

How Are Prosocial Responses to Ostracism Related to Thwarted Psychological Needs?

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ABSTRACT. This study investigated the extent to which ostracized individuals engaged in prosocial responses after an opportunity for inclusion and the extent that these responses were related to thwarted fundamental needs. A total of 206 primarily European American female first-year college students played two games of Cyberball. In Game 1, participants were randomly assigned to the ostracism group or the inclusion group. In Game 2, all participants were assigned to the inclusion group and were told that one of the 2 other players was a repeat player from Game 1 and the other player was a newcomer. Results revealed that ostracized participants in Game 1 passed the ball to the repeat player fewer times than included participants in Game 1, $U = 2859.50$, $Z = -5.46$, $r = -.38$, $p < .001$. After Game 1, ostracized participants reported more threats to the 4 fundamental needs relative to included participants. After Game 2 inclusion, Game 1 ostracized participants reported higher needs scores than the Game 1 included group. Individuals who reported higher needs states in Game 1 and lower needs states in Game 2 showed more prosocial responses in Game 2, which suggests that the need states, not ostracism status, are related to prosocial responses to ostracism.

Social ties are an integral part of the human experience. All throughout life, people experience events in a group with others. Inevitably, however, there comes a time where an individual is left out of a group. Whether it is a child who does not get chosen to be on a team on the playground, an adult getting the cold shoulder from a group of friends, or an individual left out of an online group, exclusion from a group has important consequences on an individual's emotional well-being. It is important, then, to investigate how individuals feel after an episode of exclusion and how they respond to the excluders.

Ostracism involves being ignored or excluded, usually without any explanation or negative attention (Williams, 2007), and it can occur through a variety of contexts. Following an episode of ostracism, an individual experiences immediate psychological distress including threats to four

psychological needs states, specifically belonging, control, sense of meaningful existence and self-esteem (Williams & Nida, 2011). This negative experience magnifies (a) when the ostracizer is psychologically close to the victim as opposed to being a stranger and (b) when the target believes that he or she (the target) is the one responsible for the exclusion (Nezlek, Wesselmann, Wheeler, & Williams, 2012). Furthermore, ostracized individuals may experience a loss of self-control, an increase in aggression toward others, and a harder time in self-regulation (Baumeister, DeWall, Ciarocco, & Twenge, 2005).

Not only is ostracism psychologically distressing, but the social pain of being ostracized occurs in the areas of the brain implicated in the experience of physical pain. Experiences of cyber-ostracism through Cyberball, a three-player (one participant, two confederates) online ball-throwing video game

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where the two confederates can create an ostracism experience, have been shown to induce increased fMRI activity in the anterior cingulate cortex, which is responsible in the experience of physical pain (Eisenberger, Leiberan, & Williams, 2003). Moreover, activity in the right ventral prefrontal cortex, which may regulate the anterior cingulate cortex and has been implicated in the inhibition of pain and negative affect, was associated with lowered psychological distress after ostracism (Eisenberger et al., 2003). There is evidence in the literature that suggests that giving an ostracized target a chance for re-inclusion provides a restorative effect on the four fundamental need states, feelings and mood, regardless if the re-inclusion episode occurred with the same sources or with different sources (Tang & Richardson, 2013).

Although the literature has consistently found immediate psychological distress that occurs as a result of being excluded, it has yielded mixed results as to the factors affecting whether ostracized individuals respond prosocially or antisocially. On one hand, individuals may respond prosocially by conforming to group decisions, paying careful attention to group members who show social cues that signal social inclusion, or treating other prospective friends well. On the other hand, they may instead respond antisocially by withdrawing from others to reinforce the self or acting aggressively toward others (Maner, Miller, Schmidt, & Eckel, 2010).

One factor that may moderate a prosocial response is if the ostracized individual possesses concerns for the future. This is because those who have a high concern for the future (e.g., willingness to sacrifice immediate happiness for future outcomes) as opposed to little concern for the future may be more likely to cooperate with group members (Balliet & Ferris, 2013). However, ostracism has been shown to reduce prosocial behavior which may be due to a decrease in empathy that reduces an individual's desire to help others (Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007). Overall, prosocial responses can be adaptive as they help the target be re-included into the group. Working harder on a group task, mimicking a good group member, and joining a new group are all adaptive responses that can help an individual cope with the stress of being ostracized (Williams & Gerber, 2004).

