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When Inclusion Costs and Ostracism Pays, Ostracism Still Hurts

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Recent research indicates that ostracism is painful even in the face of mitigating circumstances. However, in all previous experiments, there have been no costs to inclusion or benefits for ostracism. If being included meant losing money and being ostracized meant retaining money, would individuals still be distressed when ostracized? In 2 studies, the authors attempted to "load the dice" against inclusion in favor of ostracism. Participants played a variant of Cyberball called €yberball (pronounced *Euroball*), in which ostracism and inclusion were crossed with whether the participants earned or lost money for each ball toss they received. In 2 experiments, the authors found that even when being ostracized meant retaining more money than the other players, it was painful. In Study 2, the authors also introduced conditions in which participants were overincluded. In these conditions, participants were sensitive to financial incentives. However, even then participants felt worse when given no positive attention than when given punitive attention.

Keywords: gain–loss framing, social exclusion, bullying

Being ostracized—ignored and excluded—is painful and distressing. It severs our sense of belonging and feelings of connection with others; it makes us realize that others do not value us and consequently lowers our own self-esteem; it takes away any sense of control that we think we have in our social interaction with the others; and at perhaps a deeper level, it challenges our sense of existence. Several groups of researchers have amassed considerable insight into how we react to ostracism, social exclusion, and rejection. Our analysis relies on a fast-growing literature in social psychology on the impact of being ostracized, socially excluded, and rejected (for an overview, see Williams, Forgas, & von Hippel, 2005).

Being ostracized causes pain and distress during the ostracism episode itself, regardless of individual predispositions of the target of ostracism, the social context in which it occurs, or who is the source of ostracism. Ostracism threatens four fundamental needs (belonging, self-esteem, control, and meaningful existence) and increases sadness and anger when it occurs face-to-face (Warburton, Williams, & Cairns, 2006; Williams & Sommer, 1997) or when it occurs remotely (e.g., over cell phones, Smith & Williams, 2004; in Internet chat rooms, Williams et al., 2002; or in an Internet game of ball toss—Cyberball—Williams, Cheung, & Choi, 2000; Williams & Jarvis, in press).

In Cyberball, participants play a game of virtual toss with two other ostensible players whom they do not know and do not expect to meet. Despite these minimal conditions, participants show strong negative effects after less than 4 min of ostracism (i.e., a period in which they do not get the ball thrown to them while the other two participants continue to play). Eisenberger, Lieberman, and Williams (2003) used functional magnetic resonance imaging to examine the brain activity of ostracized Cyberball players. They found an increase in blood flow in the same region of the brain (the dorsal anterior cingulate cortex) that is activated when individuals experience physical pain. This increase occurred even when people knew that the others were not intentionally ostracizing them but were unable to include them because of a technical malfunction (Eisenberger & Liebman, 2005). Ostracism is distressing even when the individual is ostracized by outgroup members (Williams et al., 2000) or by those whom they despise (e.g., Ku Klux Klan members; Gonsalkorale & Williams, in press). Ostracism even hurts when a computer is the source (Zadro, Williams, & Richardson, 2004); in fact, it hurts just as much as when participants believe the ostracizers are humans.

The Immediate Impact of Ostracism

Williams (1997, 2002) proposed that ostracism is uniquely capable of simultaneously threatening four fundamental needs. Ostracism threatens the need for belonging because it divorces the individual from the group. It threatens self-esteem because individuals interpret their exclusion as a result of being unlikable. It threatens the need for control because unlike an argument or even a physical entanglement, ostracism is unilateral and unaffected by the individual's response. Finally, ostracism not only is a metaphor for death (Case & Williams, 2004), threatening individuals' sense of existence and recognition, but also in extreme cases, leads to death in humans and animals.

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In addition to threatening these fundamental needs, it is likely that all social animals, including humans, have evolved to detect ostracism because it threatens survival (Gruter & Masters, 1986). Being able to detect ostracism quickly is adaptive to the extent that it guides effective coping responses. Thus, it appears that the brain is well equipped to detect even the slightest hint of ostracism (Eisenberger & Lieberman, 2005) by registering it as painful. This alarm then directs the individual to focus attention on the circumstances of ostracism and appropriate coping responses. Research has uncovered a variety of coping responses that direct the ostracized individual toward fight (Gaertner & Iuzzini, 2005; Leary, Kowalski, Smith, & Phillips, 2003; Twenge & Baumeister, 2005; Twenge, Baumeister, Tice, & Stucke, 2001); flight (Predmore & Williams, 1983); freezing (Twenge, Catanese, & Baumeister, 2003), or, in many instances, becoming more socially attentive and pliable so that the chances for future inclusion are enhanced (Lakin & Chartrand, 2005; Pickett & Gardner, 2005; Pickett, Gardner, & Knowles, 2004; Ouwerkerk, Kerr, Gallucci, & Van Lange, 2005; Williams et al., 2000; Williams & Sommer, 1997).

Our focus in the present set of studies was on the immediate impact of ostracism to determine whether the large body of research showing the uniformly distressful reactions to ostracism is due primarily to the fact that ostracism is perceived to be costly, whereas inclusion is perceived to be beneficial. That is, if we were to create a situation in which people were punished for being included and rewarded for being ostracized, would the negative reactions to ostracism be reduced, eliminated, or even reversed? But how could one make ostracism beneficial and inclusion costly? For the sake of argument, imagine a group of individuals playing Russian roulette. Would an individual in that group feel unhappy if he or she were not passed the gun? In a less dramatic fashion, we investigated a pairing of ostracism and inclusion with financial penalties in the following studies.

Making Inclusion Costly and Ostracism Rewarding

In the present investigation, we attempted to turn the tables, so to speak, on the rewarding nature of inclusion and the costly nature of ostracism. In two studies, participants played a variant of Cyberball called €yberball (pronounced *Euroball*) in which catching a ball-toss had financial consequences. In Study 1, we actually deducted money from individuals every time they were included. Thus, ostracized individuals would have ended up being wealthier than the other ostracizing players. In Study 2, we threatened individuals with the loss of all their experimental payoffs if they were thrown a ball toss. Again, ostracized individuals would have been better off than included individuals because they were not under constant threat of losing all their experimental payoffs. Would these variations of Cyberball be enough to minimize or reverse the negative impact of ostracism?

