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

Wildeboer, A.

Chapter 4

Bystander behavior during social exclusion is independent of familiarity of the victim, child, and parenting characteristics

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Abstract

Bystanders of social exclusion, a special form of bullying, can defend the victim, they can be passive bystanders, or they can join in with the exclusion. As being bullied has many negative consequences, it is important to examine what drives bystander behavior. We examined how bystander behavior was associated with situational, background, child, and parenting characteristics in a sample of 215 children of 8 years old. Children played an online ball-tossing game, in which two players excluded a third player, who was unfamiliar to the child in one condition and familiar in the other condition. Children were assigned to one of three bystander groups, depending on whether they joined in with the bullying, remained passive, or defended the victim. None of the background, child, and parenting characteristics were associated with bystander behavior, therefore it is likely that situational factors influenced such behavior. However the situational factor that we modulated, familiarity of the excluded individual, did not affect bystander behavior. Although the three-partite bystander roles were empirically derived from behavior in the ball-tossing game, correlates and determinants of these roles remain elusive.

Introduction

While bullying always involves a bully and a victim, bystanders also have an important role in the bullying situation as they can defend the victim, passively watch, or join in with bullying (Salmivalli, Lagerspetz, Björkqvist, Österman &, Kaukiainen, 1996). Because being bullied in childhood has many negative consequences, such as a larger probability of becoming depressed, having a panic disorder, or generalized anxiety (Copeland, Wolke, Angold, Costello, 2013; Ttofi, Farrington, Lösel, & Loeber, 2011), it is important to know what drives children to join in with bullying or to defend the victim. Recent studies documented personality and background correlates of such participant roles (e.g. Pozzoli & Gini, 2010; Quirk & Campbell, 2015), but prosocial defender behavior is also known to be dependent of the specific situation (Oh & Hazler, 2009). Furthermore, participant roles have mostly been studied using self-reports or peer nominations. However, children tend to underestimate their own antisocial behavior and overestimate their prosocial responses in bullying situations (Salmivalli et al., 1996). Furthermore, peer-reports are limited by the fact that peers might not be present in every bullying situation a child is involved in (Quirk & Campbell, 2015), and they might not be able to observe more subtle bystander behaviors in children. The current study utilizes an online social exclusion setting to examine the effect of situational demands on bystander behavior, also incorporating background, personal and parenting correlates of observed bystander behavior.

Many studies on participant roles focus on bullying in general (e.g. Salmivalli et al., 1996), but bullying covers a wide range of behaviors, and it is important to distinguish different forms of bullying (Arora, 1996). In the current study we focused on social exclusion, a direct relational form of bullying. Social exclusion is associated with a decrease in feelings of belonging, control, self-esteem, meaningful existence, and enhanced aggression and anger (Chen, DeWall, Poon, & Chen, 2012; Chow, Tiedens, & Govan, 2008; Zadro, Williams, & Richardson, 2004). Direct relational bullying has the largest likelihood of peer support and reinforcement for the bully (Tapper & Boulton, 2005).

Not only the bully and victim roles are important in a bullying situation, the bystanders are important as well, as bullying in most instances takes place in a social context (Craig & Pepler, 1998). Bystanders are of major

influence on the bullying situation as they can respond to bullying by reinforcing or assisting the bully, passively watch the situation, or help the victim through active defense (O'Connell, Pepler, & Craig, 1999; Salmivalli et al., 1996; Sutton & Smith, 1999). Although similar roles of bystanders can be distinguished in online bullying situations and face-to-face bullying, children often adopt different participant roles in these different contexts (Quirk & Campbell, 2015). Bystanders more often show negative bystander behavior in online bullying situations compared with face-to-face bullying (Barli ska, Szuster, & Winiewski, 2013). This might be due to the lack of, e.g., non-verbal feedback in online interactions, which in face-to-face situations facilitates empathy for the victim (Heirman & Walrave, 2008; Smith et al., 2008).

Participant roles in bullying have been associated with background variables, such as gender and age (e.g. Oh & Hazler, 2009; Pozzoli & Gini, 2010; Quirk & Campbell, 2015; Salmivalli et al., 1996), and prosocial and antisocial child characteristics such as empathy and aggression (Barli ska et al., 2013; Gini, Albiero, Benelli, & Altoè, 2008; Nickerson, Mele, & Princiotta, 2008; Nickerson & Mele-Taylor, 2014; Oh & Hazler, 2009; Pozzoli & Gini, 2010). Parenting has only rarely been studied in relation to participant roles. Parental support was found to be associated with defender behavior in one study but was unrelated with defender behavior in another study (Choi & Cho, 2013; Li, Chen, Chen, & Wu, 2015). Although harsh parenting has been associated with antisocial behavior in children (e.g. Chang, Schwartz, Dodge, & McBride-Chang, 2003; Kawabata, Alink, Tseng, Van IJzendoorn, & Crick, 2011), to our knowledge no studies have evaluated its relation with bystander behavior. Furthermore, background, child, and parenting variables have not been examined together in relation to observed bystander behavior in an online bullying environment.

Familiarity of the victim might make much of a difference for bystander responses. Children more often support friends in a conflict (Chaux, 2005), and closeness to a victim of bullying fosters prosocial responses to the bullying situation (Oh & Hazler, 2009). Likewise, students report that the likelihood of their intervening in a situation in which someone was attacked on the street was higher when this was an in-group as compared to an out-group member (Levine, Cassidy, Brazier, & Reicher, 2002). Other forms of prosocial behavior were also found to be dependent on specifics of the situation (Engelmann, Herrmann, & Tomasello, 2012; Leimgruber, Shaw, Santos, & Olson, 2012; Van IJzendoorn, Bakermans-Kranenburg, Pannebakker, & Out, 2010).

