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Research Article

OSTRACIZING GROUP MEMBERS WHO CAN (OR CANNOT) CONTROL BEING BURDENSOME

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ABSTRACT

Ostracism–excluding and ignoring someone–occurs cross-culturally in humans. Previous research suggests that groups often use ostracism to punish burdensome members in order to 1) motivate the members to change undesirable behavior and 2) ultimately protect the group from these members. We present data from two studies that manipulate the presence of a burdensome member during an online group interaction and attributional information about the member's controllability over the burden. Participants played an online game in which one of their group members either played slowly (burdensome) or similarly to the other members (non-burdensome). We manipulated this group member's perceived Internet connection status (good vs. poor). A slow player with a good connection could presumably control their behavior but one with a poor connection could not. Participants ostracized a slow-playing group member regardless of connection status, but status did have some influence on participants' self-reported motives for ostracism.

Keywords: *Ostracism; Social Exclusion; Burden; Social Influence*

INTRODUCTION

Ostracism–excluding and ignoring someone–is a behavior that is ubiquitous across social contexts and cultures (Williams, 2009; Williams & Nida, 2011). Examples of ostracism have been documented in various cultural groups, such as the use of *Meidung* (*avoidance*) on rule breakers by the Amish (Gruter, 1986), silence as used by Western Apache culture on sons returning from boarding schools and widows (Basso, 1972), ostracism of strangers and norm violators by the Native Alaskan Inuktituk people (Briggs, 1970), exile used by Pathan Hill Tribes of Afghanistan and Slavic tribes of Montenegro on deviant individuals (Bohem, 1986; Mahdi, 1986), and "voodoo" death in Aboriginal tribes in Australia (Cannon, 1942).

Ostracism, whether in short- or long-term episodes, can be psychologically damaging to those who experience it. Ostracism immediately elicits psychological pain and negative affect (Williams, 2009). fMRI data demonstrated that ostracism activates the dorsal anterior cingulate cortex (dACC) and right ventral pre-frontal cortex, brain regions associated with experiencing physical pain (Eisenberger, Lieberman, & Williams, 2003; Onoda et al., 2010). Ostracism also threatens four fundamental psychological needs: belonging, control, self-esteem, and meaningful existence (Williams, Cheung, & Choi, 2000; Williams, 2009). Individuals who face chronic ostracism or isolation often experience severe negative outcomes (e.g., depression, decreased immune functioning, and cardiovascular problems; Baumeister & Leary, 1995; Cacioppo & Hawkley, 2003; Cacioppo & Patrick, 2008; Williams, 2009). These outcomes lend modern credence to the argument that permanent ostracism could be described as *social death* (Williams, 2007); for tribal and ancestral humans, ostracism severed social connections necessary for survival and in modern times it apparently still has a negative impact on individuals' well-being.

Is Ostracism Functional?

If ostracism is such a painful experience, why do individuals use ostracism on others? Most psychological researchers have focused on understanding the effects of ostracism, but fewer researchers have investigated the uses of ostracism. Researchers from various scientific disciplines suggest ostracism served a useful social function in both humans' evolutionary history and in modern society (Gruter & Masters, 1986; Kerr & Levine, 2008; Kurzban & Leary, 2001; Williams, 2009). Both human and non-human social animals use ostracism as a form of social control on deviant or burdensome group members (Kurzban & Leary, 2001; Williams, 1997; 2009). Ostracism strengthens groups both by motivating deviant members to obey social norms and by permanently removing members that do not conform (Boehm, 1999, 2008; Dijker & Koomen, 2007; Kurzban & Leary, 2001; Ouwerkerk, Kerr, Gallucci, & Van Lange, 2005; Wesselmann, Wirth, Pryor, Reeder, & Williams, 2013; Williams, 2001; Zippelius, 1986). Ostracism serves not only as a way of punishing burdensome members, but may also serve as a deterrent for other possible norm breakers (Boehm, 1986; Williams, 1997). Williams (1997) described this type of ostracism as *punitive* ostracism, which focuses on 1) motivating an individual to change undesirable behavior and 2) ultimately protecting

the group. Williams (2009, p. 278) argued fear of ostracism may be the "social glue that motivated individuals to be responsive to social norms."

In the current research, we directly investigate these ideas by manipulating the presence of a burdensome group member in an online group interaction and measure participants' ostracism behavior toward the burdensome group member and their self-reported motives for their behavior. Specifically, we measure the degree to which participants report rehabilitative and protective functions for their behavior. A *rehabilitation* motive should focus on using ostracism to motivate the burdensome group member to change behavior and conform to group norms. A *protective* motive should focus on using ostracism to stop this group member from hindering their goals and ejecting them from future interactions.

Attributions for Burden. Attributions of responsibility or controllability can affect how individuals react towards deviate, burdensome, or stigmatized individuals (Dijker & Koomen, 2007; Weiner, 2006). Individuals have a tendency to respond more harshly to members of stigmatized groups that are perceived as having control over their deviate status and respond more sympathetically to those who do not have control (Pryor, Reeder, Yeadon, & Hesson-McInnis, 2004; Weiner, Perry, & Magnusson, 1998; Weiner, 2006). This has direct implications for studying punitive ostracism: Individuals should be more likely to punish burdensome group members with ostracism when these group members are perceived as having control over their behavior. Further, attributions of controllability should influence motives in addition to behavior; burdensome group members who do not have control over their behavior may not be likely candidates for rehabilitation but may still be ostracized for protective reasons (Kurzban & Leary, 2001).

