When Justice Surrenders: The Effect of Just-World Beliefs on

Aggression Following Ostracism

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Abstract

The present research examined the influence of general just-world beliefs on aggression following ostracism. The findings provided converging support for the hypothesis that people with weak general just-world beliefs, either measured (Studies 1 and 4) or primed (Studies 2 and 3), would behave more aggressively following ostracism than people with strong general just-world beliefs. Furthermore, perceived deservingness (Study 3) or attribution (Study 4) mediated the relationship between general just-world beliefs and aggression following ostracism. These findings highlight the significance of general just-world beliefs in understanding the coping responses to negative interpersonal experiences. The implications are discussed.

Keywords: just-world beliefs, ostracism, social exclusion, aggression, antisocial behavior

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Aggression Following Ostracism

People have a fundamental need to maintain positive and sustainable social relationships (Baumeister & Leary, 1995). Ostracism[1], which refers to being excluded and rejected, thwarts such a fundamental need for belonging (see Williams, 2007, 2009 for reviews). The literature has uncovered various detrimental consequences of ostracism. In particular, ostracism-related forms of relational devaluations can lead to aggression (e.g. DeWall, Twenge, Gitter, & Baumeister, 2009; Twenge, Baumeister, Tice, & Stucke, 2001). More recently, researchers have started to examine how motivational and situational factors interact with ostracism to predict aggression (Warburton, Williams, & Cairns, 2006; Leary, Twenge, & Quinlivan, 2006; Williams, 2007, 2009). However, few studies have examined how beliefs, which are central to the way in which people package their experiences (Dweck, 2008), moderate the effect of ostracism on aggression.

Given that beliefs are closely linked to behaviors (e.g., Ajzen, 1991; Fishbein & Ajzen, 1975), it is reasonable to expect that one's beliefs may help us understand when and why ostracism increases aggressive behavior. In particular, we focused on general just-world beliefs, which are the beliefs that we live in a just world where people deserve what they get and get what they deserve (Lerner, 1980; Lerner & Miller, 1978; Lerner & Simmons, 1966). We examined whether general just-world beliefs would moderate the effect of ostracism on aggressive behavior.

Strong general just-world beliefs not only help people cope with stressful situations (Tomaka & Blascovich, 1994), but also inhibit anti-social urges in situations that involve conflicts (Nesbit, Blankenship, & Murray, 2012). Therefore, we predicted that strong general just-world beliefs would weaken the effect of ostracism on

aggression. Furthermore, we explored a mechanism for the relationship between just-world beliefs and aggression following ostracism. People with strong just-world beliefs, but not people with weak just-world beliefs, tend to believe that victims deserve misfortunes and negative experiences (see Dalbert, 2009; Furnham, 2003; Hafer & Bègue, 2005 for reviews). Thus, relative to people with strong general just-world beliefs, people with weak general just-world beliefs may be more likely to believe that they do not deserve ostracism, and hence behave more aggressively. Specifically, we predicted that perceived deservingness (or attribution) would mediate the relationship between general just-world beliefs and aggression, following ostracism.

The Effect of Ostracism on Aggression

By definition, aggressive behavior refers to an action with the intention to harm others, who are motivated to avoid the harm (Anderson & Bushman, 2002; Bushman & Huesmann, 2010). Ostracism may increase the desires to harm and hurt others. For example, a systematic analysis of the cases of school shootings demonstrate that most perpetrators had experienced ostracism and bullying from peers (Leary, Kowalski, Smith, & Phillips, 2003; but see also Weatherby, Strachila, & McMahon, 2010 for a counterargument). Moreover, a remarkable amount of experimental studies in laboratory settings have demonstrated that ostracism increases various forms of aggressive behaviors. For example, compared to included or control participants, ostracized participants were more likely to hurt another person by allocating more spicy hot sauce, blasting louder aversive white noise for longer periods of time, giving more negative job evaluations, and assigning longer exposure to painful cold water (e.g., Aydin, Fischer, & Frey, 2010; Chen, DeWall, Poon, & Chen, 2012; DeWall et al., 2009; Twenge et al., 2001; see also Leary et al., 2006 for a

review). However, it should be noted that ostracized people would not always behave aggressively, and they can sometime be very pro-social (e.g. Maner, DeWall, Baumeister, & Schaller, 2007).

The literature has identified some situational and motivational factors, which may weaken the effect of ostracism on aggression (see Leary et al., 2006; Williams, 2007, 2009 for reviews). For example, people who have been ostracized demonstrated a decreased level of aggression after their feelings of belonging were restored by recalling past social activities (Twenge et al., 2007) or experiencing mild social acceptance from others (DeWall, Twenge, Bushman, Im, & Williams, 2010). Furthermore, ostracized participants whose feelings of control were restored behaved less aggressively than those whose feelings of control were further deprived (Warburton et al., 2006).

The appraisal of the experience of ostracism can also influence an individual's corresponding responses. For instance, Wesselmann, Butler, Williams, and Pickett (2010) found that ostracized people would behave more aggressively when the ostracism experience was unexpected than when it was expected. Also, Chow, Tiedens, and Govan (2008) found that ostracized individuals who were given an unfair reason for their ostracism experience felt angrier and behaved more antisocially than those who were given a fair reason. Furthermore, ostracized people were more likely to retaliate against the source of ostracism when the ostracism experience was framed as representing financial losses than when it was framed as representing financial gains (van Beest & Williams, 2006).

Most relevant to the current investigation, past research has suggested that specific beliefs may moderate the relationship between ostracism and aggression. For example, ostracized participants with destiny beliefs that relationships were fixed and

unchangeable behaved more aggressively than ostracized participants with growth beliefs that relationships were changeable through effort (Chen et al., 2012). Moreover, in a simulated game of Russian roulette (Cyberbomb), ostracized people who were first primed with the belief that there is an afterlife behaved less aggressively than ostracized people who were primed with the belief that there is not an afterlife (van Beest, Williams, & van Dijk, 2011). The researchers explained the results by suggesting that a belief in the existence of an afterlife ensured feelings of belonging because it implied permanent companionship and acceptance from potential sources of affiliation such as family and friends.

Extending past research on how specific beliefs about relationship (Chen et al., 2012) and afterlife (Van Beest et al., 2011) influenced the effect of ostracism on aggression, the current investigation further examined whether general beliefs that the world is just would influence the relationship between ostracism and aggression. In the next section, we briefly review evidence regarding the general adaptive functions of general just-world beliefs. Then, we discuss the potential interactive relationship between general just-world beliefs, ostracism, and aggressive behavior.

Just-world Beliefs, Ostracism, and Aggression

People need to believe that they live in a just world (Lerner, 1980; Lerner & Miller, 1978; Lerner & Simmons, 1966); this is critical for people to be able to maintain their well-being and to navigate events in their social world. Research on just-world beliefs has proliferated since the 1960s. More recently, the literature has differentiated general and personal just-world beliefs. Specifically, general just-world beliefs refer to the beliefs that the world is generally fair; whereas personal just-world beliefs refer to the beliefs that one's life events are fair (Dalbert, 1999, 2009). The

present research examines the role of general just-world beliefs on the effect of ostracism and aggression.

Why might strong just-world believers behave less aggressively following ostracism than weak just-world believers? When just-world beliefs are threatened, people usually experience discomfort and engage in defensive behavior (see Furnham, 2003; Hafer & Bègue, 2005; Dalbert, 2009 for reviews). For instance, people react angrily when they receive unfair treatment (Lind & Tyler, 1988; Solomon, 1990). Similarly, classroom procedural justice is negatively correlated with aggressive tendency toward the instructor (Chory-Assad, 2002; Chory-Assad & Paulsel, 2004).

General just-world beliefs are adaptive because they help people cope with negative and stressful events. For example, Hafer and Olson (1989) found that people with strong general just-world beliefs perceived negative outcomes as less unfair and reported less resentment than those with weak general just-world beliefs. When confronted with a stressful laboratory task, people with strong general just-world beliefs reported a lower level of stress and performed better than people with weak general just-world beliefs (Tomaka & Blascovich, 1994). Moreover, McParland and Knusson (2010) found that general just-world beliefs can buffer the psychological distress experienced by elderly people with chronic pain.

The literature has further shown that general just-world beliefs are negatively related to antisocial responses following frustrations and interpersonal conflicts. For example, general just-world beliefs were negatively correlated with an array of antisocial responses, such as problematic expressions of anger, history of aggressive driving behavior, and delinquency (Hafer, 2000; Nesbit et al., 2012). In addition, Dalbert (2002) found that participants with strong general just-world beliefs, compared to those with weak general just-world beliefs, reported less feelings of

anger (Study 2) and were better able to control their feelings of anger when describing an anger-provoking situation (Study 1). Moreover, relative to those with weak general just-world beliefs, people with strong general just-world beliefs have lower levels of hostile cognition when experiencing potentially injustice situations. In particular, drivers with strong general just-world beliefs compared to drivers with weak general just-world beliefs, have fewer hostile/angry thoughts and lower aggressive urges when they experience justice violation in a driving context (Nesbit et al., 2012).

It should be noted that past studies that examine the relationship between general just-world beliefs and antisocial tendency usually do not consider the role of personal just-world beliefs (e.g. Nesbit et al., 2012). The relationship between general just-world beliefs and antisocial urges may be weakened or even become positive when personal just-world beliefs are controlled (e.g. Sutton & Winnard, 2007). The role of personal just-world beliefs on the ostracism-aggression link is beyond the scope of the current investigation. However, correlational research also suggests that personal just-world beliefs may be negatively related to antisocial responses to frustrations and interpersonal conflicts. For instance, Dalbert (2002) found that participants with strong personal just-world beliefs, relative to those with weak personal just-world beliefs, demonstrated less anger when describing an anger-provoking situation. In addition, prisoners (who were institutionally ostracized) with strong personal just-world beliefs were less likely to express their feelings of anger through outbursts of behavior, than prisoners with weak personal just-world beliefs (Dalbert & Filke, 2007). Moreover, Bègue and Muller (2006) found that adolescents with strong personal just-world beliefs reported lower levels of hostility, when they imagined potential conflicts with their peers.

In summary, the literature has provided evidence that strong general just-world believers may tend to inhibit aggressive intentions and behaviors, while weak general just-world believers may tend to respond to interpersonal conflicts with destructive or aggressive responses. Therefore, general just-world beliefs should interact with ostracism to predict aggression. Specifically, we hypothesized that people with weak general just-world beliefs would behave more aggressively following ostracism than people with strong general just-world beliefs.