Defender behavior might even be more dependent on situational factors than on background, child or parenting characteristics. One study found that defender behavior was predicted by personal responsibility (a child characteristic) only if perceived peer pressure (a situational factor) was low. When perceived peer pressure was high, children exhibited high levels of defending behavior, independent of levels of personal responsibility (Pozzoli & Gini, 2010). Similarly, defender behavior was dependent on children's fatalistic attitude towards bullying only when they experienced low levels of parental support, whereas children with high levels of parental support showed high levels of defender behavior independent of their fatalistic attitude towards bullying (Li et al., 2015). Situational factors may thus override the effects of dispositional factors. However, dispositional factors might make children also more or less sensitive to situational cues. For anxiety and autistic traits it was shown that these dispositional factors influence a child's sensitivity to situational cues (e.g. Izuma, Matsumoto, Camerer, & Adolphs, 2011; Kochanska, 1997; Kochanska, Aksan, & Joy, 2007; Wildeboer et al., 2016). However, whether situational and dispositional factors show a similar interplay affecting bystander behavior in an online social exclusion situation is unknown.

The aim of the current study was (i) to test which background, child, and parenting variables were associated with bystander behavior during an online bullying situation; (ii) to test if situational characteristics (an unfamiliar or familiar excluded person) influence bystander behavior; and (iii) to examine whether situational effects were dependent on child characteristics. With an exploratory aim, we also examined the role of other background, child, and parenting variables in predicting the influence of victim familiarity on bystander behavior. First, we expected background, child, and parenting variables to differentiate between complicit and passive bystander behavior and between active defender and passive bystander behavior. Furthermore, we expected that children would defend the victim more often if the victim was familiar to them. Lastly, we expected that factors previously associated with sensitivity to situational cues (anxiety, autistic traits, situation dependent honesty/lying; Thijssen et al., 2016; Wildeboer et al., 2016) would be associated with a differential increase in defending unfamiliar versus familiar victims.

Methods

Setting

The current study is 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 resided in Rotterdam were invited to participate. At approximately 8 years of age, a subsample was invited to participate in a lab visit with detailed measures on neuropsychological and behavioral functioning. The study was approved by the Medical Ethical Committee of the Erasmus Medical Center, Rotterdam. Written informed consent was obtained from all parents and assent was obtained from all children.

Participants

The project of which the current study was part aimed to measure antisocial as well as prosocial behavior. To obtain sufficient variation and avoid skewness in the distribution of outcome variables, we preselected an aggressive, a prosocial, and a typical group from the Generation R Study, based on parent reports on the aggressive behavior scale of the Child Behavior Checklist 1½–5 (CBCL, Achenbach & Rescorla, 2000) and the prosocial scale of the Strengths and Difficulties Questionnaire (SDQ, Goodman, 1997). Trajectories of aggressive behavior were distinguished for children of Dutch origin who had at least two CBCL aggression scores available at age 1.5, 3 and/or 6. A three-trajectory solution was selected as optimal, comprising a high, intermediate and low aggression trajectory (Wildeboer et al., 2015).

Children in the high aggression trajectory were eligible for the high aggressive group. Children in the lowest aggression trajectory who had a high prosocial score on the SDQ (14 or 15, range 5-15) were eligible for the high prosocial group. Children in the low aggression trajectory with a prosocial score < 14 or in the intermediate aggression trajectory were eligible for the typical group. This resulted in a total sample of 291 children who were invited to take part in the current study. Of these, 59 children and/or their parents refused to participate and did not visit the research center.

In 16 children, data on the outcome variable was not available due to technical difficulties or because the child was unmotivated. One child had an IQ < 70 and was therefore excluded from the analyses. This resulted in a final sample of 215 children, see **TABLE 4.1** for sample characteristics.

TABLE 4.1
Sample Characteristics

Child	*M*(*SD*)/*N* (%)	Family	*N* (%)
Age, *M*(*SD*)	8.58 (0.74)	Education, *n* (%) ≥ 1 parent higher	174 (81)
Gender, *n* (%) boys	108 (50)	Income, *n* (%)	
IQ, *M*(*SD*)	105.47 (13.72-14.11)	€800-1,600	5 (2)
Empathy, *M*(*SD*)	4.66 (0.94-1.00)	€1,600-2,400	18 (8)
Guilt, *M*(*SD*)	4.10 (0.89-0.92)	€2,400-3,200	40 (19)
Inhibition, *M*(*SD*)	30.91 (3.79-3.88)	€3,200-4,000	46 (21)
No. donated €0.20 coins, *M*(*SD*)	8.11 (6.79-6.95)	€4,000-4,800	38 (18)
Honesty, *n* (%)		€4,800-5,600	24 (11)
Honest	49 (23)	>€5,600	44 (20)
Situational liars	83 (38)	Parity, *n* (%) ≥ 1 sibling	192 (89)
Persistent liars	83 (39)	Harsh parenting mother, *n* (%) none	117 (54)
Groups, *n*(%)		Harsh parenting father, *n* (%) none	120 (56)
Prosocial	59 (27)		
Antisocial	71 (33)		
Typical	85 (40)		
Bullying, *n* (%) never	130 (60)		
Victimization, *n* (%) never	118 (55)		
Anxiety, *M*(*SD*)	1.61 (1.82-1.88)		
Social resp. probl., *M*(*SD*)	0.25 (0.25-0.27)		

N = 215.
Note. Reported values are untransformed, imputed data.
SD is not available as pooled measure and therefore the range of *SD* over the five imputed datasets is reported.

Participating children did not differ from the non-participating children on gender, IQ, family income and education of the parents, guilt, social responsiveness problems, anxiety, antisocial/prosocial group for which they were invited, bullying, victimization, and harsh parenting of the father and mother. However, participating children more often had one or more siblings (89%) than excluded children (77%), $\chi^2(1)= 7.04$, $p = .008$, $\varphi = .16$. Furthermore, participating children had lower levels of empathy, $t(265) = 1.97$, p .049, Cohen's d =0.28 (included $M = 4.68$ ($SD = 0.95$), excluded $M = 4.94$ ($SD = 0.85$)).

Procedure

When the children were age 3, a questionnaire was sent out to the parents including items on harsh parenting of both the father and the mother. At the age of 6, two consecutive questionnaires were sent to the parents. The first questionnaire measured anxiety as well as family income, educational level of the parents, and parity. The second questionnaire included questions on empathy, guilt, and social responsiveness problems. IQ was measured during a lab visit at age 6. When the children were 8 years old, a third questionnaire was sent to the parents that included items on bullying and victimization. Participant roles in a social exclusion situation, donating behavior, lying/honesty, and inhibition were also measured at age 8 during a lab visit.