Current Research

In this research we used an adapted version of a common ostracism paradigm–Cyberball (Williams et al., 2000). Cyberball is an online game of ball toss that has participants interact with two other players (in reality, computer-programmed virtual confederates). This paradigm demonstrates similar effect sizes to face-to-face ostracism paradigms (e.g., Williams & Sommer, 1997). Additionally, Cyberball allows researchers to manipulate social interactions in a controlled setting that, in spite of its minimal characteristics, still demonstrates experimental realism (Williams, 2009). Researchers typically use Cyberball either to include or ostracize participants (via number of ball tosses from confederates). For our purposes, Cyberball also allows researchers to measure participants' ostracism behavior towards the other group members, because it records to which group member participants give each of their tosses (Andari, Duhamel, Zalla, Herbrecht, Leboyer, & Sirigu, 2010; Bartlett, Condon, Cruz, Baumann, & Desteno, 2011; Degner, Wentura, Gniewosz, & Noack, 2007; Pryor, Reeder, Wesselmann, Williams, & Wirth, 2013).

Recently, we developed a version of Cyberball that allows experimenters to manipulate the amount of time each confederate player takes to decide to throw the ball (Wesselmann,

Wirth, Pryor, Reeder, & Williams, 2013). In a traditional Cyberball game, confederate players are programmed to throw the ball following a three to five second delay, which is also approximately the amount of time an average participant takes for each toss. We found that a confederate player who took considerably longer (16 seconds) to throw the ball than the traditional confederates were more likely to be perceived as burdensome and ostracized by participants. This modified Cyberball paradigm is one of the first experimental paradigms to demonstrate participants' use of ostracism in a real-time group interaction and established that burden was a primary motive in participants' ostracism behavior. The current research extends Wesselmann et al. (2013) by examining how burden also influences participants' emotions and desired future interaction toward a group member. This research also establishes nuances in punitive motives toward a burdensome group member, specifically the desire to rehabilitate the group member and protect one's group from burden. Finally, this research examines how a manipulation of controllability may influence the effects of burden on participants' thoughts, feelings, and behaviors.

Hypotheses. We hypothesize that participants will ostracize a burdensome group member more than a non-burdensome group member during a group interaction. We hypothesize that participants will also indicate a desire to ostracize a burdensome member from future group interactions more than a non-burdensome member. We also hypothesize that participants' will express more anger and less sympathy toward a burdensome member compared to a non-burdensome member. These emotional reactions should be moderated by whether or not the burdensome member has control over the behavior (Weiner, 2006).

We have two competing hypotheses for how attributions will influence participants' behavior toward the burdensome member. One hypothesis predicts that participants will ostracize a burdensome member who cannot control the burden less than (or not at all) compared to a member who can control the burden (reflecting attribution research; Weiner, 2006). An alternative hypothesis is that participants will ostracize a burdensome member in spite of controllability, because this member is burdensome to group functioning either way (reflecting the evolutionary basis of avoiding harmful individuals; Kurzban & Leary, 2001).

We also hypothesize that participants will endorse both rehabilitative and protective motives more for their behavior toward a burdensome member compared to a non-burdensome member. However, participants should endorse a rehabilitative motive less for their behavior toward a member who has no control over being burdensome than a member who *does* have control; the protective motive should remain relatively consistent regardless of controllability attributions.

STUDY 1 METHOD

Participants

One hundred and seventy-two individuals participated in this study for course credit in an introductory psychology course. We discarded the data of any participants who had computer problems (n = 7) or indicated they had played Cyberball before or heard about it in their psychology course (n = 12). The remaining sample included 153 participants (76 men, 77 women; M_{age} = 19.53 years, SD = 1.64; 66.0% Caucasian, 22.9% Asian, 5.9% Black, 5.2% other).

Procedure and Design

Participants played one 45-toss game of Cyberball with two other virtual confederates. Participants were assigned randomly to one of six different conditions in a 3 (Target Player Speed: 4 vs. 8 vs. 16 seconds per toss) × 2 (Connection Status: good vs. poor) between-participants design. The confederate players included participants equally.

The *target player speed* manipulation required participants to play with either two confederates who took the same amount of time to decide to throw the ball (4 seconds), or play a game with one normal speed player (4 seconds) and one player who took longer to decide to throw the ball (either 8 or 16 seconds). The position of the target player (LEFT/RIGHT) was counter-balanced.

We also modified the game instructions to make the potential burden of a slow player as salient as possible. In a traditional game of Cyberball, participants are told before the game begins that the goal of the game is mental visualization, and not ball-tossing performance. Participants are told to focus on visualizing aspects of the entire interaction, creating a mental picture of the other players, the weather, and other characteristics (Wesselmann et al., 2013; Williams et al., 2000). We altered the Cyberball instructions to state that the goal of the group interaction was to "mentally visualize while completing the game as quickly as possible." We also made explicit that the game was 45 tosses long, so that participants know that the game length would ultimately be influenced by how long it takes for each ball toss.

The *connection status* manipulation was communicated via text below each Cyberball player, indicating Internet connection status. Normal connection status was labeled *Connection status: Good* and slow connection status was labeled *Connection status: Poor*. Participants were always told they had good connection status. We programmed the non-manipulated confederate player in the game always as a 4-second player with good connection status (Figure 1). In the normal speed/normal connection condition we chose a target player randomly for each participant because there was no manipulated difference between either confederate player.

