

Some Bullies are More Equal Than Others: Peer Relationships Modulate Altruistic Punishment of Bullies After Observing Ostracism

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Abstract

The current study presents a novel experimental design to examine how *real-life* peer relationships modulate altruistic punishment of bullies and compensation of victims after *observed* ostracism. Twenty-four participants (age 20) were invited to an experimental session in groups of three classmates and two unfamiliar peers, where they engaged in online interactions with one another. They played a series of virtual ball-tossing games (Cyberball) where they *observed* the ostracism of a classmate by another classmate and an unfamiliar bully. In between the Cyberball sessions, participants played economic exchange games where they could invest money to increase or decrease the payoffs of the players from the preceding Cyberball session. Participants punished classmate bullies and compensated victims more when they liked the victim more than the bully. Importantly, participants punished familiar bullies less severely than unfamiliar bullies when the familiar bully was better liked than the victim.

Keywords

Victimization, bullying, Cyberball, friendship, exclusion, social decision-making

Imagine seeing a classmate being bullied by others; do you interfere? And if you do not or cannot interfere, would you retaliate in a different situation where you have the power to do so? Would you punish the bullies? And how would your behavior in these situations be different if it was a friend who was being bullied? Or what if your friend was the bully? The current study set out to answer these questions by examining the role of peer relationships in punishment and compensation behavior subsequent to observing ostracism.

Bullying occurs internationally and experiences related to bullying and victimization are rather common among youngsters. Among 11–15 year old adolescents

from 25 countries, reports of involvement in bullying as a bully range between 3–20% and as a victim between 5–20%; this percentage goes up to 54% when bully-victims are included (Nansel et al., 2004). The percentage of adolescents specifically reporting being victims of indirect bullying assessed as social exclusion ranges between 2% and 23% across countries (Craig et al., 2009). The majority of bullying takes place in the presence of peers: peers are actively involved or are passive bystanders in 85% of bullying episodes (Atlas & Pepler, 1998). An analysis of the definition of bullying across 14 different countries showed that adolescents discriminate between physical bullying, verbal bullying, and social exclusion, that is, deliberately not allowing a person into a group (Smith, Cowie, Olafsson, & Liefoghe, 2002). Social exclusion as a form of indirect bullying is one of the main six categories of negative

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peer experiences along with denial of access, aggression, dominance, moral disapproval, and rejections involving a third party (Sandstrom & Cillessen, 2003). In recent years, numerous experimental studies have shown that ostracism as assessed by exclusion during an online ball-tossing game called Cyberball elicits feelings of decreased mood, self-esteem, and belonging (Williams, Cheung, & Choi, 2000) or a lack of emotion (Twenge, Catanese, & Baumeister, 2003), and lowers self-regulation (Baumeister, DeWall, Ciarocco, & Twenge, 2005) and subsequent intrinsic motivation and performance (Lustenberger & Jagacinski, 2010). Interestingly, these brief experiences of ostracism lead to negative affect even when it is by a computer or when there is financial compensation for being excluded (van Beest & Williams, 2006; Zadro, Williams, & Richardson, 2004).

Although limited, there is a relatively large body of literature examining the negative effects of witnessing bullying, ranging from poor psychological functioning and substance use to heightened anxiety and stress (e.g. Hansen, Høgh, Persson, Karlson, Garde, & Ørbaek, 2006; Rivers, Poteat, Noret, & Ashurst, 2009). However, because these studies focus on real-life experiences of witnessing bullying, they often refer to visible forms of bullying such as harassment and physical bullying (Rivers et al., 2009), and not on more discrete and subtle forms of bullying such as ostracism (but see Nishina & Juvonen, 2005). Experimental studies, however, show that it is not only the direct experience of ostracism, but also mere *witnessing* of ostracism that causes negative affect across age groups (Wesselmann, Bagg, & Williams, 2009; Will, Crone, van den Bos, & Güroğlu, in press). Observers of ostracism report lower levels of mood and increased levels of distress, similar to those reported by ostracized individuals. Behavioral findings in this direction are recently also supported by several neuroscience studies pointing out the role of pain related neural networks in experiences of direct as well as observed ostracism (Eisenberger, 2012; Masten, Eisenberger, Pfeifer, & Dapretto, 2010; Masten, Morelli, & Eisenberger, 2011). Interestingly, such experimental research on ostracism has so far often focused on interactions with anonymous others, whereas the majority of our daily social interactions are with people we know. Therefore, in the current study we focused on the effects of witnessing ostracism of familiar peers.

