Supplemental Materials and Analyses

Exclusionary Cues (Exploratory Measure)

Exclusionary cues measure. As an exploratory measure of exclusion, we created an 18-item assessment of how tempted participants were to exhibit exclusionary cues towards each player (e.g., "Interrupt *Alex/Pat* when this player is talking.") on a 1 (*Not at all tempted*) to 9 (*Very tempted*) scale (αs≥.78). These exclusionary cues were based on examples from the signals of social exclusion/inclusion outlined by Kerr and Levine (2008). For this measure, we used a similar approach of measuring behavioral temptations as previous research (Buckley, Winkel, & Leary, 2004).

Exclusionary cues results for Study 2. We found a significant Target Member Performance × Group Member interaction ($F(1,59)=7.44$, $p=.008$, $\eta_p^2=.11$) on the temptation to give exclusionary cues to the other players. Specifically, participants were more tempted to exhibit exclusionary cues towards the poor-performing target player compared with the equal-performing target player and the non-target player in the poor-performing target condition, ts≥-2.48, ps≤.016, ds≥0.64, 95%CI=[-1.60, -0.17].

Exclusionary cues results for Study 3. Similar to Study 2, on this exploratory measure, we found a significant Target Member Performance × Group Member interaction ($F(1,67)=5.77$, $p=.019$, $\eta_p^2=.08$) on how tempted participants were to exhibit exclusionary cues to each player. Participants indicated more of a temptation to exhibit exclusionary cues to the poor-performing target compared with the equal-performing target player, $t_{\text{adjusted}}(67)=-2.51$, $p=.016$, $d=0.60$, 95%CI=[-1.43, -0.16]. Participants were also more tempted to exhibit exclusionary cues towards the poor-performing target compared to the non-target player in the poor-performing target condition, but only to a marginal degree, $t(33)=1.90$, $p=.066$, $d=0.39$, 95%CI=[-0.03, 1.01].

Supplemental Materials and Analyses Table 1

Exploratory exclusionary cues means and standard deviations.

	Group Member											
	Non-target						Target					
	Normal-Speed		Slow-speed		Total		Normal-Speed		Slow-speed		Total	
Study	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Study 2	2.52	1.47	2.44	1.14	2.48	1.29	2.30	1.22	3.19	1.52	2.78	1.45
Study 3	2.92	0.85	3.06	0.74	2.99	0.79	2.75	0.98	3.54	1.58	3.14	1.36

Supplemental Analyses

The supplemental analyses include Multivariate Analyses of Variance (MANOVAs) to establish having multivariate effects of our experiment manipulations. We also included analyses comparing the non-target group member in a burdensome target condition to both the target and non-target group members in a non-burdensome target condition. We also compared the target and non-target group members in the non-burdensome target group member conditions (control condition).

Study 1

MANOVA Analysis

We conducted a MANOVA to establish multivariate effects of our experiment manipulations. For Study 1, we did, indeed, find significant multivariate effects, $F(6, 206)=33.69$, $p<.001$, Wilk's $\lambda=.51$, $\eta_p^2=.50$). Specifically, we found significant Target Member Performance $\times$ Group Member interactions for all of our variables using a MANOVA, $Fs \geq 78.03$, $ps<.001$, $\eta_p^2 s \geq .27$.

Ostracism of Group Members

Suggested by a marginal effect, participants indicated they ostracized the non-target of a group with a burdensome target more than the non-target or target of a group with a non-burdensome target, $ts \geq 1.91$, $ps \leq .058$, $ds \geq 0.26$, 95%CI=[-0.09, .54]. When the recalled experience was with a non-burdensome target, there was no significant difference between the non-target and target group members, $t=-1.53$, $p=.130$, $d=0.17$, 95%CI=[-0.29, 0.04].

Psychological Pain: NRS-11 Pain Measure and Pain Faces Scale

For the NRS-11 pain measure, we found that the non-target group member of a group with a burdensome target caused more psychological pain than both the non-target and target

group members when the group interaction was with a non-burdensome target, $ts \geq 3.61$, $ps < .001$, $ds \geq 0.48$, 95%CI=[0.50, 1.71]. When the experience participants recalled was with a non-burdensome target, there were no significant differences between non-target and target group members, $t = -.11$, $p = .912$, $d = 0.01$, 95%CI=[-0.38, 0.34].

