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The Effect Of Ostracism by Strangers on Romantic Relationship Evaluations

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THE EFFECT OF OSTRACISM BY STRANGERS ON ROMANTIC RELATIONSHIP EVALUATIONS

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ABSTRACT

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One behavioral consequence of ostracism is to seek and strengthen connections with others. The current research tests whether a brief episode of ostracism by strangers strengthens targeted individuals' perceptions of their romantic relationship and increases their desire to be closer to their partner. In Study 1a and Study 1b, participants were either included or ostracized by strangers in a Cyberball game, and then completed relationship evaluation measures. Interactions of ostracism and gender emerged, suggesting that as hypothesized, ostracized women tended to evaluate their relationships more positively than included women. However, men who were ostracized tended to evaluate their relationships less positively than those who were included. Study 2 followed similar procedure, and explored control and belonging need-threat and mood as potential mediators, as well as the value of these needs and endorsement of social goals (agentic vs. communal) that may account for this divergent effect of ostracism and gender on relationship evaluations. The Gender X Ostracism interaction was not replicated; however, mediation analyses revealed that threatened-control led ostracized women to perceive their relationship as closer and to desire

closeness, and negative mood led ostracized men to be less satisfied with their relationships.

INTRODUCTION

Romantic relationships are characterized by love, trust, care, closeness and interdependence, and are central to people's lives (Arriaga, 2013; Berscheid & Peplau, 2002; Berscheid, Snyder, & Omoto, 2004; Fletcher & Overall, 2010; Rusbult, Coolsen, Kirchner, & Clarke, 2006). Research generally indicates that romantic partners provide comfort and support (see Hazan & Shaver, 1987; Simpson & Rholes, 2010). Thus, it is not surprising that when faced with a hurtful experience such as ostracism, the salience of one's romantic partner buffers the negative effects (Karremans, Heslenfeld, van Dillen, & Van Lange, 2011). Whereas research has examined the effects of romantic relationships on the experience of ostracism, little is known about the effect of ostracism on individuals' evaluations of their romantic relationship and partner.

In a recent study that addressed how individuals respond to ostracism when their partner is one of the ostracizing sources, a measure of relationship and partner evaluation was included (Arriaga et al., 2014). Because half the participant sample included individuals who were either included or ostracized by two strangers, this subset of participants had relevance to the question of how ostracized individuals might change their partner and relationship evaluations. Although no effects were found on this variable, the salience of the romantic partner, who was waiting in the next room, might have mitigated against finding an effect on relationship evaluations. Further,

research has shown that ostracism can change perceptions of others (sources and naïve others; Predmore & Williams, 1983;Ren & Williams, 2014; Twenge, Baumeister, Tice, & Stucke, 2001), it seems plausible that ostracized individuals might also change their perception of their partners and of their relationship. Thus, the research in this thesis is designed to address this question.

Ostracism – being ignored and excluded – causes social pain and threatens four fundamental needs: belonging, self-esteem, control, and meaningful existence (Williams, 2009). A substantial amount of research provides evidence for the pervasive and powerful effects of ostracism (see Williams, 2007 for a review). Ostracism is significantly painful and a source of distress and negative emotions such as sadness and anger (Eisenberger, Lieberman, & Williams, 2003; Williams & Zadro, 2005). Being purposefully excluded from a group cuts off the connection between the self and others, thus threatening the fundamental need to belong. Ostracism also threatens one's sense of control over the situation: The ostracized individual is ignored by others, and thus lacks the ability to restore and recover the lines of communication or engagement. Additionally, because being ignored and excluded removes the communicative aspect of social interactions, the ostracized individual is left to ruminate on their plight and generate all possible reasons for the treatment. Many of these reasons include listing one's own faults and weaknesses, which will threaten one's self-esteem. Finally, because the essence of ostracism is invisibility, the ostracized individual is treated as having no functional place in the social environment. Their mere existence is treated as unnecessary, leaving the target to reflect on the true meaningfulness (or lack thereof) in their world (Williams, 2009).

Previous research has shown that following a brief episode of ostracism individuals will strive to improve their inclusionary status. They do this by becoming more socially susceptible to conformity (Williams, Cheung, & Choi, 2000), compliance (Carter-Sowell, Chen, & Williams, 2008), and obedience (Riva, Williams, Torstrick, & Montali, 2014), increasing their social value to the group (Williams & Sommer, 1997); paying closer attention to and improving their accuracy about social information (Pickett & Gardner, 2005; Sacco, Wirth, Hugenberg, Chen, & Williams, 2011), and desiring to join new (even extreme) groups and to form new social bonds (Santiago, Williams, & Hales, 2013; Maner, DeWall, Baumeister, & Schaller, 2007).

Whereas new social bonds can benefit the individual, an interaction with a stranger or a new acquaintance, as positive as it may be, compared to an interaction of a similar nature with someone with whom there is already an established positive relationship will not be as rewarding (Baumeister & Leary, 1995). Interactions with new acquaintances provide social contact that with time can develop into a relationship. However, to satisfy belonging needs relationships are desired. Relationships that are characterized by stability, mutual affective concern and continuity are essential to satisfy the need to belong (Baumeister & Leary, 1995). Romantic relationships, one type of ongoing, positive and significant interpersonal relationship can satisfy individuals' belonging needs, and should appeal to ostracized individuals who have had their belonging needs threatened by people outside of their relationship. Therefore, reminding people of their existing relationships would reduce the pain caused by ostracism or speed subsequent recovery.

A connection between one's existing relationships and ostracism by strangers has been examined. It has been shown that one's existing relationships affect the ostracism experience as well as the recovery from ostracism. For example, people who construe the self as interdependent recover from an ostracism episode faster than people who construe the self as independent (Ren, Wesselmann, & Williams, 2013), and more specifically, thinking about a close other while experiencing ostracism by strangers helps to buffer the negative effects of ostracism (Karremans, Heslenfeld, van Dillen, & Van Lange, 2011).

Thus, the salience of one's close relationships lessens the distress and speeds the recovery from an ostracism episode. However, how does ostracism affect one's perception of one's relationship? This is the question I pose and intend to examine in this thesis.

Based on theory and prior research, ostracism by strangers could have two diametrically opposing consequences on individuals' evaluation of their relationship and relationship partner. On the one hand, individuals may raise the estimation of their relationship and partner because thinking about a significant other is a source of reassurance (Bowlby, 1973, 1980, 1982; Brown and Han, 2012; Feeney, 2004; Karremans, Heslenfeld, van Dillen, & Van Lange, 2011; Kouzakova, Karremans, van Baaren, & van Knippenberg, 2010; Lakin, Arkin, & Chartrand, 2008; Predmore & Williams, 1983). This can be an adaptive response that is intended to restore belonging and maintain existing relationships. On the other hand, ostracism by strangers may lead individuals to lower their evaluations of their close relationships. Ostracized individuals may view others in general, including their romantic partners, more

negatively (Predmore & Williams, 1983; Ren & Williams, 2014; Twenge, Baumeister, Tice & Stucke, 2001). They may wish to distance themselves from others, and to increase their independence and avoid further rejections. Whereas this too can be an adaptive response that is intended to restore feelings of control, it may take a toll on the relationship.

Differences in reactions to ostracism might also be the result of gender differences. Williams and Sommer (1997) women were more likely to contribute more to a collective effort found that in reaction to ostracism, whereas men were not. Furthermore, women tend to attribute the ostracism to their own poor character more than men, whereas men were more likely than women to show signs of denial and face-saving and to attribute the ostracism to exhibiting lack of interest in the game.

I will first review the theory and research that predict enhanced relationship perceptions following ostracism.

Why Ostracism Should Enhance Perceptions of One's Existing Relationship

Ostracized people, whose belonging needs were threatened, are motivated to reconnect with others, and to perceive them as physically closer to them, to the extent that those others are perceived as realistic sources of social connection (Maner et al., 2007; Pitts, Wilson, & Hugenberg, 2014). People in romantic relationships are likely to perceive their partners as a natural source of social connection. A romantic partner, as the term suggests, is a significant other in one's life; and the relationship between romantic partners is characterized by high levels of trust, care, and interdependence (Arriaga, 2013; Fletcher & Overall, 2010). According to attachment theory (Bowlby, 1973, 1980, 1982; Hazan & Shaver, 1987), the human attachment system has a distress

regulatory function. When experiencing distress, infants are prompt to seek proximity to the main caregiver with whom they formed an attachment bond. Often times, romantic partners serve as main attachment figures and thus replace the role of the main caregivers from childhood. The relationship with an attachment figure provides a secure base from which people can obtain confidence while exploring social situations outside of the romantic relationship, as well as a safe haven – a place that they can turn to in times of need (Bowlby, 1973, 1980, 1982; Feeney, 2004). It then stands to reason that when faced with the threats presented by ostracism, people are likely to seek proximity to their romantic partners, as well as to enhance their view of their romantic partners as a relative source of comfort and inclusion; that is they may become more dependent on their relationships with their partners. As a result, according to interdependence theory (Kelly & Thibaut, 1978) and the investment model (Rusbult, 1983), the primary bases of dependence level are likely to be affected as well: ostracized individuals will perceive their relationships with their romantic partners as more satisfying, derogate alternatives, perceive their investments in the relationships as higher, and in turn, will become more committed to these relationships.

In support of this claim, Kouzakova and colleagues (2010) showed that in reaction to a subtle social exclusion experience with a stranger, individuals felt psychologically closer to their romantic partner and reported higher commitment to their relationships. Social exclusion was manipulated in a social interaction with a stranger who was a confederate who did not the mimic participant's behavior. In one study, participants who were not mimicked by a confederate felt closer to their romantic partner and reported higher commitment to the relationship (i.e., intention to

stay close to their partner in the next three years), than participants who were mimicked by the confederate or non interacting participants. This effect was replicated in a second study, in which relationship evaluations were assessed before and after an interaction with a stranger-confederate. Participants who were not been mimicked by a confederate reported higher need to belong following the interaction, and in turn, elevated their romantic relationship evaluations. However, there was no difference in romantic relationship evaluations before and after the interaction, for participants who were mimicked by a confederate. Because lack of mimicry reduced feelings of belonging in their study, it is plausible to conclude that belonging threat produced by ostracism will result in similar elevations of their partner and relationship.

Ostracized individuals' threatened self-esteem may cause them to increase their evaluations of their romantic partners because they are motivated to protect their self-esteem. Strengthening one's association with a successful partner could be one way to benefit self-enhancement. Cialdini and colleagues (1976) showed that individuals were prone to associate themselves with successful others after their self-worth was threatened. According to Aron and Aron's (1997) self-expansion theory, relationship partners are often considered as a part of the self. Thus, glorifying the romantic partner's attributes could indirectly help protect or reclaim one's self-esteem. Brown and Han (2012) showed that in reaction to negative performance feedback, which is like ostracism a self-threat, low self-esteem individuals, who are especially vulnerable, have enhanced the virtues of their romantic partner. Enhancing relationship evaluations can also help protect one's self-esteem. Individuals can cope with damaging feedback about their abilities by exaggerating their success in their relationships (Murray,

Bellavia, Feeney, Holmes, & Rose, 2001). There is also evidence that mortality salience, a threat that motivates self-enhancement, leads to reports of higher commitment to romantic relationships (Florian, Mikulincer, & Hirschberger, 2002).