Being the target of ostracism has furthermore been linked to subsequent decreases in prosocial behavior, ranging from charitable donations to helpfulness and

cooperation (Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007). Ostracism as manipulated by the experimental Cyberball paradigm has also been found to modulate subsequent fairness considerations (Gunther Moor et al., 2012). After playing the inclusion and exclusion conditions of Cyberball, participants were asked to divide money in a series of Dictator Games between themselves and the people who included or excluded (i.e., bullies) them during Cyberball. Results showed that participants chose more often to punish bullies by choosing unfair allocations (i.e., more money for self and less for the bully).

When examining the effects of witnessing bullying, and particularly ostracism, the majority of studies focused on the negative health and affect related effects on the observer (e.g., Rivers et al., 2009; Wesselmann et al., 2009). Gunther Moor et al. (2012) examined not only mood, but also behavior following ostracism. However, in their study participants themselves were victims of ostracism and not observers. Importantly, mere observations of ostracism also evoke prosocial and empathic reactions towards victims. In an experimental study, Will and colleagues (in press) have examined the influence of witnessing ostracism on subsequent fairness considerations. They had participants across the ages of 9–22 years first play Cyberball with two anonymous peers and then observe the Cyberball interaction among three different anonymous peers, where one player was excluded by the other two. As in the Gunther Moor et al. (2012) study, participants then played a series of allocation games with the includers and bullies, as well as the victims. Notably, with increasing age, participants more often chose to punish the bullies by reducing their outcomes and shared more of their money with the victims. In two other studies, it was also shown that after observing the exclusion of a peer during Cyberball, both adolescents and adults with high empathic traits wrote more prosocial emails to the victims of exclusion (Masten et al., 2010; 2011). Taken together, evidence so far strongly suggests that observers of ostracism show differential treatment of victims and bullies, with more prosocial, fair and compensating behavior towards victims and more punishing behavior towards bullies. In the current study, we also expected to replicate these previous findings such that after witnessing ostracism participants will punish bullies and compensate victims in subsequent interactions.

The aforementioned studies examining interactions with bullies and victims from previous social engagements have solely focused on unfamiliar interaction

partners. The findings are intriguing in showing that participants modify their social behavior according to preceding behaviors of their interaction partners, who they do not personally know. This is in line with studies showing, for example, that trust and cooperation behaviors towards others are shaped by previous behaviors of or knowledge about interaction partners (Delgado, Frank, & Phelps, 2005; Hillebrandt, Sebastian, & Blakemore, 2011; van den Bos, van Dijk, & Crone, 2011). In real life, the majority of our social interactions are with people we know, where we have built a personal relationship with the other person across an accumulation of interactions over time. According to the social information processing model (SIP; Crick & Dodge, 1994), such relationship specific information is one of the core determinants of social behavior, where perception of others' behaviors is largely influenced by previous knowledge about these others. In the context of observed ostracism, a personal relationship with the bully as well as the victim might influence subsequent behavioral reactions to the situation.

Despite the high relevance and prevalence of bullying and victimization across childhood and adolescence, relatively little is known about these behaviors among young adults. This might be partly due to age related decreases in antisocial behavior, especially in the form of physical aggression and bullying (Eslea & Rees, 2001; Loeber & Hay, 1997; Moffitt, 1993; Smith, Madsen, & Moody, 1999). Besides this age related decrease in prevalence of negative interactions, lack of research on bullying among older age groups might also be related to the fact that bullying and victimization are typically assessed within peer groups in schools. Particularly ostracism, as defined by the deliberate exclusion from a group (Smith et al. 2002), might be more difficult to assess among young adults, as it requires examination of a closed circle of peers. This might partly be why studies of bullying in adulthood have focused on workplace bullying or more extreme settings such as prison bullying (cf. Hansen, et al. 2006; Schuster, 1996; Smith, 2004).

In the current study, we examined the role of peer relationships in altruistic punishment and compensation reactions to observed ostracism among young adults studying at vocational universities with a fixed classroom structure, which provided us with the opportunity to examine these processes within closed peer groups. Participants engaged in a series of Cyberball games, each followed by an allocation game where they could divide money between themselves and the other players from Cyberball interactions (see Figure 1 for an

overview of our procedure). Here we employed an allocation game where participants had the chance to decrease or increase the outcomes of others by incurring costs for their own outcomes (i.e., show altruistic punishment or compensation, respectively). We expected participants to punish bullies and compensate victims in subsequent interactions following witnessed ostracism.