Measures

Participant roles in a social exclusion situation. Participant roles during social exclusion were measured using an adapted version of Cyberball; the Prosocial Cyberball Game (PCG; Riem, Bakermans-Kranenburg, Huffmeijer, & Van IJzendoorn, 2013; Vrijhof et al., 2016). Cyberball is a well-known computerized task in which children are led to believe that they play a ball game in which they get excluded by the two other players (Crowley, Wu, Molfese, & Mayes, 2010; Williams, Cheung, & Choi, 2000). In the PCG, not the participating child but one of the computerized co-players gets excluded. In the PCG, there are three other players, located at the left, top, and on the right side of the computer screen, represented by a picture, name, and baseball glove. The player at the left and right were matched on age and gender with the participant. The player at the top was an unfamiliar female adult.

The game started with a fair phase (48 throws in total), in which the participant and the other three players received the ball roughly 25% of the time. The child could choose to whom to throw the ball with marked keys on a keyboard. In the following unfair phase (48 throws in total), the player at the left and right started to exclude the player at the top by not throwing the ball to this player anymore. The child was free to choose to whom to throw the ball.

When the game ended, the participant was told by a voice-over on the computer that they were going to play the game again. The second game was identical to the first, except that the player at the top was an adult who was familiar to the participant; the research-assistant. The child had spent approximately 50 minutes with the research-assistant prior to the PCG doing neuropsychological tests. Before the start of the first PCG, the child was informed that the research-assistant would be a co-player in the second game.

Participant roles were defined by deciding whether children compensated for the lack of throws from the two other players to the excluded player (active defenders), joined the exclusion by not (or hardly) throwing to the excluded player (complicit bystanders), or whether they did not chose sides (passive bystanders).

Construction of participant roles in a social exclusion situation. For each participant, a score for compensation in the unfair condition is calculated from

$$f = \frac{\textit{Number of tosses to player at the top in unfair game}}{\textit{Total number of tosses in unfair game}} - \frac{\textit{Number of tosses to player at the top in fair game}}{\textit{Total number of tosses in fair game}}$$

f is a measure of the increase (or decrease) of tossing to the excluded player in the unfair phase, compared to the fair phase. Thresholds for categorizing the participants in three groups can be extracted from the distribution of all values. A probability density function (PDF) consisting of three Gaussians was fitted to the distribution. The intersections of the Gaussians mark the values of the transition where it becomes more likely that a participant belongs to one group than another, and these intersections can therefore be used as thresholds (developed by JB, based on Cowan, 1998; Dulin, Berghuis, Depken, & Dekker, 2015).

Fitting a probability density function to the distribution is done by Maximum Likelihood Estimation (MLE) using Matlab. In an MLE fit, the parameters of the probability density function $A,B,C,\mu_1, \mu_2, \mu_3, \sigma_1, \sigma_2, \sigma_3$ of the probability density function $PDF\ (f|\ A,B,C,\mu_1, \mu_2, \mu_3, \sigma_1, \sigma_2, \sigma_3) = A * norm\ (\mu_1, \sigma_1) + A * norm\ (\mu_2, \sigma_2) + C * norm(\mu_3, \sigma_3)$ are varied such that the likelihood of obtaining the actual data by drawing from that PDF is maximized. In other words, based on three groups of values, each described by a Gaussian, the MLE fit describes the most likely way that these groups yield the measured data. For the values at the intersection of the Gaussians, the probability of

belonging to the group left of the intersection is equal to that of belonging to the group right of the intersection. A participant with a lower value is more likely to belong to the group left of the intersection, a participant with a higher value is more likely to belong to the group on the right of the intersection. For the familiar condition, the group of children to the right of the intersection at 0.20 is defined as the group of active defenders (showing an increase of tosses to the excluded player in the unfair phase), children with scores lower than -0.13 are considered complicit bystanders (showing a decrease of tosses to the excluded player in the unfair phase), and the middle group is the group of passive bystanders (showing no large increase or decrease of tosses to the excluded player in the unfair phase; see **FIGURE 4.1**). For the unfamiliar condition, only two groups could be distinguished (corresponding with the complicit bystander and passive bystander groups of the familiar condition; see **FIGURE 4.2**). Although no curve for an active defender group was found, the distribution of unfamiliar scores also included children with high scores (corresponding to the defender group in the familiar condition). Therefore, we used the same intersection points to create the three participant role groups in the unfamiliar condition.

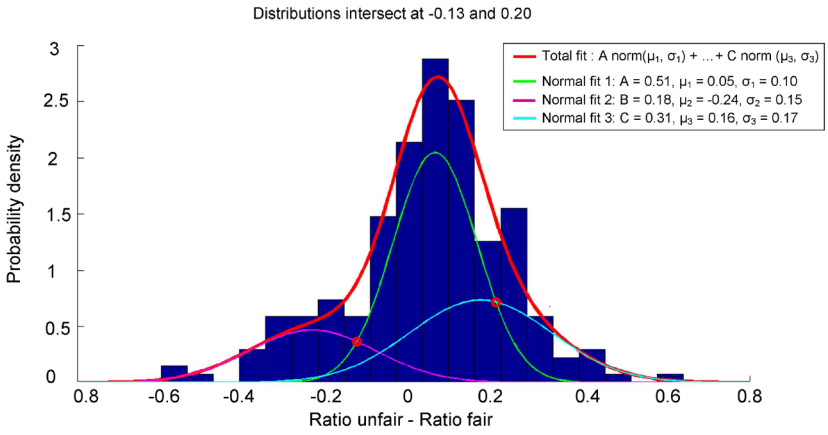

FIGURE 4.1
Distribution familiar difference score including Gaussians and their intersection points.

