought to be a more stable and heritable trait (e.g. Porsch, et al., 2016). If prosocial and antisocial behavior are indeed such distinct constructs, both have to be studied, especially when we want to develop interventions targeting a decrease of antisocial behavior as well as an increase of prosocial behavior.

### *Moral reasoning and prosocial behavior*

Many studies in the domain of prosocial development focus on moral reasoning (e.g. Pratt, Arnold, Pratt, & Diessner, 1999; Walker & Taylor, 1991), originating from Kohlberg's cognitive stages of moral judgement and Hoffman's theory on the affective route to moral internalization (Gibbs, 2014). However, Eisenberg (1982) suggests that while moral reasoning can predict prosocial behavior, moral reasoning might be affected by the specific situation, resulting in different behavioral outcomes. Also researchers often rely on self-reports of prosocial acts (e.g. Carlo, Hausmann, Christiansen, & Randall, 2003; Eisenberg, Cumberland, Guthrie, Murphy, & Shepard, 2005; Paciello, Fida, Cerniglia, Tramontano, & Cole, 2012), thereby measuring what people say they do, but not *observing* the actual behaviors. It has been demonstrated that self-report of prosocial and antisocial behavior can differ greatly from actual behavior (Salmivalli, Lagerspetz, Björkqvist, Österman, & Kaukiainen, 1996). Also, a recent study showed that people value utilitarian autonomous cars (i.e. self-navigating cars which would sacrifice a smaller number of passengers to save a larger number of pedestrians). However people were less willing to buy such a utilitarian car for themselves (Bonneson, Shariff, & Rahwan, 2016). Parents are also suggested to be biased reporters of their child's prosocial behavior (Holmgren, Eisenberg & Fabes, 1998). Prosocial moral reasoning, self- and other-reports on prosocial behavior may thus divert from prosocial acts.

### *Measuring prosocial behavior*

For the current thesis, we therefore used two paradigms to observe prosocial behavior in middle childhood. First, we used a donating task (Van Ijzendoorn et al., 2010), to observe charitable giving in children. In an anonymous situation, children could donate their previously earned money to a



good cause that was shown in a short video clip. As we were interested in the effect of situational differences on prosocial behavior, we showed half of the children an additional video fragment of a same-sex peer who donated money to the charity. Modelling of prosocial behavior has previously been shown to increase prosocial acts in individuals (Kallgren et al., 2000). The second paradigm was an adapted version (Prosocial Cyberball Game, PCG; Riem, Bakermans-Kranenburg, Huffmeijer, & Van IJzendoorn, 2013; Vrijhof et al., 2016) of the computerized ball tossing game Cyberball (Crowley, Wu, Molfese, & Mayes, 2010; Williams, Cheung, & Choi, 2000). During this game, children can throw the ball to three players, who throw the ball back to the child and each other. After a while, one of the players is excluded by the other two. While the game continues, the participating children can then compensate for the exclusion and defend the victim. They can also join in with the exclusion or remain passive by not choosing sides. This paradigm thus enabled us to observe both prosocial behavior (compensating the excluded player) and antisocial behavior (joining the excluders). Bystander behavior used in the PCG is not a measure of a prosocial or antisocial trait, but indicates children's prosocial or antisocial response to observed social exclusion in a specific game-like setting. The advantage of the PCG is its standardized design and its use in slightly different conditions, e.g. familiarity of the excluded person. Besides its continuous score for number of tosses to the excluded player the PCG also allows for the categorization of three bystander roles during social exclusion.

Donating to a charity can be considered altruistic behavior as the costs to the benefactor are high; previously earned money is given up to a stranger, which eliminates the possibility of getting something back from this person (Van IJzendoorn et al., 2010). Furthermore, there were no reputational benefits for the children in the current paradigm, as the donation was made in private. Although it is not costly in the material sense, defending a victim can be costly as well. It is a risk to oppose a bully (Caravita, Gini, & Pozzoli, 2012), for example because of reputational damage or the risk of being excluded as well. Using two different paradigms to measure prosocial behavior, we do not study prosocial behavior as a unified construct, but as a broad category of different behaviors which may have unique precursors (Padilla-Walker & Carlo, 2014).

## Setting

All studies in this thesis were embedded within the Generation R Study, a population-based prospective cohort from early fetal life onwards in Rotterdam, the Netherlands (Jaddoe et al., 2012; Tiemeier et al., 2012). All mothers who had a delivery date between April 2002 and January 2006 and who were resident in Rotterdam were invited to take part in the study. At 6 years of age 8,305 children and their parents were still participating. Information on, among others, cognition and behavior was available for the entire cohort from the prenatal phase up to 8 years postnatally. For three of the studies presented in this thesis, a sub-sample ( $n = 291$ ) was invited to take part in detailed measures on (f)MRI, neuropsychology, and prosocial and antisocial behavior at the age of 8. To obtain sufficient variation in prosocial and antisocial behavior, we selected highly prosocial, highly antisocial, and control children for this subsample.

## Outline

The aim of the current thesis is to examine situational and dispositional correlates of prosocial and antisocial behavior in middle childhood. Parent- and teacher-reported data, observations and neuroimaging data were used to study these associations. In Chapter 2 we examine the longitudinal trajectories of parent-reported aggression and its associations to antisocial behavior in school. We also test the predictive validity of aggression trajectories over a single measurement of aggression. Aggression trajectories from this Chapter were used for the sample selection in Chapters 3-5. In Chapters 3 and 4 we examine the situational and dispositional correlates of prosocial and antisocial behavior. In Chapter 3, we test whether donating behavior is mainly situationally driven or is dependent on child characteristics. Furthermore, we test whether sensitivity to situational cues depends on child characteristics. In Chapter 4 we examine child and parenting correlates of bystander behavior during social exclusion in the PCG. Furthermore, we test whether bystander behavior in this situation is dependent on the familiarity with the excluded victim. Again, differences in children's sensitivity to situational cues are examined.

To find out whether variance in prosocial behavior is not only dependent on situational characteristics, but also has a neuroanatomical compo-

nent, the association between donating behavior and cortical thickness and resting state functional connectivity is examined in Chapter 5. We end the current thesis with a discussion and conclusion in Chapter 6. In this closing Chapter limitations of the current set of studies and directions for future research are discussed.

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