From a rational cost–benefit perspective, making inclusion costly ought to have relieved ostracized participants of all distress. People should not feel unhappy when ostracized if ostracism prevents them from losing money. From a rational perspective, it may therefore be argued that financial incentives should have mitigated ostracism. In fact, applying prospect theory (Kahneman & Tversky, 1979; Kühberger, 1998; Tversky & Kahneman, 1991), arguing that losses loom larger than gains, one could even predict that the difference between inclusion and ostracism might have been reversed. If people would rather minimize losses than maximize gains, then study participants should have felt worse when included in a loss game than when ostracized from a gain game.

We did not believe, however, that either of these outcomes would happen. As we noted above, research on ostracism indicates that the immediate reflexive reaction to ostracism appears to be precognitive: Information that if incorporated would reduce or dismiss the impact of ostracism either is not incorporated or is disregarded by what appears to be an alarm reaction to the pain of ostracism. Given this reasoning, then all that matters is that participants perceive themselves to be ignored and excluded. Any mitigating factors related to this perception should be inconsequential to the immediate experience of ostracism. Taking this perspective, we argued that even if we created a situation in which ostracism is financially beneficial and inclusion is financially costly, ostracism would still be painful, thwart fulfillment of fundamental needs, and increase sadness and anger.

Study 1

The main goal of Study 1 was to test whether immediate responses to ostracism can be mitigated by the manipulation of financial payoff valences. People were informed that their experimental pay was contingent on the number of ball tosses they received. In the gain conditions, they were informed that they would earn 50 euro cents for each ball toss that they received. In the loss conditions, they were informed that they would lose 50 euro cents for each ball toss that they received. Consequently, people made money when they were included in the gain game but lost money when they were included in the loss game.

If individuals focus only on the monetary consequences as rational-person theorists would have us believe, then study participants should prefer to be included in a gain game and ostracized in a loss game. Additionally, such a prediction would also be accompanied by commensurate assessments of fundamental needs and mood. However, if immediate reactions to ostracism are indeed precognitive, as we believe, and override reflections of whether a situation has financial benefits, we would expect to find only a main effect of ostracism. It should lower the sense of belonging, self-esteem, control, and meaningful existence and should increase negative mood, regardless of the financial implications of the situation.

Method

Participants and design. Participants were 135 students (28 men, 107 women; mean age = 20.90 years, *SD* = 2.33) from Leiden University who were randomly assigned to a 2 (€yberball experience: ostracized, included) × 2 (payoff valence: gain, loss) between-S design.

Procedure. The general outline of the procedure was based on previous research on Cyberball (e.g., Williams et al., 2000; Williams & Jarvis, in press; Zadro et al., 2004). Participants were seated behind a computer in separate cubicles. All instructions were presented on the computer screen. The participants were told that they were participating in a study about the relation between mental visualization and task performance and informed that this would be tested by means of a three-player Internet ball-tossing game called €yberball. In this game, players see an animated ball-toss game. Depicted on the screen are two other ostensible players (represented by Cyberboy icons), and the participant is represented as an animated hand at the bottom of the screen). Participants were asked to use this game as a means of engaging in mental visualization (i.e., they were encouraged to

visualize whom the others were, what they looked like, where they were playing, what the temperature was like, and so on). In this game, there were a total of 30 throws.

€yberball experience manipulation. The €yberball experience was manipulated by the number of ball tosses thrown to the participant. In the ostracism conditions, the €yberball game was programmed such that the participant received two tosses at the beginning of the game and then never received another toss. In the inclusion conditions, the participant received one third of the tosses.

Payoff valence manipulation. The payoff valence manipulation was based on a procedure used by van Beest, Van Dijk, De Dreu, and Wilke (2005), who examined the impact of gain and losses on the willingness to ostracize people in a three-player coalition game. Participants were endowed with 0 euros in the gain game and 6 euros in the loss game. It was made clear that their experimental earnings would be based on the number of received ball tosses. In the gain game, participants were informed that they would earn 50 euro cents for each ball toss they received. In the loss game, participants were told that they had to pay 50 euro cents for each ball toss they received. Combined with our ostracism manipulation, this arrangement meant that in the gain game, participants gained 5 euros when included but gained only 1 euro when ostracized and that in the loss game, participants lost 5 euros when included but only 1 euro when ostracized. The implication of this manipulation was that participants entered the next phase of the experiment believing that they possessed 1 euro (i.e., when ostracized in the gain game or when included in the loss game) or 5 euros (i.e., when ostracized in the loss game or when included in the gain game).

Dependent variables. After the game ended, we asked participants to provide self-reports concerning their current satisfaction levels with belonging, self-esteem, meaningful existence, and control on 7-point scales (see Appendix, $\alpha = .92$).[1] Next, we asked participants to assess their emotional state (also on 7-point scales) during the game. This mood index contained three items assessing negative emotions (sad, angry, hurt) and three assessing positive emotions (happy, elated, cheerful; $\alpha = .88$). We reverse-scored the negative emotions. Finally, we checked whether the participants had understood the most important elements of the experiments. To check the €yberball experience manipulation, we asked participants to recall the percentage of ball throws that they received. To check the payoff valence manipulation, we asked participants how financially rewarding it was to catch a ball (1 = *not rewarding*, 7 = *rewarding*).

At the end of the experiment, we fully debriefed the participants. We explained that they had played against preprogrammed computer players. In addition, we informed them that their experimental pay would not be based on the number of ball throws and that they would be paid 5 euros instead.

Results

A multivariate analysis and subsequent univariate analyses on the separate needs and the separate emotions showed that each need and each emotion yielded identical results. This is common in research on ostracism; therefore, following the procedure in previous research, we only report an analysis of the combined needs and the combined emotions (Williams et al, 2000; Zadro, Boland, & Richardson, in press). We included gender in a first run of our analyses. This factor did not yield any significant results, apart from an occasional main effect of gender (i.e., men were more positive or less negative during the game, and their need satisfaction levels were higher regardless of condition) and was therefore dropped from the reported analyses.