Why Ostracism Should Lower Perceptions of One's Existing Relationship

There are also theoretically derived reasons to predict that following an experience of ostracism by strangers, individuals will perceive their existing relationships more negatively. Research has shown that mood affects people's evaluations, such that when in a good mood evaluations tend to be more positive, and when in a bad mood evaluations tend to be more negative (see Forgas, 1995; and Schwartz, 1998, for reviews). Thus, the negative mood that is elicited by ostracism can elicit a tendency for negative evaluations and judgments in general. This tendency may also influence one's evaluations of their romantic partner, and their romantic relationship. Moreover, current mood affects recollection of memories such that people will recall information that is congruent with their current mood, and also interpret information that they recall in light of their current mood. In light of the negative mood that is elicited by ostracism, individuals may recall negative memories regarding their interactions with their romantic partner, and reinterpret past behaviors of their romantic partner more negatively (Forgas, Bower, & Krantz, 1984; Forgas & Bower, 1987); and these will affect their evaluations regarding their partner and romantic relationship. Additionally, according to the feeling as information approach (Schwartz & Clore, 1996), mood can affect judgments simply because people may misinterpret the source of their current feelings. Thus, ostracized individuals may identify their romantic

partners as responsible (in part) for the bad feelings that they experience, and in turn their judgment of their partners will be more negative.

As a result of feelings of lack of control that are caused by ostracism, ostracized individuals may wish to regain control by demonstrating independence. Thus, they may wish to distant themselves from others, especially from those that they are dependent on to a certain extent. Because high levels of dependency of each couple member on the other characterize romantic relationships (Rusbult, Coolsen, Kirchner, & Clarke, 2006), ostracized individuals may wish to distant themselves from their romantic partners in order to regain feelings of control over the situation. Ostracized individuals might also aim to regain control by establishing an active role in social situations. Previous research has shown that individuals who experience ostracism seek opportunities to establish *new* social connections (Santiago, Williams, & Hales, 2013). Initiating and forming new relationships requires active self-presentation and communication that can increase the feeling of control. Therefore, ostracized individuals' motivation to establish new social bonds might be at the expense of their existing relationships.

Overview

In this thesis, I examine the competing predictions that following ostracism by strangers, individuals may either raise or lower their perceptions of their partners and relationship. I also entertain the possibility that one's gender determines which of these two responses are more likely. Because women are found to be more relationship oriented than men (Eagly, 2009; Eagly & Steffen, 1984; Kite, Deaux, & Haine, 2007), they might see their relationships as a source of comfort and thus evaluate their

relationships more positively following an ostracism episode. However men, who are found to be more independent than women (Eagly, 2009; Eagly & Steffen, 1984; Kite, Deaux, & Haine, 2007), might be more reactive to the rejection experience and will thus seek to demonstrate their ability to get by themselves.

I present two experiments and a reanalysis of a study conducted by Arriaga, Capezza, Reed, Wesselmann and Williams (in press), exploring whether men and women differ in the way that being ostracized affects their evaluations of their partners and close relationships. Throughout these studies, ostracism is manipulated using Cyberball, a virtual ball toss game in which participants believe that they play with two other players, whereas in reality the game is pre-programmed to either include or ostracize the participants from the game (Williams, Cheung, & Choi, 2000).

STUDY 1A

The purpose of this study was to examine how individuals would evaluate their relationships following an episode of ostracism by two strangers. I predicted that ostracism (relative to inclusion) would increase positive evaluations of their relationships. In this study, I recruited men and women who were in a romantic relationship. When they arrived for the experiment, they were separated into individual cubicles where they played Cyberball with two strangers. They were either included or ostracized. Then, they were asked to complete relationship evaluation measures as well as attachment orientation and demographic questionnaires.

Method

Participants and Design

Ninety-one undergraduate students (59.3% men, M_{age} = 19.75, SD = 1.42) who were in a romantic relationship for at least one month were recruited from their Introductory Psychology class to take part in the study in exchange for course credit. They were randomly assigned to be either included or ostracized by strangers in a Cyberball game. Of these participants, eight who reported not being in a romantic relationship of any kind were excluded from the final analyses, resulting in 83 participants (32 women, 51 men) ranging from 18 to 25 years of age (M = 19.80, SD = 1.42).

Procedure

Upon arrival, a female experimenter greeted the participants and explained that the experiment involved playing a virtual game on the computer followed by answering questions on a questionnaire.

Cyberball task. Participants were told the study they were to take part in dealt with the effects of mental visualization on subsequent task performance. Participants were led to believe that they would play the game with two other random players determined by the computer. They were told that the game helped them exercise their mental visualization abilities; that it did not matter who got the ball or to whom they threw the ball, but rather, that they engaged in mental visualization about who the others were, where they were playing, the geography, weather, and anything else of which they could think. The other players in Cyberball were actually programmed to either include or ostracize the participant. In the inclusion condition, participants were thrown the ball such that they received it one-third of the time; in the ostracism condition, they were thrown the ball once at the beginning of the game, and then never again. Immediately after the game, participants were asked to complete relationship evaluation measures. To insure that the effect of ostracism on relationship evaluations, in case that it existed, would be detected in this study, I chose to measure relationship evaluations immediately after the ostracism manipulation and to rely on previous studies' results showing that Cyberball successfuly manipulates ostracism, which in turn affects mood and fundamental needs (i.e. belonging, control, self-esteem and meaningful existence; see Hartgerink, Van Beest, Wicherts, & Williams, 2014).

Relationship evaluations. Participants completed nine items from the Evaluation and Nurturing Relationship Issues, Communication and Happiness (ENRICH) Marital Satisfaction Scale (Fowers & Olson, 1993). This scale was chosen to assess idealization of the relationship due to the extreme nature of the items in it. This scale was originally designed to assess marital quality, and in its original form participants are asked to rate their agreement with each of 15 statements (e.g., "My partner and I understand each other perfectly"). For this study, nine statements that were relevant to dating relationships were chosen out of the original 15, and one question was added to assess idealization of the partner (i.e. "I think that my partner is perfect"; $\alpha = .88$). Participants in the current study rated their agreement with each statement on a 7-point scale ranging from *strongly disagree* (1) to *strongly agree* (7). Participants also completed the Perceived Relationship Quality Components Inventory (PRQC; Fletcher, Simpson, & Thomas, 2000), with investment model items embedded (alternatives were reverse-scored). In total, the scale consists of 10 items that were designed to assess different aspects of the participants' relationships (e.g., "How much do you love your partner?" $\alpha = .81$). The investment model items assessed the different components of the model: commitment to one's relationship, satisfaction with the relationship, investments in the current relationship, and attractiveness of alternatives to the relationship. Participants rated their answers to each item on a 7-point scale ranging from *not at all* (1) to *extremely* (7).

Filler survey. In order to distance attachment orientation measures from the ostracism manipulation (to minimize any chance that the ostracism experience affected the way participants rated themselves on the measure), after the relationship evaluation

measures participants answered the Self-Construal Scale (Singelis, 1994), which consists of 24 statements as a filler task. Participants rated the extent to which each statement was descriptive of them on a 7-point scale ranging from *strongly disagree* (1) to *strongly agree* (7). Because it was meant to be a filler task, data from this questionnaire was not analyzed.

Attachment orientation. Participants then completed the Experience in Close Relationships Scale (ECR; Brennan et al., 1998). The scale consists of 36 items assessing the dimensions of attachment anxiety and avoidance. Participants rated the extent to which each item is descriptive of their feelings in close relationships on a 7-point scale ranging from *strongly disagree* (1) to *strongly agree* (7). Within this scale, 18 items measure attachment anxiety (e.g., "I worry about being abandoned," $\alpha = .92$) and 18 items measure attachment avoidance (e.g., "I get uncomfortable when a romantic partner wants to be very close," $\alpha = .91$).

At the end of the questionnaire participants answered a demographics questionnaire, reported whether they were familiar with Cyberball before arriving to the study, and self-reported whether they were being honest when responding to the questions. Finally, they were fully debriefed so that they understood that the game was preprogrammed, and dismissed.

Results

As mentioned, no manipulation or process checks were taken for the ostracism manipulation. Instead, only relationship evaluation measures were assessed. To examine whether relationship evaluations changed as a function of ostracism (being included or excluded during the game), a series of 2 X 2 Analyses of Variance

(ANOVAs) was performed. Participants' gender was included as a between-subjects factor in the analyses for exploratory reasons.

Idealization of Romantic Relationships

A relationship idealization index was computed by averaging ENRICH items and was used as the outcome in the analysis (means and standard deviations are presented in Table 1). Both main effects (Ostracism: $F(1, 79) = 0.34$, *ns*, *partial* $\eta^2 = .00$; Participant gender: $F(1, 79) = 0.09$, *ns*, *partial* $\eta^2 = .00$) were non-significant as well as the interaction, $F(1, 79) = 0.00$, *ns*, *partial* $\eta^2 = .00$.

Relationship Evaluations

A relationship quality index was computed by averaging PRQC items and was used as the outcome in the analysis (means and standard deviations are presented in Table 1). The analysis revealed a marginally significant interaction between ostracism condition and participant gender, $F(1, 79) = 3.03$, $p = .08$, *partial* $\eta^2 = .04$. The pattern of the interaction suggests that ostracized women tend to evaluate their relationship quality more positively than included women, $F(1, 30) = 1.68$, *ns*, *partial* $\eta^2 = .05$, whereas ostracized men tend to evaluate their relationship quality less positively than included men, $F(1, 49) = 1.31$, *ns*, *partial* $\eta^2 = .03$. It should be noted, however, that no simple effects emerged in this analysis (see Table 1).

Because the PRQC measure had investment model items embedded (with each representing a different component of the model), in further analyses I examined each component of the investment model separately (a two-way ANOVA for each; means and standard deviations are presented in Table 1). A marginally significant interaction

between ostracism condition and participant gender on commitment was observed, $F(1, 79) = 3.29$, $p = .07$, *partial* $\eta^2 = .04$. Analysis of the simple effects indicated that ostracized men reported being less committed to their relationships than included men, $F(1, 49) = 4.86$, $p = .03$, *partial* $\eta^2 = .09$, whereas women's commitment to their relationship remained unaffected by their level of inclusion during Cyberball, $F(1, 30) = 0.36$, *ns*, *partial* $\eta^2 = .01$.

A similar pattern was found for relationship satisfaction. The analysis revealed a marginally significant interaction between ostracism condition and participant gender, $F(1, 79) = 2.72$, $p = .10$, *partial* $\eta^2 = .03$. Analysis of the simple effects indicated that ostracized men reported being less satisfied from their relationships than included men, $F(1, 49) = 3.73$, $p = .05$, *partial* $\eta^2 = .07$, whereas women were unaffected by their level of inclusion during Cyberball, $F(1, 30) = 0.34$, *ns*, *partial* $\eta^2 = .01$.

For investments, a significant interaction effect was found, $F(1, 79) = 7.39$, $p < .01$, *partial* $\eta^2 = .09$. Analysis of the simple effects indicated that ostracized women reported investing more in their relationships than included women, $F(1, 30) = 5.35$, $p = .03$, *partial* $\eta^2 = .15$, whereas there was no significant difference between ostracized and included men, $F(1, 49) = 1.59$, *ns*, *partial* $\eta^2 = .03$.

Finally, evaluations of alternatives to their current relationship revealed only a main effect of gender. Men evaluated their alternatives more positively than women, $F(1, 79) = 5.56$, $p = .02$, *partial* $\eta^2 = .07$.

Attachment Orientation[1]

Adding attachment avoidance and attachment anxiety as covariates did not affect the significance level or the directions of the results of the findings reported here with one exception: the interaction effect of ostracism condition and participant gender on satisfaction was no longer significant, $F(1, 77) = 2.46$, $p = .12$, *partial* $\eta^2 = .03$.

Study 1a – Discussion

The findings in this study did not support the hypothesis that relationship evaluations would be elevated following a brief exposure to ostracism. Further, no manipulation checks were taken to insure that ostracism was perceived and negatively impacted fundamental needs and affect. Thus, some of the observed patterns of results as a function of interactions with gender should be regarded with caution.