In addition to examining how general just-world beliefs influenced people's aggressive responses to ostracism, the current investigation further explored a mechanism for such an effect. Past research has shown that people with strong general just-world beliefs tend to accept and justify deprivations and setbacks more readily than people with weak general just-world beliefs. For example, after being deprived of receiving a desirable outcome, people with strong general just-world beliefs perceive the incidence as less unfair relative to those with weak general just-world beliefs (Hafer & Olson, 1989). People with strong general just-world beliefs also tend to appraise stressful situations as challenges, while those with weak general just-world beliefs tend to appraise such situations as threats (Tomaka & Blascovich, 1994). More generally, when confronted with negative incidents and misfortunes, people with strong general just-world beliefs tend to believe that victims deserve their sufferings (see Hafer & Bègue, 2005; Dalbert, 2009 for reviews); they also make stronger internal attributions and weaker external attributions for their own negative experiences (Hafer & Correy, 1999).

It is, therefore, reasonable to expect that following ostracism, people with weak general just-world beliefs may think that they do not deserve the hurtful ostracism experience. By making such external attributions for their ostracism

experience, they are more likely to behave aggressively. In contrast, those with strong general just-world beliefs may believe that they deserve the ostracism experience. By making such internal attributions for their ostracism experience, they are unlikely to behave aggressively. Specifically, we hypothesized that perceived deservingness (or attribution) of the ostracism experience would mediate the effect of general just-world beliefs on aggression following ostracism.

Current Research

Four studies were conducted to test the aforementioned hypotheses. General just-world beliefs were first measured (Studies 1 and 4) or manipulated (Studies 2 and 3). The experience of ostracism was then induced via recalling a past experience (Study 1), playing an online ball-tossing game, (Cyberball; Studies 2 and 3), or imagining a workplace experience (Study 4). Afterwards, participants had an opportunity to behave aggressively by giving negative job evaluations (Study 1) or assigning another person to be exposed to painful cold water (Studies 2 to 4). We expected that, in all four studies, people with weak just-world beliefs, compared to those with strong just-world beliefs, would behave more aggressively following ostracism. Furthermore, we expected that perceived deservingness (Study 3) or attribution (Study 4) to the ostracism experience would mediate the relationship between general just-world beliefs and aggression following ostracism.

Study 1

Research has shown that ostracized people are less aggressive if they believe that a specific ostracism experience is fair (Chow et al., 2008). Study 1 aimed to extend the literature by providing an initial test of the hypothesis that people with weak general just-world beliefs would behave more aggressively following ostracism than those with strong general just-world beliefs. Participants first completed a

measure of general just-world beliefs (Dalbert, 1999). Next, participants recalled and

wrote down either a past incidence of ostracism or inclusion (e.g., Chen et al., 2012;

Pickett, Gardner, & Knowles, 2004). Finally, participants were given an opportunity

to behave aggressively by giving a negative job evaluation (e.g., Chen et al., 2012;

DeWall et al., 2009; Twenge et al., 2001).

Method

  Participants and design. Eighty-one undergraduates (27 men; mean age=

20.64; *SD*= 1.33) participated in exchange for a payment of HK$50. They were

randomly assigned to the ostracism or inclusion condition.

  Procedure and materials. Participants were told that the study consisted of

several unrelated parts. Participants first completed the six-item general just-world

beliefs measure (Dalbert, 1999; 1= *strongly disagree* to 6= *strongly agree*). Sample

items included "I think basically the world is a just place" and "I am confident that

justice always prevails over injustice." The scores were averaged to index general

just-world beliefs (α= .66).

  By random assignment, participants then recalled and wrote down either an

ostracism or inclusion experience (e.g., Chen et al., 2012; Pickett et al., 2004).

Participants were instructed to describe the experience with as many details as

possible. Afterwards, they responded to two statements, "I feel excluded" and "I feel

rejected," (1= *not at all* to 5= *extremely*). The scores were averaged to check the

ostracism manipulation (r= .81, p< .001).

  Next, participants completed a job evaluation task, which was meant to assess

their levels of aggression (e.g., Chen et al., 2012; DeWall et al., 2009; Twenge et al.,

2001). Deliberately giving a negative job evaluation was considered to be an

aggressive behavior because it could potentially hurt another person's chances of

obtaining a desirable job. Specifically, participants received a job application package

of a candidate for a competitive research assistant position. They were told that the

position was very competitive, and the lab was trying to receive several evaluations

for each candidate. Participants were also told that their evaluations were very

important and influential in making the recruitment decision. A negative job

evaluation would decrease the candidate's chance of getting the position. Participants

rated the candidate on six statements (e.g., "The candidate is motivated" and "The

candidate is trustworthy"; 1= *strongly disagree* to 7= *strongly agree*). The scores were

averaged to provide a job evaluation index (α= .82). Finally, participants were

carefully probed to assess their awareness of the research hypotheses and suspicious

thoughts about the study. A debriefing followed.

Results and Discussion

  Manipulation check. As expected, participants in the ostracism condition

(*M*= 3.11; *SD*= .96) reported feeling more excluded/rejected than participants in the

inclusion condition (*M*= 2.06; *SD*= .86), $F(1, 79)= 26.64$, $p< .001$, $\eta_p^2= .25$. Thus, the

ostracism manipulation was successful. Furthermore, participants in the ostracism

condition (*M*= 3.65; *SD*= .60) and participants in the inclusion condition (*M*= 3.60;

SD= .86) reported similar levels of general just-world beliefs, $F(1, 79)= .09$, $p= .76$,

$\eta_p^2= .001$.

  Aggression. We predicted that ostracized participants with weak general

just-world beliefs would behave more aggressively than ostracized participants with

strong general just-world beliefs. A hierarchical regression analysis with two steps

was conducted (Aiken & West, 1991) to examine whether general just-world beliefs

interacted with ostracism in predicting aggressive behavior. The ostracism condition

was coded as 1 (ostracism) and -1 (inclusion), and general just-world-belief scores

were centered.

In Step 1, the two main effects were entered into the regression analysis simultaneously to predict the job evaluation index. The results revealed a significant main effect of general just-world beliefs, $b= .37$, $se= .11$, $t(78)= 3.40$, $p= .001$. The main effect of ostracism was not statistically significant, $b= -.11$, $se= .07$, $t(78)= -1.52$, $p= .13$.

In Step 2, the interaction term was included in the regression analysis to predict the job evaluation index. The results revealed a significant main effect of general just-world beliefs, $b= .43$, $se= .11$, $t(77)= 3.96$, $p< .001$. The main effect of ostracism was not statistically significant, $b= -.11$, $se= .07$, $t(77)= -1.59$, $p= .12$. More importantly, the predicted two-way interaction emerged, $b= .26$, $se= .11$, $t(77)= 2.41$, $p< .02$, $\Delta R^2= 0.06$ (Figure 1).

Among participants with weak general just-world beliefs (1 SD below the mean), ostracized participants gave a more negative evaluation than included participants, $b= -.29$, $se = .10$, $t(77)= -2.83$, $p< .01$. Among participants with strong general just-world beliefs (1 SD above the mean), the evaluation did not differ across the ostracism/inclusion condition, $b= .06$, $se= .10$, $t(77)= .63$, $p= .53$. In addition, among ostracized participants, the general just-world belief was positively associated with job evaluation, $b= .68$, $se= .17$, $t(77)= 4.07$, $p< .001$. This association was not observed among included participants, $b= .16$, $se= .13$, $t(77)= 1.24$, $p= .22$.

These findings provided initial support for the prediction that general just-world beliefs had implications for the relationship between ostracism and aggression. After recalling a past ostracism experience, people with weak general just-world beliefs gave a more negative job evaluation than those with strong general just-world beliefs. Such an evaluation would negatively impact the likelihood that an

applicant would be hired for a desired job. In contrast, after recalling a past inclusion experience, it was found that general just-world beliefs were unrelated to job evaluation.

This study contributed to the literature by providing the first empirical evidence that people with weak general just-world beliefs would behave more aggressively following ostracism, while people with strong general just-world beliefs would not. It should also be noted that the main effect of ostracism on aggression was not statistically significant in this study. Although we intended to use the job evaluation task to measure aggression, it was possible that the task was not sensitive enough because it did not allow participants to directly inflict physical pain on another person. To address this limitation, it was desirable to replicate the findings by adopting another paradigm to measure aggression, which assessed participants' willingness to inflict direct pain on another person. Moreover, it was also desirable to manipulate general just-world beliefs to provide causal evidence.

Study 2

Study 2 extended Study 1 in two ways. First, we manipulated general just-world beliefs to provide causal evidence for our predictions. We adapted a manipulation from previous research (Laurin, Fitzsimons, & Kay, 2011) in which participants read an article suggesting that the world we live in is either just or not. Second, we adopted another paradigm to capture ostracism and aggression to provide multi-method convergences. After being included or ostracized in an online ball-tossing game (Williams, Cheung, & Choi, 2000; Williams & Jarvis, 2006), participants were given an opportunity to decide on the period of exposure and temperature of painful cold water to which a stranger would be exposed (Aydin et al., 2010).

Method

Participants and design. Eighty-two undergraduates (26 men; mean age= 19.60; *SD*= 1.30) participated in the study in exchange for course credits. They were randomly assigned to a 2 (strong vs. weak just-world beliefs) by 2 (ostracism vs. inclusion) between-subject design.

Procedures and materials. Participants were told that this study consisted of several unrelated parts. Participants were first exposed to a general just-world-beliefs manipulation, which was modified from past research (Chen et al., 2012; Laurin et al., 2011). Participants read a BBC-News–style article about a recently developed index concerning the justice and fairness of our world[2]. Specifically, all of the participants read the following:

Since very early on, there have always been people who were concerned with justice, fairness, and the equal treatment of all human beings. Recent sociological advances have permitted researchers to establish a single unbiased index of justice and fairness using objective indicators such as education levels, individual wealth, and health outcomes. For instance, this index takes into account how well people's financial outcomes and professional success are determined by their hard work and the education they complete, as opposed to being attributable to demographic variables and biased perceptions.

Through random assignment, half of the participants were primed with strong just-world beliefs, and the other half of the participants were primed with weak just-world beliefs.