Manipulation checks. Both manipulations were successful. A 2 (€yberball experience) × 2 (payoff valence) analysis of variance (ANOVA) on the percentage of balls caught yielded only a main effect of €yberball experience, $F(1, 133) = 90.45$, $p < .000$, $\eta^2 = .41$. Included participants ($M = 25.52$, $SD = 1.39$) reported being thrown a higher percentage of ball tosses than did ostracized participants ($M = 7.09$, $SD = 1.38$). A 2 × 2 ANOVA on the financial consequences of catching a ball yielded only a main effect of payoff valence, $F(1, 133) = 338.70$, $p < .000$, $\eta^2 = .66$. Participants in the gain conditions ($M = 6.41$, $SD = 1.33$) believed it was more rewarding to catch a ball than participants in the loss conditions did ($M = 1.68$, $SD = 1.67$).

Fundamental needs. Means and standard deviations of our need satisfaction index are given in Table 1. A 2 × 2 ANOVA on needs yielded a small but (marginally) significant main effect of payoff valence, $F(1, 133) = 3.87$, $p = .051$, $\eta^2 = .03$, such that need satisfaction levels were higher in the loss game ($M = 3.74$, $SD = 1.08$) than in the gain game ($M = 3.43$, $SD = 1.07$). Apparently, needs were more thwarted in the gain game than in the loss game. The more important finding was that the results yielded a main effect of €yberball experience, $F(1, 133) = 51.64$, $p = .000$, $\eta^2 = .28$, and not an interaction effect of €yberball experience and payoff valence ($F < 1$). The €yberball experience effect showed that needs were more thwarted in the ostracism condition ($M = 3.02$, $SD = 0.81$) than in the inclusion condition ($M = 4.14$, $SD = 1.02$), supporting our hypothesis that ostracism is painful even when it pays.

Mood. Means and standard deviations of our mood index are given in Table 2. A 2 × 2 ANOVA on the emotion index yielded a main effect of payoff valence, $F(1, 133) = 8.99$, $p = .003$, $\eta^2 = .06$. Participants were more positive during the loss game ($M = 4.90$, $SD = 1.15$) than during the gain game ($M = 4.30$, $SD = 1.15$). As predicted, we observed a main effect of €yberball experience, $F(1, 133) = 11.74$, $p = .001$, $\eta^2 = .08$, and no interaction between €yberball experience and payoff valence ($F < 1$). Participants were less positive when ostracized ($M = 4.29$, $SD = 1.17$) than when included ($M = 4.95$, $SD = 1.12$). This is again consistent with our prediction that individuals would respond negatively to ostracism even when it was financially beneficial to be ostracized.

Mediation. The results showed that being ostracized lowered need satisfaction and mood. Our next step was to determine if the need satisfaction levels mediated mood, as was hypothesized and has been shown in other studies (e. g., Williams et al, 2000). To test for mediation, we used the procedure of Baron and Kenny (1986). Following the recommendations of Aiken and West (1991), we centered participants' answers on the needs satisfaction and mood index and effect-coded our independent variables: €yberball experience manipulation and payoff valence.

First, we regressed our mood index on €yberball experience. Second, we regressed our needs satisfaction index on €yberball experience. As could be deduced from the above ANOVAs these regression analyses showed that €yberball experience affected mood, $\beta = .27$, $t = 3.32$, $p < .000$, and needs, $\beta = .52$, $t = 7.12$, $p < .000$. Third, we regressed mood on €yberball experience while controlling for needs. This regression analysis showed that needs

[1] The need questions were based on previous research using the Cyberball paradigm. Note that the questions measure how much belonging, control, self-esteem, and meaningful existence people are experiencing during Cyberball and, as such, only serve as a proxy of whether these needs are threatened.

affected mood, $\beta = .68$, $t = 8.74$, $p < .000$, and that €yberball experience did not affect mood when we controlled for needs, $\beta = .08$, $t = 1.03$, *ns*. A subsequent Sobel test showed that this reduction was statistically significant, $Z = 5.50$, $p < .000$. Finally, we also regressed needs on €yberball experience while controlling for mood. This analysis revealed that the effect of €yberball experience on needs remained significant, $\beta = .37$, $t = 6.15$, $p < .000$. Taken together, these analyses show that needs mediate mood, not vice versa. It shows that mood is formed as an appraisal of needs.

Discussion

Our results are consistent with those of previous research showing that ostracism appears to overwhelm factors that, rationally, ought to mitigate distressful reactions (Zadro, Williams, & Richardson, 2005). Again, ostracism seems to be a powerful experience, overriding even a pervasive incentive such as earning money. Regardless of whether people earned money by being ostracized or not, ostracism lowered need satisfaction levels and mood. Additionally, self-reported mood levels were mediated by the self-reported need satisfaction levels, and not the reverse, providing support for Williams's need threat model of ostracism (Williams, 2001; Williams, in press; Zadro, Williams, & Richardson, 2004).

In addition to the main effects of €yberball experience, the results also yielded main effects of payoff valence. Apparently, people felt better when playing a loss game than when playing a gain game. This may be a side effect of our payoff valence manipulation. People were endowed with 6 euros in the loss game and 0 euros in the gain game, and such an endowment may have caused participants to appreciate the experiment more in the loss conditions than in the gain conditions.

Study 2

Our first goal of Study 2 was to replicate our findings using a different payoff valence manipulation. In Study 1, participants gained or lost 50 euro cents each time they caught the ball. It could be argued that participants became used to losing or gaining a small amount of money and therefore 50 euro cents may not have been strong enough to moderate ostracism. Furthermore, we endowed participants with 6 euros in the loss conditions and 0 euros in the gain conditions in Study 1. A possible side effect of this may have been that people were more elated during the loss game than during the gain game. To address these issues, we altered our payoff valence manipulation in Study 2 such that its effect would be stronger but would not endow participants with different amounts of money prior to participating in €yberball. In Study 2, all participants were endowed with 5 euros at the beginning of €yberball. They were informed that the ball-tossing game could stop at any moment and that the person holding the ball would either lose all his or her money or double all his or her money, depending upon the condition. In contrast with Study 1 in which participants were confronted with small increments or decrements of money to which participants may have habituated, participants were now under constant threat of losing all their money (or were under the constant promise of doubling their money).