Despite the adaptive nature of prosocial responses to ostracism, some individuals respond antisocially to ostracism. For instance, antisocial

responses to ostracism have been linked to reports of anger after an episode of ostracism (Chow, Tiedens, & Govan, 2008). Those who felt angrier after being ostracized were more likely to display antisocial responses such as giving unpleasant snacks to the group members. This response was magnified the more the victims thought that they were unfairly treated and excluded from the group (Chow et al., 2008). Also, individuals who were given more control over administering the onset timing of loud sound blasts to ostracizers after ostracism were less likely to exhibit aggressive responses to their ostracizers (Warburton, Williams, & Cairns, 2004), so aggressive, antisocial responses may be moderated by both anger and perception of control following ostracism. More work is needed to clarify other moderating factors that may influence whether individuals respond either prosocially or antisocially.

The current study utilized the Ostracism Detection Theory (Williams, 2007, 2009) to try to explain emotional and behavioral responses to ostracism. According to Ostracism Detection Theory, three distinct stages characterize the response to ostracism. First, experiencing an episode of ostracism leads to immediate psychological distress along with a decrease in the four fundamental needs or social motives, which include feelings of belonging (the drive to have caring interactions with others), control (the need to perceive having some control over relationships and the environment), meaningful existence (feeling that one's life is valuable), and self-esteem (how one perceives others to perceive one's goodness or worth; Williams & Govan, 2005). Second, the short-term effects of ostracism involve the utilization of resources to regain the four thwarted fundamental need states through prosocial or antisocial responses. The third stage occurs after long-term ostracism in which the resources used to thwart the fundamental need states are depleted, which can lead to despair, hopelessness, and a perception of lower worth.

The literature has yet to uncover why some individuals respond prosocially to ostracism whereas others respond antisocially. According to the Ostracism Detection Theory (Williams, 2009), the specific response strategy to ostracism may be dependent on the specific thwarted need(s) that the target is motivated to reinforce. For instance, threats to belonging and self-esteem might lead to more prosocial responses toward the ostracizers as a way of being re-included such as conforming to the group and working harder on a group task

(Wesselmann & Williams, 2013). On the other hand, threats to control and meaningful existence might lead to antisocial responses that reinforce one's exclusion such as aggression toward group members or others who are similar to the ostracizers (power/provocation needs; Wesselmann & Williams, 2013). Although this assertion has yet to be tested directly using an experimental design, studies have shown an indirect association between for these specific threats and retaliation response tendencies (for a review, see Wesselmann & Williams, 2013). The current study investigated the ability of the model to predict prosocial and antisocial responses to ostracism based on more thwarted self-esteem/belonging needs and meaningful existence/control needs, respectively.

Hypotheses

First, we predicted that ostracized individuals would show more prosocial responses directed toward their perpetrators than included participants even when the perpetrator initiated first contact with the victim. Second, it was expected that ostracized participants would feel improved belonging, self-esteem, control, and meaningful existence after an opportunity for inclusion, relative to the initial ostracism episode. Third, when given a chance for inclusion, we believed that individuals who felt more threats to their sense of belonging and self-esteem and fewer threats to their sense of control and meaningful existence after the initial ostracism episode would be more likely to exhibit prosocial responses to the initial rejecter.

Methods

Participants

Data for 206 participants were included in this study. The original pool included 254 participants, but data for 48 participants were excluded in the analysis because they expressed some awareness of the hypotheses of the study (e.g., themes around ostracism/rejection).¹ In the final pool, most participants were women (65.4%). Participants (97.1%) were first-year college students, followed by 2.9% sophomores. The mean age for the participants was 18.43 years ($SD = 0.60$), with a range from 18 to

¹The statistical analyses for this study were performed on the sample with excluded participants ($n = 206$) and for the full sample ($N = 254$). Results for the full sample yielded similar findings across all analyses including side bias determination, accuracy of reported ball tosses, manipulation checks, group differences in prosocial responses, group differences in fundamental needs, and in all of the association statistics with tosses and needs except for two correlations noted in the last section of the Results.