In our experimental design, victims were always a familiar peer (i.e., a classmate), whereas there were two kinds of bullies: a familiar peer (i.e., a classmate) or an unfamiliar peer (i.e., a confederate). Specifically, we expected the relationship with a particular peer to modulate behavior in the subsequent allocation game. That is, we expected the relationship between the participant and the particular peer to influence punishment of this peer when he/she was a bully and the compensation of the same peer when he/she was a victim. Further, we expected the punishment and compensation behavior to be modulated by participants' relationship with the bully *as well as* the victim involved in the interaction. We assessed relationship quality with the two familiar peers and investigated differences in behavior in relation to the *difference* between the relationships with the two classmates. We expected this difference in relationship quality to be related to differential treatment (i.e., punishment and compensation) of peers following observed ostracism. We specifically expected participants to differentiate between the bully and the victim more (i.e., show differential treatment of these players in the subsequent allocation games) when they had a better relationship with the bully than with the victim. Moreover, we also hypothesized that participants would punish an unfamiliar bully more than a familiar bully when the victim was a classmate with whom they had a better relationship.

Methods

Participants and Procedure

Students from vocational universities were contacted in their classrooms, where they provided personal information and indicated their willingness to participate in the study. The experimental sessions were in groups of five people: three classmates and two unfamiliar peers, who were confederates of the study. Participants were told that the two unfamiliar peers (the confederates) were participants from a different vocational

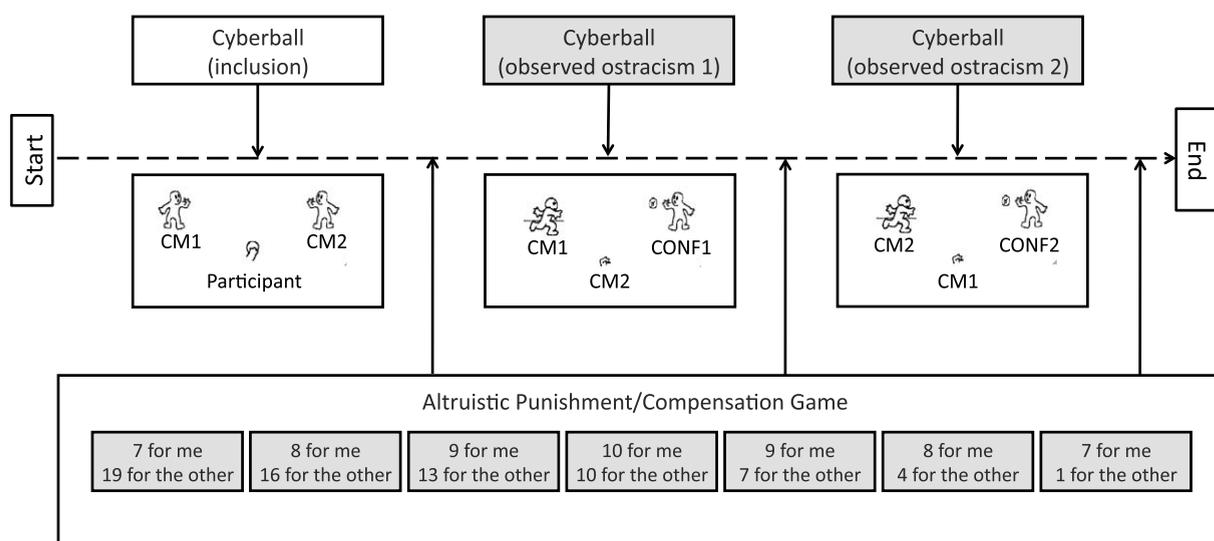


Figure 1. Experimental procedure where the participants i) first played the Cyberball inclusion with two classmates (CM1 and CM2), followed by (offline) the Altruistic Punishment/Compensation Game (APCG) with CM1 and CM2, ii) then observed the Cyberball game between three players, CM1, CM2, and confederate1 (conf1) where CM2 was ostracized, again followed by the APCG with these three players, and iii) finally observed the Cyberball game between three players, CM1, CM2, and confederate2 (conf2), where CM1 was ostracized, followed by the APCG with the players.

university. At the start of each session, all participants met in a room where they received introductory information. They were told that they would be engaging in online interactions with one another and were subsequently each taken to a separate quiet testing room, after which they did not see each other again. Unknown to the participants, one of the three classmates participated in a different experiment, which will be reported elsewhere. Thus, the current study involves data from the remaining two classmates from each session. This yielded a total of 24 participants (58% male; $M_{age} = 20.5$, $SD = 1.67$) taking part in the experimental session, where they engaged in online interactions with the four interaction partners: two classmates and two confederates. The confederates were in all sessions one male and one female; 75% of the participants had two same-sex classmates, for the rest there were one same-sex and one opposite-sex classmate.