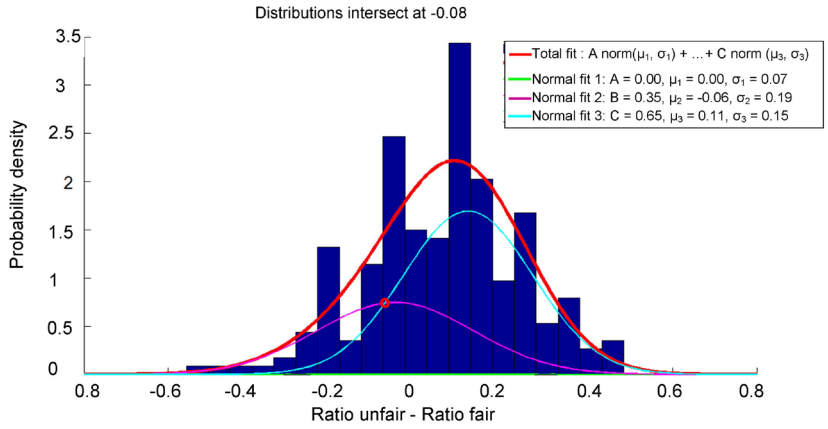

FIGURE 4.2
Distribution unfamiliar difference score including Gaussians and their intersection points

Empathy and guilt. Empathy and guilt were measured using a shortened subscale of the My Child Questionnaire (Kochanska, DeVet, Goldman, Murray, & Putnam, 1994), a parent-report questionnaire on conscience development. The questionnaire was shortened with approval of Kochanska (personal communication). Questions were presented on a 7-point Likert scale ('*not applicable at all*' to '*fully applicable*'). The Empathy subscale consisted of seven items (e.g. '*My child will try to console or comfort somebody who is unhappy*') and internal consistency of this subscale was questionable/acceptable, Cronbach's α = .66 (in the complete data). The Guilt/Remorse subscale consisted of 8 items (e.g. '*My child continues to feel bad even after he/she has already been forgiven for his/her lapse or blunder*') and the internal consistency was acceptable, Cronbach's α = .70 (in the complete data).

Inhibition. Using the Response Set task from the NEPSY-II-NL (Korkman, Kirk, & Kemp, 2010; White et al., 2013), inhibition was measured. The NEPSY-II-NL is a Dutch translation of the North American NEPSY-II (Brooks, Sherman, & Strauss, 2010) and is suitable to assess neuropsychological functioning in 5- to 12-year-old children. The subscale used to assess inhibition also measured working memory.

Donating behavior. Donating behavior was measured during the same lab visit as the PCG using an adapted version of the donating task by Van IJzendoorn and colleagues (2010). In the absence of their parent, children

received 20 coins of 20 eurocents (€4.00) prior to the start of the task. The children received the money as a reward for their participation in the previous tasks. Subsequently, they were asked to watch a short UNICEF movie about a girl in Bangladesh who had to work in a stone pit and therefore could not go to school. The movie was presented as a means to raise money to help the girl go to school. When the movie ended, the children were asked by a voice-over and by a text on the computer screen whether they wanted to donate money in the moneybox that stood in front of them. The experimenter returned 30 seconds after the movie had ended. Though not the focus of the current study, for a random half of the children, a video-fragment followed after the movie that showed a probe of a same-sex peer in the same research setting donating 20 eurocent coins to the charity. We included the version of the task (with or without probe) as a covariate in all analyses including donating behavior.

Money donations were not normally distributed, instead a distribution with several peaks was found. Therefore we distinguished four categories: donated nothing (0 coins), donated less than half (1-9 coins), donated half or more than half (10-19 coins), donated everything (20 coins). The pattern of scores then approached a normal distribution.

Anxiety. Anxiety was assessed using the Child Behavior Checklist/1½–5 (CBCL, Achenbach & Rescorla, 2000), a self-administered parent-report questionnaire including 99 items concerning emotional and behavioral problems of the child. Because the majority of children were younger than age 6 during the measurement of parent-reported anxiety, we chose to use the CBCL/1½–5. The Anxiety subscale consisted of eight items (e.g. '*Too fearful or anxious*'), which could be rated on a 3 point scale (0 = '*not true*', 1 = '*somewhat true or sometimes true*', 2 = '*very true or often true*'). The subscale had an acceptable internal consistency, Cronbach's $\alpha = .69$ (in the complete data).

Social responsiveness problems. To assess autistic traits, a shortened version of the Social Responsiveness Scale (SRS, Constantino, 2002; Román et al., 2013) was used. Parents reported on their child's social responsiveness problems in a naturalistic setting. The shortened scale comprised 18 items (e.g. '*Avoids eye contact, or has unusual eye contact*'). Questions could be answered on a 4-point scale ('*not true*' to '*almost always true*'). The current scale had good internal consistency, Cronbach's $\alpha = .82$ (in the complete data). SRS total scores show strong correlations with a diagnostic instrument for autism (Constantino et al., 2003).

Lying/honesty. Lying/honesty was measured using a child-friendly adaptation of Greene and Paxton (2009). The task was performed in a scanner (Thijssen et al., 2016), but in the current study only behavioral data will be used. During the task, children were asked to predict a random computerized event. Children were not asked for their prediction, only for their accuracy after each trial. When children indicated that they were correct, they were rewarded with €0.05. The task was done twice: once in a low perceived lie-detectability situation and again in a high-perceived lie-detectability situation. The only difference between these conditions was that at the start of the latter condition, children were told that the research-assistant who operated the MRI machine could tell whether they were being honest or not. Children with unlikely high self-reported accuracy levels (one-tailed binomial test, $p < .05$; more than 13 correct guesses (72%) in 18 trials) were classified as dishonest. Children were divided into three groups: persistently honest (honest in both conditions), low lie-detectability lie-tellers (dishonest in the low lie-detectability condition only), and persistent lie-tellers (dishonest in both conditions).

Bullying and victimization. Bullying and victimization were measured using a parent-report questionnaire (Alsaker & Valkanover, 2000). Both scales consisted of three items, covering verbal and physical bullying/victimization, and exclusion. Items could be answered on a 5-point Likert scale ('*never*' to '*several times a week*'). After transformation of the skewed variables, skewness remained severe and therefore the variables were dichotomized into children who had never bullied/children who were never a victim of bullying and children who had bullied/children who had been a victim of bullying.