Specifically, participants in the strong just-world beliefs condition further read:

This research has found that in the past decade, our society has become a much more just and fair place. In other words, it is becoming more and more likely that the hard work of citizens will translate into occupational success, and less likely that factors such as gender or family connections will have an influence. For example, people can succeed and improve their quality of life if they work hard regardless of their socioeconomic backgrounds because all people have similar opportunities and receive similar treatment from others. Furthermore, the inequalities between demographic groups in terms of physical health and emotional well-being are becoming smaller and smaller.

Overall then, it seems that our society is becoming more and more just and fair, and all indicators point to this trend continuing over the next several years.

Participants in the weak just-world beliefs condition further read:

This research has found that in the past decade, our society has become a much more unjust and unfair place. In other words, it is becoming less and less likely that the hard work of citizens will translate into occupational success, and more likely that factors such as gender or family connections will have an influence. For example, the success and quality of life depends on their socioeconomic backgrounds regardless of their hard work because different people have different opportunities and receive different treatment from others. Furthermore, the inequalities between demographic groups in terms of physical health and emotional well-being are becoming bigger and bigger.

Overall then, it seems that our society is becoming more and more unjust and unfair, and all indicators point to this trend continuing over the next several years.

Afterwards, participants answered a manipulation check question, "The world we live in is just and fair (1= *strongly disagree* to 7= *strongly agree*).

Feelings of ostracism versus inclusion were then induced by playing an online ball-tossing game—Cyberball[3] (Williams et al., 2000; Williams & Jarvis, 2006). Participants were asked to participate in a mental visualization exercise by playing an online ball-tossing game with two people. The game was controlled by the computer. Participants were asked to mentally visualize the ball-tossing experience as vividly as possible. Through random assignment, participants received either only two tosses at the beginning (ostracism condition) or received approximately one third of the total 30 tosses (inclusion condition). After the game, participants responded to two statements, "I was ignored" and "I was excluded" (1= *agree* to 5= *disagree*). Responses were averaged to check the ostracism manipulation ($r= .93, p< .001$).

Next, participants proceeded to complete the aggression task, which was adopted from previous research (e.g., Aydin et al., 2010). Participants were told that there was an upcoming study in the laboratory about physical experience and intellectual performance, during which participants were required to put their hands in ice water while working tasks that required intelligence. The experimenter further explained that keeping one's hand in ice water was painful, especially when the temperature was low and the duration was long. Thus, it was important to find an unrelated person to assign the water temperature and duration. Participants then selected the water temperature, ranging from Level 0 (0°C) to Level 10 (10°C); and duration, ranging from Level 0 (0 seconds) to Level 10 (50 seconds). The reversed temperature level and duration were standardized and summed to create an aggression composite. Finally, participants were carefully probed to assess their awareness of the research hypotheses and suspicious thoughts about the study. A debriefing followed.

Results and Discussion

Manipulation checks. As expected, participants in the strong just-world beliefs condition ($M= 3.67$; $SD= 1.39$) viewed the world as more just and fair than participants in the weak just-world beliefs condition ($M= 2.58$; $SD= 1.11$), $F(1, 80)= 15.37$, $p< .001$, $\eta_p^2= .16$. Also, ostracized participants ($M= 1.95$; $SD= .86$) reported feeling more ignored/excluded than included participants ($M= 3.87$; $SD= .99$), $F(1, 80) = 85.53$, $p< .001$, $\eta_p^2= .52$. Thus, both manipulations were successful.

Aggression. We predicted that participants primed with weak just-world beliefs would be more willing to harm and hurt others by assigning a longer and colder exposure to painful cold water than participants primed with strong just-world beliefs. As expected, a 2 by 2 ANOVA revealed a significant interaction effect of the general just-world beliefs manipulation and ostracism experience on participants' aggressive behavior, $F(1, 78)= 7.98$, $p< .01$, $\eta_p^2= .09$ (Figure 2). Moreover, significant main effects of the just-world beliefs manipulation, $F(1, 78)= 4.71$, $p= .03$, $\eta_p^2= .06$, and the ostracism condition manipulation, $F(1, 78)= 6.21$, $p< .02$, $\eta_p^2= .07$, were found.

Among participants primed with weak just-world beliefs, ostracized participants ($M= 1.22$; $SD= 1.91$) behaved more aggressively than included participants ($M= -.47$; $SD= 1.23$), $F(1, 78)= 13.79$, $p< .001$. Among participants primed with strong just-world beliefs, inclusion ($M= -.26$; $SD= 1.31$) or ostracism experience ($M= -.37$; $SD= 1.32$) did not influence aggression level, $F(1, 78)= 0.06$, $p= .81$.

Furthermore, following ostracism, participants primed with weak just-world beliefs behaved more aggressively than those primed with strong just-world beliefs, $F(1, 78)= 11.89$, $p< .001$. In contrast, following inclusion, participants in the two

just-world beliefs conditions did not differ on their levels of aggression, $F(1, 78)= .23$, $p= .64$.

Thus, the priming of general just-world beliefs weakened the relationship between ostracism and aggressive behavior. Ostracized participants primed with weak just-world beliefs behaved more aggressively than ostracized participants primed with strong just-world beliefs. The just-world beliefs priming, however, did not reliably influence included participants' aggressive behavior.

The findings of Studies 1 and 2 provided converging support for the hypothesis that people with weak just-world beliefs, either measured or primed, behaved more aggressively than people with strong just-world beliefs. Although these findings were clear, what remained uncertain was the underlying mechanism of the relationship between general just-world beliefs and aggression following ostracism. We proposed that participants with weak just-world beliefs would be more likely to believe that they did not deserve the ostracism experience when they were ostracized, which might explain why these participants showed greater aggression following ostracism than those participants with strong just-world beliefs.

Study 3

Study 3 aimed to examine an underlying mechanism of the effect of general just-world beliefs on aggression following ostracism. We predicted that people with weak general just-world beliefs would report feeling less deserving of an ostracism experience when they were ostracized, which should mediate the effect of general just-world beliefs on aggression following ostracism. We also examined an alternative hypothesis by testing whether the potential difference in affect following ostracism would account for the effects we observed.

Method

Participants and design. Eighty-four undergraduates (25 men; mean age= 18.76; *SD*= 1.32) participated in the study in exchange for course credits. They were randomly assigned to either the strong- or the weak just-world beliefs condition.

Procedures and materials. The procedures of Study 3 duplicated those of Study 2 with the exception that all participants were exposed to an ostracism experience. Through random assignment, participants were first primed with just-world beliefs using the articles suggesting either a just world or an unjust world. Afterwards, participants were given the same manipulation check that was used in the previous study: "The world we live in is just and fair," (1= *strongly disagree* to 7= *strongly agree*).

Next, participants were asked to engage in a mental visualization exercise elicited by playing the online ball tossing game (Cyberball; e.g., Williams et al., 2000). During the game, all participants were ostracized and only received two tosses at the beginning and none afterwards. Participants then completed a three-item measure to capture their feelings of perceived deservingness of the ostracism experience (i.e., "I deserve this ostracism experience", "I deserve to be ostracized", and "I feel I deserved"; 1= *strongly disagree* to 7= *strongly agree*; see Heuer, Blumenthal, Douglas, & Weinblatt, 1999). The scores were averaged to index perceived deservingness of the ostracism experience (α = .71). Also, participants completed the Positive Affect and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988; 1= *not at all*; 5= *extremely*). The scores were averaged to provide separate indices of positive affect (α = .87) and negative affect (α = .81).

Finally, as in Study 2, participants were told that the laboratory had an upcoming study about physical experience and intellectual performance, during which participants were required to put their hands in ice water while working on

intelligence tasks. Participants selected the water temperature, ranging from Level 0

(0°C) to Level 10 (10°C), and duration, ranging from Level 0 (0 seconds) to Level 10

(50 seconds). As in Study 2, the reversed temperature level and duration were

standardized and summed to create an aggression composite. A debriefing followed.

Results and Discussion

Manipulation check. As expected, participants in the weak just-world beliefs

condition ($M= 2.46$; $SD= 1.11$) viewed the world as less just and fair than participants

in the strong just-world beliefs condition ($M= 4.07$; $SD= 1.35$), $F(1, 82)= 35.53$,

$p< .001$, $\eta_p^2= .31$.

Positive and negative affect. Following ostracism, the positive affect reported

by participants in the weak just-world beliefs condition ($M= 2.19$; $SD= .79$) did not

differ from that reported by participants in the strong just-world beliefs conditions

($M= 2.28$; $SD= .72$), $F(1, 82)= .26$, $p= .61$, $\eta_p^2= .003$. However, following ostracism,

participants in the weak just-world beliefs condition ($M= 2.04$; $SD= .67$) reported

negative affect at a marginally higher level than participants in the strong just-world

beliefs condition ($M= 1.78$; $SD= .57$), $F(1, 82)= 3.63$, $p= .06$, $\eta_p^2= .04$.

Perceived deservingness and aggression. We predicted that participants

primed with weak just-world beliefs would feel less deserving of the ostracism

experience and as a result would show more willingness to hurt others by assigning a

longer and colder exposure to painful cold water than participants primed with strong

just-world beliefs. As expected, participants in the weak just-world beliefs condition

($M= 1.55$; $SD= .74$) rated the ostracism experience as less deserved than participants

in the strong just-world beliefs condition ($M= 2.16$; $SD= 1.00$), $F(1, 82)= 9.34$,

$p= .002$, $\eta_p^2= .11$. Moreover, participants in the weak just-world beliefs condition (M

= .25; *SD* = .90) behaved more aggressively than participants in the strong just-world

beliefs condition (*M*= -.24; *SD*= 1.25), $F(1, 82)= 4.19$, *p*= .04, η_p^2= .05.

Mediation analyses. A bootstrapping mediation analysis with 5,000 iterations

(Preacher & Hayes, 2004) was conducted to examine whether perceived

deservingness mediated the effect of general just-world beliefs on aggression

following ostracism. The experimental condition was coded as 1 (strong just-world

beliefs) or -1 (weak just-world beliefs). The results revealed an indirect effect, with a

point estimate of -.10. The 95% confidence interval for the indirect path coefficient

through perceived deservingness excluded zero (-.26 to -.01), suggesting a significant

indirect effect (see Figure 3). The effect of general just-world beliefs on aggression

following ostracism became statistically insignificant (from standardized β= -.22,

p= .04 to standardized β= -.13, *p* = .24), when perceived deservingness was included

in the regression model. Moreover, perceived deservingness still uniquely predicted

aggression following ostracism (standardized β= -.27, *p*= .02), after controlling for

general just-world beliefs.