Figure 1. Modified Cyberball game; the right-hand player is the target player in this example. The hand at the bottom is the participant.

Dependent Variables

The main behavioral dependent variable was the number of tosses each participant gave to the target player during the game. Each participant had 14-15 total tosses (this varied randomly due to the nature of Cyberball's programming) to allocate between the two confederates. We created a proportion score to account for this variability: the number of tosses participants allocated to the target confederate divided by the number of tosses they allocated to the other confederate.

For each of the self-report measures, we displayed a screen shot of the Cyberball game for the participants' reference. Participants answered all questions for both virtual confederates.

Burden. We asked five questions measuring how burdensome participants perceived the confederate players to be (a = .89). Participants rated their agreement with the statements, "The LEFT/RIGHT player was costing me time," "The LEFT/RIGHT player was wasting my time," "The LEFT/RIGHT player was hindering me," "How stressful was the player on your LEFT/RIGHT?" and "The LEFT/RIGHT player was handicapping me" on a 1 (*Not at all*) to 7 (*Very much so*) scale.

Emotions. We also asked participants the degree to which they had anger-based (i.e., angry, disgust, dislike, and hate; α = .89) and sympathy-based (i.e., sympathy, sadness, soft-hearted, and compassion; α = .79) emotions towards each player (1 = *Not at all,* 7 = *Very much so*).

Future ostracism intentions. We wanted to assess the possibility that participants' ostracism behavior would extend beyond the Cyberball context, so we asked two questions to examine participants' desire to avoid future interactions with the target player (Spearman-Brown coefficient = .82). Participants were asked to rate on a 1 (*Not at all*) to 7 (*Very much so*) rating scale their desire to participate in another game of Cyberball with each player, as well as their desire to participate in a different task with each player.

Motives for tossing behavior. We examined the two proposed motives for participants' use of ostracism: rehabilitative and protective. We measured the *rehabilitative* motive using five items (α = .95). Participants rated their agreement on the statements, "I tried to make the LEFT/RIGHT player feel excluded to change his/her behavior during Cyberball," "I tried to make the LEFT/RIGHT player feel excluded to teach him/her a lesson," "I tried to make the LEFT/RIGHT player feel excluded because I wanted him/her to conform to the group's expectations," "I tried to make the LEFT/RIGHT player feel excluded because I wanted him/her to behave differently in future Cyberball games," and "I tried to make the LEFT/RIGHT player feel excluded to motivate him/her to start acting like a good group member" on a 1 (*Not at all*) to 7 (*Very much so*) scale.

We examined the *protective* motive using six items (α = .95). Participants rated their agreement on the statements, "I tried to make the LEFT/RIGHT player feel excluded because I wanted to make our group interaction easier," "I tried to make the LEFT/RIGHT player feel excluded to keep him/her out of our group's game," "I tried to make the LEFT/RIGHT player feel excluded because I don't want him/her on our team in future Cyberball games," "I tried to make the LEFT/RIGHT player feel excluded because he/she was harming our group's performance," "I tried to make the LEFT/RIGHT player feel excluded because I can't kick him/her out of our group completely," and "I tried to make the LEFT/RIGHT player feel excluded because I wanted to protect our group from him/her" on a 1 (*Not at all*) to 7 (*Very much so*) scale.

Connection status manipulation check. We asked participants to recall the connection status for each group member (i.e., "good", "poor", "I don't remember").

RESULTS AND DISCUSSION

Status manipulation check. Thirteen participants could not identify the target player's connection status correctly and we discarded them from the analyses[1]. The remaining sample included 140 participants.

Ostracism behavior. Participants allocated fewer tosses to the target player depending upon the speed manipulation, $F(2, 134) = 31.51$, $p < .01$, $\eta_p^2 = .32$ (see Table 1 for all descriptive statistics). Participants threw fewer tosses to the 16- and 8-second players than the 4-second player (Tukey's HSD $ps < .01$, $d = 1.77$ and .74 respectively), and threw fewer tosses to the 16-second player than the 8-second player (Tukey's HSD $p < .01$, $d = .85$). There was no evidence for a main effect of or interaction with the connection status manipulation, $Fs < 1.20$, $ps > .29$, η_p^2 s < .01.

Burden. Participants rated the target player as more burdensome depending upon the speed manipulation, $F(2,134) = 24.63$, $p < .01$, $\eta_p^2 = .27$. Specifically, participants perceived the 16- and 8-second players as more burdensome than the 4-second player (Tukey's HSD $ps < .01$, $d = 1.55$ and .98 respectively), and perceived the 16-second player as more burdensome than the 8-second player (Tukey's HSD $p = .05$, $d = .45$). There was no evidence for a main effect of or interaction with the connection status manipulation, $Fs < .30$, $ps > .60$, η_p^2 s < .01.

Emotions. Participants expressed more *anger* towards a slow target player compared to a normal speed target player, $F(2, 134) = 10.76$, $p < .01$, $\eta_p^2 = .14$. Participants were more angered by a 16-second player than an 8- or 4-second player, (Tukey's HSD $p = .03$, $d = .48$, and $p < .01$, $d = .97$, respectively). Participants were marginally more angered by an 8-second player than a 4-second player (Tukey's HSD $p = .09$, $d = .52$). There was no evidence for a main effect of connection status on anger, $F(1, 134) = .84$, $p = .36$, $\eta_p^2 < .01$. There was also no evidence for an interaction between player speed and connection status, $F(2, 134) = .21$, $p = .81$, $\eta_p^2 < .01$. Participants expressed more *sympathy* towards a target player with poor connection status ($M = 2.96$, $SD = 1.36$) compared to one with good connection status ($M = 2.20$, $SD = 1.22$), $F(1,134) = 11.36$, $p < .01$, $\eta_p^2 = .08$. There was no evidence for a main effect of player speed on sympathy, $F(2, 134) = .32$, $p = .72$, $\eta_p^2 < .01$.