23 years. A total of 45.8% were majoring in a field from the college of arts and sciences, 9.8% in the school of business, and 44.4% had not yet declared a major. The breakdown for ethnicity was as follows: 67.5% European American, 11.2% Hispanic, 5.8% Asian American, 1% African American, 1.5% Native American, 1% Pacific Islander, and 12.1% self-rated as having another ethnicity not defined by these categories. Participants received course credit for participating in the study.

Eligibility screening. After Institutional Review Board approval, data recruitment and collection began. All participants provided written informed consent before participating. Data collection was conducted across five academic semesters. All participants were recruited from the psychology department participant pool. They were told that the purpose of the study was to examine how mental visualization was related to how people perform in online games with others.

Randomization. A computer-generated randomization program (www.randomizer.com) was used to randomly assign participants to inclusion versus ostracism for Game 1. For the 206 participants, a total of 42.2% participated in the ostracism condition for Game 1, and all participants were in the inclusion condition for Game 2.

Procedure

Upon arrival, the researcher greeted the participants and immediately took them to a small private enclosed room with a desk and chair, where they signed a consent form to participate and relaxed for 5 min without using their cell phones or doing any work. At the end of the relaxation period, all participants completed a series of questionnaires.

Next, the participant sat down in another private room with a computer to play Cyberball (Williams, 2007; Williams & Jarvis, 2006). The participant was given instructions on how to play the game and was told that he or she would be playing the game with two other students who were logged in to the university network. However, the other two students were actually virtual confederates. Cyberball begins with one of the players throwing the ball to the participant. By mouse-clicking on the appropriate player's icon, the participant then passes the ball to that player. Players randomly assigned to the ostracism condition received the ball only twice in the entire game. Players randomly assigned to the inclusion condition received the ball approximately 33% of the time. In both conditions, there was a total of 30 throws, and the game

lasted approximately 4 min. Immediately after the Cyberball game, the participant returned to the previous room and completed the first Aversive Impact Index (AII).

Then the participants played Cyberball a second time. This time, all participants in the current study were included by the other players. The second game appeared the same to participants as the first game except that the participant was told that one of the players in the original game was replaced with a newcomer while the other participant (one of the original excluders) was a repeat player. In the second game, all participants received the ball an equal number of times by both players. The time from the start of Game 1 to Game 2 was approximately 8 min ($SD = 2.0$). When the game ended, all study participants completed the second AII rating in their private room. The participants did not learn of the true hypotheses via the full debriefing until the end of the semester in order to make sure that future participants would not know the hypotheses.

Assessments

Fundamental needs. To measure the fundamental needs of belonging, self-esteem, control, and meaningful existence, participants completed the AII (Williams, Cheung, & Choi, 2000). The AII is a 28-item measure used to measure felt ostracism, feelings, and threats to fundamental needs that has been successfully employed in previous studies (Williams et al., 2000). For purposes of this study, data from felt ostracism used for the manipulation variable check, perception of ball tosses received and initiated, as well as the participants' fundamental needs states. The four fundamental needs scales were belonging (e.g., "I felt like I belonged with the group"; 5 items), self-esteem (e.g., "My self-esteem was high"; 5 items), control (e.g., "I felt I had control over the course of the game"; 5 items) and meaningful existence (e.g., "I felt meaningless"; 5 items), where lower scores on the four needs scales indicated more thwarted needs. The AII alpha scores for the four needs states with the current sample (Game 1, Game 2) were as follows: belonging (.89, .83), self-esteem (.87, .88), Control (.88, .72) and meaningful existence (.82, .80). The AII alpha scores for the 3-item felt ostracism scale used for the manipulation test (see below) for the current sample was .93 for Game 1 and .92 for Game 2.