With that caveat in mind, a few interactions (mostly marginal) emerged suggesting that women's self-reports more closely resembled the predicted effects than men's self-reports. Although only some simple effects were evident, the interactions appear to suggest that ostracized men tended to be either unaffected by the ostracism manipulation, or to downgrade their relationships, whereas ostracized women tended to be either unaffected by the ostracism manipulation, or to view their relationships more positively.

I have presented two competing hypotheses: on one hand, I expected that because ostracism threatens the need to belong and one's self-esteem, and because one's romantic relationships are a natural fulfillment of belonging needs and can enhance self-esteem, ostracized individuals could be expected to seek reconnection with their romantic partners, value their romantic relationships more, and as a result

evaluate their relationships more positively than included individuals. On the other hand, ostracized individuals typically experience negative mood and thwarted control needs. These reactions might lead to viewing others (including relationship partners) more negatively and desire to be more independent. That ostracism tended to affect men and women differently with respect to their relationship evaluations suggests that the proposed processes might accurately reflect responses, but that women's relationship evaluations are driven by trying to enhance belonging and self-esteem, whereas men's relationship evaluations may be more affected by their negative affect and loss of control, both of which might lead devaluating their relationships and desire for independence.

As mentioned earlier, in one study ostracism was found to affect men's and women's behavior differently. Williams and Sommer (1997) ostracized men or women (in 2-person same sex groups) using the predecessor of Cyberball, face-to-face ball tossing. They then had the same triad work on a coactive or collective brainstorming task. Productivity (and, my inference, effort) was measured by how many ideas were generated by each individual. In the coactive condition, individual productivity was known to be available to the experimenter; in the collective condition, only group productivity was known to be available. The results showed that ostracized men socially loafed by putting less efforts in a group task (as did included men), however ostracized women, unlike included women who loafed, compensated by putting more effort in the group task. Furthermore, ostracized women maintained eye contact longer with their ostracism sources than ostracized men who broke eye-contact off sooner and began engaging in face-saving activities. The authors speculated that men's behavior

following ostracism was in reaction to their threaten self-esteem and control, whereas women's behavior was a result of the perceived threat on belongingness. They suggested that the reason for the gender differences was rooted in sex roles: Although the authors assumed that men and women had their belonging needs threatened to a similar extent, they acknowledged that social norms set different expectations from men and women regarding emotional expressions. Women are encouraged to be open and expressive regarding their emotions, while men are encouraged to demonstrate control (Leary, 1995). Women are also perceived and expected to be oriented toward communal goals, to be more sociable, to rely on others when in need, to be more relationship oriented and to be more intimate in their relationships than men who are perceived and expected to be more oriented toward agentic goals, to be independent and in control and to pursue individual ambitions (Eagly, 2009; Eagly & Steffen, 1984; Kite, Deaux, & Haine, 2007; Reis, Senchak & Solomon, 1985; Swim, 1994; Wood & Eagly, 2010). Thus, differences in endorsement of communal and agentic goals might drive the gender difference in reactions to ostracism.

In support of the reasoning that individuals' reactions to ostracism may be influenced by the distinct sex roles for men and women, there is some evidence that social exclusion lead women to embrace their traditional sex role that involve being relationship and family oriented, and taking care of others. Aydin and colleagues (2011) showed that excluded women had more positive attitudes toward the roles of mother and housewife than included women. Furthermore, in a word completion task excluded women completed more word fragments to words related to family than

included women, while there was no similar effect for men that according to traditional sex roles should be less relationship oriented and less intimate in their relationships .

Another research as shown that men tend to endorse the masculine sex role in reaction to threat. Birnbaum and colleagues (2012) showed that in reaction of relational threat, that was manipulated with an explicit priming of unavailability of an attachment figure, anxiously attached men desired less intimacy and portrayed themselves as less affectionate and more aggressive in their description of a sexual fantasy. However, no similar effect was found for anxiously attached women. The authors suggested that this effect was unique to men, because women's knowledge regarding the feminine sex role inhibited desires to portray behaviors that do not fit the traditional sex role, such as hostility and seeking distant from the relationship, whereas for men these behaviors can affirm their masculinity. Unlike ostracism by strangers, that is the focus of the current work, the threat used in the study was by a close other and specifically designed to threat anxiously attached individuals. Even though these differences, this research informs that in reaction to threat men may act in line of their sex role, and as a result their desire for closeness in their close relationship may decrease.

Another possibility is that men and women differ in their coping mechanisms to negative mood. In their research Williams and Sommer (1997) also found that ostracized women were more likely than men to attribute the reason for the treatment to their own faults and weaknesses, whereas ostracized men were more likely than women to attribute the reason for the treatment to their apparent lack of interest in the game. This is consisted with previous work showing that women tend to report more internalizing emotions (e.g., shame) than men, whereas men tend to report more

externalizing emotions than women (e.g., anger). Accordingly, there are also gender differences in the defenses that people use in reaction to negative mood: Women are more likely to turn against the self and seek support, whereas men are more likely to turn against others, demonstrate self control and aggression, and belittling others (Brody, 1999; Cramer, 1991). Another study found that whereas ostracism elicited sadness and anger, only anger in reaction to ostracism was associated with aggressive behavior (Chow, Tiedenes, & Govan, 2008). Thus, the negative mood that is elicited by ostracism can affect men and women differently, such that women seek for support from their relationships, while men pull away from their relationships.

Because women, more than men, are likely to prioritize their relationships (Eagly, 2009), and often enhance their self esteem by strengthening their close relationships (Murray et al., 2001), it might be the case that ostracism threaten women's belonging needs more than men's. However, men, more than women, are likely to prioritize control and independence (Eagly, 2009). Thus, ostracism may threat men's control needs to a larger extent than women's. However, it is also possible that men and women's needs are threaten to a similar extent. According to the need-threat model of ostracism (Williams, 2009; Williams & Sommer, 1997), while ostracism threatens several fundamental needs, certain needs will likely be more salient than others, which will in turn direct individuals' reactions to focus on fulfillment of that need. It might be the case that whereas fundamental needs of both men and women are threatened in a similar way, sex roles and social norms cause women to address the threat on the need to belong first whereas they trigger men to be more concerned with fulfilling the need for control.

In support of this argument are recent findings from a previous study by Bozin and Yoder (2008). The researchers replicated the results from Williams and Sommer's (1997) study that I discussed above regarding gender differences in contribution to a group task following ostracism. They further expanded on these finding by demonstrating that when ostracized men were informed that they had higher status than the other group members (information that could be relevant to both their self-esteem and their control over the situation), they contributed more to the collective task than men who did not receive status relevant information. However, information about status did not affect ostracized women's performance in the collective task. These findings may reflect the notion that following ostracized women address the need to belong first and try to fortify belonging, whereas men address the threat on the need for control and concentrate their efforts in demonstrating control. However, after men's self-esteem and control needs are satisfied, they too aim to fortify belonging.

STUDY 1B

Whereas study 1a yielded interesting results, most of the findings were marginally significant, and there were very few simple effects. To determine if these observed marginal interactions between gender and ostracism on relationship evaluations were flukes or reliable, I reanalyzed portions of a study conducted by Arriaga et al. (in press). In Arriaga et al (in press), 65 dating couples were recruited. Participants were instructed that during the experiment they would play an online ball-tossing game (Cyberball) with presumably two other players. Participants were led to believe that they either played the game with two strangers, or with their romantic partner and a stranger. In fact, as in the previous study, Cyberball was pre-programmed to manipulate either ostracism or inclusion. Following the game, relationship evaluations were measured. Because the focus of my work is to examine the effect of ostracism by strangers on evaluations of one's own romantic relationship, in this reanalysis I included only data from participants who were led to believe that the other Cyberball players were strangers.

Method

Participants and Design

Fifty-six out of 130 individuals who arrived to the lab with their romantic partner and participated in the original study were included in the current analyses (29

women, 27 men), ranging from 18 to 22 years of age (M_{age} = 19.18, *SD* = 1.11. Twenty two participants did not report their age). Participants were randomly assigned to be either included or ostracized by strangers in the Cyberball game.

Procedure

At the beginning of the experimental session, participants were asked to complete an attachment orientation scale (subset of questions from the Experiences in Close Relationships scale; Brennan, Clark, & Shaver, 1998) assessing anxious attachment (nine items, α = .87) and avoidant attachment (nine items, α = .87) on a 9-point scale ranging from *do not agree at all* (1) to *agree completely* (9). They also completed a relationship commitment measure (3 items from Investment Model Scale; Rusbult et al., 1998; α = .90).

Then, participants played Cyberball as a part of a mental visualization task. They were led to believe that the computer randomly assigned two strangers as the other players, where in fact the game was pre-programmed to either include or ostracize the participant as in the previous study.

Following the game, participant completed another set of questionnaires consisting of an immediate needs measure, in which participants reported retrospectively how they felt during the game in respect to four fundamental needs: belonging (five items; α = .94; e.g., "I felt I belonged to the group"), control (five items; α = .87; e.g., "I felt I had control over the course of the game"), self esteem (five items; α = .90; e.g., "I felt good about myself") and meaningful existence (five items; α = .87; e.g., "I felt important"). Participants also completed eight items assessing their mood during the game (e.g., "I felt sad"). Then, participants completed manipulation

checks, in which they assessed what percentage of the ball throws they received and to what extent they were ignored and excluded during the game (2 items; $\alpha = .92$). All of these measures were on a 5-point scale ranging from *not at all* (1) to *extremely* (5).

Relationship evaluations were assessed using the Investment Model Scale (Rusbult et al., 1998), to measure relationship commitment (seven items; $\alpha = .94$), relationship satisfaction (five items; $\alpha = .90$), investments in one's relationship (five items; $\alpha = .80$), and alternatives to the relationship (five items; $\alpha = .78$); all items were assessed on 9-point scales ranging from *do not agree at all* (1) to *agree completely* (9).

Finally, participants rated their psychological closeness with their partner on the Inclusion of Other in the Self Scale (IOS; Aron, Aron, & Smollan, 1992). This is a single-item measure in which they were asked to choose a picture that best illustrates their relationship with their romantic partner. There are seven response options, each a Venn-like diagram depicting various degrees of overlap between circles labeled, "self" and "other." The scale is scored from 1 (no overlap) to 7 (almost complete overlap).

Results

Manipulation Checks

The manipulation checks were assessed using a two-way ANOVA with ostracism condition and participant gender as the predictors. As expected, the analysis for ball throws revealed only a main effect for ostracism condition, such that participants in the inclusion condition perceived that they received a higher percentage of ball throws ($M = 40.07\%$, $SD = 14.60\%$) than participants in the ostracism condition ($M = 5.93\%$, $SD = 2.97$; $F(1, 52) = 132.96$, $p < .001$, *partial* $\eta^2 = .72$). Additionally, participants in the ostracism condition reported feeling more excluded and ignored (*M*

= 4.09, *SD* = 1.17) than participants in the inclusion condition (*M* = 1.88, *SD* = 0.86; $F(1, 52) = 62.95$, $p < .001$, *partial* $\eta^2 = .55$).

There was also a marginal main effect of participant gender on this measure, such that women (*M* = 3.33, *SD* = 1.40) were more likely to feel excluded and ignored than men (*M* = 2.54, *SD* = 1.54; $F(1, 52) = 2.99$, $p = .09$, *partial* $\eta^2 = .05$); However, the interaction between ostracism condition and participant gender was not significant ($F(1, 52) = .79$, *ns*, *partial* $\eta^2 = .01$). Because the interaction between ostracism condition and gender was not significant, differences in feeling ignored and excluded cannot account for interaction effects of ostracism condition and participant gender on relationship evaluation measures (see Table 4 for means and standard deviations by conditions).