Evaluating participants' responses on the Pain Faces Scale, we found participants felt more psychological pain when they interacted with the non-target of a group with a burdensome target than either the target or non-target when the recalled group experience was with a non-burdensome target, $ts \geq 3.44$, $ps = .001$, $ds \geq 0.46$, 95%CI=[0.37, 1.37]. There was no significant difference between the non-target and target group members in the non-burdensome Target Member Performance condition, $t = -.39$, $p = .698$, $d = 0.05$ 95%CI=[-0.37, 0.25].

Liking and Burdensomeness of the Group Members

For liking, we found there were no significant differences between the players, $ts \leq -1.71$, $ps \geq .088$, $ds \leq 0.24$, 95%CI=[-0.90, 0.06] when comparing the non-target player of a group that included a burdensome target player with both the non-target and target players in the non-burdensome condition or when comparing the non-target to the target players in the non-burdensome target player condition. Regarding burdensomeness, participants indicated the non-target in a group with a burdensome target to be more burdensome than the target and non-target members of a group comprised of a non-burdensome target, $ts \geq 3.29$, $ps \leq .001$, $ds \geq 0.44$, 95%CI=[0.26, 1.04]. Participants also reported the non-target player was more burdensome than the target player in the non-burdensome target group, $t = -2.07$, $p = .044$, $d = 0.27$, 95%CI=[-0.50, -0.01].

The Influence of Psychological Pain on Ostracizing

Self-report. Participants were more motivated by psychological pain to ostracize the non-target in a group with a burdensome target condition compared to either the target or non-target in the non-burdensome target member condition, $ts \geq 3.42$, $ps \leq .001$, $ds \geq 0.46$, 95%CI=[0.22, 0.82]. Examining the non-burdensome target condition, there was no significant difference between the target and non-target group members, $t=-1.52$, $p=.132$, $d=0.20$, 95%CI=[-0.32, 0.04].

Study 2

Manipulation Check

For the manipulation check, there were no significant differences between the remaining comparisons of players, $ts \leq -0.16$, $ps \geq .877$, $ds \leq 0.04$, 95%CI=[-17.68, 15.13].

MANOVA Analysis

A MANOVA analysis supported having a significant multivariate effect of our experiment manipulations, $F(7, 52)=6.08$, $p<.001$, Wilk's $\lambda=.55$, $\eta_p^2=.45$). For each of our Target Member Performance $\times$ Group Member, we found significant effects for our variables, $Fs \geq 6.77$, $ps \leq .012$, $\eta_p^2 s \geq .11$.

Ostracism

Self-reported ostracism of players. There were no significant differences between the remaining combinations of players, $ts \leq -1.70$, $ps \geq .102$, $ds \leq 0.43$, 95%CI=[-1.22, 0.12].

Exclusionary cues. Analyses of the exclusionary cues found no significant differences when examining the remaining combinations of players, $ts \leq -0.76$, $ps \geq .451$, $ds \leq 0.16$, 95%CI=[-0.82, 0.37].

Psychological pain: NRS-11 pain measure and Pain Faces Scale. For the NRS-11, there were no significant differences between the remaining combinations of players, $ts \leq -1.16$, $ps \geq .255$, $ds \leq 0.22$, 95%CI=[-1.23, 0.34]. Similarly, for the Pain Faces Scale, there were no significant differences in psychological pain levels for the remaining comparisons between players, $ts \leq -1.55$, $ps \geq .133$, $ds \leq .28$, 95%CI=[-0.66, 0.09].

Liking and Burdensomeness of the Group Members

Examining liking, we found a marginal difference between the non-target player in the poor-performing target player condition compared to the non-target player in the equal-performing target player condition, $t=-1.95$, $p=.056$, $d=0.50$, 95%CI=[-1.75, 0.02]. Otherwise, there were no significant differences between the remaining comparisons, $ts \leq -1.08$, $ps \geq .286$, $ds \leq 0.28$, 95%CI=[-1.35, 0.41]. For burdensomeness, results indicated there were no remaining significant differences between the combinations of players, $ts \leq 1.24$, $ps \geq .219$, $ds \leq 0.32$, 95%CI=[-0.20, 0.84].

The Influence of Psychological Pain on Ostracizing

Self-report. There were no significant differences between the remaining player comparisons when examining how much participants' psychological pain motivated them to ostracize, $ts \leq -1.20$, $ps \geq .242$, $ds \leq 0.31$, 95%CI=[-1.02, 0.27].

Study 3

Manipulation Check

Participants found the non-target in the slow-speed target player condition took longer to throw the ball than both the non-target and target of a game that included a normal-speed target, $ts \geq -1.96$, $ps \leq .057$, $ds \geq 0.48$, 95%CI=[-5.20, .08]. We did not find a significant difference on

how long it took the players to throw the ball between the non-target and target player in normal-speed target player condition, $t(34)=-1.30$, $p=.202$, $d=0.21$, 95%CI=[-1.17, 0.26].