Prosocial responses. In Game 2, prosocial ball toss scores to the repeat player were determined

by a proportion score based on the total number of tosses directed to the repeat player in Game 2 divided by the total number of tosses to both the repeat player in Game 2 and the new player in Game 2. A total of 30 tosses per game were examined for each participant. More frequent ball tosses directed toward the repeat player (the excluder from Game 1) were considered to be indicative of more prosocial responses.

Post-hoc analyses confirmed no concerning trend toward a bias in participants' ball tosses to any particular side in the games or an inaccuracy rate in participants' ability to recall that the repeat player in Game 2 was represented on the right side of the screen. This provided additional evidence that the Cyberball game accurately measured prosocial motivations and that the participants showed reasonably accurate judgments of their prosocial behaviors.

Manipulation Check

Two manipulation checks based on the AII were used to confirm participants' perception of their ostracism status during each of the Cyberball games. These include a felt ostracism scale that included three items (i.e., "I was excluded", "I was ignored", and "I was rejected") which were answered using the same 5-point scale described in the Assessments section, and an open-ended question (i.e., "Assuming that 33% of the time you would receive the ball if everyone received it equally, what percent of throws did you receive?"). For ease of interpretation and cross-study comparison, both median and mean scores are presented for the manipulation check items below.

Mann Whitney tests found that, in Game 1, participants in the ostracism condition reported on the AII that they received an average of 6.41% ($Mdn = 5\%$, $SD = 4.03\%$) of the ball tosses whereas participants in the Inclusion condition reported receiving an average of 29.01% ($Mdn = 30\%$, $SD = 8.72\%$) of the ball tosses, $U = 189.50$, $Z = -13.71$, $p < .001$. These values were consistent with reports from other research (Sethi, Moulds, & Richardson, 2013). For felt ostracism in Game 1, ostracized participants ($M = 12.01$, $Mdn = 12$, $SD = 2.89$) reported higher perceived feelings of being excluded/rejected/ignored than the included participants ($M = 4.79$, $Mdn = 5$, $SD = 2.21$), $U = 1460.00$, $Z = -14.80$, $p < .001$.

Game 1 ostracism-Game 2 inclusion participants reported that they received an average of 34.74% ($Mdn = 33\%$, $SD = 8.94\%$) of the ball

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tosses in Game 2. This was no different than the Game 1 inclusion-Game 2 inclusion participants who reported receiving an average of 33.63% ($Mdn = 33\%$, $SD = 9.79\%$) of the ball tosses in Game 2. For the merge variable in Game 2, all participants reported low ratings of being excluded/rejected/ignored ($M = 4.03$, $Mdn = 3$, $SD = 2.05$). However, the Game 1 ostracism-Game 2 inclusion participants reported lower ratings of being excluded/rejected/ignored in Game 2 ($M = 3.56$, $Mdn = 3$, $SD = 1.18$) than Game 1 inclusion-Game 2 inclusion participants ($M = 4.38$, $Mdn = 3$, $SD = 2.44$), $U = 4492.00$, $Z = -1.97$, $p = .04$. These results from Game 1 and 2 suggest that the manipulation for both ostracism and inclusion were successful.

Results

Data Exploration and Analyses

Statistics were computed using Statistical Package for the Social Sciences (SPSS 18.0). The level of significance was intended at $p < .05$ to control for Type I error. Normal distribution assumptions for the two manipulation check variables and all dependent variables were tested using the Kolmogorof-Smirnov goodness of fit tests for each parameter and each cell. Square root and natural log data transformations were unsuccessfully applied on all non-normally distributed parameters. Therefore, Mann Whitney tests were used to investigate group differences in psychological outcomes. Effect sizes ($r = Z / \sqrt{N}$ where N = the total number of cases; Rosenthal, 1991) were calculated for all Mann Whitney tests. Spearman's rank order correlations were calculated to measure the association between ball tosses and fundamental needs at Game 1 and Game 2.