Harsh parenting. Maternal and paternal harsh parenting was measured separately using self-report questionnaires. A harsh discipline scale was constructed for both parents, consisting of six items of the Parent-Child Conflict Tactics scale (Straus, Hamby, Finkelhor, Moore, & Runyan, 1998). The items were selected in an earlier study within the same cohort, based on factor analysis (Jansen et al., 2012). Mothers and fathers reported on their use of harsh discipline (e.g. '*shook my child*') during the past two weeks on a 6-point Likert scale ('*never*' to '*five times or more*'). Due to low internal consistency of the scales, we dichotomized the variables for father- and mother-report separately into children who never experienced harsh parenting and children who experienced one or more acts of harsh parenting one or more times in the past two weeks. As one item ("*I shouted or screamed*

angrily at my child") was experienced by almost all children, this item was deleted before we dichotomized this variable (for a similar approach see Jansen et al., 2012).

Covariates. We included the following covariates: gender, age of the child, IQ, family income, educational levels of the parents, and parity. IQ was assessed using Mosaics and Categories, two subtests from the Snijders-Oomen Non-verbal Intelligence Test – Revised (Tellegen, Winkel, Wijnberg-Williams, & Laros, 2005). Family income was measured in categories, each comprising a range of €800 (see **TABLE 4.1** for categories). When either one or both of the parents obtained higher education, educational level was coded as 'higher', when both parents completed secondary education or lower, the variable was coded as 'other'. Parity was dichotomized into 'none' and 'one or more siblings'.

Data analysis

Correlations between all variables were computed, using passive bystanders as the reference category for participant roles. Paired *t*-tests were used to test whether the proportion of throws to the excluded player (number of throws to the excluded player divided by the total number of participant throws) was different in the fair versus the unfair phase in both the unfamiliar and the familiar condition.

To approach normality, skewed predictor variables were transformed. Anxiety and social responsiveness problems were moderately skewed and therefore a square root transformation was applied. Because of severe skewness, inhibition, bullying, and victimization were transformed using a log10 transformation (Tabachnik & Fidell, 2007). Missing data on the predictor variables ranged between 0 and 15% and was imputed using the multiple imputation method (Markov chain Monte Carlo) with five imputations and 10 iterations in SPSS 21. For statistics that could not be pooled by SPSS 21.0 (e.g. R^2), the value range over the five imputed datasets is provided.

To test associations with the participant roles, we used multinomial logistic regression analyses for the unfamiliar and familiar condition separately with the passive bystanders as the reference group. Variables were included in the multinomial logistic regression in a hierarchical way.

Variables remained in a next step if the *p*-value of their contribution to the prediction was < .10 (as we did not want to be too stringent in our selection of variables for which we controlled the analyses). In the first model we included the covariates gender, age, IQ, educational level of the parents, income, and parity. In the second model, we included variables associated with prosocial behavior; empathy, guilt, inhibition, and donating (including the version of the donating task as a covariate). The third model comprised variables associated with problem behavior; the honesty/lying grouping, the antisocial/prosocial grouping on the basis of which children were selected to take part in the study, parent-reported bullying and victimization, anxiety, and social responsiveness problems. For the honesty/lying groups we made dummy variables with the honest children as the reference category. The same was done for the antisocial/prosocial groups with the typical group as the reference category. The fourth (and last) model included harsh parenting of both father and mother. The order in which variables were entered into the models was the same for the unfamiliar and familiar condition.

As a sensitivity analysis we explored associations with the continuous PCG score (proportion of throws to the excluded player in the unfair condition minus proportion of throws to the excluded player in the fair condition). We conducted hierarchical linear regression analyses controlling for the proportion of throws to the player at the top in the fair phase, in order to control for a preference of symmetry (which might already in the fair phase lead to a higher proportion of throws to the player at the top; the later excluded player). The order in which variables were entered into the models was similar to the multinomial logistic regression analyses described above.

Last, we tested whether there was an effect of the familiarity of the excluded player. A paired *t*-test was used to examine if the continuous PCG score in the unfamiliar condition differed from the continuous PCG score in the familiar condition. In a repeated measures analysis we tested which variables were associated with the familiarity effect; the change between the unfamiliar and familiar condition.

Results

Univariate associations

In the unfamiliar condition, 34 (16%) of the children were identified as complicit bystander, 134 (62%) as passive bystander, and 47 (22%) as active defender. In the familiar condition, 33 (15%) of the children were identified as complicit bystander, 144 (67%) as passive bystander, and 38 (18%) as active defender.

Correlations between all variables in the models are reported in **TABLE S4.1**. In the unfamiliar condition, there was a 5% increase (*SD* = 18.80) in mean proportion of throws to the excluded player from the fair to the unfair phase, $t(214) = -4.11$, $p < .001$, Cohen's $d = -0.37$ (fair $M = 0.38$ ($SD = 0.14$), unfair $M = 0.43$ ($SD = 0.15$)). In the familiar condition, there was a 4% increase ($SD = 19.11$) in mean proportion of throws to the excluded player from the fair to the unfair phase, $t(214) = -2.74$, $p = .007$, Cohen's $d = -0.24$ (fair $M = 0.41$ ($SD = 0.15$), unfair $M = 0.44$ ($SD = 0.17$)). See **TABLE 4.2**, **TABLE 4.3**, **TABLE 4.4**, and **TABLE 4.5** for frequencies and means of the predictor variables per group in the unfamiliar and familiar conditions, respectively.

Associations with participant roles in the unfamiliar condition

First, we tested the multinomial logistic regression model associating background variables with participant roles (**TABLE S4.2**). Passive bystanders were older than complicit bystanders, $B = -0.93$ ($SE = 0.34$), $p = .007$, $OR = 0.40$ (95% CI 0.20 – 0.77). There were fewer girls in the complicit bystander group as compared to the passive bystander group, $B = -1.15$ ($SE = 0.43$). $p = .007$. $OR = 0.32$ (95% CI 0.14 – 0.74). No other background variable was associated with participant roles. In the second model (**TABLE S4.3**) we found that guilt levels of complicit bystanders were higher than those of passive bystanders, $B = 0.56$ ($SE = 0.28$), $p = .041$, $OR = 1.75$ (95% CI 1.02 – 3.01). Age and gender were also associated with participant roles (same contrast and direction of effect as in the first model, see **TABLE S4.2**). No other prosocial variable was associated with participant roles. None of the variables in the third model (**TABLE S4.4**) was associated with participant roles, except for age and gender (same contrast and direction of effect as in the first model,

see TABLE S4.2). Guilt showed a trend ($p < .10$) for the passive bystander vs. active defender contrast and was included in the next model. In the last model, harsh parenting of the father and mother were not associated with participant roles (see TABLE S4.5). For the results of the hierarchical regression analyses on the continuous PCG score, see Supplementary material and TABLE S4.10. In short, except for a positive association with gender (girls showing more bystander behavior), no associations with bystander behavior in the unfamiliar condition using the continuous PCG score were found.