Our second goal of Study 2 was to extend our interest in the inclusion–ostracism continuum by adding an overinclusion condition. Overinclusion means being included more than what one would expect, given equal participation among the members of the group. Similar to ostracism, overinclusion is likely to make participants feel conspicuous. The difference, however, is that overincluded participants are conspicuous by excessive attention, whereas ostracized participants are conspicuous by excessive inattention. Williams et al. (2000) added an overinclusion condition to their Internet Cyberball design (but for which there were no financial benefits or costs) and found that overinclusion tended to be a more positive experience than inclusion, although this effect was not significant. They included overinclusion to rule out that ostracism was distressing simply because it made participants feel conspicuous. Our reason for adding an overinclusion condition is that participants should be able to register whether they are overincluded in a good situation or overincluded in a bad situation when asked to evaluate their satisfaction with needs and mood. We thought that participants would have unmoderated reflexive responses only to ostracism, not to overinclusion. It also rules out the possibility that our need and mood measures are insensitive to detecting payoff valence differences.

Our third goal of Study 2 was to test the specificity of our reasoning by assessing reflective behavioral responses. That is, after the initial pain and distress of ostracism that we think is unmoderated by situational constraints like gain or loss of payoff, we expect moderation for reflective behavioral responses. Several studies have shown that when ostracized individuals have little control over their future inclusion or have been sufficiently deprived of a sense of control over any outcome, their reactions are hostile. Not only are they more willing to lash out, but they are also less willing to donate to charity (Twenge, 2005; Twenge & Baumeister, 2005; Twenge et al., 2001; Warburton et al., 2006). Thus, we expected that differences in payoff valence (i.e., gain vs. loss) would be likely to moderate behavioral responses to ostracism. More specifically, we predicted that participants should be

Table 1
Means and Standard Deviations of Need Satisfaction Index by €yberball Experience (Ostracism, Inclusion) and Payoff Valences (Gain, Loss) in Study 1

	Ostracism		Inclusion	
Variable	*M*	*SD*	*M*	*SD*
Gain	2.85	0.74	4.02	1.03
Loss	3.20	0.86	4.28	1.02

Table 2
Means and Standard Deviations of Mood Index by €yberball Experience (Ostracism, Inclusion) and Payoff Valences (Gain, Loss) in Study 1

	Ostracism		Inclusion	
Variable	*M*	*SD*	*M*	*SD*
Gain	3.93	1.03	4.66	1.17
Loss	4.66	1.22	5.25	1.01

more willing to retaliate and less willing to donate to charity when they are ostracized from a gain game than from a loss game. This expected interaction would again underscore our argument that only the immediate responses to ostracism are reflexive. It would also help to rule out the possibility that our payoff valence manipulation cannot elicit moderation when people are ostracized.

Our fourth and final goal of Study 2 was to directly compare the condition in which participants are overincluded in a loss game with the condition when they are ostracized from a gain game. We wondered which is worse: getting punitive attention or getting no positive attention? One could argue on the basis of the prospect theory that participants should react more negatively to punitive attention than to a lack of positive attention. However, as James (1890/1950) stated, it may also be the other way around. He wrote the following:

> If no one turned round when we entered, answered when we spoke, or minded what we did, but if every person we met 'cut us dead,' and acted as if we were non-existing things, a kind of rage and impotent despair would ere long well up in us, from which the cruelest bodily tortures would be a relief; for these would make us feel that, however bad might be our plight, we had not sunk to such a depth as to be unworthy of attention at all. (pp. 293–294)

In line with this reasoning, Williams and Zadro (2001) reported that targets of long-term ostracism voluntarily state that they would have preferred to be beaten than to have been ostracized. In Study 2, we put this notion to the test.

Method

Participants and design. There were 167 students from Leiden University (62 men, 105 women; mean age = 20.93 years, $SD = 2.95$) who were randomly assigned to the conditions of a 3 (€yberball experience: ostracized, included, over-included) × 2 (payoff valence: gain, loss) design. Participants were given 5 euros before the start of the experiment.

Procedure. The procedure was similar to Study 1 with some notable exceptions. The first difference was that we used a different payoff valence manipulation. Instead of losing or gaining money each time a participant got the ball, participants were now informed that the game could stop at any moment and that the person holding the ball would then lose or double his or her endowment of 5 euros. In addition, we also introduced an overincluded condition. In this condition, both computer players always threw the ball to the participant.

In all conditions, the game would stop when the participant was not holding the ball. That is, the threat of losing all payoffs (or promise of doubling payoffs) was never realized. Note that we did not realize threats or promises because it is impossible to realize treats or promises in the ostracism conditions and because it would obscure the reason that people reacted to the inclusion and overinclusion conditions. Contrary to the procedure in Experiment 1 in which some participants possessed more money than others after the ostracism manipulation, this procedure ensured that all participants still possessed 5 euros the moment they started answering the dependent measures.

Similar to our procedure in Study 1, we first asked participants to fill out questionnaires about need satisfaction levels ($\alpha = .92$) and mood ($\alpha = .92$). After answering these questions, the participants were asked whether they felt like taking revenge on the other players and punishing them. These questions were used as our measure of retaliation ($\alpha = .92$).

After the experiment ended and participants were paid 5 euros, participants were informed that they could make a donation to the people of Darfur (Sudan, Africa). At the time of the experiment, news about Darfur was televised daily in the Netherlands because of the war and famine, and people were called on to make donations to alleviate the suffering. Participants were told that they could help out by making a donation to one of the major funds whose appeals were being televised by putting some of their experimental earnings in drop box that was positioned on the way out of the laboratory. Participants were asked to use an envelope that was present in their experimental cubicle. To ensure anonymity, we asked the participants to drop the envelope in the drop box regardless of whether they actually put money in the envelope. The amount given to Darfur was used as our measure of prosocial behavior, and after all participants completed the experiment, the money was indeed given to Darfur.

