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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 6

General discussion

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This thesis examined the dispositional and situational correlates of prosocial and antisocial behavior in children. In Chapter 2, three trajectories of parent-reported aggression were distinguished, and were shown to be associated with several types of antisocial behavior at school. However, the trajectories did not show incremental predictive validity in explaining antisocial behavior at school as compared to a single time point measure of aggression. The results in Chapter 3 indicate that donating behavior is influenced by characteristics of the situation, but the effect of the situation may depend on characteristics of the child. In Chapter 4 we found no dispositional or situational correlates of bystander behavior during a virtual social exclusion game. Other situational or dispositional factors than the ones measured in our study might have played a role. In Chapter 5 we showed that donating behavior is not only dependent on the situation, but may also have an identifiable neuroanatomical basis. In the following sections, the findings from these chapters will be reviewed. Limitations and directions for future research will be discussed.

The effect of the situation on prosocial and antisocial behavior

This thesis showed that both prosocial and antisocial behavior are dependent on the situation. In Chapter 3 we found that donating behavior in children was predicted by a situational effect: donations were higher for children who observed a moral exemplar of a donating peer. Donating behavior in children had earlier been shown to be affected by a situational factor: the encouragement of a researcher to donate (Van IJzendoorn, Bakermans-Kranenburg, Pannebakker, & Out, 2010). The current study shows that even a more subtle and less intrusive situational factor, modelling of prosocial behavior in a film clip instead of being probed in real life (and thus observed) by an adult, can substantially increase donations in middle childhood.

Earlier studies (in adults) also showed effects of modelling on prosocial behavior. Being confronted with donations of others increased charitable giving among students (Frey & Meier, 2004). Witnessing someone picking up garbage from the ground decreased littering among people who found a

handbill attached to the windshield of their car (Kallgren, Reno, & Cialdini, 2000). Also, seeing someone else offering help to a victim of an accident increased helping among bystanders (Wilson & Petruska, 1984) and reading about or seeing moral virtuous behavior by others in a video clip also led to an increase in donations (Freeman, Aquino, & McFerran, 2009). A moral exemplar can thus bring about the good in people, possibly because modelling causes a state of moral elevation, can provide an example on how to act in (new) situations, or because individuals want to adhere to social norms (Bandura, 1977; Freeman et al., 2009; Kallgren et al., 2000).

Familiarity of a victim can also increase prosocial behavior. Closeness to a victim of bullying increases prosocial behavior in a bullying situation (Oh & Hazler, 2009) and children more often support friends in conflicts (Chaux, 2005). However, in Chapter 4 the effect of familiarity on prosocial defending behavior during the Prosocial Cyberball Game (PCG) was absent. Although children varied greatly in their response to social exclusion of another person, their bystander responses were independent of the familiarity with the victim. Yet, some children became more prosocial whereas others became more antisocial or showed stable levels of their behavior over the two conditions in Chapter 4. Other situational factors than the one measured might have influenced these divergent patterns. For example, modelling could also have affected the behavior of some participants. Speculatively, the bullies might have served as a model to some children, overriding the effects of familiarity of the excluded victim, resulting in the absence of prosocial compensating behavior. Affiliation with antisocial peers was indeed found to increase adolescents' antisocial behavior (Monahan, Steinberg, & Cauffman, 2009). Bystander behavior might thus partly depend on situational modelling. Other participants might however been more strongly affected by the presence of an (familiar) adult.

The lack of association between defender behavior during the PCG and donating behavior, and between these two paradigms and the prosocial group, to which some children belonged according to the high prosociality ratings by their parents, may also demonstrate the situational dependency of prosocial behavior. Whether children donate to a good cause, defend a victim from bullying, or are rated by their parents as high on prosocial (and low on antisocial behavior) seems independent of each other, which makes it less likely that these distinct forms of prosocial behavior have an underlying prosocial trait. This leaves room for situational factors to play a role. The absence of associations is congruent with the finding that several

other prosocial behaviors (helping, sharing, and comforting) are not related either (Dunfield, Kuhlmeier, O'Connell, & Kelley, 2011) and that the underlying motivations of various prosocial behaviors can differ greatly (Eisenberg & Spinrad, 2014).