Participants played a total of three online Cyberball games, and in between these games played allocation games with the other players, which were all offline and not visible to the other players (see Fig. 1). Finally, they filled out a questionnaire assessing relationship quality on paper. These sessions lasted approximately 75 minutes in total. At the end of the experiment, the participants were fully debriefed; they received approximately 15 euros for their participation.

Experimental Session

Cyberball

Cyberball is a virtual ball-tossing game (Williams, Cheung, & Choi, 2000), where three players throw a ball to each other. Participants were told that they would play the games online with other participants, but the ball-throws were actually pre-programmed. The participants were told that during each Cyberball session three of the five participants would be playing and that the other two would observe the games.

First, in the “inclusion condition” participants played the Cyberball game with their two classmates, where each player received the ball an equal amount of times (10 out of 30 trials). Next, participants observed two rounds of Cyberball; in each round one of the two classmates (i.e., the victim) was ostracized by the other classmate and one confederate (i.e., bullies). Considering the fact that the two classmates had distinguishable roles in the two Cyberball exclusion rounds, they could no longer be considered as exchangeable. In the “observed ostracism1” condition (ostracism1), they watched Classmate1 (CM1, bully) and confederate1 (unfamiliar bully) ostracize Classmate2 (CM2, victim). In the “observed ostracism2” condition (ostracism2), CM2 (bully) and confederate2 (unfamiliar bully) ostra-

cized CM1 (victim). During the ostracism conditions, the victim was ostracized for 18 trials after receiving the ball once at the start of the game.

Allocation Game

Following each game of Cyberball, participants played the Altruistic Punishment/Compensation Game (Leliveld, van Dijk, & van Beest, 2012) in which they were coupled with the players they encountered during the preceding Cyberball game. In this game, participants were given 10 points, of which they could invest 0, 1, 2, or 3 points to either compensate or punish each player. For each point invested, three points would be either added to (compensation) or subtracted from (punishment) the outcome of the recipient. Participants could choose from 7 fixed divisions: three compensation options (7/19 (i.e., 7 points for themselves and 19 for the other player), 8/16, 9/13), one equitable option (10/10), and 3 punishment options (9/7, 8/4, 7/1). These divisions were depicted by numbers on the computer screen from left to right with the 10/10 option in the middle of the screen (see Figure 1).

Prior to each round of the allocation game it was emphasized that the points each player received were valuable and points earned in several randomly chosen rounds would be converted into money, which they would receive upon completion of the experiment. Participants were reminded that their decisions had consequences for their own as well as for pay-offs of other players, who would also receive money based on the outcomes of the games. Participants were told that they would receive an additional amount of money, which would be contingent upon their decisions during the allocation games. In reality, each participant was paid the same amount (2.5 euros) as extra earnings.

Relationship Quality

Relationship quality (RQ) with each classmate was assessed based on a modified version of the Friendship Quality Scale (Bukowski, Hoza, & Boivin, 1994). The scale consisted of two subscales assessing the positive (18 items on the amount of companionship, help, security and closeness in the relationship) and negative (11 items asking about the amount of conflict, jealousy, and balance in the relationship) aspects of relationship quality. For each item participants were asked to report the extent to which the statement holds for their relationship on a 5-point Likert scales ranging from (1)

Not true at all to (5) Definitely true. Scores on the negative quality subscale were recoded; scores per subscale were averaged to yield a total relationship quality score ranging between 1 and 5, with higher scores indicating better relationship quality. The reliability of each subscale was high: Cronbach's alphas were 0.91 and 0.84 (respectively for CM1 and CM2) and 0.87 and 0.87 (respectively for CM1 and CM2) for positive and negative quality subscales, respectively.

Analyses

Because the participants of this study are nested in sessions where they believe to engage in online interactions with one another, the individual data points can no longer be considered independent. Therefore, data on the allocation game were analyzed using multilevel modeling (MLM) in SPSS 17.0 with participants as Level 1 and sessions as Level 2; the restricted maximum likelihood (REML) estimation method was used with maximum 1000 iterations.