[1] All of the participants who incorrectly answered the status manipulation check were in the good connection conditions, perhaps because in these conditions each group member had good connection and thus it was not as salient as in the poor conditions. There was no significant difference between the 4-second ($n = 4$), 8-second ($n = 6$), and 16-second ($n = 3$) conditions in the number of participants who incorrectly answered this manipulation check, $\chi^2(2) = 1.45$, $p = .48$.

There was also no evidence for an interaction between player speed and connection status on sympathy, $F(2, 134) = .04$, $p = .96$, $\eta_p^2 < .01$.

Future ostracism intentions. Participants were less likely to want to have future interactions with slow target players compared to a normal speed target player, $F(2, 134) = 12.26$, $p < .01$, $\eta_p^2 = .15$. Specifically, participants were less likely to want future interactions with a 16-second player than an 8- or 4-second player (Tukey's HSD $p = .07$, $d = .44$, and $p < .01$, $d = 1.12$, respectively). Participants were less likely to want future interactions with an 8-second player than a 4-second player (Tukey's HSD $p = .02$, $d = .56$). There was no significant main effect of connection status on desired future interaction, $F(2,134) = 2.19$, $p = .14$, $\eta_p^2 = .02$. There was also no significant interaction between player speed and connection status, $F(2,134) = .14$, $p = .87$, $\eta_p^2 < .01$.

Weiner (2006) argues that attributions of controllability should influence the emotions individuals feel towards others; perceived controllability over a negative status should evoke anger (and subsequent aggressive behavior), but uncontrollability should provoke sympathy (and subsequent helping behavior). Although the main effect for status on desired future interaction was non-significant, it was close to what is typically considered the outer limit of marginal significance ($p = .10$). The pattern of means was in the hypothesized direction, such that participants were more likely to want future interactions with a target player that had poor connection status. These data are consistent with Weiner's (2006) argument about controllability and emotions. We conducted a post-hoc investigation of the possibility that the connection status manipulation may have an indirect effect on desired future interaction via sympathy. Participants' sympathy-based emotions significantly predicted their desired future interaction with the target player ($b = .34$, $p < .01$), and mediated the relation between target player connection status and participants' desired future interactions (original $b = .45$, $p < .10$; mediated $b = .19$, $p = .48$; Sobel's $z = 2.42$, $p = .01$). Bootstrapping results based on 1,000 resamples showed that the indirect effect is estimated to lie between .09 and .51 with 95% confidence (bias corrected and accelerated C.I.; Preacher & Hayes, 2008). Because the order of the emotions and the future interaction measures were randomly presented, we ran an additional mediation model to investigate the possibility that future interaction functioned as a mediator of the manipulation's effect on sympathy-based emotions instead. Participants' desired future interactions did not mediate the relation between target player connection status and participants' sympathy-based emotions; bootstrapping results based on 1,000 resamples showed that 0 is contained within the indirect effect estimation confidence interval of -.01 and .28 with 95% confidence (bias corrected and accelerated C.I.; Preacher & Hayes, 2008). Taken together, these findings suggest that our connection status manipulation had at least some effect on participants' intended future behavior toward target player even if it did not influence their tossing behavior toward this player during the game itself.

Table 1. Study 1: Means and Standard Deviations for all Dependent Variables

Target Player Speed	Connection Status	Proportion of Tosses to Target Player	Burden	Anger-Based Emotions	Sympathy-Based Emotions	Rehabilitative Motive	Protective Motive	Desired Future Interaction	*N*
	Good	1.02 (.32)	2.42 (1.16)	2.15 (1.53)	2.26 (1.31)	1.72 (.99)	1.77 (1.10)	3.33 (1.46)	18
4-sec.	Poor	1.07 (.38)	2.62 (1.27)	1.86 (1.08)	3.00 (1.21)	1.91 (1.44)	1.76 (1.18)	3.83 (1.36)	26
	Total	1.05 (.36)	2.54 (1.21)	1.98 (1.27)	2.70 (1.29)	1.84 (1.26)	1.76 (1.14)	3.62 (1.41)	44
	Good	.74 (.39)	3.91 (1.89)	2.73 (1.68)	2.02 (1.07)	2.67 (2.17)	2.62 (1.95)	2.67 (1.68)	21
8-sec.	Poor	.79 (.45)	4.09 (1.59)	2.71 (1.52)	2.87 (1.28)	2.70 (2.17)	2.49 (2.22)	2.85(1.67)	23
	Total	.76 (.42)	4.00 (1.72)	2.72 (1.58)	2.47 (1.25)	2.69 (2.15)	2.55 (2.08)	2.76 (1.66)	44
	Good	.38 (.28)	4.74 (1.77)	3.81 (2.07)	2.30 (1.30)	3.82 (2.27)	3.49 (2.40)	1.86 (.99)	25
16-sec.	Poor	.49 (.37)	4.76 (1.48)	3.35 (1.82)	2.99 (1.60)	2.81 (1.94)	2.94 (1.90)	2.30 (1.57)	27
	Total	.44 (.33)	4.75 (1.61)	3.57 (1.94)	2.66 (1.49)	3.30 (2.15)	3.21 (2.15)	2.09 (1.33)	52
	Good	.68 (.42)	3.82 (1.89)	2.99 (1.91)	2.20 (1.22)	2.85 (2.12)	2.72 (2.06)	2.54 (1.49)	64
Total	Poor	.78 (.46)	3.83 (1.70)	2.64 (1.62)	2.96 (1.36)	2.47 (1.88)	2.40 (1.85)	2.99 (1.65)	76
	Total	.73 (.45)	3.82 (1.78)	2.80 (1.76)	2.61 (1.35)	2.65 (1.99)	2.55 (1.95)	2.78 (1.59)	140