Group Differences in Prosocial Responses Between Game 1 Ostracized and Included Participants

Did participants who were ostracized in Game 1 toss the ball to the ostracizer (the repeat player in Game 2) more or less frequently than participants who were initially included in Game 1? Actual Cyberball data for Game 2 (when all participants who played Cyberball were included) showed that participants who were ostracized in Game 1 tossed the ball to the repeat player in Game 2, on average, 39% of the time ($SD = 17\%$, $Mdn = 40\%$; range = 70%). Included participants in Game 1 tossed the ball to the repeat player in Game 2, on average, 52% of the time ($SD = 11\%$, $Mdn = 50\%$; range = 60%). A Mann-Whitney test showed that compared to included participants, ostracized

participants passed the ball to the repeat player less frequently in Game 2, $U = 2859.50$, $Z = -5.46$, $r = -.38$, $p < .001$ (see Figure 1). In Game 2, the game-assigned first toss went to either the repeat player (right side; 56.8%, $n = 117$) or the participant (43.2%, $n = 89$); no tosses were assigned to the left player (newcomer) first.

If the first toss in Game 2 went to the repeat player and then the second toss was passed to the participant, Mann-Whitney test showed that the Game 1 group showed differences in the proportion of tosses that the participant directed toward the repeat player, $U = 193$, $Z = -3.36$, $p = .001$, $n = 55$. Specifically, the overall proportion of tosses to the repeat player was lower for the ostracism group ($M = 40\%$, $Mdn = 50\%$, $SD = 17\%$, range = 70%, $n = 27$) than the inclusion group ($M = 55\%$, $Mdn = 50\%$, $SD = 12\%$, range = 60%, $n = 28$).

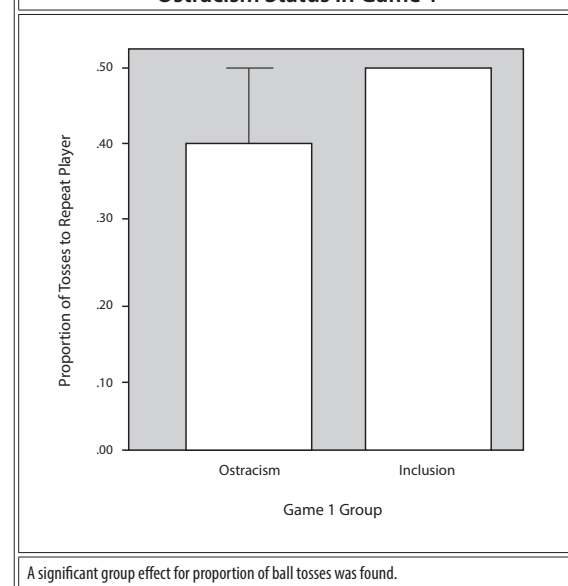
When the participant was given the first toss, there were significant differences in how the participant directed the second toss depending on Game 1 condition, Pearson $\chi^2 = 12.10$, $n = 89$, $p < .001$. Specifically, among the ostracism group, 44.1% ($n = 15$) directed the toss to the repeat player. Among the inclusion group, 80.0% ($n = 44$) directed the toss to the repeat player.

Group Differences in Fundamental Needs at Games 1 and 2

Did participants who were ostracized in Game

FIGURE 1

Median Ball Tosses (95% Confidence Interval) to the Repeat Player in Game 2 as a Function of Ostracism Status in Game 1



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I report lower levels of the four fundamental needs compared to participants who were initially included in Game 1? How did reports of the four fundamental needs compare between the ostracism group and inclusion following the Game 2 inclusion experience? Mann-Whitney tests were conducted separately for Game 1 inclusion and ostracism groups to determine group differences on the four fundamental need states during Game 1 and Game 2. As shown in Table 1, the ostracism group reported lower levels of the four needs during the ostracism experience in Game 1 compared to the inclusion group. However, the Game 1 ostracism group reported higher levels of the four needs during the Game 2 inclusion experience, relative to the Game 1 included group (See Figures 2 and 3, and Table 1). Effect sizes were strong for Game 1 (ranging from $r = -.56$ to $-.74$) and moderate for Game 2 (ranging from $r = -.30$ to $-.43$).