Results

Descriptives

In a ML model, relationship quality scores per classmate were compared. The results yielded a significant fixed effect of Player (2 levels: CM1 and CM2) such that participants reported higher relationship quality with CM1 ($M = 3.55$, $SD = 0.60$, $\min = 2.43$, $\max = 4.50$) than with CM2 ($M = 3.13$, $SD = 0.57$, $\min = 1.90$, $\max = 4.18$), $F(1,23) = 9.40$, $p = 0.005$. Thus, relationship quality difference for the two classmates ($RQ_{CM1} - RQ_{CM2}$) was included in the subsequent analyses as a covariate. The mean relationship quality difference score was 0.42 ($SD = 0.67$; $\min = -1.10$, $\max = 2.03$). It is relevant to point out that the majority of participants (61%) reported higher relationship quality with CM1 than with CM2, which means that $RQ_{CM1} - RQ_{CM2}$ was a positive score in most cases. Only 29% ($n = 7$) of the participants had a negative difference score, which indicates a better relationship quality with CM2 than with CM1; 6 of these 7 participants had a score greater than -0.20 , indicating that the difference in relationship quality for CM1 and CM2 was actually close to zero. Following the suggestion of Delaney & Maxwell (1981) in using covariates in ANCOVA analyses in a repeated measures design, the mean centered relationship quality difference scores were included in the MLM analyses.

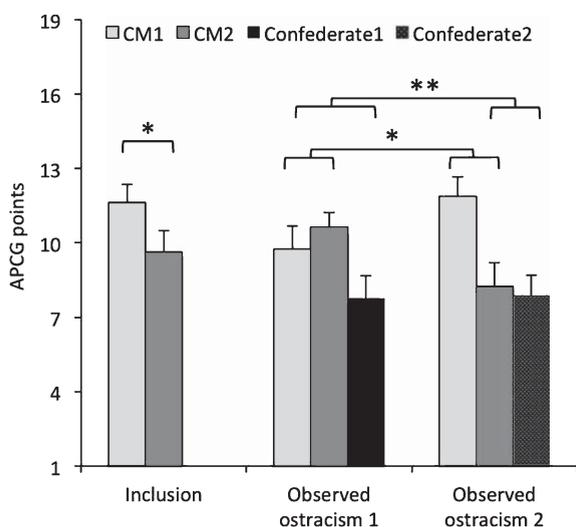


Figure 2. Mean number of Altruistic Punishment/Compensation Game (APCG) points allocated to the three players classmate 1 (CM1), classmate 2 (CM2), and the unfamiliar peer (confederate 1 and confederate 2) following the Cyberball inclusion, and the two Cyberball observed exclusion rounds. Note that CM1 is the bully and CM2 the victim in observed ostracism1 and CM2 the bully and CM1 the victim in observed ostracism2; * $p < 0.05$, ** $p < 0.01$.

Reactions to Observed Ostracism: Punishment and Compensation

First, we examined the number of points given across the three rounds to the two classmates (see Figure 2). For this, a MLM analysis was conducted with two fixed factors: Round (3 levels: inclusion, ostracism1 and ostracism2) and Player (2 levels: CM1 and CM2). There was a significant effect of Player ($F(1,115) = 8.84, p = 0.004$) as well as a Round \times Player interaction ($F(2,115) = 6.10, p = 0.003$). Post-hoc tests showed that the number of points given to CM1 after inclusion and after exclusion of CM1 (ostracism2) did not differ ($M_{inclusion} = 11.63, SD = 3.54$ and $M_{ostracism2} = 11.87, SD = 3.84$). However, CM1 received fewer points after exclusion of CM2 (ostracism1) ($M_{ostracism1} = 9.75, SD = 4.50; F(2,46) = 3.87, p = 0.03$), suggesting punishment of CM1 for ostracizing CM2. For CM2, the number of points after inclusion and ostracism2 also did not differ ($M_{inclusion} = 9.63, SD = 3.54$ and $M_{ostracism2} = 8.25, SD = 3.84$), whereas after ostracism1 CM2 received more points than CM1 ($M_{ostracism1} = 10.62, SD = 2.93; F(2,46) = 4.32, p = 0.02$), suggesting compensation of CM2.