MANOVA Analysis

Our MANOVA analysis indicated a significant multivariate effect of our experiment manipulations on the outcomes, $F(7, 61)=7.85$, $p<.001$, Wilk's $\lambda=.53$, $\eta_p^2=.47$). Examining the interaction effects further, we found a significant Target Member Performance $\times$ Group Member for all of our variables, $Fs\geq5.77$, $ps\leq.019$, $\eta_p^2s\geq.08$.

Ostracism

Self-reported ostracism of players. There were no significant differences for the remaining comparisons between players on self-reported ostracism of the players, $ts\leq-0.86$, $ps\geq.395$, $ds\leq0.21$, 95%CI=[-0.97, 0.39].

Exclusionary cues. Examining the remaining comparisons between the players, there were no significant differences, $ts\leq-1.47$, $ps\geq.146$, $ds\leq0.35$, 95%CI=[-0.73, 0.11].

Psychological Pain: NRS-11 Pain Measure and Pain Faces Scale

Examining the NRS-11 measures, we found participants felt more psychological pain when playing with the non-target in the slow-speed target player Cyberball condition than both the non-target and target player in the normal-speed target player condition, $ts\geq-3.83$, $ps<.001$, $ds\geq0.93$, 95%CI=[-2.57, -0.80]. There was no difference between players in the normal-speed target player condition, $t=-1.37$, $p=.180$, $d=0.15$, 95%CI=[-0.53, 0.10].

For the Pain Faces Scale, when we examined the remaining comparisons, the non-target in the normal-speed target player game caused marginally more psychological pain than the non-target player in the slow-speed target player game, $t=1.77$, $p=.08$, $d=0.43$, 95%CI=[-0.04, 0.59].

Otherwise, there were no remaining significant differences in comparisons between the players, ts≤1.45, ps≥.15, ds≤0.35, 95%CI=[-0.10, 0.60].

Liking and Burdensomeness of the Group Members

Participants liked the non-target player in the slow-speed target player game at least marginally more than either the target or non-target players in the normal-speed target player game, ts≥-1.97, ps≤.053, ds≥0.47, 95%CI=[-1.75, 0.01]. There was no significant difference between the target and non-target in the normal-speed target player condition, t=0.32, p=.752, d=0.07, 95%CI=[-0.62, 0.84]. Investigating burdensomeness of the players, there were no remaining significant differences between the players, ts≤1.71, ps≥.092, ds≤0.41, 95%CI=[-0.07, 0.93].

The Influence of Pain on Ostracizing

Self-report. For self-reported assessment of how much participants ostracized the players, we found there were no significant differences when evaluating the remaining comparisons between the players, ts≤1.15, ps≥.256, ds≤0.28, 95%CI=[-0.18, 0.68].

<center>**Study 4**</center>

Manipulation Check

Similar to Study 3, participants indicated the non-target in the slow-speed target player condition took longer to throw the ball than either the non-target or target player of a normal-speed target player game, ts≥-3.58, ps<.001, ds≥0.65, 95%CI=[-5.06, -1.42]. There was no significant difference between the target and non-target in the normal-speed target player condition, t=0.50, p=.618, d=0.04, 95%CI=[-0.17, 0.29].

MANOVA Analysis

Conducting a MANOVA test, we found a significant multivariate effect of our experiment manipulations on the outcomes, $F(7, 113=7.02, p<.001$, Wilk's $\lambda=.70$, $\eta_p^2=.30$). Specifically, analyses indicated a significant Target Member Performance $\times$ Group Member for all of our variables, $Fs\geq4.45$, $ps\leq.037$, $\eta_p^2s\geq.04$.

Psychological Pain: NRS-11 pain measure, Pain Faces Scale, and McGill Pain Questionnaire

Starting with the NRS-11 measures, participants felt at least marginally more psychological pain when playing with the non-target in the slow-speed target player condition than the non-target in the normal-speed target player condition, $t_{adjusted}=-1.81$, $p=.073$, $d=0.33$, 95%CI=[-1.36, 0.06]. There were no significant differences for the remaining comparisons, $ts\leq1.60$, $ps\geq.114$, $ds\leq0.29$, 95%CI=[-1.27, 0.14].

For the Pain Faces Scale, there were no significant differences between the non-target in the slow-speed target player game compared to the target or non-target players in the normal-speed target player game, $ts\leq-0.73$, $ps\geq.468$, $ds\leq0.13$, 95%CI=[-0.45, 0.21]. However, there was a significant difference between the target and non-target player in the normal-speed target player game (control condition; $t=2.10$, $p=.040$, $d=0.21$, 95%CI=[0.01, 0.35]).