Note: Standard deviations appear in parentheses

Motives for tossing behavior. The measures of both rehabilitative and protective motives correlated highly, $r(140) = .93$, $p < .01$. However, the results of a Confirmatory Factor Analysis in SAS 9.2 (Proc CALIS) suggest that a 2-factor model fits the data better than a 1-factor model: 2-factor: $\chi^2 = 139.32$, RMSEA = .11, CFI = .96, AIC = 53.33; 1-factor: $\chi^2 = 148.87$, RMSEA =.12, CFI = .96, AIC = 60.87; χ^2 difference (1) = 9.54, $p < .01$.

We hypothesized both rehabilitative and protective motives would be important when dealing with a slow player, but that connection status should have more of an influence on the rehabilitative motive than the protective motive. We conducted a repeated-measures ANOVA, with player speed and connection status as our two between-participants factors and the two motives as a within-participants factor. There was a main effect of target player speed on the two motives, $F(2, 134) = 7.39$, $p < .01$, $\eta_p^2 = .10$. Participants endorsed the two punitive motives (rehabilitative and protective) more for the 16-second player than the 4-second player (Tukey's HSD p < .01, $d = .79$). Participants' motives did not differ significantly between the 16- and 8-second player (Tukey's HSD $p = .10$, $d = .35$) or the 8- and 4-second player (Tukey's HSD $p = .22$, $d = .44$). There was no evidence for a main effect of status or interaction between status and target player speed on the motives overall, $Fs < .80$, $ps > .43$, η_p^2 s <. 02.

Central to our hypothesis, the interaction between status, speed, and the comparison of the two motives was significant, $F(2, 134) = 3.09$, $p = .05$, $\eta_p^2 = .04$ (Figure 2). Simple effects analyses revealed that participants were less likely to endorse a rehabilitative motive for a 16-second target player who had poor connection status compared to one with good connection status (Bonferroni $p = .03$, $d = .48$). The connection status manipulation did not significantly affect participants' endorsement of a protective motive toward the 16-second target player (Bonferroni $p = .34$, $d = .25$). The connection status manipulation did not significantly affect either motive toward the 8-second target player (Bonferroni $ps > .16$, $ds < .08$).

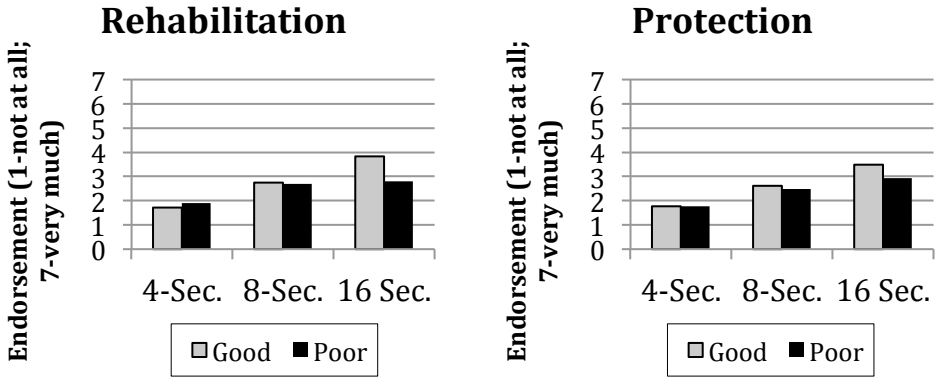

Figure 2. Study 1: Target Player Speed × Connection Status × Self-Reported Motives

This study replicates the burden-ostracism effect demonstrated in previous research (Wesselmann et al., 2013). We had two competing hypotheses for how connection status would influence participants' ball-tossing behavior toward the target player. One possible hypothesis was that participants would ostracize a slow target player regardless of the connection status, because this target player would be burdensome either way (Kurzban & Leary, 2001). The alternative hypothesis predicted an interaction between target player speed and connection status, such that participants would ostracize a slow player who had a poor connection status (i.e., no controllability of burdensome behavior) less than a slow player who had a good connection status (i.e., controllability of behavior; Weiner, 2006). The results support the former hypothesis: Participants were more likely to ostracize a group member the more slowly this member played Cyberball, and this member's connection status did not appear to influence participants' use of ostracism.

This study provided preliminary evidence that participants' ostracism behavior was motivated by both rehabilitative and protective concerns. Although these two motives correlated highly, a confirmatory factor analysis supported a two-factor model over a one-factor model. More importantly, the connection status manipulation differentially affected these motives. As hypothesized, participants were less likely to endorse a rehabilitative motive for a slow target player that had poor connection status (and thus could not change behavior) compared to one that had good connection status (and could rehabilitate hypothetically). There was no significant evidence that participants' endorsement of the protective motive was influenced by the target player's connection status.