Association Between Prosocial Behavior and Fundamental Needs During Games 1 and 2

Were ball tosses to the repeat player in Game 2 correlated with Game 1 and Game 2 levels of the four fundamental needs? The proportion of tosses passed to the repeat player in Game 2 was positively correlated with Game 1 levels of belonging, $r(203) = .25, p < .001$; self-esteem, $r(203) = .20, p < .001$; control, $r(203) = .30, p < .001$; and meaningful existence, $r(202) = .25, p < .001$, for all participants, regardless of ostracism status. The frequency of tosses passed to the repeat player in Game 2 was negatively correlated with Game 2 levels of belonging, $r(203) = -.16, p = .02$; self-esteem, $r(203) = -.15, p = .02$; control, $r(203) = -.21, p = .002$; and meaningful existence, $r(203) = -.19, p = .006$, for all participants, regardless of ostracism status (see Table 2). Correlations were performed separately for the inclusion and ostracism groups from Game 1 between proportion of tosses to the repeat player in Game 2 and reports of thwarted needs for Game 1 and Game 2. All observed correlations were statistically insignificant; correlations for the ostracism group ranged from $r = -.19$ to $.18$ and correlations for the inclusion group ranged from $r = -.08$ to $-.01$.

Discussion

The purpose of the study was to investigate the extent to which ostracized individuals responded to their excluders prosocially and to see if these responses were related to the thwarted fundamental needs of belonging, self-esteem, control, and meaningful existence after ostracism and after

an episode of inclusion. Participants played two games of Cyberball, which involved participants being either ostracized or included in the first game. All participants who played Cyberball again were included in the second game. Following both games of Cyberball, the participants completed questionnaires indicating the extent to which they agreed with statements about how they felt during the game.

The first hypothesis was that ostracized individuals in Game 1 would show more prosocial responses to their ostracizers in Game 2. Contrary to our expectations, Game 1 ostracized participants displayed fewer prosocial responses (i.e., more antisocial responses) to their perpetrator by throwing the ball to them significantly fewer times in Game 2 than the initially included participants did. Among participants who were given the first ball toss in Game 2, the initially ostracized group tossed it to the repeat player significantly less times than participants in the initially included group. Even when the repeat player initiated contact first with the participant, ostracized participants still continued to pass the ball to them less frequently, and when the participant was given the first toss (or the first opportunity for a prosocial response), he/she passed it less to the repeat player if ostracized in Game 1. This suggests that an initial prosocial attempt from the ostracizer does not affect the tossing tendency to the ostracizer in Game 2 for the initially ostracized participants. Although previous studies demonstrated the use of both prosocial and

TABLE 1

Group Differences for Game 1 Condition

	Ostracism <i>Mdn (Range)</i>	Inclusion <i>Mdn (Range)</i>	<i>U</i>	<i>p</i>	<i>r</i>
Game 1					
Belonging	9 (20)	19 (18)	641.50	<.001	-.74
Self-Esteem	11 (17)	17 (18)	1746.50	<.001	-.56
Meaningful Existence	11 (20)	20 (19)	1101.00	<.001	-.67
Control	6 (20)	15 (20)	1116.00	<.001	-.69
Game 2					
Belonging	23 (11)	21 (18)	2580.00	<.001	-.43
Self-Esteem	20 (15)	17 (19)	3297.50	<.001	-.31
Meaningful Existence	22 (14)	19 (19)	3005.50	<.001	-.36
Control	19 (16)	16 (20)	3292.00	<.001	-.30

Note. For Game 1, $N = 206$ except for Meaningful Existence ($N = 205$).
For Game 2, $N = 206$ except for Control ($N = 205$).

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antisocial responses to ostracism, most of these published studies have focused on one episode of ostracism, followed by an opportunity to determine how participants would act following the ostracism. In this study, participants were included following ostracism and so it was expected that this inclusion would contribute to more prosocial responses, especially if the moderating factors shown to be associated with more antisocial responses (i.e., thwarted control and anger) were assumed to be mitigated by the inclusion experience. Perhaps, there were other moderating factors not mitigated by the inclusion experience following ostracism, such as attributions about the ostracizer (e.g., “The ostracizer might just ostracize me again.”) or ruminations about the ostracism experience (e.g., “This was a bad experience for me.”). Research has shown that ruminating about ostracism as opposed to being distracted after ostracism tends to hinder recovery from threats to the fundamental needs states (Wesselmann, Ren, Swim, & Williams, 2013).