Effects on Mood and Need Satisfaction

A two-way ANOVA with ostracism condition and participant gender as predictors and negative mood as the outcome was performed. Participants in the ostracism condition reported more negative mood (*M* = 3.33, *SD* = 1.05) than participants in the inclusion condition (*M* = 2.07, *SD* = 0.68; $F(1, 52) = 27.58$, $p < .001$, *partial* $\eta^2 = .35$). Women reported more negative mood (*M* = 3.02, *SD* = 1.01) than men (*M* = 2.30, *SD* = 1.04; $F(1, 52) = 5.65$, $p = .02$, *partial* $\eta^2 = .10$). However, the interaction between ostracism condition and participant gender was not significant, $F(1, 52) = 1.14$, *ns*, *partial* $\eta^2 = .02$.

A total needs satisfaction score was computed as the average of the needs satisfaction of all the four fundamental needs. A two-way ANOVA was used to

examine the effect of ostracism and gender on need satisfaction. As expected from past research, there was a main effect of ostracism such that ostracized participants reported less need satisfaction (M = 2.00, SD = 0.64) than included participants (M =3.51, SD = 0.73; $F(1, 52) = 69.22$, $p < .001$, *partial* $\eta^2 = .57$). A main effect for gender also emerged such that women (M = 2.44, SD = 0.88) reported less need satisfaction than men (M = 3.14, SD = 1.06; $F(1, 52) = 7.33$, $p < .01$, *partial* $\eta^2 = .12$). However the interaction between ostracism condition and gender was not significant, $F(1, 52) = 1.95$, *ns*, *partial* $\eta^2 = .04$.

The explanation for the gender difference in relationship evaluations following ostracism might be differences in the extent to which belonging and control needs are threaten. Following ostracism, belonging needs might be threaten to a larger extent among women than among men, whereas control needs might be threaten to a larger extent among men than among women. For this reason, I performed a series of two-way ANOVAs to examine the effects of ostracism and gender on the satisfaction of each need separately (one ANOVA for each need). For belonging, there was a main effect of ostracism, such that ostracized participants reported less need satisfaction (M = 2.03, SD = 0.71) than included participants (M = 3.70, SD = 0.91; $F(1, 52) = 55.53$, $p < .001$, *partial* $\eta^2 = .52$).

For control, both the main effect for ostracism and the main effect for participant gender were significant, such that ostracized participants reported less need satisfaction (M = 1.53, SD = 0.44) than included participants (M = 3.04, SD = 1.00; $F(1, 52) = 57.52$, $p < .001$, *partial* $\eta^2 = .52$), and women reported less need satisfaction

(*M* = 1.95, *SD* = 0.83) than men (*M* = 2.70, *SD* = 1.21; *F*(1, 52) = 7.47, *p* < .01, *partial* η^2 = .13). These main effects were qualified by a significant interaction (*F*(1, 52) = 6.08, *p* = .02, *partial* η^2 = .11) suggesting that whereas ostracized participants (across gender) reported less satisfaction of the need for control than included participants, this effect was more pronounced for men (Ostracism: *M* = 1.56, *SD* = 0.45; Inclusion: *M* = 3.49, *SD* = 0.89. *F*(1,25) = 43.63, *p* < .001, *partial* η^2 = .64) than it was for women (Ostracism: *M* = 1.51, *SD* = 0.44; Inclusion: *M* = 2.49, *SD* = 0.88. *F*(1,27) = 15.23, *p* = .001, *partial* η^2 = .36).

For Self-esteem, both the main effect for ostracism and the main effect for participant gender were significant, such that ostracized participants reported less need satisfaction (*M* = 2.20, *SD* = 0.98) than included participants (*M* = 3.50, *SD* = 0.72; *F*(1, 52) = 30.72, *p* < .001, *partial* η^2 = .37), and women reported less need satisfaction (*M* = 2.50, *SD* = 0.98) than men (*M* = 3.27, *SD* = 1.04; *F*(1, 52) = 6.98, *p* = .01, *partial* η^2 = .12). However the interaction of ostracism and participant gender was not significant, *F*(1, 52) = 0.47, *ns*, *partial* η^2 = .01. Similarly, for meaningful existence both the main effect for ostracism and the main effect for participant gender were significant, such that ostracized participants reported less need satisfaction (*M* = 2.22, *SD* = 0.74) than included participants (*M* = 3.79, *SD* = 0.73; *F*(1, 52) = 62.06, *p* < .001, *partial* η^2 = .54), and women reported less need satisfaction (*M* = 2.71, *SD* = 1.01) than men (*M* = 3.38, *SD* = 1.06; *F*(1, 52) = 5.55, *p* = .02, *partial* η^2 = .10). However the interaction of ostracism and participant gender was not significant, *F*(1, 52) = 0.40, *ns*, *partial* η^2 = .01.

Relationship Evaluations

The analyses to examine the joint effect of ostracism and gender on relationship evaluations employed multilevel modeling (SAS PROC MIXED; Campbell & Kashy, 2002), with couple intercepts modeled as random effects in order to account for non-independent observations within each couple. Analyses for investment model components (commitment, satisfaction, investments, and alternatives) and for psychological closeness are presented here.

All four models testing relationship evaluation components as well as the model testing psychological closeness included the main effects of ostracism, gender, their interaction, and both attachment dimensions (centered). Higher-order interactions involving attachment dimensions were dropped from analyses given the absence of significant effects.

There was a significant interaction of ostracism condition and participant gender on all the investment model components: commitment, $t(5) = -4.53$, $p < .01$, satisfaction, $t(5) = -4.39$, $p < .01$, investments, $t(5) = -4.07$, $p < .01$, and alternatives, $t(5) = -3.54$, $p < .02$. Whereas the simple effects were not significant, the patterns of the interactions is such that ostracized men tended to be less committed, slightly more satisfied, estimated their investments in the relationship as lower, and their alternatives as better than included men. Ostracized women, however, were more committed, more satisfied, and estimated their alternative as worse than included women (there was no difference between ostracized and included women in their estimation of investments in the relationship). Also, there was a significant interaction of ostracism condition and participant gender on the psychological closeness measure, $t(5) = -4.64$, $p < .01$, such

that the pattern of results suggested that ostracized men reported being slightly less close to their partner than included men, whereas ostracized women reported being closer to their partner than included women, however the simple effects were not significant.

Study 1b – Discussion

The reanalysis of the study conducted by Arriaga et al. (in press), provided further support to the findings of Study 1a and also increased the external validity of the results because of the slightly different nature of the sample (whereas in Study 1a participants arrived to the lab as individuals, in the current study participants arrived to the lab with their romantic partner). In both studies, ostracism by strangers affected individuals' evaluation of their own romantic relationships, however this effect differ between men and women. In reaction to ostracism, women tended to evaluate their romantic relationships more positively and to perceive their relationships as closer, whereas the opposite pattern emerged for men who tended to evaluate their romantic relationships more negatively following an ostracism episode.

Both studies had several limitations; mainly the relatively small sample sizes and the focus on relationship evaluations. Study 1b added supportive information to Study 1a concerning relationship evaluations. Furthermore, it revealed that women and men's perceptions of closeness between the self and the romantic partner are affected differently by ostracism. However, there are still questions that remained unanswered: Is the divergent effect of ostracism and gender unique to relationship evaluations, or are women and men's romantic partner evaluations also affected by ostracism in different ways? Do perceptions of ideal closeness to the romantic partner change as a

function of ostracism and gender? Do women and men differ in their tendency to seek proximity to their romantic partners following ostracism? And most importantly, what processes drive this divergent effect of ostracism and gender? And what is the difference between men and women that account for the different reactions to ostracism? In Study 2, I aimed to answer these questions.

STUDY 2

The purpose of this proposed study is to replicate and expand on Study 1a and Study 1b. In Study 2, I examine the effect of ostracism on men and women's evaluations of their romantic relationship, their romantic partners and their desire to seek proximity to their romantic partner. I recruited men and women who were in a romantic relationship and followed similar procedure to the one presented in Study 1a and Study 1b. When arriving for the experiment, the experimenter separated the participants into individual cubicles where they were included or ostracized in a game of Cyberball, ostensibly played with three strangers. Then, they were asked to complete potential meditational mechanisms by answering measures regarding need satisfaction and mood; those were followed by a survey consisting of romantic relationship evaluation measures, romantic partner evaluation measures, and closeness and proximity seeking measures. After a filler task, participants were asked to complete potential moderations by answering measures to assess communal and agentic goals, need importance, attachment orientation, and demographic questionnaires.

Method

Participants and Design

One hundred and sixty seven undergraduate students (43.6% men, M_{age} = 19.64, *SD* = 1.11) who were in a romantic relationship were recruited from their Introductory

Psychology class to take part in the study in exchange for course credit. They were randomly assigned to be either included or ostracized by strangers in a Cyberball game. Of these participants, twenty-five participants were excluded from the final analyses[3], resulting in 142 participants (81 women, 61 men; 97.2% heterosexual) ranging from 18 to 23 years of age (M = 19.62, SD = 1.06), who were involved in the relationship between 1 month to 9.35 years (M = 19.32 months, SD = 19.82).

Procedure

A female experimenter greeted the participants when arriving to the lab and explained that the study included several sections, and that at the end of each section she will return with further instructions. During the first section they were asked to complete a mental visualization on-line ball-tossing game called Cyberball, and then answer a questionnaire. Participants were separated into individual cubicles and were asked to complete the task and the following questionnaire over their computer screens via the Qualtrics survey software.

Cyberball task. Participants were instructed that the goal of the game was to practice mental visualization, and that the study examines the effects of mental visualization on subsequent task performance. They were provided with the same description of Cyberball that was provided in Study 1. During the 4-person, 30-throw game, participants were either included or ostracized, as determined randomly by the computer. At the end of the game, participants were asked to complete a manipulation check detecting whether they felt ignored and/or excluded during the game (2 items; α = .85), and how many ball throws they thought they received during the game.

Immediate measures of mood and need satisfaction. After the Cyberball game, participants indicated how they felt during the game using measures from previous ostracism studies. They rated to what extent they felt each of 8 emotions (8 items; e.g., "during the game I felt sad," $\alpha = .90$) as well as 12 items that are designed to assess four immediate needs ($\alpha = .93$): belonging (3 items; e.g., "during the game I felt disconnected," $\alpha = .93$), control (3 items; e.g., "during the game I felt I had control over the course of the interaction," $\alpha = .83$), self-esteem (3 items; e.g., "during the game I felt good about myself," $\alpha = .92$) and meaningful existence (3 items; e.g., "during the game I felt invisible," $\alpha = .92$). Participants rated their agreement with each statement on a 5-point scale ranging from *not at all* (1) to *extremely* (5).

Desired physical distance. Participants were then asked to rate the extent to which they would like to be with their romantic partner at the moment (48% of participants scored on the highest point on the scale) on a 7-point scale ranging from *not at all* (1) to v*ery much* (7). They also indicated the desired distant from their partner if they were in the same room on a continuous scale ranging from 0 (no distance, e.g. holding hands) to 100 inches (50% of participant scored on the lowest point on the scale).