Although less often discussed and studied, antisocial behavior can also be a state, dependent on the situation. In a review, Zimbardo (2004) demonstrates through examples such as the Stanford prison experiment (Zimbardo, Maslach, & Haney, 2000) and the Milgram experiments (Milgram, 1974) that situational factors can influence people to act more antisocial than would be predicted from their personal characteristics. Also, violent video games are thought to enhance aggression and state hostility (Anderson & Carnagey, 2009; Anderson & Ford, 1986). In Chapter 2 we showed that, although significantly associated, the agreement of parent and teacher report on antisocial behavior was low. Even though these reporters are not completely bound to one setting, this result may implicate that children act differently at home and at school. Apart from informant characteristics and perspective, situational dependency is suggested as an important factor influencing discrepancies between raters (Dirks, De Los Reyes, Briggs-Gowan, Cella, & Wakschlag, 2012). Such situational variability of children's antisocial behavior and corresponding discrepancies between parent and teacher ratings of such behavior was also found in another study (De Los Reyes, Henry, Tolan, & Wakschlag, 2009). If the rater discrepancy in the current study is indeed due to situational dependency of aggression, we still do not know what situational factors might have influenced the discrepancy between parent and teacher reports in Chapter 2. Speculatively, children can be influenced by antisocial peers at school (Monahan et al., 2009), whereas siblings or parents can be antisocial models at home (Snyder, Bank, & Burraston, 2005; Sousa et al., 2011). The results of Chapter 4 might converge with the idea of antisocial behavior being (partly) situationally driven. No dispositional factors could be identified that distinguish children who joined in with bullying from those who acted as passive bystanders. Yet, children did show changes in bystander behavior across the two conditions, which illustrates the somewhat volatile nature of children's behavior in the PCG.

Dispositional correlates of prosocial and antisocial behavior

While the results of Chapter 2, 3, and 4 might provide support for the hypothesis of situational influences on both prosocial and antisocial behavior, the results of Chapter 5 indicate that donating behavior also has neuroanatomical correlates, implying that prosocial behavior is not only situationally determined. A thicker cortex in the lateral orbitofrontal/pars orbitalis and the pre-/postcentral was associated with higher donations. Although the cortex changes over time (Gogtay et al., 2004; Sowell et al., 2004), such changes are relatively slow. The neuroanatomical correlate may thus indicate that donating behavior is also a result of dispositional factors. However, we must be cautious with drawing causal inferences, as behavior can also influence brain structure. For example, learning how to juggle over the course of three months resulted in an increase in grey matter in several areas of the brain (Draganski et al., 2004). Still, even when prosocial behavior would affect a child's neuroanatomy, this would be a long-term and potentially transactional process, showing that prosocial behavior is more present in some children than others.

Many other studies report on dispositional factors such as perspective taking, internalized moral reasoning, and empathy associated with prosocial behavior (e.g. Batson & Ahmad, 2001; Carlo & Randall, 2002), implying that prosocial behavior stems from a trait. Furthermore, teacher-reported prosocial behavior remained stable from middle childhood to adolescence (Flynn, Ehrenreich, Beron, & Underwood, 2015). Studies on whether prosocial behavior also has a genetic component show mixed results so far (e.g. Knafo-Noam, Uzefovsky, Israel, Davidov, & Zahn-Waxler, 2015; Krueger, Hicks, & McGue, 2001). Prosocial behavior may be a mixed bag of various traits and states that if incorporated in one phenotype may elude consistent genetic or personality-related explanations.