Another bootstrapping analysis was conducted to examine whether differences

in negative affect would account for the relationship between general just-world

beliefs and aggression following ostracism. The results revealed an indirect effect,

with a point estimate of .02. The 95% confidence interval for the indirect path

coefficient through negative affect did not exclude zero (-.03 to .11), suggesting that

the indirect effect was not statistically significant.

A multiple mediators bootstrapping analysis was also conducted, in which

perceived deservingness, positive affect and negative affect were simultaneously

entered as mediators operating in parallel. The results revealed that the indirect path

coefficient via perceived deservingness still excluded zero (-.25 to -.01), while the

indirect path coefficient via positive (-.02 to .05) and negative affect (-.04 to .11) included zero. Therefore, perceived deservingness still significantly mediated the effect of general just-world beliefs on aggression following ostracism after controlling the effects of positive and negative affect.

Study 3 provided additional evidence that people with weak general just-world beliefs behaved more aggressively following ostracism than people with strong general just-world beliefs. Moreover, we provided a mechanism to explain such an effect. We showed that perceived deservingness mediated the effect of general just-world beliefs on aggression following ostracism.

Our first three studies provided consistent support to our prediction that general just-world beliefs carry implications for the effect of ostracism on aggression. However, the experimental conditions (i.e. inclusion or ostracism) in previous studies differ in both social relationship status and mood valence. It was desirable to replicate our findings by examining whether general just-world beliefs moderated the effect of ostracism on aggression, when compared with a negative non-social experience. Moreover, it was desirable to conceptually replicate our mediation model by measuring individual differences in general just-world beliefs and assessing participants' attributions for their experiences, as corroborating evidence of perceived deservingness. Study 4 was conducted to address these issues[4].

Study 4

Study 4 aimed to replicate and extend the above studies by adopting a negative control condition. As misfortune experience is a popular negative control experience in ostracism research (e.g., Twenge et al., 2001; Baumeister, DeWall, Ciarocco, & Twenge, 2005), we examined the role of general just-world beliefs on the effect of ostracism on aggression with that of a misfortune control experience. Participants first

completed a measure of general just-world beliefs (Dalbert, 1999). Next, ostracism were induced though imagination (Filipkowski & Smyth, 2012; Poon, Chen, & DeWall, 2013). Participants imagined that they experienced ostracism or misfortunes in a workplace, and they were asked to make attributions for their experience. Finally, participants were given an opportunity to aggress against a stranger.

Participants and design. Ninety-seven individuals in the United States completed this study in exchange for a payment of US$0.3. Participants were recruited through Amazon's Mechanical Turk, a website that can recruit representative samples (Buhrmester, Kwang, & Gosling, 2011). The participants were randomly assigned to either the ostracism or misfortune condition. One outlier was detected in the attribution measure. This participant was removed from the analyses; thus our final sample consisted of ninety-six participants (37 men; mean age= 31.41; $SD=$ 12.07). Keeping this participant in the analyses did not alter the results.

Procedures and materials. Participants were told that the study consisted of two unrelated parts. In the first part, participants first completed the six-item general just-world beliefs questionnaire (Dalbert, 1999; 1= *strongly disagree* to 6= *strongly agree*). The scores were averaged to index general just-world beliefs (α= .80).

Participants were then exposed to an ostracism manipulation, which was elicited through imagination (Filipkowski & Smyth, 2012; Poon et al., 2013). Participants were asked to imagine that they were a new employee of a company. Through random assignment, participants in the ostracism condition imagined that they were ostracized by colleagues; while participants in the misfortune condition were asked to imagine that they frequently experienced accidental physical injuries. Participants then indicated how they felt during the imagination: "I feel socially excluded", "I feel rejected", "The experience is negative", and "The experience is

aversive" (1= *not at all* to 5= *extremely*). The scores of the first two items were averaged to assess the ostracism manipulation (*r*= .74, *p*< .001), and the scores of the latter two items were averaged to determine whether participants rated the ostracism and misfortune experiences as equally negative (*r*= .44, *p*< .001). Participants also indicated the extent to which they agreed with the statement "I vividly imagine the experience" (1= *strongly disagree*; 7= *strongly agree*).

Next, participants were asked to make attributions for the experience they imagined. We included three items assessing the extent to which participants thought their imagined experience was due to internal or external factors (e.g. "is the cause of the experience something that reflects an aspect of yourself or an aspect of the situation?"; see McAuley, Duncan, & Russell, 1992; Russell, 1982). The scores were averaged to index participants' attributions, with higher scores indicated more internal attributions (1= *external attributions*; 9= *internal attributions*; α= .63).

In the second part, participants were given the opportunity to aggress against a stranger. Similar to Studies 2 and 3, participants were told that the lab had another study testing how physical simulation influences intellectual performance, which requires its participants to put their hands into painful cold water. Participants decided how long and how cold the person in the other study needed to put his or her hand in cold water. The temperature (ranged from 10°C to 0 °C) and duration level (ranged from 0 seconds to 50 seconds) was standardized and summed to create an aggression composite.

Finally, participants completed the four-item Perceived Awareness of the Research Hypothesis (PARH) scale (e.g. "I knew what the researchers were investigating in this research"; 1= *strongly disagree*, 7= *strongly agree*; Rubin, Paolini, & Crisp, 2010). Scores were averaged to check participants' perceived awareness of

research purposes (α= .85). Participants were also asked to write down the perceived

research purpose and suspicious thoughts (if any) during the study. A debriefing

followed.

Results and Discussion

Manipulation checks. As expected, participants in the ostracism condition

(M= 4.39; SD= .74) reported feeling more excluded/rejected than participants in the

misfortune condition (M= 2.89; SD= 1.13), $F(1, 94)$= 60.15, $p < .001$, η_p^2= .39.

Moreover, participants in the ostracism condition (M= 4.03; SD= .76) and participants

in the misfortune condition (M= 4.09; SD= .76) rated the two experiences as equally

negative, $F(1, 94)$= 0.14, p= .71, η_p^2= .001. Furthermore, participants in the ostracism

(M= 5.12; SD= 1.66) and misfortune condition (M= 4.63; SD= 1.61) reported similar

vividness of imagination, $F(1, 94)$= 2.14, p= .15, η_p^2= .02. Two one-sample t tests

revealed that participants in both condition could vividly imagine the experience, as

their scores were significantly higher than the item's mid-point (ts> 2.65, ps$<= .01$).

Thus, the manipulation was successful. Moreover, participants in the ostracism

condition (M= 3.58; SD= .89) had similar levels of general just-world beliefs to

participants in the misfortune condition (M= 3.54; SD= .99), $F(1, 94)$= .05, p= .82,

η_p^2= .001.

Attribution. Given that people with strong general just-world beliefs tend to

make internal attributions for their own negative experiences (Hafer & Correy, 1999),

we expected that positive relationships between general just-world beliefs and internal

attributions would be observed among participants in the ostracism and misfortune

condition. A hierarchical regression analysis with two steps was conducted (Aiken &

West, 1991) to examine whether general just-world beliefs interacted with ostracism

in predicting participants' attributions for the imagined experience. The ostracism

condition was coded as 1 (ostracism) and -1 (misfortune), and general just-world-belief scores were centered.

In Step 1, the two main effects were entered into the regression simultaneously to predict attribution. The results revealed a significant main effect of general just-world beliefs, $b= .38$, $se= .16$, $t(93)= 2.34$, $p= .02$. The main effect of ostracism was also significant, $b= -.35$, $se= .15$, $t(93)= -2.35$, $p= .02$.

In Step 2, the interaction term was entered into the regression analysis to predict aggression. The results revealed a significant main effect of general just-world beliefs, $b= .38$, $se= .16$, $t(92)= 2.35$, $p= .02$. The main effect of ostracism was also significant, $b= -.35$, $se = .15$, $t(92)= -2.34$, $p= .02$. However, no interaction effect emerged, $b= .06$, $se= .16$, $t(92)= 0.37$, $p= .71$, $\Delta R^2= 0.001$.

The results revealed participants in the ostracism condition made less internal attributions than participants in the misfortune condition. Moreover, participants with strong general just-world beliefs made more internal attributions for both ostracism and misfortune experience than participants with weak general just-world beliefs.

Aggression. We predicted that following ostracism, participants with weak general just-world beliefs would behave more aggressively than participants with strong general just-world beliefs. Another hierarchical regression analysis with two steps was conducted to examine whether general just-world beliefs interacted with ostracism in predicting aggressive behavior.

In Step 1, the two main effects were entered into the regression analysis simultaneously to predict aggression. The results revealed a significant main effect of ostracism, $b= .38$, $se= .16$, $t(93)= 2.37$, $p= .02$. The main effect of general just-world beliefs was not statistically significant, $b= -.24$, $se= .17$, $t(93)= -1.41$, $p= .16$.

In Step 2, the interaction term was entered into the regression analysis to

predict aggression. The results revealed a significant main effect of ostracism, $b= .38$, $se= .16$, $t(92)= 2.43$, $p< .02$. The main effect of general just-world beliefs was not statistically significant, $b= -.27$, $se= .17$, $t(92)= -1.59$, $p= .12$. More importantly, the predicted two-way interaction emerged, $b= -.39$, $se= .17$, $t(92)= -2.29$, $p < .03$, $\Delta R^2= 0.05$ (Figure 4).

Among participants with weak general just-world beliefs (1 SD below the mean), participants in the ostracism condition behaved more aggressively than participants in the misfortune condition, $b= .74$, $se = .22$, $t(92)= 3.33$, $p= .001$. Among participants with strong general just-world beliefs (1 SD above the mean), aggression did not differ across the ostracism/misfortune condition, $b= .02$, $se= .22$, $t(92)= .09$, $p= .93$. In addition, among participants in the ostracism condition, general just-world beliefs were negatively associated with aggression, $b= -.65$, $se= .25$, $t(92)= -2.65$, $p< .01$. This association was not observed among participants in the misfortune condition, $b= .12$, $se= .23$, $t(92)= .51$, $p= .61$.

Mediation analysis. We predicted that attribution would mediate the relationship between general just-world beliefs and aggression following ostracism. Because we did not have theory-driven predictions about the relationship between misfortune experience, attribution and aggression, we tested mediation in the ostracism condition only. A series of regression analyses were conducted. In the first analysis, general just-world beliefs were negatively correlated with aggression following ostracism (standardized $\beta= -.35$, $p= .01$). In the second analysis, general just world beliefs were positively correlated with internal attribution for ostracism experience (standardized $\beta= .29$, $p< .05$). In the third analysis, the correlation between general just-world beliefs on aggression following ostracism became statistically insignificant (standardized $\beta= -.24$, $p= .07$) when internal attribution was

simultaneously included in the regression model. Moreover, internal attribution still uniquely predicted aggression following ostracism (standardized β= -.37, p< .01) after controlling for general just-world beliefs.