Relationship evaluations. Participants completed a shortened version of the Investment Model Scale (Rusbult et al., 1998) consisting of 13 items. The original scale consists of 5 items (from which 3 were used in the current study) to assess each of the components of the investment model: relationship satisfaction (e.g., "I feel satisfied with our relationship," $\alpha = .88$), quality of alternatives (e.g., "My alternatives are attractive to me," $\alpha = .75$), investments in one's relationship (e.g., "I have put a

great deal in our relationship that I would lose if the relationship were to end," α = .87) and commitment level (e.g., "I am committed to maintain my relationship with my partner," α = .91; 43% of participants scored on the highest point on the scale). I used a modified version of the scale by Lehmiller and Agnew (2005) that used three items each for domain of satisfaction and alternatives, and four items for commitment. For investments I modified their scale by choosing the three items (out of the five) that had the highest item-total correlations across three studies as reported in data from Rusbult et al. (1998). The selected items for investments were "I have put a great deal into our relationship that I would lose if the relationship were to end," "Compared to other people I know, I have invested a great deal in my relationship with my partner," and "I feel very involved in our relationship – like I have put a great deal into it." Participants rated their agreement with each statement on a 9-point scale ranging from *do not agree at all* (1) to *agree completely* (9). Following this measure, participants were presented with measures of closeness and partner evaluations in randomized order.

Psychological closeness. As in Study 1b, participants completed the Inclusion of Other in the Self Scale (IOS; Aron, Aron, & Smollan, 1992). In this study, the participants were asked to complete the measure twice: once as they currently perceived their relationship with their partner, and the other, as they would like their relationship with their partner to be.

Partner evaluations. Participants completed nine items from the Who-To scale adjusted to be worded with respect to their romantic partner at the time of the study (Tancredy & Fraley, 2006; α = .96): Five items assessed the extent to which the participant currently perceive their romantic partner as secure base (e. g., "Right now I

feel that my partner is the first person that I would turn to if I had a problem," α = .94) and four items assessed the extent to which the participant currently perceive their romantic partner as safe haven (e. g., "Right now I feel that my partner is the person that I would like to be able to count on to always be there for me and care about me no matter what," α = .91). They also completed a brief measure of Perceived Partner Responsiveness (Reis, 2007; α = .84) consisting of Reis's exemplars for the three facets of the scale: understanding (e. g., "My partner is aware of what I am thinking and feeling"), validation (e. g., "My partner values my abilities and opinions"), and caring (e. g., "My partner expresses liking and encouragement for me"). Participants rated their agreement with each statement on a 7-point scale ranging from *disagree strongly* (1) to *agree strongly* (7). Then, participants rated to what extent they perceived their romantic partner (α = .80) and their best friend (α = .72; who is not their romantic partner; in a randomized order) as attractive, aloof (reversed score), nice, caring, cold (reversed score), trustworthy, neglectful (reversed score), intelligent and compassionate on a 7 point scale ranging from *not at all* (1) to *very much* (7).

Attraction ratings. Participants were asked to rate how attracted they are to their romantic partner on a 7-point scale ranging from *not at all* (1) to *very much* (7). In order to examine the participants attraction to alternatives, pictures of four strangers (2 men, 2 women) appeared on the screen individually, and each was accompanied with the question "How attracted are you to this person?" using the same response scale. The ratings were counterbalanced, so half of the participants rated their attraction to their romantic partner first and their attraction to each of the four strangers later, and the other half of the participants rated their attraction to each of the strangers first and

their attraction to their romantic partner second. The order of the pictures of the strangers was also randomized. Because participants rated both men's and women's attractiveness, for each participant a mean attraction to strangers was computed according to their reports of their sexual orientation.[2]

Filler task. After completing the first set of questionnaires, participants were approached by the experimenter who provided them with Word Search task, in which they were asked to find neutral words in a puzzle. After five minutes the experimenter approached again to collect the Word Search and to assist the participant to continue to the next section of the survey. The goal of this task was to assess recovery from the ostracism episode.

Delayed measures of mood and need satisfaction. As a measure of their recovery from the ostracism episode, participants then answered the same mood items (8 items; $\alpha = .90$) and need satisfaction items (12 items; $\alpha = .90$) according to how they felt *right now*.

Filler task. After completing the second set of questionnaires participants were again approached by the experimenter who provided them with another Word Search task, who had the same instructions as the previous one. The participants were asked to work on the task for 5-minutes, until the experimenter returned and helped them to continue to the next section of the survey. The goal of this task was to distance participants from a variety of predictor variable measures.

Communal and agentic goals. Participants completed a measure of endorsement of communal and agentic goals (Diekman, Clark, Johnston, Brown & Steinberg, 2011), in which they rated the importance of each of several goals on

7-point scales ranging from *not at all important* (1) to *extremely important* (7). Ten items consisted the communal goals endorsement scale (e. g., "helping others," α = .84), and 14 consisted the agentic goals endorsement scale (e. g., "independence," α = .87).

Value of fundamental needs. Participants rated the extent to which they value each of the four fundamental needs: belonging (e.g., "how important it is to you to be included by other?," α = .75), self-esteem (e.g., "how important it is to you to feel good about yourself?," α = .53), control (e.g., "how important it is to you to feel in control of social situations?," α = .80), and meaningful existence (e.g., "how important it is to you to feel meaningful?," α = .75) in everyday life situations, on an 11-point scale ranging from *not at all* (-5) to *very much* (5). The scale is consisted of eight items, two items to assess each of the needs. This is the first time this scale has been used and was included primarily for exploratory purposes.

Attachment orientation. Participants completed a subset of items from the *Experience in Close Relationships Scale* (ECR; Brennan et al., 1998; items used demonstrated high factor loadings in the original scale development). I used 18 items (out of the original 36 items) assessing the dimensions of attachment anxiety and avoidance. Participants rated the extent to which each item is descriptive of their feelings in close relationships on 7-point scales ranging from *strongly disagree* (1) to *strongly agree* (7). Within this scale, 9 items measured attachment anxiety (e. g., "I worry about being abandoned," α = .86) and 9 items measured attachment avoidance (e. g., "I get uncomfortable when a romantic partner wants to be very close," α = .87).

At the end of the questionnaire participants answered a demographic questionnaire, reported whether they were familiar with Cyberball before arriving to the study, and whether their romantic partner was participating in the same session. They were also asked their opinion regarding the purpose of the study. Then, they were asked to wait for the debriefing for five minutes in which they were allowed to use their cell phones. After five minutes they completed a short survey regarding their cell phone use that was included for exploratory purposes. Finally, the experimenter debriefed the participants, explained that the game was preprogrammed, and that there was no deliberate effort to include or exclude them.

Results

The primary dependent variables were tested using a two-way ANOVA with ostracism condition and participant gender as the predictors.

Manipulation Checks

As expected, the analysis for ball throws revealed only a main effect for ostracism condition, such that participants in the inclusion condition reported that they received a higher percentage of ball throws (M = 23.46%, SD = 9.11%) than participants in the ostracism condition (M = 9.73%, SD = 4.62; $F(1, 138) = 122.60$, $p < .001$, *partial* $\eta^2 = .47$). Similarly, participants in the ostracism condition reported that they felt more excluded and ignored (M = 3.57, SD = 0.89) than participants in the inclusion condition (M = 1.88, SD = 0.82; $F(1, 138) = 134.49$, $p < .001$, *partial* $\eta^2 = .49$). The interactions between ostracism and gender were not significant ($F(1, 138) = 0.75$, *ns*, *partial* $\eta^2 = .00$; $F(1, 138) = 0.62$, *ns*, *partial* $\eta^2 = .00$, respectively).

Mood and Need Satisfaction

Consistent with previous research, ostracized participants reported more negative mood ($M = 2.90$, $SD = 0.84$) than included participants ($M = 1.91$, $SD = 0.64$; $F(1, 138) = 64.22$, $p < .001$, *partial* $\eta^2 = .32$). There was no significant main effect for participants' gender, $F(1, 138) = 0.92$, *ns*, *partial* $\eta^2 = .01$, nor significant interaction of ostracism condition and participant gender, $F(1, 138) = 0.92$, *ns*, *partial* $\eta^2 = .01$.

A total needs satisfaction index score was computed as the average of the needs satisfaction of all of the four fundamental needs. As hypothesized, ostracized participants reported less need satisfaction ($M = 2.31$, $SD = 0.73$) than included participants ($M = 3.52$, $SD = 0.65$; $F(1, 138) = 103.21$, $p < .001$, *partial* $\eta^2 = .43$). There was no effect of gender, $F(1, 138) = 1.26$, *ns*, *partial* $\eta^2 = .01$, nor was there a significant interaction between ostracism condition and gender, $F(1, 138) = 0.42$, *ns*, *partial* $\eta^2 = .00$.

Because I proposed that the control and belonging needs might be differentially affected for men and women (i.e., higher control threat for men; higher belonging threat for women), I performed a series of two-way ANOVAs to examine the effects of ostracism and gender on the satisfaction of each need satisfaction score separately (one ANOVA for each need), and the pattern of results was consistent for all needs (see Table 5). In all cases, there was a main effect of ostracism condition, no effect for gender, and no interaction.

Relationship Evaluations

Commitment, satisfaction and investments in current relationships. The correlation coefficients of the investment model components were examined (see Table 6). Because commitment, satisfaction and investments were all correlated with each other, a two-way Multivariate Analysis of Variance (MANOVA) was performed with ostracism (inclusion vs. ostracism) and participant gender (men vs. women) as the predictors, and commitment, satisfaction and investments as the outcome (means and standard deviations are presented in Table 5). This analysis did not yield any significant main effects (Ostracism: $F(3, 136) = 0.35$, *ns*, Wilks' $\Lambda = .99$; Participant gender: $F(3, 136) = 1.22$, *ns*, Wilks' $\Lambda = .97$) or interactions, $F(3, 136) = 0.60$, *ns*, Wilks' $\Lambda = .99$.

Alternatives to current relationships. Neither ostracism condition, gender, nor their interaction affected participants' responses regarding their evaluations of their relationship alternative (Ostracism: $F(1, 138) = 0.02$, *ns*, *partial* $\eta^2 = .00$; Participant gender: $F(1, 138) = 1.22$, *ns*, *partial* $\eta^2 = .01$), $F(1, 138) = 0.00$, *ns*, *partial* $\eta^2 = .00$.

To further explore the joint effect of ostracism and gender on evaluations of alternatives to the current relationships, participants rated their attraction to strangers and their attraction to their romantic partner. A mixed ANOVA with ostracism condition and participant gender as between-subject variables and target of attraction rating as within-subject variable was performed. Overall participants reported to be more attracted to their romantic partner ($M = 6.40$, $SD = 0.87$) than to strangers ($M = 2.76$, $SD = 1.40$; $F(1, 132) = 577.17$, $p < .001$, *partial* $\eta^2 = .81$). The two-way

interaction for target of rating and participant gender was marginally significant, $F(1, 132) = 3.31$, $p = .07$, *partial* $\eta^2 = .02$, suggesting that this effect is more pronounced among men ($M_{partner} = 6.43$, $SD = 0.95$; $M_{strangers} = 2.45$, $SD = 1.25$) than among women ($M_{partner} = 6.39$, $SD = 0.80$; $M_{strangers} = 2.98$, $SD = 1.47$). However, there was no influence for ostracism condition on the attraction ratings as can be seen in a non-significant two-way interaction of ostracism condition and target of attraction ratings, $F(1, 132) = 2.68$, *ns*, *partial* $\eta^2 = .02$, and in a non-significant three-way interaction of ostracism condition, gender and target of attraction ratings, $F(1, 132) = 0.99$, *ns*, *partial* $\eta^2 = .01$.

Partner Evaluations

Perception of partner as secure base and safe haven. Because the correlation coefficient between the extent to which participants perceive their romantic partner as a secure base and as a safe haven was high ($r = .87$, $p < .01$) and the reliability of all the items in these scales together was also high ($\alpha = .96$), one index to reflect both was computed as the mean of all the items combined. The analysis with this index as the outcome yielded a marginal main effect of gender, $F(1, 134) = 2.95$, $p = .09$, *partial* $\eta^2 = .02$, suggesting that women perceive their romantic partner as a secure base and as a safe haven ($M = 6.13$, $SD = 1.03$) to a larger extent than men ($M = 5.79$, $SD = 1.29$). However, there was no main effect for ostracism, $F(1, 134) = 0.55$, *ns*, *partial* $\eta^2 = .00$, or interaction between ostracism and gender, $F(1, 134) = 0.04$, *ns*, *partial* $\eta^2 = .00$.