TABLE 4.2
Frequencies per Group in the Unfamiliar Condition

	Complicit	Passive	Defender	
	N (%[a])	*N* (%[a])	*N* (%[a])	χ^2
Gender				7.86*
Boy	24 (22)[b]	59 (55)[b]	25 (23)	
Girl	10 (9)[b]	75 (70)[b]	22 (21)	
Education				1.89
Secondary/lower	4 (10)	29 (71)	8 (20)	
Higher	30 (17)	105 (60)	39 (22)	
Parity				1.62-3.27
No siblings	2 (9)	18 (78)	3 (13)	
≥1 siblings	32 (17)	116 (60)	44 (23)	
Anti-/Prosocial groups				2.60
Prosocial	8 (14)	40 (68)	11 (19)	
Antisocial	9 (13)	45 (63)	17 (24)	
Typical	17 (20)	49 (58)	19 (22)	
Honesty/lying groups				2.02-3.91
Persistent liar	13 (16)	50 (60)	20 (24)	
Situational liar	16 (19)	52 (63)	15 (18)	
Honest	5 (10)	32 (65)	12 (24)	
Bully				0.30-3.44
No	20 (15)	79 (60)	32 (24)	
Yes	14 (17)	55 (65)	15 (18)	
Victim				0.08-2.51
No	18 (15)	71 (60)	29 (25)	
Yes	16 (16)	63 (65)	18 (19)	
Harsh parenting father				0.74-2.95
No harsh parenting	19 (16)	71 (59)	30 (25)	
Harsh parenting	15 (16)	63 (66)	17 (18)	
Harsh parenting mother				0.49-2.01
No harsh parenting	21 (18)	72 (62)	23 (20)	
Harsh parenting	13 (13)	62 (63)	24 (24)	

N = 215
Note. χ^2 range over 5 imputed datasets.
[a]Percentages over rows
[b]Numbers sharing the same superscript in the same column (participant role) differ significantly
*$p < .05$

TABLE 4.3
Means per Group in the Unfamiliar Condition

	Complicit	Passive	Defender	
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*F*
Age	8.31[a] (0.56)	8.67[a] (0.73)	8.55 (0.83)	3.33*
Income	4.40 (1.57-1.71)	4.55 (1.72-1.80)	4.85 (1.48-1.64)	0.57-1.68
IQ	102.52 (16.65-17.37)	105.76 (13.26-13.86)	106.77 (12.48-12.97)	0.78-1.96
Guilt	4.26 (1.08)	4.05 (0.89-0.93)	4.14 (0.70-0.75)	0.60-1.09
Empathy	4.63 (1.00)	4.64 (0.94-1.02)	4.73 (0.88-0.93)	0.12-0.28
Donating	1.28 (0.90-0.95)	1.38 (0.95-0.96)	1.17 (0.88-.91)	0.71-0.96[b]
Inhibition	0.21 (0.27)	0.33 (0.29-0.30)	0.30 (0.29)	2.17-2.42
Bully	0.56 (0.11-0.15)	0.55 (0.11-0.14)	0.55 (0.14-0.15)	0.15-0.38
Social resp. prob.	0.44 (0.25)	0.41 (0.22-0.23)	0.47 (0.29-0.31)	0.40-1.34

N = 215
Note. *SD* & F range over 5 imputed datasets.
[a]Means sharing the same superscript differ significantly at at $p < .05$ (Bonferroni corrected post hoc test)
[b]Corrected for version of the donating task
*$p < .05$

Associations with participant roles in thefamiliar condition

The same models were used for the familiar condition. In the first model (**TABLE S4.6**), family income was higher for passive bystanders as compared to complicit bystanders, *B* = -0.42 (*SE* = 0.15), *p* = .004, *OR* = 0.66 (95% *CI* 0.49 – 0.87). No other background variable was associated with participant roles. IQ and parity showed a trend ($p < .10$) for the passive bystander vs. complicit bystander contrast and the passive bystander vs. active defender contrast respectively and were therefore included in the next model. In the second model (**TABLE S4.7**), no variable was associated with the participant roles except for income and parity (same contrast and direction of effect as in the first model, see **TABLE S4.6**). IQ and donating behavior showed a trend ($p < .10$) for the passive bystander vs. complicit bystander contrast. All four variables were therefore included in the next model. In the third model (**TABLE S4.8**), children who were a victim of bullying were more likely to show active defender behavior as compared to passive bystander behavior, *B* = 1.26 (*SE* = 0.485), *p* = .009, *OR* = 3.53 (95% *CI* 1.38 – 9.02). IQ, income and parity also showed an effect (same contrast and direction of effect as in the first model, see **TABLE S4.6**) and donating behavior showed a trend ($p < .10$) for the passive bystander vs. complicit bystander contrast. All four variables were therefore included in the next model.