Furthermore, a bootstrapping analysis with 5,000 iterations was conducted (Preacher & Hayes, 2004) to examine whether the indirect effect was statistically significant. The results revealed an indirect effect, with a point estimate of -.20. The 95% confidence interval for the indirect path coefficient through internal attributions of ostracism experience excluded 0 (-.51 to -.01), suggesting a significant indirect effect (Figure 5)[5].

Demand characteristics. Participants in the ostracism condition (M= 3.20; SD = 1.31) had similar awareness of research hypotheses with participants in the misfortune condition (M= 3.05; SD = 1.54), $F(1, 94)$= .25, p= .62, η_p^2= .003. Two one sample t tests revealed that participants in both conditions disagreed that they were aware of the research hypotheses as their scores were significantly lower than the mid-point of the scale (ts> 4.17, ps< .001). Moreover, no measure in the study was significantly correlated with PARH scores (all ps> .05). Therefore, there was no evidence that our results could be explained by the influence of demand characteristics.

General Discussion

Ostracism is an aversive interpersonal experience that elicits intense painful feelings (e.g., Eisenberger, Lieberman, & Williams, 2003). Ostracized people sometimes have higher aggressive urges. The literature has speculated and demonstrated that some motivational and situational factors may moderate the effect of ostracism on aggression (see Leary et al., 2006; Williams, 2007, 2009 for reviews). For example, ostracized people may behave aggressively to restore their feelings of

control (Warburton et al. 2006). However, relatively less research attention has been devoted to examine the role of beliefs on the effect of ostracism on aggression. Given that beliefs can significantly influence one's behaviors (e.g. Ajzen, 1991; Fishbein & Ajzen, 1975), it is reasonable to expect that people's belief systems may influence their aggressive responses following ostracism.

Building upon past correlational findings that general just-world beliefs help to cope with stress (e.g. Tomaka & Blascovich, 1994; Hafer, 1999) and inhabit antisocial urges (e.g., Hafer, 2000; Nesbit et al., 2012), we proposed that strong endorsement of general just-world beliefs would weaken the relationship between ostracism and aggression. Consistent with this prediction and prior correlational findings, we found that individuals with strong general just-world beliefs (either measured or primed) behaved less aggressively following ostracism than individuals with weak general just-world beliefs. In contrast, general just-world beliefs had no statistically reliable influence on aggression among participants in the inclusion or control (misfortune) condition. To conclude, these multi-method convergent findings suggest that general just-world beliefs, either measured or primed, play a critical role in determining whether or not people would behave aggressively following ostracism

We also examined a mechanism to explain why ostracized people with weak general just-world beliefs behave more aggressively than ostracized people with strong general just-world beliefs. People with strong general just-world beliefs believe that people live in a world where people deserve what they get and get what they deserve (Lerner, 1980; Lerner & Miller, 1978; Lerner & Simmons, 1966). Correspondingly, people with strong general just-world beliefs tend to believe that sufferers deserve their experiences (see Dalbert, 2009; Hafer & Bègue, 2005 for reviews). Thus, we proposed that people with strong just-world beliefs would be more

likely to perceive that they deserve their ostracism experience and, so, behave less aggressively. In contrast, people with weak general just-world beliefs would be more likely to perceive that they do not deserve the ostracism experience and, so, behave more aggressively. As expected, we found that perceived deservingness of the ostracism experience mediated the effect of general just-world beliefs on aggressive behavior following ostracism (Study 3). Moreover, we found that attribution (which served as corroborating evidence of perceived deservingness) also mediated the relationship between general just-world beliefs and aggression following ostracism (Study 4).

We ruled out an alternative explanation for our observed results in Study 3. We found that affect did not mediate the effect of general just-world beliefs on aggression following ostracism. Perceived deservingness of ostracism still accounted for the effect of general just-world beliefs on aggression following ostracism after controlling for the effect of affect. This finding is consistent with prior findings that affect usually does not account for the effect of ostracism on aggression (e.g. Buckley, Winkel, & Leary, 2004; Twenge et al. 2001; see also Blackhart, Nelson, Knowles, & Baumeister, 2009; Gerber & Wheeler, 2009 for meta-analyses).

The present findings complement other recent findings by offering additional explanations to understand why some people would behave aggressively following ostracism. For example, our current findings may explain why people with high destiny beliefs that relationships are unchangeable would behave aggressively following ostracism (Chen et al., 2012). People with strong general just-world beliefs focus more on long-term goals and investments (Hafer, 2000) and demonstrate higher interpersonal trust (Zuckerman & Gerbasi, 1977). Individuals who believe that damaged relationships cannot be improved even through effort may imply that they

do not believe the world is just. Therefore, such people may behave aggressively following ostracism.

Moreover, the present findings may also explain why people who experienced unexpected ostracism would behave more aggressively than people who experienced expected ostracism (Wesselmann et al., 2010). In this study, before the ostracism manipulation, participants had either positive or negative interactions with the sources of ostracism. The researchers found that ostracized participants who had prior positive interactions (i.e., ostracism was unexpected) would deliver more hot sauce to a stranger who disliked spicy food than ostracized participants who had prior negative interactions (i.e., ostracism was expected). The researchers suggested that predictive control over an interaction weakened the relationship between (expected) ostracism and aggression. Our findings may further suggest that the prior positive interactions with ostracizers may lead ostracized people to believe that the ostracism experience is unjust and that they do not deserve the ostracism experience; thus, they behave aggressively. In contrast, the prior negative interactions with ostracizers may lead ostracized people to believe that the ostracism is just and that they deserve the ostracism experience; thus, they do not behave aggressively.

The present findings also shed light on the mixed evidence as to whether general just-world beliefs can buffer antisocial urges. In particular, some studies have found that general just-world beliefs are negatively correlated with antisocial responses, such as delinquency (Hafer, 2000) and aggression (Nesbit et al., 2012). Moreover, people with high general just-world beliefs are better able to control their anger upon provocation (Dalbert, 2002). However, some researchers have suggested that personal (rather than general) just-world beliefs were negatively associated with anger and hostility (Bègue & Muller, 2006; Dalbert & Filke, 2007). In the present

research, we found that general just-world beliefs could weaken displaced aggression against strangers following ostracism, but they were unrelated to displaced aggression following social inclusion or negative non-social misfortune experience. These findings suggest that general just-world beliefs may weaken aggressive urges in interpersonal conflicts, but they may be unrelated to aggressive urges in non-provoking situations.

More broadly, general just-world beliefs may carry implications for understanding various responses to ostracism. In particular, some ostracized people would behave prosocially and helpfully toward potential sources of affiliations (Maner et al., 2007). One of the underlying assumptions of this prosocial motive is the belief that prosocial effort can earn social acceptance. As noted above, people with strong general just-world beliefs are willing to invest in the future (Hafer, 2000). Thus, such people are more willing to help and trust others in general (Zuckerman, 1975; Zuckerman & Gerbasi, 1977). In the face of ostracism, people with strong just-world beliefs should be willing to behave prosocially. Conversely, people with weak just-world beliefs may not believe that prosocial effort can lead to social acceptance, thus they may not be motivated to behave prosocially following ostracism.

Furthermore, general just-world beliefs may have other positive implications with respect to coping with ostracism. Research has identified the adaptive functions of just-world beliefs on the well-being of victims in stressful situations (e.g., Tomaka & Blascovich, 1994). Ostracism can be disastrous, leading to an assortment of maladaptive behaviors such as irrational risk taking, selfish behavior, dishonest behavior, self-regulation failure, and self-defeating behavior (Baumeister, DeWall, Ciarocco, & Twenge, 2005; Poon et al., 2013; Twenge, Catanese, & Baumeister, 2002). The present findings indicate that people with weak general just-world beliefs

may be more likely to develop such maladaptive behaviors than people with strong general just-world beliefs. Future research may test these possibilities.

Limitations and Future Directions

The present research provides converging support for the hypothesis that people with weak general just-world beliefs are more prone to aggressive responses following ostracism than people with strong general just-world beliefs because of their perceived deservingness (or attribution) of ostracism experience. However, there are several limitations, which warrant further research attention.

First, the present research examined a seemingly adaptive function of general just-world beliefs in coping with ostracism as the beliefs weakened the relationship between ostracism and aggressive behavior. However, would the belief that one deserves the ostracism experience have negative consequences and implications? In some cases, ostracism-related experiences can lead to social withdrawal (Molden, Lucas, Gardner, Dean, & Knowles, 2009), negative perceptions of others (DeWall et al., 2009), depression (see Allen & Badcock, 2003), and even suicidal ideations (see Van Orden, et al. 2010). Would people with strong general just-world beliefs be more prone to these negative effects because of their beliefs that they deserve the ostracism experience? Future research is needed to determine when and why general just-world beliefs are adaptive or maladaptive in coping with ostracism. We believe such investigations could help shed light on the multiple factors at play in coping with ostracism.

Second, ostracism varies in severity, certainty, and motive in daily life (Chen, Law, & Williams, 2010). The present research manipulated the presence or absence of ostracism, and it is unclear whether people with weak general just-world beliefs would behave aggressively following milder forms of ostracism (e.g., information

ostracism; Jones, Carter-Sowell, Kelly, & Williams, 2009, and linguistic ostracism;

Dotan-Eliaz, Sommer, & Rubin, 2009). Future studies may fill these research gaps. In

addition, many forms of ostracism exist (Nezlek, Wesselmann, Wheeler, & Williams,

2012), such as role-prescribed ostracism (e.g., the form that waiters experience at

work when they are serving customers), punitive ostracism (e.g., the form that

criminals experience because they have done something illegal), and oblivious

ostracism (e.g., the form that a person experiences when others do not recognize or

attend to him or her). Future research is needed to examine whether different forms of

ostracism would also moderate the relationship between general just-world beliefs and

aggression following ostracism.