Perceived partner responsiveness. The analysis with perceived partner responsiveness did not yield any main effects (ostracism: $F(1, 138) = 1.50$, *ns*, *partial*

η^2 = .01; gender: $F(1, 138) = 1.26$, *ns*, *partial* η^2 = .01), or interaction, $F(1, 138) = 0.17$, *ns*, *partial* η^2 = .00.

Positive traits attribution. The analysis for attribution of positive traits to the romantic partner did not yield any main effects (ostracism: $F(1, 137) = 0.83$, *ns*, *partial* η^2 = .01; gender: $F(1, 137) = 2.33$, *ns*, *partial* η^2 = .02), or interaction, $F(1, 137) = 0.50$, *ns*, *partial* η^2 = .00.

To examine whether the joint effect of ostracism and gender on perceptions of close others differ according to the target, a mixed ANOVA with ostracism condition and participant gender as between-subject variables and target of traits attribution (romantic partner vs. best friend) as within-subject variable was performed. Not surprisingly, participants attributed more positive traits to their romantic partner (M = 5.99, SD = 0.76) than to friends (M = 5.73, SD = 0.73; $F(1, 136) = 17.48$, $p < .001$, *partial* η^2 = .11). A significant two-way interaction of target of traits attribution and participant gender, $F(1, 136) = 12.11$, p = .001, *partial* η^2 = .08, revealed that this effect is more pronounced for men ($M_{partner}$ = 5.88, SD = 0.82; M_{friend} = 5.32, SD = 0.69) than for women ($M_{partner}$ = 6.07, SD = 0.72; M_{friend} = 6.02, SD = 0.60). However, there was no influence for ostracism condition on the traits attribution as can be seen in a non-significant two-way interaction of ostracism condition and target of traits attribution, $F(1, 136) = 0.21$, *ns*, *partial* η^2 = .00, and in a non-significant three-way interaction of ostracism condition, gender and target of traits attribution, $F(1, 136)$ = 0.03, *ns*, *partial* η^2 = .00.

Proximity Seeking

Desired physical distance. The extent to which participants would like to be with their romantic partner, and the actual distance they would like to have between themselves and their romantic partner were moderately correlated (r = -.48, p < .01) and thus a two-way MANOVA was used to examine the joint effect of ostracism and gender on desired physical distance. This analysis did not yield any main effects (Ostracism: $F(2, 137) = 0.65$, *ns*, Wilks' Λ= .99; Participant gender: $F(2, 137) = 1.20$, *ns*, Wilks' Λ= .98) or interaction, $F(2, 137) = 0.09$, *ns*, Wilks' Λ= .99.

Perceptions of current and ideal closeness to the romantic partner. The analysis for perceptions of closeness as assessed with the IOS measure as the outcome did not yield any significant main effects (Ostracism: $F(1, 136) = 0.12$, *ns*, *partial* η^2 = .00; Participant gender: $F(1, 136) = 0.08$, *ns*, *partial* η^2 = .00) or interaction, $F(1, 136) = 0.21$, *ns*, *partial* η^2 = .00. Similarly, the analysis for ideal closeness did not yield any main effects (Ostracism: $F(1, 136) = 1.97$, *ns*, *partial* η^2 = .01; Participant gender: $F(1, 136) = 0.02$, *ns*, *partial* η^2 = .00) or interaction, $F(1, 136) = 0.29$, *ns*, *partial* η^2 = .00.

Attachment Orientation

Adding attachment avoidance and attachment anxiety as covariates did not affect the significance level or the directions of the results of the findings reported above.

Mediation Analyses

From the analyses I presented so far, it is evident that in this study there is no direct effect of the main predictors on the outcomes. Nonetheless, according to recent

approaches, mediation can occur even in the absence of direct effect (Rucker, Preacher, Tormala & Petty, 2011; Zhao, Lynch Jr., & Chen, 2010). Thus, potential mediation models were tested using the PROCESS Macro for SPSS (Hayes, 2013). Bootstrapping procedure of 5000 re-samples was used to generate a 95% confidence intervals around the coefficients, and the direct and indirect effects for inference testing. Ninety-five percent confidence intervals not containing zero indicate a significant effect.

Does belonging and control need satisfaction mediate reactions to ostracism among men and women? To test belonging and control need satisfaction as mediators Model 8 in the PROCESS macro was used. Model 8 tests the moderation of the effect of the predictor on the outcome by the mediator, with both the direct effect as well as the indirect effect of the predictor moderated (see Figure 1 for conceptual model). For these mediation analyses I used ostracism condition as the predictor and participant gender as the moderator. The mediator variable was either belonging or control need satisfaction, and I performed this analysis separately with each of the relationship evaluations, partner evaluations and proximity seeking measures as the outcome. The model estimates the direct effect separately for men and women, the indirect effect separately for men and women, and also examines whether the indirect effects for men and women differ from one another.

As I described before, one potential explanation to a gender difference in the effect of ostracism on relationship and partner evaluation, and proximity seeking to a romantic partner, can be the extent to which belonging needs are threaten. More specifically, women's belonging needs may be threaten more than men's belonging needs, which in turn drives women to evaluate their romantic relationship and their

romantic partner more positively and seek proximity to a larger extent than men. Previous analyses demonstrated that the extent to which belonging needs were threatened as a result of ostracism did not differ between men and women. However threat on belonging needs may have led to more positive evaluations among women, but not among men. To test these ideas, I used belonging need satisfaction as mediator (see Table 7).

None of the models yielded significant direct effects. However the model with perceived partner responsiveness as the outcome yielded significant indirect effects for both men and women that did not significantly differ from one another. This suggests that ostracized individuals experience less belonging need satisfaction, which in turn led to perceptions of the romantic partner as less responsive to one's needs.

Another potential explanation to a gender difference in the effect of ostracism on relationship and partner evaluation, and proximity seeking to a romantic partner, can be the extent to which control needs are threaten. Men's control needs may be threaten more than women's control needs and in turn drive men to evaluate their romantic relationship and their romantic partner less positively and seek proximity to a smaller extent than women. Previous analyses demonstrated that the extent to which control needs were threatened as a result of ostracism did not differ between men and women. However threat on control needs may have led to less positive evaluations among men, but not among women. To test these ideas, I used control need satisfaction as mediator in the analyses (see Table 8).

None of the models yielded significant direct effects. However the model with perceptions of current closeness to the romantic partner and desire for closeness as the

outcomes yielded significant indirect effects for women but not for men. This suggests that ostracized women experience less control need satisfaction, which in turn led to perceptions of higher current closeness between the self and the romantic partner as well as desire for higher closeness between the self and the romantic partner.

Does negative mood mediate reactions to ostracism among men and women? Whereas ostracism elicits negative mood among both men and women, I examined whether the negative mood that is elicited by ostracism affects women's and men's relationship evaluations, partner evaluations and proximity seeking to the romantic partner differently.

To test negative mood as mediator, Model 14 in the PROCESS macro was used. Model 14 tests the moderation of the effect of the predictor on the outcome by the mediator, with the indirect effect moderated (see Figure 2 for conceptual model). For these mediation analyses I used ostracism condition as the predictor and participant gender as the moderator. The mediator variable was negative mood, and I performed this analysis separately with each of the relationship evaluations, partner evaluations and proximity seeking measures as the outcome. The model estimates the direct effect for men and women combined and the indirect effect for men and women separately (see Table 9).

None of the models yielded significant direct effects. However the models with satisfaction from current relationship and with perceived partner responsiveness as the outcomes yielded significant indirect effects for men but not for women. This suggests that ostracized men experience more negative mood which in turn led to less satisfaction from the relationship and perceptions that their partner was less responsive.

Delayed Mood and Need Satisfaction

Before measuring additional potential predictors, I measured delayed mood and need satisfaction to assess recovery. To examine recovery of participants' mood, a mixed ANOVA with ostracism condition and participant gender as between-subject variables and stage (immediate vs. delayed) as within-subject variable was performed. This analysis revealed a main effect for ostracism condition, $F(1, 138) = 17.74$, $p < .001$, *partial* $\eta^2 = .11$, and a main effect for stage, $F(1, 138) = 24.94$, $p < .001$, *partial* $\eta^2 = .15$, that were qualified by a two-way interaction of ostracism condition and stage, $F(1, 138) = 63.86$, $p < .001$, *partial* $\eta^2 = .32$, indicating that ostracized participants' mood improved more between measurements than included participants' mood. A significant three-way interaction of ostracism condition, stage and participant gender was also detected, $F(1, 138) = 4.67$, $p = .03$, *partial* $\eta^2 = .03$, indicating that men had a better recovery with respect to mood than women.

To examine recovery of participants' need satisfaction, a series of mixed ANOVA with overall need satisfaction, belonging need satisfaction and control need satisfaction as outcomes, ostracism condition and participant gender as between-subject predictors and stage (immediate vs. delayed) as within-subject predictor was performed. The analysis with overall need satisfaction as the outcome revealed a main effect for ostracism condition, $F(1, 138) = 39.96$, $p < .001$, *partial* $\eta^2 = .22$, and a main effect for stage, $F(1, 138) = 172.61$, $p < .001$, *partial* $\eta^2 = .56$, that were qualified by a two-way interaction of ostracism condition and stage , $F(1, 138) = 99.08$, $p < .001$, *partial* $\eta^2 = .42$. For belonging need satisfaction similar results emerged: a main effect

for ostracism condition, $F(1, 138) = 63.58$, $p < .001$, *partial* $\eta^2 = .31$, and a main effect for stage, $F(1, 138) = 118.48$, $p < .001$, *partial* $\eta^2 = .46$, that were qualified by a two-way interaction of ostracism condition and stage , $F(1, 138) = 96.63$, $p < .001$, *partial* $\eta^2 = .42$. For control need satisfaction the analysis revealed a main effect for stage, $F(1, 138) = 78.34$, $p < .001$, *partial* $\eta^2 = .36$, that was qualified by a two-way interaction of ostracism condition and stage , $F(1, 138) = 32.38$, $p < .001$, *partial* $\eta^2 = .19$. These results indicated that ostracized participants overall needs satisfaction, as well as belonging and control need satisfaction specifically, improved more between measurements than included participants'.

Moderation Analyses

Does the extent to which individuals value needs satisfaction moderate reactions to ostracism among men and women? Because I proposed that men and women will differ in the extent to which they value belonging and control (i.e., higher value of control among men; higher value of belonging among women), and that that will cause men and women to differ in their reactions to ostracism, in regard to their romantic relationships, I performed independent T tests. As I expected, women ($M = 3.29$, $SD = 1.41$) were found to value belonging more than men ($M = 2.82$, $SD = 1.28$; $t(137) = 2.02$, $p = .04$, *Cohen's d* = 0.35). However, against my prediction men and women did not differ in the extent to which they value control, $t(137) = 1.09$, *ns*, *Cohen's d* = 0.19.

To further explore whether the difference in value of belonging accounts for differences in relationship measures in reaction to ostracism, the correlation

coefficients between the value of belonging with each of the outcomes were examined (see Table 10). The value of belonging was not correlated with any of the outcome variables, indicating that the extent to which individuals value belonging does not relate to relationship evaluations, partner evaluations or proximity seeking.

Although there was no difference among men and women in the extent to which they value control, I examined whether value of control affect reactions to ostracism across gender. The correlation coefficients between the value of control with each of the outcomes were examined (correlations are presented in Table 10), and a regression analysis with ostracism condition, value of control (centered) and the interaction between ostracism and value of control as the predictors with each of the outcomes that was correlated with value of control was performed. None of the analyses yielded significant results for ostracism or for the interaction between ostracism and value of control (see Table 11).