It is possible that even though the majority of participants correctly identified the target player's connection status, they may not have associated poor connection status as a potential reason for why the target player was playing slowly. We asked participants to describe the target player in their own words, and of the 57 participants who had a slow target player (8- and 16-seconds) with poor connection status only 5 (8.8%) explicitly mentioned the connection status as a likely reason for the player's speed. Here are some example comments:

"They took longer to throw the ball but that says nothing about the person."
"Slow (maybe due to the poor connection)."

One participant made a comment that did not explicitly mention connection status but could be interpreted as an attribution toward the target's ability.

"The left player was slower which made me think about some friends from baseball that were not as good as the better players."

Interestingly, 15 (26.3%) of these participants described the target player using unflattering terms suggesting internal attributions (e.g., stupid, indecisive, lazy). One participant described the player as an "old man." The other participants in the slow/poor status condition described the target player as being slow or annoying, but these words could equally apply to a slow player with good or poor connection status–slow players would be

annoying even if they are not responsible. We may have needed a more explicit manipulation of controllability to examine the effects of controllability on motives for ostracism directly. Thus, we designed Study 2 to give participants explicit information that the target player in the poor status condition had computer problems, providing an external attribution for the slow throwing speed.

STUDY 2 METHOD

Participants

Eighty-five individuals participated in this study for course credit in an introductory psychology course. We discarded the data of any participants who had computer problems (n = 2) or indicated they had played Cyberball before or heard about it in their psychology course (n = 2). The remaining sample included 81 participants (27 men, 54 women; M_{age} = 19.21 years, SD = 2.94; 60.5% Caucasian, 27.2% Asian, 3.7% Black, 8.6% other).

Procedure and Design

Participants played one 45-toss game of Cyberball with two other virtual confederates. We randomly assigned participants to one of four different conditions in a 2 (Target Player Speed: 4 vs. 16 seconds per toss) × 2 (Connection Status: good vs. poor) between-participants design. We did not use the 8 seconds condition from Study 1 because the connection status only influenced the motive measures significantly in the 16 seconds condition. Before playing Cyberball, we gave participants the opportunity to send a message to the other players in their game before playing as a way to introduce themselves. We used this information as a means to make it clearer to participants that the confederate's performance was due to poor computer functioning and thus not under the player's control. For the *good* connection status condition, the target confederate sent a neutral statement (i.e., “Hi! I'm a Freshman Engineering major from Indianapolis.” or "I'm a Freshman majoring in Biology."). For the *poor* connection status condition, the target confederate sent a message saying "This computer sucks. I have to hit keys many times to do anything! " Regardless of the target player's connection status condition, the other confederate always had good connection status and sent one of the two neutral statements.

Dependent Variables

We used the same dependent variables as Study 1: ball-tossing behavior, burden perceptions (α = .90), sympathy- (α = .79) and anger-based emotions (α = .89), desired future ostracism (Spearman-Brown coefficient = .94), rehabilitative motive (α = .95), and protective motive (α = .95).

RESULTS AND DISCUSSION

Status manipulation check. Eight participants could not identify the target player's connection status manipulation correctly and we discarded them from the analyses[2]. The remaining sample included 73 participants.

Ostracism behavior. Participants allocated fewer tosses to the target player depending upon the speed manipulation, $F(1, 69) = 45.04$, $p < .01$, $\eta_p^2 = .39$ (see Table 2 for all descriptive statistics). Connection status had no main effect or interaction with player speed, Fs < 1.55, ps > .20, $\eta_p^2 < .03$.

Burden. Participants rated the target player as more burdensome depending upon the speed manipulation, $F(1, 69) = 39.06$, $p < .01$, $\eta_p^2 = .36$. There was no evidence for a main effect of connection status, $F(1, 69) = 2.29$, $p = .13$, $\eta_p^2 = .03$. There was a marginally significant speed × status interaction, $F(1, 69) = 3.38$, $p = .07$, $\eta_p^2 = .05$. The pattern of means suggests that connection status influences perceptions toward the 4-second player with a poor status player perceived as more burdensome than a good status player ($d = .90$), but makes little difference for the 16-second player ($d = .07$).

Emotions. There was no evidence of a main effect of player speed, $F(1,69) = .99$, $p = .32$, , $\eta_p^2 = .01$, or connection status on sympathy-based emotions, $F(1,69) = .19$, $p = .66$, $\eta_p^2 < .01$,. Neither was there an interaction between the two factors on sympathy-based emotions, $F(1,69) = .46$, $p = .50$, $\eta_p^2 < .01$. There was a main effect for player speed on anger-based emotions such that participants felt more anger toward a 16-second player than a 4-second player, $F(1,69) = 9.88$, $p < .01$, $\eta_p^2 = .12$. There was no evidence for a main effect of connection status, $F(1,69) < .01$, p = .94, $\eta_p^2 < .01$, or an interaction between player speed and status, $F(1,69) = 1.94$, $p = .17$, $\eta_p^2 = .03$. Although the interaction between player speed and status was non-significant, it was close to what is typically considered the outer limit of marginal significance ($p = .10$). Thus, we conducted a post-hoc simple effects test to examine the pattern of means. The simple effects patterns suggests participants' felt more anger toward a 16-second player compared to a 4-second player in the good connection status condition (Bonferroni $p < .01$, $d = 1.09$), whereas this difference was diminished in the poor connection status condition (Bonferroni $p = .22$, $d = .43$). Although exploratory in

[2] Six of the eight participants who incorrectly answered the status manipulation check were in the good connection conditions. There was a marginally significant difference between the 4-second ($n = 6$) and 16-second ($n = 2$) conditions in the number of participants who incorrectly answered this manipulation check, $\chi^2(1) = 2.81$, $p = .09$.

nature, these patterns support Weiner's (2006) argument that individuals express more anger toward individuals who are perceived as having control over their negative situation.