Next, we examined the number of points given to the three players after each of the two observed

Table 1
Correlations Between the Number of Points Allocated to the Players and the Relationship Quality (RQ) Difference for Classmate 1 (CM1) and Classmate 2 (CM2)

	RQ _{CM1} - RQ _{CM2}
<i>Points given</i>	
CM1-CM2 after inclusion	0.47*
CM1-CM2 after ostracism of CM2 (ostracism1)	0.43*
CM2-CM1 after ostracism of CM1 (ostracism2)	-0.37
CM1-unfamiliar bully after ostracism of CM2 (ostracism1)	0.55**
CM2-unfamiliar bully after ostracism of CM1 (ostracism2)	0.12

Note: * $p < 0.05$, ** $p < 0.01$.

ostracism rounds. After ostracism1, both CM1 (familiar bully) and CM2 (victim) received more points than the unfamiliar bully ($M = 7.75, SD = 4.53; F(2,46) = 5.08, p = 0.01$), suggesting that the unfamiliar bully is punished more than the familiar bully. After ostracism2, CM1 (victim) received more points than both CM2 (familiar bully) and the unfamiliar bully ($M = 7.88, SD = 4.00; F(2,46) = 11.67, p < 0.001$), suggesting that both bullies were equally punished.

Taken together, CM1 and CM2 were treated differentially as bullies and victims; we expected this differential treatment to be related to the differences in relationship quality with the two classmates. Therefore, we performed a next set of MLM analyses where we examined the moderating role of relationship quality differences between CM1 and CM2 in the differences in points given to the players. For this purpose, in each MLM, Player and the interaction term between Player and the difference in relationship quality scores for classmates (i.e., $RQ_{CM1} - RQ_{CM2}$) were included. Table 1 presents the correlations of $RQ_{CM1} - RQ_{CM2}$ and i) difference in the number of points given to CM1 and CM2 after inclusion, ii) difference in the number of points given to CM1 and CM2 after each ostracism round, and iii) difference in the number of points given to the two bullies after each ostracism round (i.e., CM1 versus confederate1 and CM2 versus confederate2).

Following Cyberball Inclusion

The ML model with the number of points allocated to CM1 and CM2 after inclusion yielded a significant main effect of Player ($F(1,22) = 6.17, p = 0.02$) as well as an interaction between Player and relationship quality difference scores ($F(2,22) = 3.69, p = 0.04$). The main effect of Player indicated that participants gave CM1 more points ($M = 11.78, SD = 0.72$) than they

gave CM2 ($M=9.59$, $SD=0.90$). In order to examine the interaction effect further, correlations between the number of points and relationship quality difference scores were conducted for the two players separately. There was a positive correlation between points given to CM1 and $RQ_{CM1}-RQ_{CM2}$ ($r(24)=0.49$, $p=0.01$), indicating that participants with a higher relationship quality difference score (i.e., higher relationship quality for CM1 than for CM2) gave more points to CM1 after inclusion. This correlation was not significant for CM2 ($r(24)=-0.08$, $p=0.72$).

Following Ostracism: Familiar Bully Versus Familiar Victim

In order to examine how much participants differentiated between familiar bullies and victims, MLM analysis was run with the difference in points given to the familiar bully and victim after each ostracism round as the dependent variable. There was a main effect of Player ($F(1,22)=5.35$, $p=0.03$) as well as a Player \times $RQ_{CM1}-RQ_{CM2}$ interaction ($F(2,22)=5.51$, $p=0.01$). The Player main effect indicated that participants differentiated between bully and victim less after ostracism1 (CM1 bully, CM2 victim; $M_{CM1}-M_{CM2}=-0.88$) than after ostracism2 (CM2 bully, CM1 victim; $M_{CM2}-M_{CM1}=-3.63$). Importantly, this difference was qualified by the relationship quality difference scores. There was a significant correlation between $RQ_{CM1}-RQ_{CM2}$ and the difference in the number of points given to CM1 as bully and CM2 as victim ($r(24)=0.43$, $p=0.04$); when CM2 was the bully and CM1 the victim, this relationship was not significant ($r(24)=-0.37$, $p=0.08$). In other words, participants were more tolerant of ostracism (as reflected in less severe punishment of the bully) when they had a better relationship with the perpetrator.

Following Ostracism: Punishment of Familiar Versus Unfamiliar Bully

Finally, MLM analysis was run to examine the difference in the number of points given to the two bullies (familiar and unfamiliar bully) after each observed ostracism round. There was only a significant Player \times $RQ_{CM1}-RQ_{CM2}$ interaction ($F(2,44)=5.33$, $p=0.008$). The relationship quality difference scores were positively related to the difference in the number of points given to CM1 as a bully versus the unfamiliar bully ($r(24)=0.55$, $p=0.005$). This link was not significant for CM2 ($r(24)=0.12$, $p=0.58$). In other words, the

better the relationship quality was with the bully than with the victim, the less severely the familiar bully was punished (compared to the unfamiliar bully).