TABLE 4.4
Frequencies per Group in the Familiar Condition

	Complicit	Passive	Defender	
	N (%[a])	*N* (%[a])	*N* (%[a])	χ^2
Gender				3.43
Boy	20 (19)	66 (61)	22 (20)	
Girl	13 (12)	78 (73)	16 (15)	
Education				2.96
Secondary/lower	6 (15)	24 (59)	11 (27)	
Higher	27 (16)	120 (69)	27 (16)	
Parity				4.94-8.90*
No siblings	4 (17)	11 (46)[b]	9 (38)[b]	
≥1 siblings	29 (15)	133 (70)[b]	29 (19)[b]	
Anti-/prosocial groups				1.97
Prosocial	10 (17)	41 (69)	8 (14)	
Antisocial	10 (14)	45 (63)	16 (23)	
Typical	13 (15)	58 (68)	14 (16)	
Honesty/lying groups				0.78-2.57
Persistent liar	14 (17)	52 (63)	17 (20)	
Situational liar	12 (14)	58 (70)	13 (16)	
Honest	7 (14)	33 (67)	9 (18)	
Bully				0.38-2.44
No	19 (15)	91 (69)	21 (16)	
Yes	14 (17)	53 (63)	17 (20)	
Victim				7.89-11.65**
No	20 (17)	86 (73)[b]	12 (10)[b]	
Yes	13 (13)	58 (60)[b]	26 (27)[b]	
Harsh parenting father				1.40-2.58
No harsh parenting	20 (17)	82 (68)	18 (15)	
Harsh parenting	13 (14)	62 (65)	20 (21)	
Harsh parenting mother				0.74-2.02
No harsh parenting	17 (15)	82 (70)	18 (15)	
Harsh parenting	16 (16)	62 (63)	20 (20)	

N = 215
Note. χ^2 range over 5 imputed datasets.
[a]Percentages over rows
[b]Numbers sharing the same superscript in the same column (participant role) differ significantly
*$p < .05$, **$p < .01$

In the final model (**TABLE S4.9**) harsh parenting of the father and mother were not associated with participant roles. Income was associated with the passive bystander vs. complicit bystander contrast. IQ and donating behavior showed a trend ($p < .10$) for the passive bystander vs. complicit bystander contrast and parity and income showed a trend for the passive bystander vs. active defender contrast. For the results of the hierarchical linear regression analysis on the continuous PCG

score, see Supplementary material and **TABLE S4.11**. In short, except for a negative association with IQ, no associations with bystander behavior in the familiar condition using the continuous PCG score were found.

TABLE 4.5
Means per Group in the Familiar Condition

	Complicit	Passive	Defender	
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*F*
Age	8.43 (0.71)	8.59 (0.71)	8.67 (0.88)	1.03
Income	3.85 (1.66-1.76)[a]	4.88 (1.58-1.67)[a]	4.14 (1.57-1.66)	5.02-9.51**
IQ	109.67 (12.91-13.70)	104.93 (14.05-14.64)	103.88 (12.54-13.41)	1.68-2.57
Guilt	4.09 (0.97-1.04)	4.06 (0.85-0.90)	4.24 (0.92-0.98)	0.41-0.77
Empathy	4.76 (1.04-1.07)	4.59 (0.89-0.96)	4.83 (0.98-1.14)	1.02-2.18
Donating	0.99 (0.87-0.93)	1.41 (0.92-0.93)	1.26 (0.95)	2.23-2.67[b]
Inhibition	0.26 (0.32)	0.33 (0.30)	0.24 (0.21-0.22)	1.50-1.85
Anxiety	0.92 (0.87-0.89)	0.92 (0.83-0.84)	1.05 (0.78-0.83)	0.15-0.86
Social resp. prob.	0.41 (0.26)	0.42 (0.22-0.23)	0.50 (0.30-0.32)	1.73-3.09

N = 215
Note. *SD* & *F* range over 5 imputed datasets.
[a]Means sharing the same superscript differ significantly at at $p < .05$ (Bonferroni corrected post hoc test)
[b]Corrected for version of the donating task
** $p < .01$

Situational effect

There was no difference in the average continuous PCG score between the two conditions (unfamiliar vs. familiar excluded player), $t(214) = -0.94$, $p = .349$. Neither were the distributions of participants across the three bystander groups different in the unfamiliar versus the familiar condition, $\chi^2(4) = 4.64$, $p = .327$. The continuous PCG scores in the unfamiliar and familiar conditions were associated (corrected for the proportion of throws to the player at the top in the fair phase of both conditions), partial $R = .21$, $p = .003$. The repeated measures analysis showed that the effects of familiarity were not associated with any of the background, child, or parenting variables, except for IQ, $F(1, 209) = 4.13\text{-}6.29$, $p = .013\text{-}.043$, *partial* $\eta^2 = .02\text{-}.03$.

Discussion

On average, children compensated for the exclusion of another person by their peers but their prosocial tossing to the excluded individual was rather modest compared to similar studies (e.g. Riem et al., 2013). We were not able to identify variables associated with participant roles during online

social exclusion – complicit bystanders, passive bystander, and active defenders – that would survive a correction for multiple testing. Familiarity of the excluded player did not significantly affect the children's prosocial compensating behavior.

The current study is the first to examine background, child, and parenting variables as well as a situational factor potentially associated with observed participant roles during online social exclusion. In both the unfamiliar and familiar condition children tossed on average more often to the player at the top when this person was excluded by others. Despite our finding of a significant difference in the mean continuous PCG scores of the fair versus unfair phases in both conditions, the increase in tosses to the excluded player was low (5% (*SD* = 18.80) in the unfamiliar condition and 4% (*SD* = 19.11) in the familiar condition) as compared to other studies (showing a rough 15-19% increase; Riem et al., 2013; Sellaro, Steenbergen, Verkuil, Van IJzendoorn & Colzato, 2015; Vrijhof et al., 2016). This might be due to the overrepresentation of antisocial children in our sample. Although this is not reflected in an association between bystander behavior and parent-reported antisocial scores, there might be unmeasured external factors underlying both forms of behavior, such as genetics or peer relationship quality (Ball et al., 2008; Dishion, Patterson, Stoolmiller, & Skinner, 1991; Pappa et al., 2015; Salmivalli et al., 1996). Surprisingly, a substantial proportion of the children in the current study did show complicit bystander behavior towards the excluded victim as they joined in with the bullying. This might be an indication that although the PCG has previously been used to specifically measure prosocial behavior compensating for exclusion (Vrijhof et al., 2016), this paradigm also allows for the measurement of antisocial, complicit bystander behavior, at least in samples with an over representation of children with high aggression levels.