A dispositional dimension of antisocial behavior was found in Chapter 2. Children with high levels of parent-reported aggression showed higher levels of antisocial behavior at school, as compared to children with lower aggression levels according to their parents. For some children, antisocial behavior thus shows pervasive forms across settings. We also found a stable trajectory of intermediate levels of aggressive behavior over time, which also implies that children in this trajectory show similar levels of aggressive behavior over time. These results converge

with other studies that show that antisocial behavior can be a stable and heritable trait (e.g. Porsch et al., 2016).

The interplay of dispositional and situational factors

We found both dispositional and situational factors associated with prosocial behavior. In Chapter 3 we also showed the interplay of such factors on prosocial behavior. Anxious children and children with less social responsiveness problems were more affected by the moral exemplar, and donated more after seeing the donating peer than less anxious children and children with higher levels of social responsiveness problems. In absence of the moral exemplar, anxious children donated less money than their less anxious peers. Anxiety and social responsiveness thus influence a child's sensitivity to situational demands. Whether this also holds for other dispositional factors is not examined in the current study. However, others found that, for example, being observed increased prosocial behavior in people with a high need for approval or high public self-awareness, but not for people lower on these traits (Pfattheicher & Keller, 2015; Van Rompay, Vonk, & Fransen, 2008). These studies showed a similar interplay for different dispositional *and* situational factors on prosocial behavior. We however did not find dispositional factors that influenced the sensitivity to the effect of familiarity of the excluded player on bystander behavior in Chapter 4.

The current set of studies shows both dispositional and situational influences on prosocial and antisocial behavior. As described above, they can have interactive effects, but this does not explain the finding of dispositional and situational main effects on prosocial and antisocial behavior, as reported in many studies (e.g. Batson & Ahmad, 2001; Van IJzendoorn et al., 2010). A likely explanation might be that dispositional factors are of major influence on prosocial and antisocial behavior when situational factors are absent or weak. But, when robust situational factors are present, they may largely override the effects of dispositional factors. For example, personal responsibility of a child was of influence on prosocial behavior, but only when peer pressure was low. When perceived peer pressure was high, children showed high levels of prosocial behavior, independent of their levels of personal responsibility (Pozzoli & Gini, 2010). Also, when people were socially excluded, their empathy levels were much lower than those of not-excluded participants, and in turn they showed lower levels of prosocial behavior (Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007).

Associations between prosocial and antisocial behavior

We did not find associations between prosocial and antisocial behavior in this thesis. In Chapter 3 and 4 the high increasing aggression trajectory (Chapter 2) was not associated with donating or defending behavior. Furthermore, the prosocial group in the low aggression trajectory did not show lower levels of complicit bystander behavior in Chapter 4. However, in the sample used for Chapter 3, 4, and 5 higher prosocial scores on the Strength and Difficulties Questionnaire (Goodman, 1997) were associated with lower parent-reported aggression on the Child Behavior Checklist both measured at age 6 (Achenbach & Rescorla, 2000; $R = -.48$, $p < .001$). Although, other studies report on children with both high levels of antisocial and low levels of prosocial behavior as well (Flynn et al., 2015; Kokko, Tremblay, Lacourse, Nagin, & Vitaro, 2006; Nantel-Vivier, Pihl, Côté, & Tremblay, 2014), the association in the current thesis might be (partly) a result of our selection process: all children selected for the prosocial group were screened for low parent-reported aggression levels, and the aggressive group consisted of children with relatively high levels of aggression, which must have inflated the correlation. Also, common method variance might have led to a stronger association, as both questionnaires were parent reports, assessed at the same moment in time.

Speculatively, associations between the broad constructs of prosocial and antisocial behavior, measured with questionnaires, might be stronger than associations with specific types of observed prosocial or antisocial behavior, such as donating or bystander behavior during social exclusion. Specific types of prosocial and antisocial behavior might be more situationally determined than global measures, resulting in the absence of associations with trait-like personality measures. For example, specific, in behavior-genetics studies observed types of prosocial behavior showed a smaller heritable component than broad constructs of prosocial behavior measured with a questionnaire (Fortuna & Knafo, 2014).