Discussion

The current study employed a novel and unique experimental design to investigate the role of real-life peer relationships in reactions to observed ostracism in a group of young adults. Our findings show that both punishment and compensation behavior are modulated by the relationship with the bully and the victim. When given the chance to retaliate, bullies were punished in general, but this punishment was less severe when participants had a better relationship with the bully than with the victim.

Punishment of Bullies

One of the main goals of this study was to examine how peer relationships modulate altruistic punishment of a bully after observed ostracism. We hypothesized that a better relationship with the bully would be related to a more lenient punishment, whereas a better relationship with the victim would lead to a more severe punishment of the bully. Our findings support both of these expectations. We showed that although unfamiliar bullies were punished after both ostracism rounds, the two familiar bullies were not punished in similar ways. Interestingly, the punishment of the bullies was not solely dependent on the relationship with the bully, but rather on the respective relationship with the two familiar classmates, that is, with the bully *and* the victim. The more the participants' relationship quality with the bully and the victim differed in favor of the bully, the more lenient bullies were punished. That is, victims were compensated for being excluded and the unfamiliar bully was punished, but the favored familiar bully received as many points as the victim. In real-life this finding might translate to ostracism being ignored when the perpetrator is a friend, which might lead to increasing levels of ostracism in peer groups. We also showed that a bigger difference in relationship quality in favor of the victim resulted in harsher punishment of the bully. Specifically, familiar bullies were punished as severely as unfamiliar bullies when participants had a better relationship with the victim than with the bully. These findings support the SIP perspective in which behavior is influenced by both emotional aspects of the social context and relational ties with the interaction

partner (Lerner & Arsenio, 2000). These findings on the interaction of relationship quality and participant behavior have crucial implications for the role of witnesses of ostracism in real-life bullying interactions. Future research on bullying and victimization should include assessments of peer relationships and peer status to better understand the dynamics of subsequent interactions among peers.

Compensation of Victims

Our findings showed that the relationship with the bully and the victim had stronger links with punishment of bullies than with compensation of victims. In the current study, there might be two ways of defining compensation. It is possible to compare allocations after inclusion and ostracism rounds and consider a relative increase in allocated points after ostracism as compared to after inclusion as compensation. From this perspective, when participants had a better relationship with the bully than with the victim, victims were compensated, as shown by an increase in points allocated to CM2 after ostracism1 relative to after inclusion. After ostracism2, where participants favored the victim (CM1) more than the bully, the victims did not receive more points than they did after inclusion; thus, there was no compensation. In the Altruistic Punishment/Compensation Game, compensation requires an investment with consequences for one's own outcome in order to increase the outcome of the other player. Based on this definition, however, there was compensation only of peers with whom the participants had a better relationship, and this compensation occurred even after inclusion. This finding suggests that among young adults generosity towards liked peers might be valued more than pure fairness in social interactions, and supports the idea that perceptions of fairness are relationship-specific (Fiddick & Cummins, 2007).

Role of Peer Relationships in Fairness Considerations

In the current design, the initial Cyberball inclusion round with the two classmates served two purposes: it provided the participants with a feeling for the game and how it feels to be included, so that they could better empathize with ostracized peers, and it provided us with a baseline for points given to the two classmates. In the Altruistic Punishment/Compensation Game, a fair allocation of points (10/10) is non-costly for the participants, and following the social norm of fairness one might expect players to choose the 10/10 option

for both players. In other words, this assessment also provided us with a baseline for the personal sense of fairness. Because behaviors of the two players during the Cyberball inclusion interaction are the same, any difference in the number of points allocated to these two players stems possibly from the relationship of the participant with them. Our results showed that participants differentiated between the two players at this baseline measurement: the higher the relationship quality discrepancy between the two classmates, the higher the difference in the number of points allocated to both peers. Interestingly, better-liked classmates received on average more than 10 points, showing that participants were willing to incur costs in order to increase the outcome of liked peers.

Limitations and Concluding Remarks

A main limitation of the current study is the small sample size. This becomes an even bigger hinder considering the dependence of the sampling units, which requires multilevel modeling analyses. Practical limitations become a major challenge in studies examining real-life relationships and social interactions, which in our case required planning of sessions with three specific classmates who could simultaneously participate in our study. Although some of our results clearly suffer from low power (e.g., non-significant correlation of size -0.37), clear and strong patterns of findings despite the low power strengthen our conclusions.