Results

As in Study 1, we analyzed need satisfaction levels and mood levels with index scores of each.[2] Furthermore, we also included gender in a first run of the analyses. However, similar to the results in Study 1, this factor yielded only some main effects (men were more positive and less thwarted in needs than women). Gender did not interact with €yberball experience or with our payoff valence manipulation, so this factor was dropped from further analyses.

Manipulation checks. The manipulations were successful. A 3 (€yberball experience) × 2 (payoff valence) ANOVA on the percentage of balls caught yielded only a main effect of €yberball experience, $F(2, 161) = 253.07$, $p < .000$, $\eta^2 = .86$. Tukey's honestly significant difference (HSD) tests showed that the overincluded participants ($M = 86.94$, $SD = 20.63$) reported being thrown a higher percentage of balls than did the included participants ($M = 35.70$, $SD = 10.11$), who in turn reported being thrown a higher percentage of balls than did the ostracized participants ($M = 6.64$, $SD = 4.96$).

A 3 × 2 ANOVA on the question as to whether it was financially profitable to catch a ball yielded only a main effect of payoff valence, $F(1, 161) = 133.95$, $p < .000$, $\eta^2 = .45$. Participants in the gain conditions ($M = 5.22$, $SD = 2.06$) believed that it was more profitable to catch a ball than did participants in the loss conditions ($M = 2.01$, $SD = 1.44$).

Fundamental needs. Means and standard deviations of our need satisfaction index are given in Table 3. A 3 × 2 ANOVA on the needs satisfaction index resulted in a main effect of €yberball experience, $F(2, 161) = 66.06$, $p = .000$, $\eta^2 = .45$. Tukey's HSD tests showed that the fundamental needs of ostracized participants ($M = 3.00$, $SD = 0.81$) were more thwarted than the fundamental needs of included ($M = 4.76$, $SD = 0.80$) and overincluded participants ($M = 4.65$, $SD = 1.10$). This replicates the findings of Study 1.

The analysis yielded also an interaction effect of €yberball experience and payoff valence, $F(2, 161) = 3.87$, $p = .05$, $\eta^2 = .03$. Simple main effects analysis to interpret this interaction showed that our payoff valence manipulation moderated the overinclusion conditions, $F(1, 161) = 3.89$, $p = .05$, $\eta^2 = .024$, but not the inclusion and ostracism conditions. Participants reported lower need levels when overincluded in a loss game than when overin-

[2] As in Study 1, we first conducted a 2 × 3 multivariate analysis of variance on the separate needs and moods. Again, the result of each separate need was identical when comparing the ostracism conditions with the inclusion conditions. There was a slight difference between the needs in the overinclusion conditions. Receiving punitive attention was especially detrimental for self-esteem and belonging. There were no differences whatsoever between the results on positive or negative mood.

cluded in a gain game. As predicted, this result shows that individuals are capable of making rational cost–benefits analyses when overincluded.

Finally, we compared participants who were ostracized from a gain game with participants who were overincluded in a loss game. This comparison showed that participants reported lower need satisfaction levels when ostracized from gains than when overincluded with financial penalties, indicating that at least in this experiment, getting no positive attention had greater negative impact on need satisfaction levels than getting punitive attention, $t(53) = 6.00$, $p = .000$.

Mood. Means and standard deviations of our mood index are given in Table 4. As in Study 1, the results of mood mirrored the results of needs. A 3 × 2 ANOVA on our mood index yielded a main effect of €yberball experience, $F(2, 161) = 17.78$, $p = .000$, $\eta^2 = .18$, and an interaction effect of €yberball experience and payoff valence, $F(2, 161) = 6.01$, $p = .003$, $\eta^2 = .07$. Tukey's HSD tests performed to interpret the main effect of €yberball experience showed that participants felt worse when ostracized ($M = 4.21$, $SD = 1.15$) than when included ($M = 5.35$, $SD = 0.83$) or overincluded ($M = 5.08$, $SD = 1.23$). Simple main effects analysis to interpret the interaction revealed that our manipulation of payoff valence only affected the overinclusion condition, $F(1, 161) = 8.51$, $p = .004$, $\eta^2 = .05$. Participants felt worse when overincluded in a loss game than when overincluded in a gain game. Furthermore, participants felt worse when ostracized from gains than when overincluded in losses, indicating that at least in this experiment, getting no positive attention caused moods to plummet more than getting punitive attention, $t(53) = 1.71$, $p < .05$.

Mediation. To test whether needs mediated mood, we centered the responses of the participants and effect-coded the independent variables and their interaction.

To facilitate a direct comparison with Study 1, we first focused on the conditions of €yberball experience in which participants were either ostracized or included. Both the regression analysis on needs, $\beta = .74$, $t = 11.49$, $p < .000$, and the regression analysis on moods, $\beta = .49$, $t = 6.00$, $p < .000$, yielded significant €yberball experience effects. The regression on mood controlling for needs showed that needs affected mood, $\beta = .78$, $t = 7.96$, $p < .000$, and made the €yberball experience effect on needs disappear, $\beta = -.08$, $t = -.80$, *ns*. A subsequent Sobel test showed that this reduction was statistically significant, $Z = 6.54$, $p < .001$. Furthermore, a regression analysis on need in which mood was controlled failed to show a reduction in mood, $\beta = .50$, $t = 8.54$, $p < .000$. As in Study 1, these analyses show that needs mediate mood when participants are ostracized.