Methodological considerations

The Generation R study and sample. The current thesis was 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). This provided us with measures on child behavior, cognition, parenting, and socioeconomic factors from the prenatal phase up to the age of 8. For example, repeated measurements of child aggressive behavior were available between the age of 1.5 and 6, which enabled us to model developmental trajectories of early childhood aggression, see Chapter 2. These trajectories combined with measures of parent-reported prosocial behavior were then used for the sample selection in Chapter 3, 4, and 5. With this smaller sample we were able to obtain more in depth measures of prosocial and antisocial behavior, as well as to collect extensive neuroimaging data. Especially the prevalence of antisocial behavior in population based studies is relatively low (e.g. Baillargeon et al., 2007). By selecting children with high levels of aggressive behavior on the one hand and children with high prosocial scores on the other hand, we obtained large variation in such behavior and skewness of the variables was reduced. Thereby, we maximized the change of finding replicable associations between precursors of prosocial and antisocial behavior. This selection of course might imply that prevalences of and associations with prosocial and antisocial behavior found in the studies reported in the current thesis diverge from associations in the population. As a result of the oversampling, associations found in Chapter 3 and 5 might be stronger than in the population. Furthermore, the small increase in prosocial defender behavior from the fair to the unfair phase in the PCG in Chapter 4 might have been a result of the sampling method. The overrepresentation of antisocial children might have resulted in lower average compensating levels than reported in other studies (e.g. Vrijhof et al., 2016).

Measurement of prosocial behavior. Many studies rely on self- or other reports of prosocial behavior (e.g. Kokko et al., 2006; Viding, Simmonds, Petrides, & Frederickson, 2009). Such questionnaires often measure global prosocial behavior covering a wide range of prosocial acts, for example, helping, comforting, and sharing (Goodman, 1997; Kokko et al., 2006). However, prosocial behavior is a multidimensional construct (Padilla-Walker & Carlo, 2014), including behaviors which are not necessarily correlated (e.g. Dunfield et al., 2011). Furthermore, self-reports of prosocial behavior often diverge from prosocial acts (Bonnefon, Shariff, & Rahwan, 2016; Salmivalli, Lagerspetz, Björkqvist, Österman, & Kaukiainen, 1996). For the current thesis we made use of two observational measures of prosocial behavior. An advantage of the virtual PCG game is that we could adapt the environment of social exclusion in such a manner that we were able to manipulate the situation and observe bystander behavior. More-

over, as the money in the donating task was given away to UNICEF, children really contributed to a good cause by donating their own money. This goes beyond perceptions of one's own prosocial behavior or intentions measured using questionnaires and hypothetical prosocial dilemma's. In the end, people in need are only helped by prosocial acts that are executed, and not by intentions or perceptions of one's prosocial deeds.

An increase in costs decreases the likelihood that people will act prosocially (Bonnefon et al., 2016). As the costs of prosocial behavior in our two paradigms were high (monetary loss, reputational damage, and risk of social exclusion) it is even more remarkable that we identified children who were prosocial towards another child in need or a victim of bullying. In the donating task, some children gave up more than half or even all of their money. What made the occurrence of prosocial behavior in both paradigms even more special was that the gains of acting prosocially were low. A reputational benefit towards the excluded familiar adult could have been of influence, however, we did not observe more prosocial behavior in the familiar condition. Furthermore, donations were made in private and no (reputational) benefits could be obtained from this task. In a previous study, public prosocial behavior and private prosocial behavior were inversely related (Carlo & Randall, 2002).