Examining the results from the McGill Pain Questionnaire, we found no signficant differences on the remaining comparisons, $ts\leq-0.34$, $ps\geq.733$, $ds\leq0.06$, 95%CI=[-0.67, 0.47].

Negative Affect Towards the Group Members

For our PANAS measure of negative affect towards the group members, we found no significant differences on any remaining comparisons, $ts\leq0.51$, $ps\geq.611$, $ds\leq0.08$, 95%CI=[-0.16,

0.27]. Likewise, there were no significant differences between remaining comparisons for burden-specific affect, $ts \leq 1.26$, $ps \geq .212$, $ds \leq 0.08$, 95%CI=[-0.04, 0.16].

Liking and Burdensomeness of the Group Members

For liking, we found a marginally significant difference between the target and non-target players in the normal-speed target player game (control condition; t=-1.94, p=.057, d=0.22, 95%CI=[-0.65, 0.01]). For the remaining comparisons on liking of the players, there were no significant differences, $ts \leq -1.70$, $ps \geq .092$, $ds \leq$, 95%CI=[-1.07, 0.08]. Looking at burdensomeness of the group members, there were no significant differences between remaining comparisons, $ts \leq 0.86$, $ps \geq .392$, $ds \leq 0.11$, 95%CI=[-0.16, 0.40].

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Study 5

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Manipulation Check

Similar to both of the previous Cyberball studies, (Studies 3 and 4), participants reported the non-target in the slow-speed target player condition took longer to throw the ball than both the non-target or target player of a normal-speed target player game, $ts \geq -29.96$, $ps \leq .007$, $ds \geq 0., 053$ 95%CI=[-3.65, -0.61]. Again, there was no significant difference between the target and non-target in the normal-speed target player condition, t=0.50, p=.618, d=0.04, 95%CI=[-0.17, 0.29].

MANOVA Analysis

Our MANOVA analysis revealed a significant multivariate effect of our experiment manipulations, F(7, 110=11.04, p<.001, Wilk's λ=.59, η_p^2=.41). We found significant Target Member Performance $\times$ Group Member for all of our variables, $Fs \geq 5.94$, $ps \leq .016$, $\eta_p^2 s \geq .05$.

Psychological Pain: NRS-11 pain measure, Pain Faces Scale, and McGill Pain Questionnaire

As we found in several of the previous studies, testing the NRS-11 pain measure, participants felt more psychological pain when playing with the non-target in the slow-speed target player Cyberball condition than both the non-target and target player in the normal-speed target player condition, $ts\geq-2.12$, $ps\leq.036$, $ds\geq0.39$, 95%CI=[-1.43, -0.05]. There was no significant difference between the target and non-target in the normal-speed target player condition, $t=-1.45$, $p=.151$, $d=0.12$, 95%CI=[-0.43, 0.07].

For the Pain Faces Scale assessment, we found no significant differences for the remaining comparisons, $ts\leq-0.92$, $ps\geq.359$, $ds\leq0.17$, 95%CI=[-0.45, 0.16].

Lastly, examining the McGill Pain Questionnaire results, we found no signficant differences on the remaining comparisons, $ts\leq-1.32$, $ps\geq.191$, $ds\leq0.07$, 95%CI=[-0.26, 0.05].

Negative Affect Towards the Group Members, Liking of the Group Members, and Burdensomeness of the Group Members

For the our general measure of negative affect towards the player, the PANAS, we found no significant differences on the remaining comparisons, $ts\leq-1.66$, $ps\geq.100$, $ds\leq0.30$, 95%CI=[-0.65, 0.06]. Likewise, there were no remaining significant comparisons for burden-specific affect, $ts\leq-0.94$, $ps\geq.349$, $ds\leq0.17$, 95%CI=[-0.73, 0.26]. For liking of the group members, there were no remaining significant differences as well, $ts\leq-0.74$, $ps\geq.464$, $ds\leq0.14$, 95%CI=[-0.36, 0.78]. For how burdensome participants rated the players, participants indicated the non-target in a slow-player target game was, at least, marginally more burdensome than the non-target and target player in the normal-speed target player game, $ts\geq-1.87$, $ps\leq.064$, $ds\geq0.35$, 95%CI=[-0.91,

0.03]. There was no significant difference between the target and non-target in the normal-speed

target player condition, t=-0.23, p=.822, d=0.03, 95%CI=[-0.30, 0.24].