Third, our experiment did not offer participants a prospect of reconnecting

with others. Past research has demonstrated that social acceptance experienced by

ostracized people reduces their self-reported distress (Tang & Richardson, 2013) and

brain activations (e.g., in the ventral anterior cingulate cortex) involved in the

experience of physical pain and ostracism (Onoda et al., 2009). Moreover, a small

experience or expectation of positive social interactions would reduce one's

aggressive urges after ostracism (DeWall et al., 2010; Twenge et al., 2007). Future

research is needed to examine how restoring feelings of belongingness through

prospective or actual social inclusion could reduce the aggressive urges of ostracized

people with weak general just-world beliefs.

Fourth, we found that perceived deservingness (or attribution) of ostracism

experience mediated the relationship between general just-world beliefs and

aggression following ostracism. It is likely that other psychological mechanisms are

operating to influence this relationship. In particular, future studies can examine

whether the effects of general just-world beliefs on aggression following ostracism is

mediated by personal just-world beliefs. We also speculate that one's sense of control may play a role in the relationship. Past research has shown that perceived loss of control is related to aggression after ostracism (Warburton et al., 2006). People with weak just-world beliefs may feel that they have less control over situations (see Furnham & Procter, 1989). Therefore, it is possible that relative to people with strong just-world beliefs, the feelings of control of people with weak just-world beliefs may be thwarted more easily and severely after ostracism, thus making such people more prone to aggressive behavior.

Fifth, we did not examine the role of culture in influencing the observed results. The literature has shown that culture and life circumstances may influence the psychological function of general just-world beliefs. In particular, Chinese may tend to endorse general just-world beliefs more than their western counterparts (Wu et al., 2011). In studies 1 to 3, our participants were undergraduate students from Hong Kong. Given that the psychological function and meaning of general just-world beliefs may depend on culture and life circumstances, it may be fruitful to directly examine the impacts of culture and life circumstances on the relationship between general just-world beliefs, ostracism, and aggression.

Finally, we did not examine the potential impact of targets of aggression on the interactive effect of general just-world beliefs and ostracism on aggression. The current studies measured displaced aggression toward a stranger who was not involved in the previous social interaction, and found that general just world beliefs decrease people's displaced aggressive urges. However, the literature has also shown that general just-world beliefs may promote vengeance and revenge against transgressors. For example, Kaiser, Vick, and Major (2004) found that American participants with strong general just-world beliefs had higher desires for revenge

against terrorists of the 9/11 attacks. Future research may examine whether people with high general just-world beliefs are more aggressive against sources of ostracism to restore the general justness of the world.

Conclusion

The present research aimed to further understand when and why ostracized people behave aggressively. The current findings suggest that general just-world beliefs weaken the relationship between ostracism and aggression. After ostracism, people with weak general just-world beliefs behave more aggressively, while people with strong general just-world beliefs do not. A better understanding of the role of general just-world beliefs in one's behavior following ostracism would be helpful in uncovering the mysterious complexity of responses to ostracism.

References

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions.* Newbury Park, CA: Sage.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50,*179-211.

Allen, N. B., & Badcock, P. B. T. (2003). The social risk hypothesis of depressed mood: Evolutionary, psychosocial, and neurobiological perspectives. *Psychological Bulletin, 129*, 887-913.

Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology, 53*, 27-51.

Aydin, N., Fischer, P., & Frey, D. (2010). Turning to god in the face of ostracism: Effects of social exclusion on religiousness. *Personality and Social Psychology Bulletin, 36*, 742-753.

Baumeister, R. F., DeWall, C. N., Ciarocco, N. J., & Twenge, J. M. (2005). Social exclusion impairs self-regulation. *Journal of Personality and Social Psychology, 88*, 589-604.

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 497-529.

Bègue, L., & Muller, D. (2006). Belief in a just world as moderator of hostile attributional bias. *British Journal of Social Psychology, 45*, 117-126.

Blackhart, G. C., Nelson, B. C., Knowles, M. L., & Baumeister, R. F. (2009). Rejection elicits emotional reactions but neither causes immediate distress nor lowers self-esteem: A meta-analytic review of 192 studies on social exclusion. *Personality and Social Psychology Review, 13*, 269-309.

Buckley, K. E., Winkel, R. E., & Leary, M. R. (2004). Reactions to acceptance and

    rejection: Effects of level and sequence of relational evaluation. *Journal of*

    Experimental Social Psychology, 40, 14-28.

Bushman, B. J., & Huesmann, L. R. (2010). Aggression. In S. T. Fiske, D. T. Gilbert,

    & G. Lindzey (Eds.), *Handbook of social psychology* (5th ed., pp. 833-863).

    New York: John Wiley & Sons.

Chen, Z., DeWall, C. N., Poon, K. T., & Chen, E. W. (2012). When destiny hurts:

    Implicit theory of relationships moderate aggressive responses to ostracism.

    Journal of Experimental Social Psychology, 48, 1029-1036.

Chen, Z., Law, A. T., & Williams, K. D. (2010). The Uncertainty surrounding

    ostracism: Threat amplifier or protector? In R. M. Arkin, K. C. Oleson, & P. J.

    Carroll (Eds.), *Handbook of the uncertain self* (pp. 291-302). Mahwah, NJ:

    Psychology press.

Chory-Assad, R. (2002). Classroom justice: Perceptions of fairness as a predictor of

    student motivation, learning, and aggression. *Communication Quarterly, 50*,

    58-77.

Chory-Assad, R., & Paulsel, M. L. (2004). Classroom justice: Student aggression and

    resistance as reactions to perceived unfairness. *Communication Education, 53*,

    253-273.

Chow, R. M., Tiedens, L. Z., & Govan, C. L. (2008). Excluded emotions: The role of

    anger in antisocial responses to ostracism. *Journal of Experimental Social*

    Psychology, 44, 896- 903.

Dalbert, C. (1999). The world is more just for me than generally: About the personal

    belief in a just world scales validity. *Social Justice Research*, *12*, 79-98.

Dalbert, C. (2002). Beliefs in a just world as a buffer against anger. *Social Justice Research, 15*, 123-145.

Dalbert, C. (2009). Belief in a just world. In M. R. Leary & R. H. Hoyle (Eds.), *Handbook of Individual Differences in Social Behavior* (pp. 288-297). New York: Guilford Publications.

Dalbert, C., & Filke, E. (2007). Belief in a personal just world, justice judgments, and their functions for prisoners. *Criminal Justice and Behavior, 34*, 1516-1527.

DeWall, C. N., Twenge, J. M., Bushman, B. J., Im, C., & Williams, K. D. (2010). Acceptance by one differs from acceptance by none: Applying social impact theory to the rejection-aggression link. *Social Psychological and Personality Science, 1*, 168-174.

DeWall, C. N., Twenge, J. M., Gitter, S. A., & Baumeister, R. F. (2009). It's the thought that counts: The role of hostile cognitions in shaping aggression following rejection. *Journal of Personality and Social Psychology, 96*, 45-59.

Dotan-Eliaz, O., Sommer, K. L., & Rubin, Y. S. (2009). Multilingual groups: Effects of linguistic ostracism on felt rejection and anger, coworker attraction, perceived team potency, and creative performance. *Basic and Applied Social Psychology, 31*, 363-375.

Dweck, C. S. (2008). Can personality be changed? The role of beliefs in personality and change. *Current Directions in Psychological Science, 17,* 391- 394.

Eisenberger, N. I., Lieberman, M. D., & Williams, K. D. (2003). Does rejection hurt? An fMRI study of social exclusion. *Science*, *302*, 290-292.

Filipkowski, K. B., & Smyth, J. M. (2012). Plugged in but not connected: Individuals' views of and responses to online and in-person ostracism. *Computers in Human Behavior, 28*, 1241-1253.

Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention, and Behavior: An*

    Introduction to Theory and Research. Reading, MA: Addison-Wesley.

Furnham, A. (2003). Belief in a just world: Research progress over the past

    decade. *Personality and Individual Differences,34*, 795-817.

Furnham, A., & Procter, E. (1989). Belief in a just world: Review and critique of the

    individual difference literature. *British Journal of Social Psychology, 28*,

    365-384.

Gerber, J., & Wheeler, L. (2009). On being rejected: A meta-analysis of experimental

    research on rejection. *Perspectives on Psychological Science, 4*, 468-488.

Hafer, C. L. (2000). Investment in long-term goals and commitment to just means

    drive the need to believe in a just world. *Personality and Social Psychology*

    Bulletin, 26, 1059-1073.

Hafer, C. L., & Bègue, L. (2005). Experimental research on just-world theory:

    Problems, developments, and future challenges. *Psychological Bulletin*, *131*,

    128-167.

Hafer, C. L., & Correy, B. L. (1999). Mediators of the relation between beliefs in a

    just world and emotional responses to negative outcomes. *Social Justice*

    Research, 12, 89-204.

Hafer, C. L., & Olson, J. M. (1989). Beliefs in a just world and reactions to personal

    deprivation. *Journal of Personality, 57*, 799-823.

Heuer, L., Blumenthal, E., Douglas, A., & Weinblatt, T. (1999). A deservingness

    approach to respect as a relationally based fairness judgment. *Personality and*

    Social Psychology Bulletin, 25, 1279-1292.

Jones, E. E., Carter-Sowell, A., Kelly, J. R., & Williams, K. D. (2009). 'I'm out of the

    loop': Ostracism through information exclusion. *Group Processes &*

    Intergroup Relations, 12, 157-174.

Kaiser, C. R., Vick, S. B., & Major, B. (2004). A prospective investigation of the

    relationship between just-world beliefs and the desire for revenge after

    September 11, 2001. *Psychological Science, 15*, 503-506.

Kay, A. C., & Jost, J. T. (2003). Complementary justice: Effects of "poor but happy"

    and "poor but honest" stereotype exemplars on system justification and

    implicit activation of the justice motive. *Journal of Personality and Social*

    Psychology, 85, 823-837.

Leary, M. R., Kowalski, R. M., Smith, L., & Phillips, S. (2003). Teasing, rejection,

    and violence: Case studies of the school shootings. *Aggressive Behavior, 29,*

    202-214.

Leary, M. R., Twenge, J. M., & Quinlivan, E. (2006). Interpersonal rejection as a

    determinant of anger and aggression. *Personality and Social Psychology*

    Review, 10, 111-132.

Lerner, M. J. (1980). *The belief in a just world: A fundamental delusion.* New York:

    Plenum Press.

Lerner, M. J., & Miller, D. T. (1978). Just world research and the attribution process:

    Looking back and ahead. *Psychological Bulletin, 85*, 1030-1051.

Lerner, M. J., & Simmons, C. H. (1966). The observer's reaction to the "innocent

    victim": Compassion or rejection? *Journal of Personality and Social*

    Psychology, 4, 203-210.