Future ostracism intentions. Participants were less likely to want to have future interactions with a 16-second target player compared to a 4-second target player, $F(1, 69) = 23.39$, $p < .01$, $\eta_p^2 = .25$, and less likely to want an interaction with a poor connection status player, $F(1, 69) = 4.03$, $p = .05$, $\eta_p^2 = .05$. There was no significant interaction between player speed and connection status, $F(1, 69) = 2.85$, $p = .10$, $\eta_p^2 = .04$.

Motives for tossing behavior. Once again, measures of both rehabilitative and protective motives correlated highly, $r(73) = .93$, $p < .01$. We conducted a repeated-measures ANOVA, with player speed and connection status as the two between-participants factors and the two motives as the within-participants factor. A main effect of target player speed on the two motives emerged, $F(1, 69) = 9.14$, $p < .01$, $\eta_p^2 = .12$, such that participants endorsed the two motives for their behavior more towards a 16-second target player than a 4-second player. There was no evidence for a main effect of status, $F(1, 69) = .12$, $p = .73$, $\eta_p^2 < .01$. Contrary to Study 1, the predicted Speed × Status × Motive interaction was not significant, $F(1, 69) = .41$, $p = .52$, $\eta_p^2 < .01$. The pattern of means, however, is in the same direction as in Study 1. It is important to note that the effect size ($d = .19$) for the difference in participants' rehabilitation motive based on connection status is considerably smaller than in Study 1 ($d = .48$). The same patterns of means also hold for participants' protective motive and the effect sizes between this study ($d = .02$) and Study 1 ($d = .25$) are once again considerably smaller.

Open-ended responses. We again asked participants to describe the target player in their own words, and of the 20 participants who had a slow target player with poor connection status only 3 participants (15.0%) explicitly mentioned the connection status as a likely reason for the player's speed, and one statement still suggested internal attributions:

> *"Slow but she had an excuse because her connection was poor. She seemed pessimistic though based on her introductory sentence."*

Six (30.0%) of the participants in the slow/poor status condition still described the target player using unflattering terms suggesting internal attributions (e.g., stupid, indecisive, lazy). These data suggest that controllability for burden (i.e., poor connection status) made little difference to participants in terms of ostracizing the target player. This tendency occurred despite the majority of participants correctly identifying the target player's connection status (we only included those participants that did in the analysis), which we designed to reduce the perceived controllability of the target player's performance.

Table 2. Study 2: Means and Standard Deviations for all Dependent Variables

Target Player Speed	Connection Status	Proportion of Tosses to Target Player	Burden	Anger-Based Emotions	Sympathy-Based Emotions	Rehabilitative Motive	Protective Motive	Desired Future Interaction	*N*
	Good	1.14 (.49)	1.79 (1.08)	1.52 (.90)	2.42 (1.23)	1.59 (1.39)	1.55 (1.16)	4.56 (1.69)	16
4-sec.	Poor	1.01 (.37)	2.94 (1.44)	2.06 (1.22)	2.06 (1.31)	2.04 (1.23)	2.16 (1.26)	3.22 (1.83)	16
	Total	1.08 (.43)	2.34 (1.38)	1.79 (1.09)	2.24 (1.26)	1.81 (1.31)	1.85 (1.23)	3.89 (1.86)	32
	Good	.56 (.32)	4.56 (1.49)	3.20 (1.98)	2.52 (1.30)	3.43 (2.28)	3.02 (2.12)	2.19 (1.51)	21
16-sec.	Poor	.48 (.19)	4.45 (1.67)	2.71 (1.75)	2.60 (1.54)	3.01 (2.12)	2.97 (2.07)	2.07 (1.14)	20
	Total	.52 (.26)	4.51 (1.56)	2.96 (1.87)	2.56 (1.41)	3.22 (2.18)	3.00 (2.07)	2.13 (1.33)	41
	Good	.81 (.49)	3.36 (1.91)	2.47 (1.80)	2.48 (1.25)	2.63 (2.13)	2.38 (1.90)	3.22 (1.97)	37
Total	Poor	.72 (.38)	3.78 (1.73)	2.42 (1.55)	2.36 (1.45)	2.58 (1.82)	2.61 (1.78)	2.58 (1.57)	36
	Total	.76 (.44)	3.57 (1.82)	2.45 (1.67)	2.42 (1.35)	2.61 (1.97)	2.49 (1.83)	2.90 (1.80)	73

Note. Standard deviations appear in parentheses.