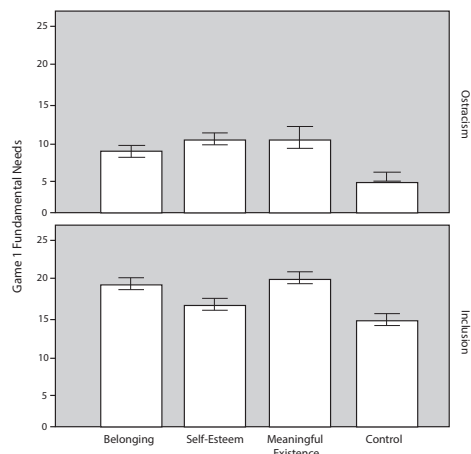
The second hypothesis was that ostracized participants would feel significantly higher levels of belonging, self-esteem, control, and meaningful existence after inclusion (in Game 2), whereas the ostracism episode in Game 1 would contribute to more thwarted needs in the ostracism group. As expected, ostracized participants reported more threats to the fundamental needs after

Game 1 compared to included participants. Also as expected, after Game 2 inclusion, the initially ostracized participants reported significantly higher scores on all four fundamental need states, relative to initially included participants. The importance in our findings resided in how ostracized participants felt emotionally after an opportunity for inclusion. Most of the previous literature on ostracism has been limited to investigating the short-term effects of one ostracism episode. The current findings validate other published studies showing the immediate negative effects of thwarted needs on ostracized participants, relative to included participants (Williams, 2007, 2009). Results of this study were in line with one of the few published studies to date examining the psychological impact of inclusion after ostracism. Specifically, similar to Tang and Richardson (2013), the current findings showed that inclusion after ostracism has a restorative effect on people’s needs for belonging, self-esteem, control, and meaningful existence.

As suggested by the Ostracism Detection Theory (Williams, 2009), the third hypothesis was that individuals who reported more threats to belonging and self-esteem and less threats to control and meaningful existence after the initial ostracism episode would be the most likely to display prosocial responses to the ostracizer, when given the opportunity in Game 2. In this

FIGURE 2

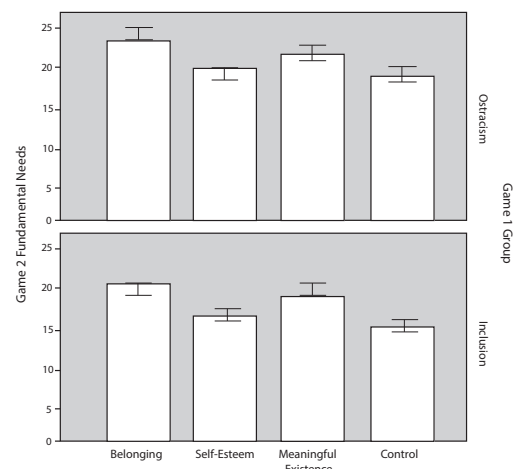
Median Reported Post-Game 1 Fundamental Need States (95% Confidence Interval) as a Function of Ostracism Status in Game 1



For those ostracized in Game 1, significant differences in reported need states in Game 1 were found for all four fundamental needs.

FIGURE 3

Median Reported Post-Game 2 Fundamental Need States (95% Confidence Interval) as a Function of Ostracism Status in Game 1



For those ostracized in Game 1, significant differences in reported need states in Game 2 were found for all four fundamental needs.