Levenson, H. (1981). Differentiating among internality, powerful others, and chance. In H. M. Lefcourt (Ed.), *Research with the locus of control construct* (Vol. 1, pp. 15-63). New York: Academic Press.

Lind, E. A., & Tyler, T. R. (1988). *The social psychology of procedural justice.* New York: Plenum Press.

Laurin, K., Fitzsimons, G. M., & Kay, A. C. (2011). Social disadvantage and the self-regulatory function of justice beliefs. *Journal of Personality and Social Psychology, 100*, 149-171.

Maner, J. K., DeWall, C. N., Baumeister, R. F., & Schaller, M. (2007). Does social exclusion motivate interpersonal reconnection? Resolving the "porcupine problem." *Journal of Personality and Social Psychology, 92*, 42-55.

McParland, J. L., & Knussen, C. (2010). Just world beliefs moderate the relationship of pain intensity and disability with psychological distress in chronic pain support group members. *European Journal of Pain, 14*, 71-76.

Molden, D. C., Lucas, G. M., Gardner, W. L., Dean, K., & Knowles, M. L. (2009). Motivations for prevention or promotion following social exclusion: Being rejected versus being ignored. *Journal of Personality and Social Psychology, 96*, 415-431.

McAuley, E., Duncan, T. E., & Russell, D. W. (1992). Measuring causal attributions: The revised causal dimension scale (CDSII). *Personality and Social Psychology Bulletin, 18*, 566-573.

Nesbit, S. M., Blankenship, K. L., & Murray, R. A. (2012). The influence of just-world beliefs on driving anger and aggressive driving intentions. *Aggressive Behavior, 38*, 389-402.

Nezlek, J. B., Wesselmann, E. D., Wheeler, L., & Williams, K. D. (2012). Ostracism

    in everyday life. *Group Dynamics: Theory, Research, and Practice, 16*,

    91-104.

Onoda, K., Okamoto, Y., Nakashima, K., Nittono, H., Ura, M., & Yamawaki, S.

    (2009). Decreased ventral anterior cingulate cortex activity is associated with

    reduced social pain during emotional support. *Social Neuroscience, 4*,

    443-454.

Pickett, C. L., Gardner, W. L., & Knowles, M. (2004). Getting a cue: The need to

    belong and enhanced sensitivity to social cues. *Personality and Social

    Psychology Bulletin, 30*, 1095-1107.

Poon, K. T., Chen, Z., & DeWall, C. N. (2013). Feeling entitled to more: Ostracism

    increases dishonest behavior. *Personality and Social Psychology Bulletin, 39,*

    1227-1239.

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating

    indirect effects in simple mediation models. *Behavior Research Methods,

    Instruments, & Computers, 36,* 717-731.

Rubin, M., Paolini, S., & Crisp, R. J. (2010). A processing fluency explanation of bias

    against migrants. *Journal of Experimental Social Psychology, 46*, 21-28.

Russell, D. (1982). The causal dimension scale: A measure of how individuals

    perceive causes. *Journal of Personality and Social Psychology, 42*, 1137-1145.

Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from

    neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation

    of the life orientation test. *Journal of Personality and Social Psychology, 67*,

    1063-1078.

Solomon (1990). *A passion for justice: Emotions and the origins of the social contract.* Reading, MA: Addison-Wesley.

Sutton, R. M., & Winnard, E. J. (2007). Looking ahead through lenses of justice: The relevance of just-world beliefs to intentions and confidence in the future. *British Journal of Social Psychology, 46*, 649-666.

Tang, H. H. Y., & Richardson, R. (2013). Reversing the negative psychological sequelae of exclusion: Inclusion is ameliorative but not protective against the aversive consequences of exclusion. *Emotion, 13*, 139-150.

Tomaka, J., & Blascovich, J. (1994). Effects of justice beliefs on cognitive appraisal of and subjective physiological, and behavioral responses to potential stress. *Journal of Personality and Social Psychology, 67*, 732-740.

Twenge, J. M., Baumeister, R. F., Tice, D. M., & Stucke, T. S. (2001). If you can't join them, beat them: Effects of social exclusion on aggressive behavior. *Journal of Personality and Social Psychology, 81*, 1058–1069.

Twenge, J. M., Catanese, K. R., & Baumeister, R. F. (2002). Social exclusion causes self-defeating behavior. *Journal of Personality and Social Psychology, 83*, 606-615.

Twenge, J. M., Zhang, L., Catanese, K. R., Dolan-Pascoe, B., Lyche, L. R., & Baumeister, R. F. (2007). Replenishing connectedness: Reminders of social activity reduce aggression after social exclusion. *British Journal of Social Psychology, 46,* 205-224.

van Beest, I., & Williams, K. D. (2006). When inclusion costs and ostracism pays, ostracism still hurts. *Journal of Personality and Social Psychology, 91,* 918-928.

van Beest, I., Williams, K. D., & van Dijk, E. (2011). Cyberbomb: Effects of being ostracized from a death game. *Group Processes & Intergroup Relations, 14*, 581-596.

van Orden, K. A., Witte, T. K., Cukrowicz, K. C., Braithwaite, S. R., Selby, E. A., & Joiner, T. E., Jr. (2010). The interpersonal theory of suicide. *Psychological Review*, 117, 575-600.

Warburton, W. A., Williams, K. D., & Cairns, D. R. (2006). When ostracism leads to aggression: The moderating effects of control deprivation. *Journal of Experimental Social Psychology, 42*, 213-220.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063-1070.

Weatherby, G. A., Strachila, S., & McMahon, B. (2010). School shootings: The deadly result of teasing and ostracism? *Journal of Criminology and Criminal Justice Research & Education*, *2,* 1-15.

Wesselmann, E. D., Butler, F. A., Williams, K. D., & Pickett, C. L. (2010). Adding injury to insult: Unexpected rejection leads to more aggressive responses. *Aggressive Behavior, 35*, 1-6.

Williams, K. D. (2007). Ostracism. *Annual Review of Psychology, 58*, 425-452.

Williams, K. D. (2009). Ostracism: A temporal need-threat model. In M. Zanna (Ed.), *Advances in Experimental Social Psychology* (Vol. 41, pp. 279-314). New York: Academic Press.

Williams, K. D., Cheung, C. K. T., & Choi, W. (2000). Cyberostracism: Effects of being ignored over the internet. *Journal of Personality and Social Psychology, 79*, 748-762.

Williams, K. D., & Jarvis, B. (2006). Cyberball: A program for use in research on

interpersonal ostracism and acceptance. *Behavior Research Methods, 38*,

174-180.

Wu, M. S., Yan, X., Zhou, C., Chen, Y., Li, J., Zhu, Z., . . . Han, B. (2011). General

belief in a just world and resilience: Evidence from a collectivistic

culture. *European Journal of Personality, 25*, 431-442.

Zadro, L., Williams, K. D., & Richardson, R. (2004). How low can you go? Ostracism

by a computer is sufficient to lower self-reported levels of belonging, control,

self-esteem, and meaningful existence. *Journal of Experimental Social

Psychology, 40*, 560-567.

Zhang, J. X., & Schwarzer, R. (1995). Measuring optimistic self-beliefs: A Chinese

adaptation of the general self-efficacy scale. *Psychologia: An International

Journal of Psychology in the Orient, 38*, 174-181.

Zuckerman, M. (1975). Belief in a just world and altruistic behavior. *Journal of

Personality and Social Psychology, 31*, 972-976.

Zuckerman, M., & Gerbasi, K. C. (1977). Belief in a just world and trust. *Journal of

Research in Personality, 11*, 306-317.
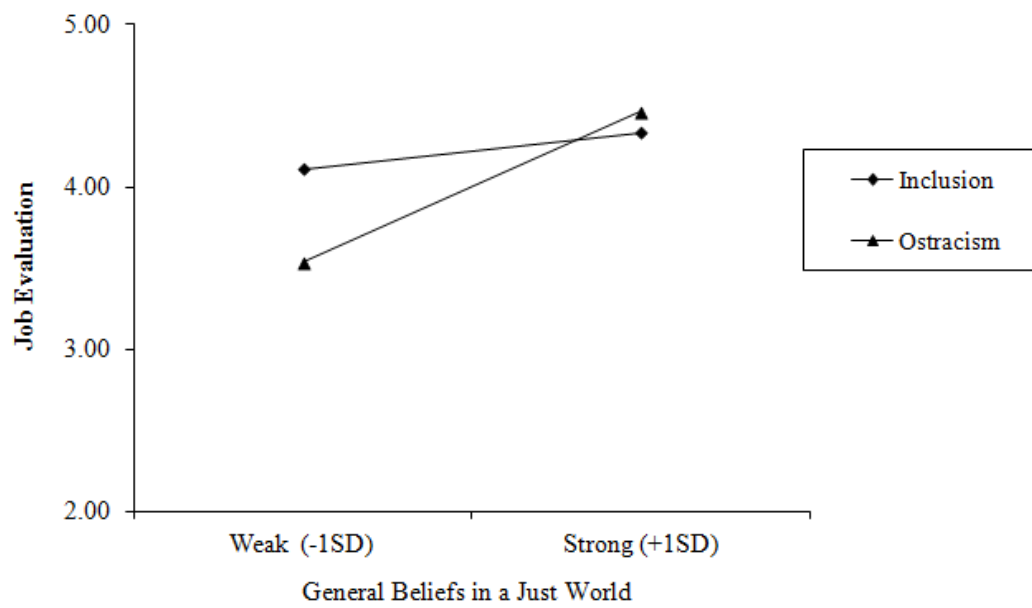
Figure Caption

Figure 1. Job evaluation as a function of ostracism condition and general beliefs in a just world (Study 1).
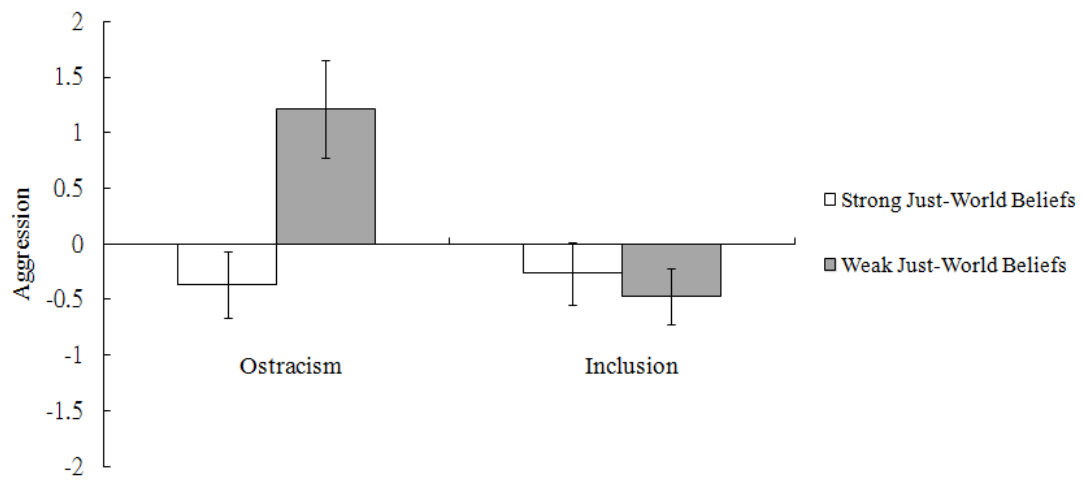
Figure 2. Aggression as a function of ostracism condition and general just-world beliefs (Study 2). Error bars represent +/- 1 standard error.