Also, both the donating task and the first condition of the PCG included unknown people in need. Whereas prosocial behavior towards a familiar individual in need can be motivated by for example inclusive fitness or reciprocity (Hamilton, 1964a, 1964b; Trivers, 1971; Zhang & Epley, 2009), such effects cannot play a role with prosocial behavior towards a stranger. Last, adhering to social norms can motivate people to act prosocially (Kallgren et al., 2000). While this preference for norm adherence might have been a factor of influence for children who were confronted with the donating peer, children who were not shown such a moral exemplar donated as well. Taken together this may indicate that children's motivations to act prosocially in both paradigms were truly altruistic. Of course, feeling good about oneself following prosocial behavior could be a rewarding factor, but monetary donations were less strongly motivated by warm glow feelings than donations of time (Lilley & Slonim, 2014).

Trajectories of aggression. While the longitudinal measurement of behavior can be of great importance, in Chapter 2 we showed that it is vital to critically evaluate the additive value of approaches such as trajectory mod-

elling, based on longitudinal data. The aggression trajectories in Chapter 2 had no added predictive validity for antisocial behavior at school as compared to a single time-point assessment of aggressive behavior. Even though many studies use a trajectory approach when examining distinct behavioral phenotypes (e.g. Campbell, Spieker, Burchinal, & Poe, 2006; Kokko et al., 2006), they do not examine what longitudinal measures add to the prediction of their outcome over and above a single assessment of their behavior of interest. Especially when behavior is stable over time, one should test what trajectories add to a prediction model, in particular when trajectories do not cross over across time.

In Chapter 2 we also demonstrated that the disagreement between reporters about levels of children's aggressive behavior was rather large. Other studies also present greater discrepancy between reports on children's antisocial behavior from distinct settings compared with reports from settings which are more alike (Achenbach, McConaughy, & Howell, 1987; Hinshaw, Han, Erhardt, & Huber, 1992). More general statements about a child's trait-like behavior should therefore stem from reports of multiple informants in various settings. This converges with Kraemer et al. (2003) who suggest that the right set of informants should be based on the settings and perspectives that influence the behavior at interest, in order to correct for rater biases. Furthermore, as parent-reported trajectories of aggression did not relate to children's observed complicit bystander behavior during the PCG (Chapter 4), it may be important to include standardized observations of a child's specific antisocial behavior, preferably in multiple settings, to complement global ratings.

Limitations

This thesis had some limitations. First, within the Generation R Study, no longitudinal measures of prosocial behavior were available. As the current study also showed a dispositional factor of prosocial behavior (Chapter 5), it would have been interesting to test the stability of prosocial behavior over time. Furthermore, the results of the current set of studies are mainly correlational, with the exception that we can infer the direction of effect with the experimentally induced situational effects in the donating paradigm and the PCG.

Although a large cohort study offers a wealth of information, we often have to rely on questionnaire data, as it is practically impossible to measure all types of behavior and cognition of interest using observations or standardized tests in such a large cohort. Questionnaire data suffer from some limitations such as a focus on more global aspects of the behavior of interest (e.g. Kokko et al., 2006), while such aspects are not always related (e.g. Dunfield et al., 2011). Also, questionnaires can have low correspondence with observed behavior, due to self-perception bias (e.g. Salmivalli et al., 1996). For example, people assume that others are more strongly biased than they are themselves on self-reports (Pronin, Gilovich, & Ross, 2004), and they credit themselves for their above-average (prosocial) intentions on questionnaires (Kruger & Gilovich, 2004). This possibly also applies to the reports of parents about their child's behavior as parents were found to report more positively about their children than did independent observers (Seifer, Sameroff, Dickstein, Schiller, & Hayden, 2004).

The sample sizes of the studies presented in Chapter 3, 4, and 5 were relatively small, which limits statistical power. The lack of power prevented us from conducting a whole brain resting state functional connectivity analysis in the study described in Chapter 5. Furthermore, a replication of the results within the same sample in Chapter 3, 4, and 5 was not possible. Nevertheless, especially for neuroimaging analyses in childhood, the sample was rather large compared to other studies, and enabled us to discover neuroanatomical correlates of donating behavior.