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study, the association between thwarted needs and prosocial responses was not specific to being ostracized or included in Game 1. Rather, more Game 2 prosocial responses were associated with higher Game 1 needs states and lower Game 2 needs states on all four fundamental needs. These findings do not support the suggestion that more prosocial responses following ostracism are related to specific threats to self-esteem/belonging whereas more antisocial responses following ostracism are specific to threats to meaningful existence/control. Perhaps higher need states during Game 1 contributed to a form of the feel-good, do-good phenomenon in which participants felt good enough to act more prosocially with the repeat player in Game 2 regardless of whether they were ostracized or included in Game 1. On the other hand, in Game 2, more thwarted need states for the four needs (rather than belonging/self-esteem specifically or the experience of prior ostracism) were associated with more prosocial tendencies during the game itself. In order to uncover the reason why these associations were observed to be different for Games 1 and 2, researchers need to experimentally examine whether fundamental needs states during the ostracism experience results in different rates of prosocial outcomes during the ostracism and in subsequent interactions with the ostracizers. Whatever the case may be, it appears that the need states of the participants after both games of Cyberball were more strongly related to prosocial responses, rather than the experience of ostracism or inclusion.

There were several limitations to the study. First, the study focused on only one form of ostracism. Due to the nature of Cyberball and the instructions, the study was specific to cyber-ostracism. Conducting a study where the participant was ostracized by individuals present in the same room may have had a much greater effect on the participant's psychological outcomes.

Second, the sample of the study hampered the generalizability of the results. Although ostracism is painful throughout adulthood, the sample of the present study consisted primarily of European American female first year college students, which limits the generalizability to other groups. Third, precautions should be taken in the future to make sure that the participants do not form ideas about study hypotheses. The cover story used for the Cyberball games was similar to other cover stories used in many ostracism studies, but some participants who were ostracized had an idea about the

study hypotheses, prompting the need to discard some of the data. Future research should revise the cover story or use filler questionnaires to prevent participants from identifying the study goals. Still, the results for the full sample and the modified sample were consistent.

Future research could also investigate the influence of different forms of ostracism and individual and situational factors related to prosocial responses. A good procedure that can be adapted is the O-cam procedure (Goodacre & Zadro, 2010; Tang & Richardson, 2013). The O-cam procedure uses a webcam to have the participant interact with two other confederates. Using a webcam would give the participant the face-to-face interaction that occurs in social ostracism and the experience of cyber-ostracism that allows for the easy manipulation of conditions. The two confederates could interact with the participant and induce ostracism, which might elicit a greater emotional and behavioral response than using cyber-ostracism through Cyberball.

In summary, the study utilized the Ostracism Detection Theory (Williams, 2005, 2007) to study emotional (fundamental needs states) and behavioral (ball tossing) responses to ostracism and whether these responses were related to inclusion following ostracism. According to the theory, when people experience ostracism, they immediately feel psychological distress and are motivated to remove the pain and fortify the thwarted fundamental need through a set of responses. There was partial support for the predictions expounded by the model. This study validated the model in that the immediate effects of ostracism through the first game of Cyberball were a lowering of the four

TABLE 2

Association Between Prosocial Behavior and Fundamental Needs During Games 1 and 2

	<i>r</i>	<i>p</i>
Game 1		
Belonging	.25	<.001
Self-Esteem	.20	<.001
Meaningful Existence	.25	<.001
Control	.30	<.001
Game 2		
Belonging	-.16	.02
Self-Esteem	-.15	.02
Meaningful Existence	-.19	.006
Control	-.21	.002

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fundamental needs of belonging, self-esteem, control, and meaningful existence. Further, inclusion in Game 2 significantly improved the levels of fundamental needs for the Game 1 ostracized participants, in relation to the Game 1 included participants. Clearly, the Game 2 inclusion experience had an ameliorative influence on fundamental needs states for initially ostracized participants. Although they felt better in Game 2, initially ostracized participants were less prosocial (more antisocial) in Game 2 to their ostracizer than initially included participants. Williams (2009) prediction that threats to belonging and self-esteem would be more likely to elicit prosocial responses was not observed in this study. Rather, threats to the fundamental needs were associated with all four threats in different ways in Game 1 (where both inclusion and ostracism occurred) and in Game 2 (where only inclusion occurred). Overall, this study and the rest of the literature investigating ostracism have brought the scientific community closer to understand the mechanisms that underlie ostracism and how we may be able to help people of all ages cope with the pain that comes from being ostracized from a group. Because ostracism can occur in all walks of life, understanding how we may be able to help others cope with ostracism will help us establish better relationships with each other.

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