Figure 3. Perceived deservingness mediates the relationship between general just-world beliefs on aggressive behavior following ostracism (Study 3). Coefficients are standardized.

Figure 4. Aggression as a function of ostracism condition and general beliefs in a just world (Study 4).

Figure 5. Internal attribution mediates the relationship between general just-world beliefs on aggressive behavior following ostracism (Study 4). Coefficients are standardized.

Figure 1. Job evaluation as a function of ostracism condition and general beliefs in a just world (Study 1).

Figure 2. Aggression as a function of ostracism condition and general just-world beliefs (Study 2). Error bars represent +/- 1 standard error.
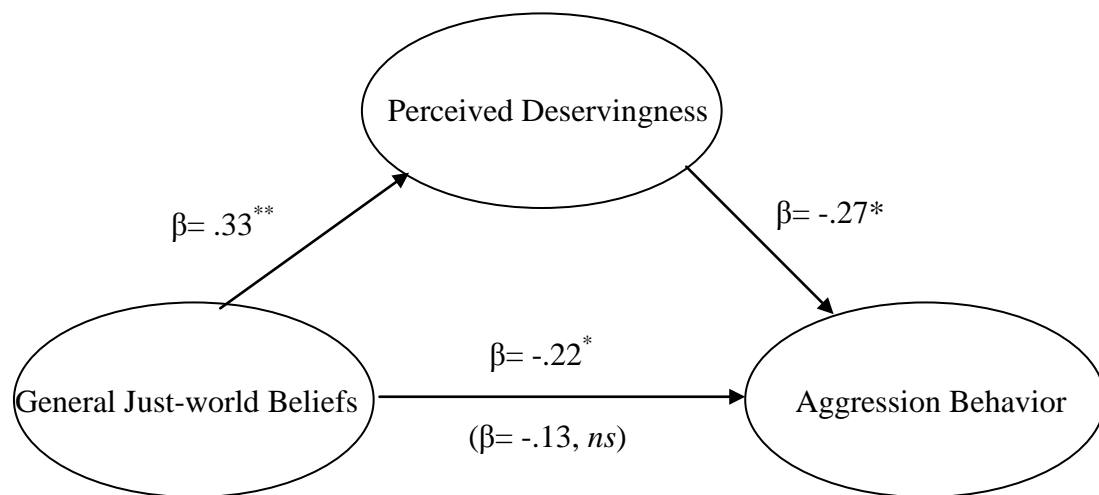
Figure 3. Perceived deservingness mediates the relationship between general

just-world beliefs on aggressive behavior following ostracism (Study 3). Coefficients

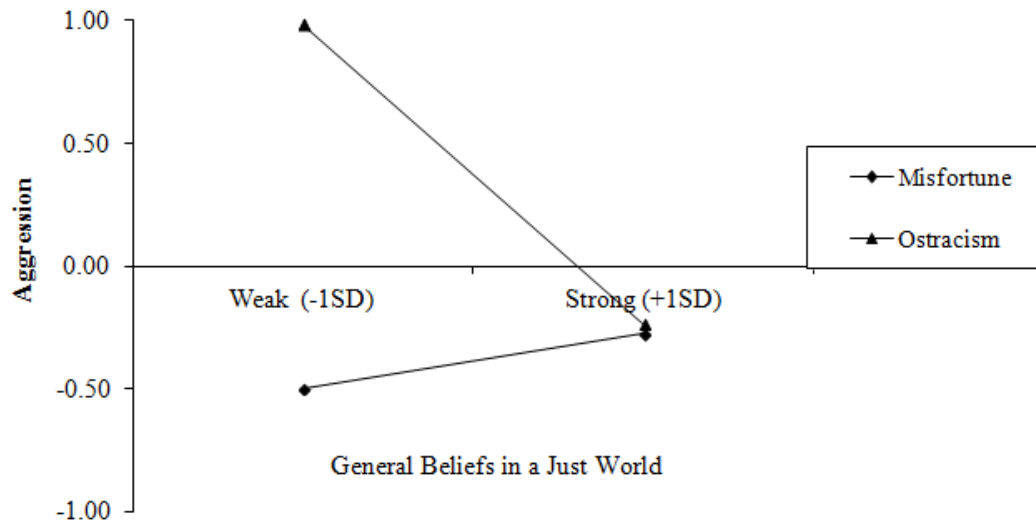are standardized.

**p< .01, *p< .05

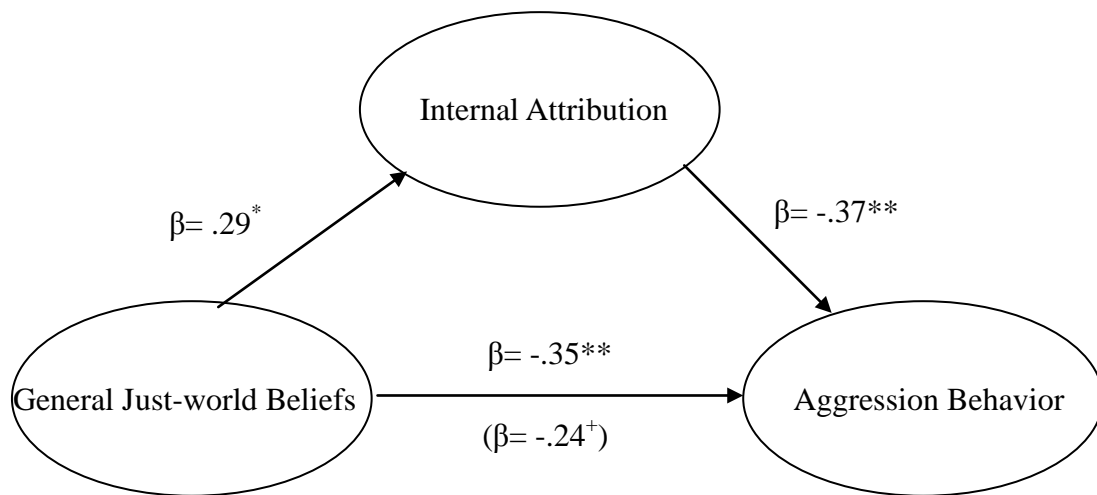Figure 4. Aggression as a function of ostracism condition and general beliefs in a just world (Study 4).

Figure 5. Internal attribution mediates the relationship between general just-world

beliefs on aggressive behavior following ostracism (Study 4). Coefficients are

standardized.

**p<= .01, *p< .05, +p< .10

Footnotes

1. Following the recommendation by Williams (2007), the terms "ostracism,"

    "social exclusion," "social rejection" are largely treated as synonyms and

    interchangeable in this article.

2. An independent sample of 56 undergraduates was recruited to examine the

    validity of the general just-world beliefs manipulation used in Studies 2 and 3.

    After reading an article arguing that the world was just or not, as in Studies 2 and

    3, participants completed several measures to access general just-world beliefs

    (e.g., "I think basically the world is a just place"; Dalbert, 1999), general

    self-efficacy (e.g., "I can manage to solve difficult problems if I try hard enough";

    Zhang & Schwarzer, 1995), locus of control (e.g., "My life is determined by my

    own actions"; Levenson, 1981), optimism (e.g., "I am always optimistic about

    my future"; Scheier, Carver, & Bridges, 1994), beliefs in norms of accountability

    (e.g., "I should be fully accountable for my future"), nothing-to-lose mindset

    (e.g., "I have nothing to lose if I act inappropriately"), and system

    justification/identification (e.g., "Most policies serve the greater good"; Kay &

    Jost, 2003). The results revealed that participants in the strong just-world beliefs

    condition had higher general just-world beliefs than participants in the weak

    just-world beliefs condition, $F(1, 54) = 11.97$, $p = .001$, $\eta_p^2 = .18$. However,

    participants in the two conditions reported similar levels of general self-efficacy,

    locus of control (internality, powerful others and chance), optimism, beliefs in

    norms of accountability, nothing-to-lose mindset, and system

    justification/identification, $Fs(1, 54) <= 2.01$, $ps >= .16$. Participants also

    completed a one-item measure, "The world we live in is just and fair". We

    obtained a similar result if we treated this item as a manipulation check.

Participants in the strong just-world beliefs condition had higher general

just-world beliefs than participants in the weak just-world beliefs condition, F (1,

54) = 16.893, $p <.001$, $\eta_p^2 = .24$. As this item was positively correlated with the

general just-world beliefs scale ($r= .55$, $p< .001$), it was served as a manipulation

check of our general just-world beliefs manipulation in Studies 2 and 3.

3. In Studies 2 and 3, a few participants expressed suspicions about whether the ball

tossing game was controlled by the computer. Past research has shown that

participants who were explicitly told that the ball tossing game was completely

controlled by computers had similar responses than those who were told that they

were playing with other individuals (see Zadro, Williams, & Richardson, 2004).

Therefore, we did not have strong reasons to remove these participants in the

analyses. It should be also noted that removing these participants did not

substantially alter the results.

4. We thank one anonymous reviewer for recommending Study 4.

5. We also conducted a bootstrapping analysis (with 5,000 iterations) to test the

same mediation in the misfortune condition. The results revealed an indirect

effect, with a point estimate of -.05. The 95% confidence interval for the indirect

path coefficient through internal attributions of misfortune experience did not

exclude 0 (-.29 to .04), suggesting that the mediation was not statistically

significant in the misfortune condition.