Table 3
Means and Standard Deviations of Need Satisfaction Index by €yberball Experience (Ostracism, Inclusion, Overinclusion) and Payoff Valences (Gain, Loss) in Study 2

	Ostracism		Inclusion		Overinclusion	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*
Gain	2.86	0.86	4.65	0.81	4.90	1.12
Loss	3.15	0.77	4.87	0.80	4.41	1.05

Table 4
Means and Standard Deviations of Mood Index by €yberball Experience (Ostracism, Inclusion, Overinclusion) and Payoff Valences (Gain, Loss) in Study 2

	Ostracism		Inclusion		Overinclusion	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*
Gain	4.07	1.17	5.14	0.71	5.50	0.92
Loss	4.36	1.14	5.58	0.91	4.66	1.38

Next, we focused on the conditions of €yberball experience in which participants were either included or overincluded. Note that in these conditions, €yberball experience interacted with payoff valence. We therefore focused on this interaction term. In the first step, we regressed mood on €yberball experience, payoff valence, and their interaction, $\beta = .30$, $t = 3.35$, $p < .000$. In the second step, we regressed the mediator needs on our independent variables, $\beta = .19$, $t = 1.96$, $p = .05$. In the third step, we regressed mood and needs on the independent variables. This regression showed that needs affected mood, $\beta = .60$, $t = 6.00$, $p < .000$, and showed that the interaction between €yberball experience and payoff valence on mood disappeared, $\beta = .13$, $t = 1.37$, *ns*. A Sobel test showed that this reduction was (marginally) significant, $Z = 1.90$, $p = .06$. These regression analyses show that need satisfaction levels mediated mood when participants were overincluded.

Retaliation. Means and standard deviations of willingness to retaliate are given in Table 5. The 2 × 3 ANOVA on self-reported desire to punish fellow game players yielded a main effect of €yberball experience, $F(1, 161) = 7.59$, $p < .001$, $\eta^2 = .09$. Tukey's HSD tests performed to interpret this main effect showed that ostracized participants were more likely retaliate ($M = 2.23$, $SD = 1.68$) than participants who were either included ($M = 1.46$, $SD = 0.87$) or overincluded ($M = 1.55$, $SD = 0.78$).

The main effect was qualified by an interaction of €yberball experience and payoff valence, $F(1, 161) = 6.08$, $p < .003$, $\eta^2 = .07$. Simple main effects analysis showed that our €yberball experience manipulation moderated willingness to retaliate only in the gain game, $F(1, 161) = 12.76$, $p < .09$, $\eta^2 = .13$. Tukey's HSD tests to interpret this simple main effect showed that ostracized participants were more likely to punish fellow game players than included or overincluded participants in a gain game. Simple main effects analysis also showed that our payoff valence manipulation only lowered willingness to retaliate in the ostracism conditions, $F(1, 161) = 12.18$, $p < .001$, $\eta^2 = .07$. This interaction is consistent with our reasoning that in contrast to needs and emotions, subsequent coping responses to ostracism can be mitigated by situational concerns.

Finally, a direct comparison between being ostracized from gains and being overincluded in losses revealed that participants were more likely to punish fellow participants when ostracized from gains than when overincluded in losses, $t(53) = 2.35$, $p < .01$. This shows that also on our retaliation measure, getting no positive attention had more negative consequences than getting punitive attention.

Prosocial behavior—donating to a charitable cause. Means and standard deviations of prosocial behavior are given in Table 6.

To analyze how much participants contributed to Darfur, we first performed a log transformation on the data because the data were heavily skewed.

A 3 × 2 ANOVA yielded only an interaction trend of €yberball experience and payoff valence, $F(1, 161) = 6.04$, $p < .09$, $\eta^2 = .06$. Simple main effects analysis to interpret this interaction showed that €yberball experience only moderated prosocial behavior in the gain game, $F(1, 161) = 3.78$, $p < .025$, $\eta^2 = .045$. Further Tukey's HSD tests comparing conditions within the gain game showed that ostracized participants donated less to charity than overincluded participants. Simple main effects analysis also revealed that payoff valence only moderated prosocial behavior in the overinclusion condition, $F(1, 161) = 9.49$, $p < .002$, $\eta^2 = .056$. Participants donated more to charity when overincluded in a gain game than when overincluded in a loss game. This is again in agreement with our reasoning that coping responses to €yberball experience are moderated by financial implications.

Finally, a direct comparison between being ostracized from losses and overincluded in gains was not statistically significant, $t(53) = .32$, *ns*. That is, different from our findings with the measure of antisocial intent, ostracized participants were not less prosocial than participants who received punitive attention.

Discussion

We replicated the main results of Study 1 using a different method of payment. Participants found ostracism unpleasant even when it prevented them from losing all their money. Subsequent mediation analyses replicated the findings of Study 1 indicating that ostracism lowers need satisfaction levels and that this in turn negatively affects mood.

We also found that whereas participants' negative reactions were not mitigated by payoff valence when being ostracized, they were mitigated when being overincluded. Compared with people who were being included, ostracized people felt worse regardless of payoff valence, whereas overincluded people only felt worse in a loss game. This result provides further evidence that ostracism is indeed a powerful experience, overriding rational cost–benefit evaluations of a situation. It also speaks to the sensitivity of our dependent variables because of their ability to reveal differences between the overinclusion conditions.

We also observed interactions between €yberball experience and payoff valence on antisocial intent and prosocial behavior. In agreement with our reasoning that only the immediate responses to ostracism are highly resistant to moderation, we observed that the financial implications of a situation influenced only subsequent coping responses. People were especially aggressive when ostracized from a gain game and more prosocial when overincluded in a gain game.

Table 5
Means and Standard Deviations Willingness to Retaliate by €yberball Experience (Ostracism, Inclusion, Overinclusion) and Payoff Valences (Gain, Loss) in Study 2

	Ostracism		Inclusion		Overinclusion	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*
Gain	2.77	2.00	1.53	1.08	1.33	0.59
Loss	1.70	1.09	1.38	0.60	1.78	0.89

Table 6
Means and Standard Deviations of Prosocial Behavior (in Euros) by €yberball Experience (Ostracism, Inclusion, Overinclusion) and Payoff Valences (Gain, Loss) in Study 2

	Ostracism		Inclusion		Overinclusion	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*
Gain	1.68	1.58	1.83	1.58	2.40	1.28
Loss	1.73	1.21	1.60	1.47	1.63	1.46

Another finding concerned our comparison between the ostracized from gain condition (i.e., ostracized from a chance of doubling payoffs) and the overincluded in loss condition (i.e., overincluded in a chance of losing all payoffs). Direct comparisons showed that participants felt worse in terms of need satisfaction and mood when they could not double their payoffs than when they were under the constant threat of losing all their payoffs. Moreover, participants who could not double their payoffs were more willing to retaliate than participants who were under constant threat of losing all their payoffs. Combined, these results add empirical support to the notion that people might prefer getting punitive attention to getting no attention at all (Williams & Zadro, 2001).