Another limitation of our study design was that we only focused on the moderating role of peer relationship in the bully role. The victims in the observed Cyberball sessions were always classmates, whereas the bullies were classmates and confederates. This enabled us to examine the role of familiar versus unfamiliar peers in subsequent treatment of bullies. Due to practical considerations such as limited sample size, time limitations of testing sessions, and multilevel analysis requirements, we decided to only focus on moderations in the bully role. Including a familiar and unfamiliar bully could be done in one Cyberball session because there are always two bullies, whereas examining the moderating role of peers in the victim role requires two separate sessions where a classmate and a confederate would be victims. This results in a higher number of Cyberball sessions than we have. Nevertheless, the question of the role of peer relationships in subsequent treatment of victims is ultimately interesting and relevant, and should be examined in future studies.

In this study we examined the role of peer relationships on observed ostracism in a group of young adults. As pointed out earlier, bullying behavior decreases in late adolescence and adulthood, especially in physical forms. However, it is likely that bullying behavior just changes form and is as prominent among adults as in other age groups, only more in relational forms, such as ignoring or excluding (Williams, 2007). In this study, we employed Cyberball to simulate ostracism, which might be closer to the forms of bullying experienced in real life among adults. We cannot readily generalize our findings to other age groups; for example, ostracism is shown to influence children more than adolescents and adults (Abrams, Weick, Thomas, Colbe, & Franklin, 2011). Similarly, experiences of ostracism lead to increased state anxiety and decreased self-esteem in young adolescents, but not in adults (Sebastian, Viding, Williams, & Blakemore, 2010; Pharo, Gross, Richardson, & Hayne, 2011). Furthermore, developmental neuroimaging studies have demonstrated higher activation in brain regions related to negative emotion processing in adolescents compared to adults (Gunter Moor et al., 2012) as well as higher activation in regions related to emotion regulation during social exclusion in adults compared to adolescents (Sebastian et al., 2011). However, it should be kept in mind that our study examined witnessing ostracism and not effects of direct ostracism experience. To our knowledge, the only study examining effects of witnessing ostracism on subsequent fairness considerations across adolescence has found no age effects of witnessing ostracism on mood (Will et al. in press). Future research needs to further examine developmental changes in effects of witnessing ostracism on subsequent social interactions with familiar peers.

Considering the high significance of peer relationships across adolescence, we would expect our findings to be even stronger among adolescents. In this sense, the moderating role of peer relationships in reactions to ostracism is expected to be an underestimation of its role in younger age groups. Particularly our finding regarding less severe punishment of bullies when the observer has a good relationship with the bully might have important developmental implications. Such tolerance to social exclusion at younger ages might give rise to a cascade of events leading to more frequent instances of social exclusion. Therefore, it is highly important for future studies to focus on these processes in children and adolescents, where bullying and victimization play a significant role in their daily lives. Examination of these processes in early childhood will provide valuable

insight into the development of social exclusion where peer group membership plays a specifically important role (Killen, Mulvey, & Hitti, 2012).

Here we examined punishment behavior in a relatively simple context involving two familiar peers, whereas real-life bullying behavior occurs in context involving many peers. We showed that interpretation of behavior, ostracism in this case, is dependent on the specific relationships with all involved parties, which determines individual reactions. In a study examining involvement with bullying and victimization, it was shown that besides the 20% of 12–13 year-olds with direct involvement as bullies or victims, about 20% were reinforcers and 7% assistants of bullies, with another 17% involved as defenders of the victims (Salmivalli et al., 1996; Salmivalli, 2010). These roles are possibly related to individuals' relationships with the bullies or the victims. As we have shown in compensation of victims, being friends with the victim might result in a defender position, whereas being friends with the bully might lead to a reinforcer position. As such, peer relationships have direct and indirect repercussions for individual well-being. For example, friendships of victimized youth have a protective function (Hodges, Boivin, Vitaro, & Bukowski, 1999); about 15% of friendships of 11- and 14-year-olds are between a victimized/withdrawn and a prosocial peer (Güroğlu, van Lieshout, Haselager, & Scholte, 2007). Importantly, the negative effects of social stressors such as victimization and ostracism during childhood and adolescence are shown to be long lasting, reaching into young adulthood (Hamilton, Newman, Delville, & Delville, 2008). A better understanding of the dynamics in the peer context will eventually lead to more efficient interventions aimed at reducing bullying and victimization among peers.

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