GENERAL DISCUSSION

Evidence from various social sciences suggest that humans and other non-human social animals use ostracism as a form of social control either to influence burdensome group members to change their behavior or cull them from the group entirely as a protective measure (Williams, 1997; 2009). Our data support this general idea as well as previous experimental research that found participants ostracized burdensome group members (Wesselmann et al., 2013). Our current data provide two more studies that replicate the burden-ostracism link and extend these findings by examining the effect of burden on participants' emotions, punitive motives toward a group member, and desired future interactions with this member. Further, our data extend prior findings by examining how controllability of burden influenced participants' use of ostracism on a burdensome group member. In our study, controllability did not influence participants' ostracism behavior or their desire to ostracize the burdensome member from future interactions. This finding could support an evolved general tendency to avoid burdensome individuals (Kurzban & Leary, 2001). It is also possible that the participants who ostracized a burdensome group member that had no control over the situation felt guilty about the ostracism and engaged in a form of victim blame to justify their behavior (Lerner, 1980). It is entirely possible that these two explanations can work in conjunction. An evolved tendency for burden avoidance would likely be automatic in nature, and any attributions or appraisals of the situation would require deliberative thought processes toward the end of (and after) the initial interaction (Pryor et al., 2004). It was clear in both studies that the majority of our participants recognized the connection status manipulation even though there was no evidence that it influenced their behavior. Interestingly, few participants mentioned the connection status in their open-ended responses and instead made comments that support a victim-blame explanation. Regardless, these explanations are post-hoc interpretations; we have no direct measure of automatic/deliberative processes or victim blame. Future research will have to examine these intriguing ideas directly.

Limitations and Future Directions

Our data suggest mixed results for how attributional information influences emotions toward burdensome group members and punitive motives for ostracism. In Study 1, our post-hoc analyses suggested that poor connection status overall influenced sympathy-based emotions, which had an indirect effect on desired future interactions with a target player. However, this indirect effect test followed up a main effect that approached marginal significance and thus should be interpreted with caution. In Study 2, we did not find a similar effect of connection status on sympathy but we did find preliminary evidence for an interaction between status and player speed on anger-based emotions that approached marginal significance. A post-hoc probing of this interaction suggested that participants felt less anger when a burdensome group member had a poor connection status than when this member had a good connection status (and thus had more control over the burdensome

behavior). Once again, this pattern should be interpreted with caution and should be followed up in future research.

In Study 1, we found a significant interaction such that participants endorsed the rehabilitation motive less when the burdensome group member (i.e., who took 16 seconds between each toss) had no control over the behavior (and thus could not rehabilitate); controllability did not influence the protective motive. In Study 2, however, we found no such interaction. Because these motive measures were highly related and were retrospective self-reports, participants may have conflated which of the two motives was the most important to them at any particular point *during* the game after having spent the entire game hoping in vain that the burdensome group member with the good connection status would respond favorably to the ostracism and change behavior. Future research could address these limitations by assessing these two motive measures at different points during the interaction itself, rather than retrospectively. It is certainly troubling that the significant interaction in Study 1 did not replicate in Study 2. Even though the pattern of means remained similar across the two studies, the observed effect sizes in Study 2 were considerably smaller than in Study 1. There could be multiple reasons why these findings did not replicate across studies (Stroebe & Strack, 2014). One possibility is that by attempting to make the link between connection status and computer performance more explicit in Study 2 we may have influenced participants' experience of the manipulations in unforeseen ways. Recall that at least one participant reported being somewhat put off by the confederate's "pessimism;" it is possible that other participants had similar reactions but did not express them in the open-ended responses. Future research that chooses to use this type of manipulation should investigate how participants' respond to the confederate's admission of difficulties and how they think this confederate should deal with these problems.

In this study, our operational definitions of burden and controllability were contrived by necessity. The minimal nature of Cyberball restricted the amount of information that we could use to manipulate burden in a group interaction while still making the task both psychologically engaging and having strong internal validity. It is possible that other types of controllability and burden manipulation would have had differential effects on ostracism behavior, the motives, or both. If we had used a different type of uncontrollable burden, perhaps one that typically evokes sympathy (e.g., physical disability; Crandall, Eshleman, & O'Brien, 2002), participants may have shown tolerance and ostracized them less than what they did in the current study, or even not at all. It is also important to note that our operational definition of burden involved something external to the target player; it is possible that participants may have responded differently if we had operationalized controllability based on something intrinsic to the target player (e.g., a cognitive or physical disability vs. laziness). Future research should explore other operational definitions of both burden and controllability.

Future research should also investigate the evolutionary underpinnings of ostracizing burdensome group members. Researchers from various disciplines have argued ostracism served a useful function in humans' evolutionary past (Gruter & Masters, 1986; Kerr &

Levine, 2008; Williams, 2009) and diverse data (e.g., cross-cultural, hunter-gather, and phylogenetic) support this argument (Schmitt & Pilcher, 2004). The adaptation argument would be further strengthened by experimental data collected from an evolutionary psychology approach. These data would need to demonstrate that ostracism could solve fitness-based problems (i.e., survival; Wesselmann, Nairne, & Williams, 2012). The current research demonstrated that participants ostracized burdensome group members and their self-reported motives supported what theorists have argued were the likely evolutionary functions for ostracism (i.e., social control/rehabilitation and protection). Further, participants ostracized a burdensome group member regardless of whether or not the member could control their behavior. From an evolutionary perspective, a burdensome individual presents a threat to the group's functioning (i.e., survival) regardless of controllability and is a likely candidate for ostracism either way (Kurzban & Leary, 2001). Future research should investigate the fitness-increasing benefits of ostracism using other evolutionary psychological paradigms, such as Nairne's (2010) survival mindset paradigm or by priming other survival threats (e.g., contamination/disease concerns; Huang, Sedlovskaya, Ackerman, & Bargh, 2011; Mortensen, Becker, Ackerman, Neuberg, & Kenrick, 2010).

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