Recommendations for future research and interventions

Although many studies focus on the dispositional correlates of prosocial behavior, the current set of studies shows that situational factors can be of major influence as well. Future studies focusing on prosocial behavior should therefore take into account situational demands next to dispositional factors and also test for the mutual influence of dispositional and situational factors on prosocial behavior.

We studied only two types of situational factors and their influence on prosocial acts measured with a donating paradigm and the PCG. As other situational factors were also found to affect prosocial behavior (e.g. Engelmann, Herrmann, & Tomasello, 2012; Powell, Roberts, & Nettle, 2012) it should be studied whether such divergent situational factors have an

equally strong influence on every type of prosocial behavior to give directions to interventions targeting increases in prosocial behavior. For example, a moral exemplar during the PCG may affect defending behavior. Whereas in the paradigm in Chapter 4 only antisocial behavior was modelled by the two bullies, prosocial defending behavior by a co-player might lead to an increase in defending behavior by children, as modelling of prosocial behavior has shown to be of influence (e.g. Kallgren et al., 2000). Also, whether some types of prosocial behavior may be more affected by situational demands and others by dispositional factors, should be subject to further research.

As prosocial and antisocial behavior were found to be unrelated in the current set of studies, but also in previous research (e.g. Krueger et al., 2001; Veenstra et al., 2008), the mere reduction of antisocial behavior does not automatically lead to an increase of prosocial behavior. Therefore, both have to be targeted in interventions aiming at a decrease in antisocial behavior as well as an increase in prosocial behavior. Furthermore, as children can show both prosocial and antisocial behavior it would be of interest which situational factor would prevail in instances where both prosocial and antisocial behavior are encouraged by different situational demands and whether such effects would be similar across children. As dispositional factors were shown to influence sensitivity to situational demands (Chapter 3), a child's response to situational factors promoting either prosocial or antisocial behavior might differ depending on their specific traits and interventions aiming to increase prosocial or decrease antisocial behavior could benefit from taking such sensitivity into account.

For both future research and interventions it would be of interest to study how situational factors that promote prosocial behavior can be implemented in real life. For example nudges, subtle changes in the environment, can already bring about changes in behavior in real life settings. By using indirect suggestions, changing social norms, and framing, people can be nudged into a certain direction (Thaler & Sunstein, 2008). For example, default options on forms are often strong nudges (Thaler & Sunstein, 2008) and implementing such options on donation forms might increase charitable giving. As shown in Chapter 3, modelling is effective to increase prosocial behavior as well and public figures could be used for modelling prosociality, as their behavior is highly visible.

Furthermore, the fact that we and others (e.g. Van IJzendoorn et al., 2010) did not find an effect of parenting on prosocial behavior, does not imply that parents are of no influence on their child's prosocial and antisocial behavior. The results of a prosocial model in Chapter 3 suggest that parents should be made aware (for example through interventions) that by setting a good example they can influence their child's prosocial behavior.

Concluding remarks

The current thesis shows that 8-year-old children are capable of acting altruistically to others in need, by helping them at high costs and without any gains. While many children act prosocially towards others, we also observed antisocial tendencies at this age, and younger. However, we could hardly identify children who consistently act prosocially or antisocially across settings, which highlights the situational dependency of these behaviors. Still, dispositional factors should not be ignored in the study of prosocial and antisocial behavior, especially since we showed that their interplay with situational factors can lead to divergent outcomes between children. Besides, a neuroanatomical correlate of donating behavior was identified, stressing that at least one type of prosocial behavior in childhood may at least partly be 'embodied'. In future studies it is important to use standardized paradigms and observations of prosocial behavior, and to be less dependent of self-reported perceptions of (intended) prosociality, as only real prosocial behaviors truly benefit others.

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