General Discussion

In two studies, we loaded the dice in favor of ostracism by making ostracism more financially rewarding than inclusion. Results of both studies indicated that penalizing inclusion or making ostracism financially beneficial did not mitigate the phenomenological experience of being ostracized. Regardless of whether people lost small amounts of their experimental earnings (Study 1) or were threatened with losing all their money (Study 2), people felt worse when ostracized from a costly situation than when included or even overincluded in a costly situation. In addition, we assessed the relation between needs and mood. Both Study 1 and Study 2 showed that need satisfaction levels mediated mood and not vice versa when people were ostracized. This indicates that, at least in our studies, mood was lowered because of an appraisal of needs, not that people's needs were thwarted because of lowered mood.

Immediate Responses to Ostracism

The general thrust of our data is consistent with other research that attempted to find moderation of need satisfaction levels and mood during or immediately following ostracism. Again, ostracism was not moderated by a factor that should logically mitigate the stress of being ostracized (Eisenberger et al., 2003; Gonsalkorale & Williams, in press; Williams et al., 2000; Zadro et al., 2004). This provides further support for the notion that immediate reactions to ostracism may indeed be precognitive and linked to pain (McDonald & Leary, 2005). The current findings also address a possible criticism on research failing to find mitigating circumstances of ostracism. It may be argued that these studies are merely

reporting null effects. In Study 2, we found moderation on self-reports of need satisfaction and mood in our overinclusion conditions, suggesting that our measures are sensitive to social pressures.

Subsequent Responses to Ostracism

We also observed that payoff valences interacted with €yberball experience on retaliation and donations to Darfur. People reported desiring retaliation following ostracism but less so when ostracized from a loss game. Furthermore, overincluded participants, especially those who were overincluded in a gain game, donated more money to charity than ostracized participants donated. This is consistent with previous research on anti- and prosocial behavior that found that people seem to become more antisocial and less prosocial when excluded from a good situation (Catanese & Tice, 2005; Twenge et al., 2001; Warburton et al., 2006). An interesting contribution of our findings is that aggression was moderated by payoff valences when people were ostracized, whereas donations to charity were moderated by payoff valences when people were overincluded. Although speculative, this finding might suggest that positive behavior is more likely to occur after positive antecedents, whereas negative behavior is more likely to occur after negative antecedents. Whether this is indeed the case or whether this is perhaps due to the fact that our measure of negative behavior was directed at fellow participants whereas our measure of positive behavior was not directed at fellow participants remains to be examined in future research. What is important here is that ostracism increased aggression and decreased prosocial behavior but that these behavioral measures were mitigated by financial incentives.

Should Ostracism Be Viewed as One End of an Inclusionary Status Continuum?

Introducing an overinclusion condition also afforded the possibility to compare two different situations in which other people single out individuals — ostracism and overinclusion. In the ostracism condition, people are the "objects of others' inattention" (Williams et al., 2000, p. 169) and are singled out by receiving less attention than expected. In the overinclusion condition, people are singled out because they receive more attention than expected. This allowed us to assess whether the experience of ostracism can be viewed as a continuum that ranges from ostracism, through inclusion, to overinclusion (see also Leary, 1990). Consistent with the findings of Williams et al. (2000) who showed that being overincluded in a ball-tossing game without financial incentives is more rewarding than being included in a ball-tossing game, we show that well-being is indeed a linear function of inclusionary status in situations in which people earn money whenever they get a ball toss. What is more important, however, is that we also introduced conditions in which individuals lost money whenever they were thrown the ball. In this situation, well-being was not a linear function of inclusionary status. Instead, well-being went down in both the overinclusion and the ostracism conditions. Moreover, the fact that financial incentives moderated immediate responses to overinclusion but not to ostracism suggests that individuals process information differently in these situations. It seems that people do not process information about the pros and cons of a situation when singled out in terms of ostracism but do process such information when singled-out in terms of overinclusion. In this respect, we agree with Leary (2005) who argued that conceptualizing rejection as an index of inclusionary status ranging from maximal exclusion to maximal inclusion may be useful for capturing the effort people use to exclude others, but it may not be useful in accounting for what victims of exclusion experience.

Bridging Two Forms of Peer Rejection

Our paradigm also allowed for a comparison between being ostracized from the possibility of doubling one's money and being overincluded when loss of all of one's money loomed. Results showed that participants responded more negatively both in terms of immediate responses and aggressive intentions when ostracized from the gain situation than when overincluded in the loss situation. This finding suggests that being ostracized is indeed a very negative experience, perhaps worse that being ganged up on in such a way that increases our chances of losing valued resources. We can link this finding to research on peer rejection that stresses that both ostracism and bullying are possible antecedents of aggressive behavior (Juvonen & Gross, 2005). For example, studies on the infamous school shootings in the United States reveal that many of the adolescents who hurt and killed their fellow schoolmates were allegedly rejected and bullied by their peers (Leary et al., 2003). To the extent that our manipulation of punitive attention can be viewed as one form of bullying (Olweus, 1978; Zadro, Williams, & Richardson, 2005), we attempted to bridge these two forms of peer rejection. The current findings concur that both these forms of peer rejection are perceived as painful. Yet, we also show that, at least in our paradigm, ostracism is worse than our form of bullying. Combined with the fact that in our paradigm, ostracized individuals were more willing to lash out than bullied individuals, our finding underscores the particularly negative impact and consequences of ostracism.