Does the extent to which individuals endorse communal and agentic goals moderate reactions to ostracism among men and women? Previous research showed that men endorse more agentic goals than women, whereas women endorse more communal goals than men (see Kite, Deaux, & Haine, 2007 for a review). To explore whether this is the case in the current sample, independent samples t-tests were performed. However, the results indicated that there is no difference in the extent to which men and women endorse agentic goals, $t(137) = -0.80$, *ns*, *Cohen's d* = 0.14, or communal goals, $t(137) = 1.36$, *ns*, *Cohen's d* = 0.28.

Although the difference in endorsement of agentic and communal goals was not found, I performed further analyses to examine whether endorsement of communal

goals is related to more positive relationship evaluations following ostracism experience, whereas endorsement of agentic goals is related to more negative relationship evaluations following ostracism experience. Endorsement of communal goals was not correlated with any of the outcomes, indicating that the extent to which individuals endorse communal goals does not relate to relationship evaluations, partner evaluations or proximity seeking (Correlations are presented in Table 12).

The correlation coefficients between the endorsement of agentic goals with each of the outcomes were examined (correlations are presented in Table 12), and a regression analysis with ostracism condition, agentic goals (centered), and the interaction between ostracism and agentic goals as the predictors with each of the outcomes that was correlated with agentic goals was performed. The interaction between ostracism and agentic goals was significant for attractiveness of alternatives, $\beta = -.28$, $t(138) = -2.56$, $p = .01$, such that for participants in the inclusion condition the endorsement of agentic goals was positively associated with attractiveness of the alternatives to the relationship, $\beta = .41$, $t(73) = 3.78$, $p < .001$, whereas for participants in the ostracism condition there was no such association, $\beta = -.00$, $t(64) = -0.03$, *ns*. These results indicate that ostracism do not increase the association between agentic goals and perceptions of the alternatives as attractive, but eliminates it. The analyses for other outcomes did not yield significant results for ostracism or for the interaction between ostracism and agentic goals (see Table 13).

Study 2 – Discussion

The results of Study 2 failed to replicate the interaction between ostracism and gender on relationship evaluations and closeness. Instead, the findings suggest that

neither men or women's relationship evaluations nor perceptions of closeness are affected by ostracism.

Additionally, new measures were added in Study 2 to provide other ways for participants to evaluate and value their partner, and to demonstrate proximity seeking. These included measures of desired physical distance between oneself and the partner, perceived partner responsiveness and perceptions of the romantic partner as secure base and safe haven. As with the relationship evaluation and closeness measures used in both studies, I found no evidence for an interaction between gender and ostracism. Once again, the basic finding was that ostracism did not affect men or women's evaluations of their romantic partner or seeking proximity to their romantic partner.

Nonetheless, advanced analyses shed light on the effect of ostracism on relationship evaluations, partner evaluations and closeness. As expected, women valued belonging more than men. However there was no difference between men and women in the extent to which they value control. Belonging need satisfaction mediated the effect of ostracism on perceived partner responsiveness, across gender, such that ostracism threatened the need to belong, and that in turn led to perceptions of the romantic partner as less responsive to one's needs, meaning that the targets of ostracism felt less understood, validated, and cared for by their romantic partners.

Control need satisfaction mediated the effect of ostracism on perceptions of current and ideal closeness only for women, such that ostracism threatened women's control needs, and that in turn led women to perceive their psychological closeness to their partner as higher, as well as to desire higher closeness to their partner. These effects goes against my prediction that threat on control needs will mediate the effect of

ostracism on relationship evaluations for men, and will lead to more negative evaluations. This effect may be a result of women's tendency to seek support from their relationship partner. It is also consisted with gender roles: men should be accountable and demonstrate control, and thus when women feel lack in control they rely on their male counterpart.

Negative mood mediated the effect of ostracism on relationship satisfaction and perceived partner responsiveness only for men, such that ostracism elicited negative mood, which in turn led men to be less satisfied from their relationships and perceive their partner as less responsive. This effect supports my prediction and existing research that showed that in reaction to negative mood men are likely to demonstrate aggression, and belittle others (Brody, 1999; Cramer, 1991), and thus their relationships with them. Finally, whereas in this study there were no differences in endorsement of agentic and communal goals across gender, the analysis revealed that endorsement of agentic goals is positively associated with attractiveness of alternatives to the current relationships. This goes hand-in-hand with the theory that defines agency as self-reliant and communion as other-reliant (Eagly, 2009; Wood & Eagly, 2009, 2010); it stands to reason that individuals who are less dependent on their partner are more likely to perceive their relationship as replaceable. However, this effect is eliminated by ostracism, suggesting that ostracism changes perceptions regarding the availability of alternatives.

It should be noted that only seventeen percent of the mediation models yielded significant indirect effects, and only five percent of the moderation model yielded significant effects that involved ostracism; and thus the results of this study should be

considered with caution, and cannot be generalized to relationship evaluations, partner evaluations, and proximity seeking tendencies in general. One of the possible reasons for the lack of significant effects is that there appeared to be ceiling effects on some of the key outcome measures, mainly those assessing commitment to the romantic relationship: Almost half of the participants in the study reported to be completely committed to their current relationship. It may be the case that relationship and partner evaluations of individuals who are highly committed to their relationships are less susceptible; and thus the ceiling effects could prevent us from detecting significant effects in this study.

Meta-Analysis

Because Study 2 failed to replicate the pattern of results that emerged in Study 1a and in Study 1b, and in order to address power issues in each of the individual studies, an inverse-variance weighted meta-analysis (Lipsey & Wilson, 2001) was conducted. The meta-analysis was conducted on the four investment model component (commitment, satisfaction, investments and alternatives) that appeared as outcomes in all of the studies, as well as on psychological closeness that appeared in both Study 1b and Study 2. Cohen's d's effect size and a confidence interval of 95% were calculated to assess the effect of ostracism condition on each of the relevant outcomes separately for men and women using Wilson's SPSS MEANES macro (2005), for which a 95% confidence interval not containing zero indicates a significant effect (Lipsey & Wilson, 2001).

The meta-analysis did not yield significant results. For commitment, there was no significant effect of ostracism condition among men, *Cohen's d* = -.24, 95% CI [-

.58, .10], nor among women, *Cohen's d* = -.07, 95% CI [-.40, .26]. For satisfaction, there was no significant effect of ostracism condition among men, *Cohen's d* = -.24, 95% CI [-.58, .10], nor among women, *Cohen's d* = -.00, 95% CI [-.33, .33]. For investments, there was no significant effect of ostracism condition among men, *Cohen's d* = -.13, 95% CI [-.47, .21], nor among women, *Cohen's d* = .06, 95% CI [-.28, .39]. For alternatives, there was no significant effect of ostracism condition among men, *Cohen's d* = -.02, 95% CI [-.36, .32], nor among women, *Cohen's d* = .12, 95% CI [-.21, .45]. Finally, for psychological closeness there was no significant effect of ostracism condition among men, *Cohen's d* = -.04, 95% CI [-.47, .39], nor among women, *Cohen's d* = -.03, 95% CI [-.41, .34]. Thus, the meta-analysis revealed that when taking into account the data from all the three studies combined, ostracism did not affect relationship evaluations of men or women.

GENERAL DISCUSSION

The present series of studies yielded significant effects regarding the effectiveness of Cyberball as an ostracism manipulation, and provided further support for the effects of ostracism on mood and fundamental need satisfaction. Whereas in Study 1a I did not use manipulation checks, needs satisfaction or mood measures, Study 1b and Study 2 had successful manipulation checks, and the findings showed that, as expected, ostracism elicited negative mood. In addition, ostracism was shown to threaten belonging, control, self-esteem and meaningful existence for both men and women.

The original prediction was that ostracism will lead individuals to bolster their evaluations of their romantic relationships, regardless of gender. However, Study 1a revealed some (mostly marginal) interactions of ostracism and gender, suggesting gender differences. Although only some of the simple effects reached significance, the pattern of means suggested that ostracized women tended to evaluate their romantic relationships more positively, while ostracized men tended to evaluate their romantic relationships less positively. Study 1b provided further support that ostracism might have potential gender differences in participants' relationship evaluations and perceptions of closeness in their romantic relationship. Based on these findings, the hypotheses were adjusted to reflect the possibility of gender differences in relationship

and partner evaluations as well as proximity seeking tendencies in Study 2. However, the results of Study 1a and Study 1b failed to replicate in Study 2, in that the joint effect of ostracism and gender did not yield significant results on any of the outcome measures. To further explore the simple effects across studies, a meta-analysis was conducted, and the results did not yield significant results, indicating that neither men's nor women's relationship evaluations were affected by ostracism. Thus, it must be concluded that ostracism did not directly affect relationship evaluations of men or of women in my studies.

Mediation analyses in Study 2 reveal different processes occurring for men and women in their reactions to ostracism, specifically in regards to their satisfaction with their relationships, the extent to which they find their partner as responsive to their needs, perceptions of closeness, and desire for closeness in their relationships. These results suggest that whereas there are no direct effect of ostracism on men's and women's relationship evaluations and proximity seeking, there may be indirect effects. However, ceiling effects on main outcome variables may have biased the results. In addition, multiple mediation analyses were performed and thus significant findings could reflect real effects but could also emerge due to chance. Thus, drawing conclusion based on these findings may be premature, before additional research addressing this issue is conducted.

Researchers who would like to pursue further research on the potential indirect effects of ostracism on men's and women's relationship evaluations, should be aware of important limitations in the current research. For example, in these studies I used Cyberball to manipulate ostracism. Whereas this manipulation is widely used and

found to be effective, it was also designed to be minimal. Another manipulation, such as the get-acquainted paradigm (Nezlek, Kowalski, Leary, Blevins, & Holgate, 1997), in which participants are introduced to other participants but later receive feedback that no one is interested in working with them on a subsequent task, may produce stronger feelings of rejection and exclusion, to which participants will be more reactive.

In addition, in Study 2 I used several measures for the first time (e.g., value of fundamental needs, desired physical distance measures) which have not yet been validated, and other measures not in their traditional form (e.g., Who-To measure to assess perceptions of partner as secure base and safe haven was not designed as a state measure). Most of these measures did not yield significant results. Also, in future studies I would include the full scale of perceived partner responsiveness (Reis, 2007) to assess the extent to which participants feel understood, validated, and cared for by their partners, as well as the full perceived relationship quality component scale (Fletcher, Simpson, & Thomas, 2000) to assess participants evaluations of satisfaction, commitment, intimacy, trust, passion and love in their relationships.

Finally, to eliminate the problem of a highly committed sample in future research I would either pre-test participant for baseline commitment to their relationship, or target people in dating relationships specifically, because of the nature of dating relationships (vs. marriages), which are more prone to transformations. People in dating relationships can exit their relationships with fewer difficulties than people in marriages, and also have more room to grow closer and get more committed to their relationships with their partners. For these reasons, it is more likely to detect effects on relationship evaluations by focusing on this population.

NOTES

1. To further explore the role of attachment orientation on the above findings, a series of hierarchical linear regression analyses was performed. The attachment dimensions that were included in each analysis was determined according to the correlation coefficient between the attachment dimension (avoidance and anxiety) and the relevant outcome measure, so an attachment dimension (centered) was only included if the correlation with the outcome was significant (Correlations are presented in Table 2).