The majority of children in the current study were passive bystanders (62% and 67% in the unfamiliar and familiar condition respectively). Furthermore, 15% and 16% were complicit bystanders and 18% and 22% were active defenders in the familiar and unfamiliar condition, respectively. The direct comparison of these percentages with those in other studies on participant roles during bullying is impossible because of the use of questionnaire data in most studies (e.g. Salmivalli et al., 1996). Although we found differences on some variables (age, gender, IQ, income, parity, being victimized, and guilt) between passive and complicit bystanders or between passive bystanders and active defenders in the unfamiliar or the

familiar condition, these associations would not survive a correction for multiple testing. Gender and IQ were associated with the continuous PCG score in the unfamiliar and familiar condition respectively and IQ was associated with the familiarity effect, but again these associations would not survive correction for multiple testing.

Other studies did find associations between participant roles and background and child characteristics (e.g. Oh & Hazler, 2009; Pozzoli & Gini, 2010). What distinguishes these studies from the current study is that they made use of self- or other-reports of bystander behavior during bullying, whereas the current study used observed participant roles. Common method variance may result in stronger associations between concepts when measured with similar methods as compared with associations between observed behavior and questionnaire reports about behavior, attitudes, or feelings. It should be noted that the power of our study ($N = 215$) to find significant associations with prosociality amounted to 0.99 (based on a meta-analytic expected effect size by Card, Stucky, Sawalani, & Little, 2008, combined $R = .29$). For associations with antisocial behaviors our power was 0.55 (based on the meta-analysis of Reijntjes et al., 2011, $R = .14$). The absence of variables differentiating between complicit and passive bystander behavior might also be a result of the shared correlates of complicit and passive bystander behavior, since doing nothing in a social rejection situation may encourage a bully and may be considered antisocial behavior as well (Salmivalli et al., 1996). In another PCG study on adolescents the authors did find associations between bystander behavior and gender and bullying, but not with empathy, externalizing, or prosocial behavior (Vrijhof et al., 2016).

The lack of variables differentiating between passive and complicit bystanders and between passive bystanders and active defenders might also be an indication that bystander behavior strongly depends on the situation. Situational influences have been demonstrated to affect prosocial behavior (e.g. Van IJzendoorn et al., 2010), and also antisocial behavior can be dependent on the situation (e.g. Anderson & Carnagey, 2009; Zimbardo, 2004). Situational dependency of participant roles was also found in an earlier study showing that children adopt different and even contrasting roles in online bullying compared to face-to-face bullying (Quirk & Campbell, 2015).

In the current study we also examined the effect of a situational factor; familiarity with the excluded person. Previous studies have shown that fa-

miliarity and being an in-group member may increase defending behavior towards a victim (Levine et al., 2002; Oh & Hazler, 2009). However, in the current study children did not show more defender behavior when the excluded person was a familiar adult (the research- assistant), compared to an unfamiliar excluded person. Although the research-assistant had spent approximately 50 minutes doing neuropsychological tests with the child, this might have been too short for developing an in-group feeling. However, in a previous study the in-group /out-group effect was even evident when participants were confronted with unfamiliar people from their own university (in-group) versus another university (out-group) (Levine et al., 2002).

Yet, in-group preference increases with age (Fehr, Bernhard, & Rockenbach, 2008). Possibly in-group preference is not fully developed around the age of 8, which might have led to the absence of an effect of the familiarity of the excluded person during the PCG game. Furthermore, the excluded person may have been considered an out-group member in both the familiar and unfamiliar condition, as this person was an adult, whereas the two bullies who excluded the top player were children. We chose the research-assistant to be the familiar person, because she was equally familiar to all participating children, but this might have limited the establishment of in-group feelings. Besides, as the bullies were the same in both conditions and the excluded person was not, some children may have felt more familiar with the bullies in the second condition than with the excluded person, which may have resulted in the absence of an increase in defender behavior.

Children showed on average, as a group, similar behavior in the unfamiliar and familiar condition, but the correlation between the continuous PCG scores of both conditions was small (*partial R* = .21). This indicates that children adopted different participant roles in the two conditions and that they showed different patterns of change over the two conditions. As the differential change of children over the two conditions could not be explained in the current study, it is likely that other situational factors than familiarity might also have played a role. Some defenders of the excluded person in the first game might have been afraid to stand up for the victim a second time, as this would decrease their reputation among the bullies who remained the same individuals across the two games. Relatedly, witnessing multiple types of bullying was found to decrease prosocial bystander behavior (Oh & Hazler, 2009), as children might become afraid of the bully. Furthermore, the bullies could have felt more strongly as in-group than the excluded research-assistant to some participants.

The present study has some limitations. First, a number of predictor variables used in the current study were parent-report questionnaire data. Parents are not always reliable reporters on their children's behavior (Seifer, Sameroff, Dickstein, Schiller, & Hayden, 2004), especially when it concerns behavior that takes place outside of the home setting, such as bullying and victimization (Holt, Kaufman Kantor, & Finkelhor, 2008). The use of observational data for participant roles is a strength of the current study. Second, the research-assistant may not have been familiar enough to the participants to create an in-group effect. However, the advantage of using the research-assistant was the standardization of familiarity; all children were equally familiar to the research-assistant. Third, the lack of associations may be due to specifics of the task. The exclusion of the top player in the unfair phase may be unclear as the later bullies did toss the ball to the top player in the fair phase. However, the fact that some children showed strong defender behavior towards the excluded player, whereas others joined the exclusion by throwing more balls to the excluders and fewer to the excluded player than they did in the fair phase, might suggest that they took note of the exclusion. Last, due to the set-up of the PCG, only three bystander roles could be distinguished; complicit bystanders, passive bystanders, and active defenders. Children could not leave the game, as they might do in real life. Furthermore, where many studies on participant roles distinguish between reinforcers and assistants of the bully (Salmivalli et al., 1996), such a distinction could not be made in the current study. We think that 'complicit bystander' covers the most important aspect of the antisocial participant roles, namely strengthening and approving the bully's behavior by doing the same.

The present study did not find background, child, or parenting variables significantly associated with participant roles in an online social exclusion setting. The absence of such associations might indicate that children's bystander behaviors may be more strongly dependent on situational factors. We tested one situational variation, familiarity of the excluded person, but this did not change defender behavior in the current study. As social exclusion can be detrimental to the victim, it is important to continue searching for dispositional and situational factors outside the realm of the 'usual suspects' that enhance defender behavior and might be used in developing preventive interventions.

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