Allocating Gains and Losses

At this point, it may be relevant to compare our current findings with other research on gain–loss framing. A general finding in this literature is that losses loom larger than gains (Kahneman & Tversky, 1979; Kühberger, 1998; Tversky & Kahneman, 1991). In individual decision tasks, individuals are more likely to minimize their losses than to maximize their gains, and they react more strongly to a loss than to an equivalent gain. In interdependent decision tasks, in which participants' actions affect the payoff of others, people may lower their own payoff so as not to harm others as long they are led to focus on the payoffs of others (De Dreu & McCusker, 1997; van Beest et al., 2005; van Beest, Wilke, & Van Dijk, 2003). Whereas a recent study showed that participants were more likely to ostracize others when negotiating about gains than when negotiating about losses (van Beest et al., 2005), the present findings suggest that targets of ostracism do not appear to discriminate between being ostracized in a gain or a loss domain. An interesting implication then is that ostracizers may underestimate the damage they inflict when they ostracize people in a gain domain (or overestimate the damage in a loss domain).

On a more general level, our results have implications for situations in which people negotiate or divide payoffs (De Dreu &

Carnevale, 2003). In such situations, getting payoffs or not getting them is often related to being included or excluded from an agreement. The current results suggest that people may indeed respond fiercely to violations of equality or equity (Messick & Sentis, 1979, 1983; Walster & Walster, 1975; Walster, Walster, & Berscheid, 1978) in negotiation or distribution tasks but that those who do not obtain payoffs at all may feel worse. The current results illustrate that, as in the Olympic spirit, it often is not about winning or losing but indeed just about participating.

Limitations and Boundary Conditions

One concern that might be raised is that had we just offered enough money in the ostracism–gain condition, we would have eliminated the pain and distress of ostracism. We agree that there may certainly be some excessively high monetary amount that might obliterate the initial pain of ostracism, but we are skeptical that our chosen amounts were so low as to give unfair advantage to the ostracism manipulation for a few reasons. First, we used payoff valence manipulations that were successful in causing differential behavior in other research areas such as negotiation. In fact, we adapted a payoff valence procedure that did impact coalition formation and thus the willingness to ostracize (van Beest, et al. 2005). Second, our ostracism manipulation was intentionally minimal. The participants neither saw nor knew the other players, nor did they expect to see or meet them in the future. One could easily imagine a much stronger ostracism manipulation in which participants endure the pain of being ignored and excluded in the presence of others for whom they care. In light of other research, it seems to us most plausible that ostracism is at least momentarily painful despite offsetting factors that rationally should minimize individuals' appraisal of the importance and relevance of the ostracism experience. As reviewed in the introduction, individuals are distressed by ostracism when a computer (rather than humans) ostracizes them (Zadro et al., 2004), when a despised outgroup ostracizes them (Gonsalkorale & Williams, in press), and when they know the others are not able to include them because of technical limitations (Eisenberger et al, 2003). In the present studies, the pain appears to endure even when the meaning of ostracism is symbolically linked with relative wealth.

Extensions

The results of our studies may also be of interest to domains beyond social psychology. Indeed, there is ample literature and scholarly attention to ostracism in biology (Gruter & Masters, 1986), anthropology (Boehm, 1986; Gruter, 1986; Mahdi, 1986), law and politics (Anawalt, 1986; Kort, 1986; Rehbinder, 1986; Weisberger, 1986), and developmental psychology (Barner-Barry, 1986; Crick, Ostrov, Appleyard, Jansen, & Casas, 2004). The interest in ostracism is commensurate with its commonality, power, and consequences across all levels of social units and apparently among all social species. Our studies suggest that the need to belong, to feel good about oneself, to have some control over social interactions, and to be recognized as existing are potent motives that overwhelm rational thought when they are first threatened by ostracism.

The next question for researchers and theorists will be to determine how ostracized individuals cope and respond once they have had time for reflection and appraisal. In his summary of the current empirical literature in ostracism and social exclusion, Williams (in press) describes four different categories of subsequent reactions to ostracism. Responses to ameliorate the threats posed by ostracism may be to (a) increase one's inclusionary status by attending more closely to social information and behaving more socially acceptably, perhaps to the extent of becoming overly susceptible to social influence; (b) reclaim control or provoke recognition of oneself by becoming more aggressive; (c) shut down emotionally and cognitively, as if in a state of stunned numbness; or (d) withdraw and ostracize oneself from others, preventing the possibility of further social pain.

Although it would seem plausible that, on reflection, ostracism from a loss game would be more easily dismissed as nonthreatening or perhaps even regarded as protective and nurturing, it might still diminish one's sense of self-worth and overall contribution to the group. For instance, in many U.S. jurisdictions, the elderly are not obligated to fulfill their duty to serve as jurors (Fingerman & Hanley, 2006). Although this might give the elderly temporary relief from an arduous task, it might also make them feel societally invisible and unimportant (Levy, 2003).

Conclusion

The results of these two studies again point to the power of ostracism: Even when ostracism results in financial gain (relative to the other players), it hurts. Going back to our rather extreme hypothetical situation posed earlier about Russian roulette, we would tentatively conclude that an individual would feel unhappy about being left out of such a potential costly activity.

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Appendix

Need Threat Scale

Needs were assessed on 7-point scales ranging from 1 (*do not agree*) to *7 (agree*). Questions ending with an "R" were recoded.

Belongingness

1. I felt as one with the other players.
2. I had the feeling that I belonged to the group during the game.
3. I did not feel accepted by the other players. (R)
4. During the game I felt connected with one of more other players.
5. I felt like an outsider during the game. (R)

Control

1. I had the feeling that I could throw as often as I wanted to the other players.
2. I felt in control over the game.
3. I had the idea that I affected the course of the game.
4. I had the feeling that I could influence the direction of the game.
5. I had the feeling that the other players decided everything. (R)

Self-Esteem

1. Playing the game made me feel insecure. (R)
2. I had the feeling that I failed during the game. (R)
3. I had the idea that I had the same value as the other players.
4. I was concerned about what the other players thought about me during the game. (R)
5. I had the feeling that the other players did not like me. (R)

Meaningful Existence

1. During the game it felt as if my presence was not meaningful. (R)
2. I think it was useless that I participated in the game. (R)
3. I had the feeling that my presence during the game was important.
4. I think that my participation in the game was useful.
5. I believed that my contribution to the game did not matter. (R)

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