Hierarchical linear regression analysis using PRQC as outcome measure, and attachment avoidance (first block), ostracism condition, participant gender (second block), and the interaction between ostracism condition and participant gender, as well as the interaction between ostracism condition and attachment avoidance (third block) as predictor variables was significant, predicting 17% of the variance. As can be seen in Table 3, attachment avoidance was related to PRQC, in a way that more avoidant individuals perceived their relationship quality less positively. Neither ostracism condition nor participant gender were directly related to PRQC, however the interaction between them yielded marginally significant results ($p = .10$) replicating the results that were found using analysis of variance. The interaction between ostracism

condition and attachment avoidance was not significant (p = .89), and thus higher order interactions were not examined.

Hierarchical linear regression analysis using commitment as outcome measure, and attachment avoidance (first block), ostracism condition, participant gender (second block), and the interaction between ostracism condition and participant gender, as well as the interaction between ostracism condition and attachment avoidance (third block) as predictor variables was significant, predicting 20% of the variance. As can be seen in Table 3, attachment avoidance was related to commitment, in a way that more avoidant individuals reported being less committed to their relationships. Neither ostracism condition nor participant gender were directly related to commitment, however the interaction between them yielded marginally significant results (p = .10) replicating the results that were found using analysis of variance. The interaction between ostracism condition and attachment avoidance was not significant (p = .63), and thus higher order interactions were not examined.

Hierarchical linear regression analysis using satisfaction as outcome measure, and attachment avoidance, attachment anxiety (first block), ostracism condition, participant gender (second block), and the interaction between ostracism condition and participant gender, the interaction between ostracism condition and attachment anxiety as well as the interaction between ostracism condition and attachment avoidance (third block) as predictor variables was significant, predicting 30% of the variance. As can be seen in Table 3, both attachment avoidance and attachment anxiety were related to satisfaction, in a way that more avoidant individuals and more anxious individuals were less satisfied from their relationships. Neither ostracism condition nor participant

gender were significantly related to satisfaction. Furthermore, the interaction between ostracism condition and participant gender as well as the interactions between ostracism condition and attachment dimensions were not significant and thus higher order interactions were not examined.

Because the attachment dimensions were not correlated with investments, there is no possibility that the attachment dimensions will influence the findings reported previously, and thus regression analysis was not performed. Furthermore, because neither ostracism condition nor the interaction between ostracism condition and participant gender were found to affect ratings of alternatives, regression analysis to examine the role of attachment orientation was irrelevant and was not performed.

2. The pictures of the strangers were chosen out of 16 pictures that were pilot tested. Forty-five participants (26 women; age mean = 30.3, *SD* = 8.19) viewed pictures of 8 men and 8 women and rated their attractiveness using 1 to 10 starts scale, and then estimated the age of the person in the picture. The people in the pictures that were chosen for this study were rated by the opposite sex participants as moderately attractive (Woman 1: *M* = 6.22, *SD* = 1.17; Woman 2: *M* = 5.61, *SD* = 1.46; Man 1: *M* = 5.85, *SD* = 1.83; Man 2: *M* = 6.00, *SD* = 1.72) and of an age that is relevant to college students (Woman 1: *M* = 21.06, *SD* = 1.98; Woman 2: *M* = 24.24, *SD* = 2.91; Man 1: *M* = 24.46, *SD* = 2.08; Man 2: *M* = 28.87, *SD* = 3.26).

3. Twenty-five Participants were excluded from the final analyses for the following reasons: three participants experienced computer problems; four participants reported not being in any type of romantic relationships; ten participants reported being familiar with Cyberball; four participants had their romantic partner participating at the

same session; three participants who were in the exclusion condition failed manipulation check (reported receiving 25% or more of the ball throws and ‘not at all’ when asked if they felt ignored and excluded); and one participants did not give us permission to use his data.

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APPENDICES

Appendix A

Table 1

Study 1a: Means and Standard Deviations for the Entire Sample and for Combined Conditions of Ostracism and Participant Gender

	Entire Sample (n = 83)		Men				Women			
			Included (n = 27)		Ostracized (n = 24)		Included (n = 13)		Ostracized (n = 19)	
	M	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*
Relationship evaluations										
Idealization of relationship	5.20	(0.97)	5.28_{a}	(1.05)	5.22_{a}	(0.74)	5.15_{a}	(0.90)	5.08_{a}	(1.18)
PRQC	5.82	(0.72)	5.92_{a}	(0.76)	5.70_{a}	(0.63)	5.62_{a}	(0.92)	5.97_{a}	(0.58)
Commitment	6.17	(1.09)	6.44_{a}	(0.89)	5.79_{b}	(1.22)	$6.08_{a,b}$	(1.19)	$6.32_{a,b}$	(1.06)
Satisfaction	5.90	(0.98)	6.11_{a}	(0.97)	5.58_{b}	(0.97)	$5.85_{a,b}$	(0.90)	$6.05_{a,b}$	(1.03)
Investments	5.58	(1.46)	5.93_{b}	(1.14)	$5.46_{a,b}$	(1.50)	4.62_{a}	(2.06)	5.89_{b}	(1.05)
Alternatives	4.01	(1.72)	4.22_{a}	(1.58)	$4.46_{a,b}$	(1.53)	3.08_{b}	(1.94)	$3.79_{a,b}$	(1.84)

Note. Higher numbers indicate a more positive relationship evaluation (1 to 7). Means with differing subscripts within rows are significantly different at the $p < .05$ based on Fisher's LSD post hoc paired comparisons.

Table 2

Study 1a: Correlation of Attachment Orientation and Outcome Variables

Variable	1	2	3	4	5	6	7
Attachment Orientation							
1. Attachment avoidance	–	.15	-.37**	-.39**	-.47**	-.11	.24*
2. Attachment anxiety		–	-.19	-.17	-.27*	-.09	-.15
Relationship evaluations							
3. PRQC			–	.76**	.64**	.65**	-.27*
4. Commitment				–	.52**	.52**	-.25*
5. Satisfaction					–	.26*	-.25*
6. Investments						–	.06
7. Alternatives							–

Note. All correlation coefficients represent Pearson's *r*. PRQC = Perceived Relations Quality Components.

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

Table 3

Study 1a: Hierarchical Multiple Regression Examining Ostracism Condition, Gender and Attachment Orientation as Predictors of Relationship Evaluations

Model	*B*	*SE B*	β	Partial *r*	R^2
Outcome measure: PRQC					0.17
Step 1					
(Constant)	5.82	.07			
Attachment avoidance	-.30	.08	-.37***	-.37	
Step 2					
Ostracism condition	.03	.15	.02	.03	
Gender	.07	.16	.05	.05	
Step 3					
Ostracism X Gender	-.51	.31	-.33	-.18	
Ostracism X Att. Avoidance	.02	.18	.02	.02	
Outcome measure: Commitment					0.20
Step 1					
(Constant)	6.17	.11			
Attachment avoidance	-.48	.13	-.39***	-.39	
Step 2					
Ostracism condition	-.24	.22	-.11	-.12	
Gender	.01	.23	.01	.01	
Step 3					
Ostracism X Gender	-.77	.46	-.32	-.18	
Ostracism X Att. Avoidance	-.13	.27	-.08	-.05	
Outcome measure: Satisfaction					0.30
Step 1					
(Constant)	5.90	.09			
Attachment avoidance	-.49	.11	-.44***	-.46	
Attachment anxiety	-.19	.09	-.21*		-.23

(*table continues*)

Model	*B*	*SE B*	β	Partial *r*	R^2
Step 2					
Ostracism condition	-.23	.19	-.11	-.13	
Gender	-.01	.20	-.01	-.05	
Step 3					
Ostracism X Gender	-.58	.40	-.27	-.05	
Ostracism X Att. Avoidance	-.10	.23	-.07	-.05	
Ostracism X Att. Anxiety	.03	.18	.02	.02	

Note. Ostracism condition: 0= inclusion, 1=ostracism; Gender: 0=female, 1=male.

* $p < .05$, ** $p < .01$, ***$p < .001$

Table 4

Study 1b – Reanalysis: Means and Standard Deviations for Combined Conditions of Ostracism and Participant Gender

	Entire Sample (n = 56)		Men				Women			
			Included (n = 16)		Ostracized (n = 11)		Included (n = 13)		Ostracized (n = 16)	
	M	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*
Manipulation checks										
Ball throws (percentage)	23.61	(20.23)	41.06_{a}	(14.43)	6.36_{b}	(2.69)	38.85_{a}	(14.43)	5.63_{b}	(3.20)
Feeling ignored\excluded	2.95	(1.51)	1.56_{a}	(.68)	3.95_{b}	(1.31)	2.27_{a}	(.93)	4.19_{b}	(1.09)
Need satisfaction										
Belonging	2.89	(1.17)	3.95_{a}	(.86)	2.09_{b}	(.68)	3.38_{a}	(.91)	1.99_{b}	(.74)
Control	2.31	(1.09)	3.49_{a}	(.89)	1.56_{b}	(.45)	2.49_{c}	(.88)	1.51_{b}	(.44)
Self-esteem	2.87	(1.07)	3.82_{a}	(.61)	$2.45_{b,c}$	(1.00)	3.09_{b}	(.65)	2.02_{c}	(.95)
Meaningful existence	3.04	(1.08)	4.05_{a}	(.64)	2.42_{b}	(.74)	3.48_{c}	(.72)	2.09_{b}	(.74)
Relationship evaluations										
Commitment	7.72	(1.36)	7.64_{a}	(1.12)	7.35_{a}	(1.87)	7.78_{a}	(1.33)	7.99_{a}	(1.24)
Satisfaction	7.60	(1.40)	7.37_{a}	(1.21)	7.51_{a}	(1.31)	7.46_{a}	(1.71)	8.01_{a}	(1.42)
Investments	6.61	(1.64)	6.60_{a}	(1.42)	6.25_{a}	(2.14)	6.75_{a}	(1.74)	6.75_{a}	(1.52)
Alternatives	4.63	(1.39)	4.53_{a}	(1.17)	4.95_{a}	(1.40)	4.72_{a}	(1.52)	4.45_{a}	(1.55)
IOS	6.20	(.86)	6.13_{a}	(.72)	6.00_{a}	(.77)	6.15_{a}	(1.14)	6.44_{a}	(.81)

Note. Means with differing subscripts within rows are significantly different at the $p < .05$ based on Fisher's LSD post hoc paired comparisons.

Table 5

Study 2: Means and Standard Deviations for Combined Conditions of Ostracism and Participant Gender

	Entire Sample (n = 142)		Men				Women			
			Included (n = 33)		Ostracized (n = 28)		Included (n = 43)		Ostracized (n = 38)	
	M	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*
Need satisfaction										
Belonging	3.56	(1.31)	4.46_a	(.80)	2.59_b	(1.04)	4.33_a	(.91)	2.61_b	(1.09)
Control	1.92	(.90)	2.22_a	(.83)	1.79_b	(.92)	2.17_a	(1.00)	1.46_b	(.60)
Self-esteem	2.65	(1.00)	3.10_a	(.92)	2.38_b	(.93)	3.04_a	(1.05)	2.03_b	(.64)
Meaningful existence	3.72	(1.23)	4.43_a	(.81)	2.98_b	(1.06)	4.46_a	(.84)	2.81_b	(1.11)
Relationship evaluations										
Commitment	7.81	(1.65)	7.61_a	(1.75)	7.73_a	(1.52)	8.12_a	(1.42)	7.69_a	(1.89)
Satisfaction	7.69	(1.52)	7.57_a	(1.72)	7.32_a	(1.78)	7.99_a	(1.07)	7.72_a	(1.56)
Investments	7.28	(1.70)	7.20_a	(1.75)	7.36_a	(1.55)	7.45_a	(1.66)	7.10_a	(1.83)
Alternatives	4.33	(1.96)	4.58_a	(2.11)	4.51_a	(1.55)	4.19_a	(2.03)	4.16_a	(2.07)

Note. Means with differing subscripts within rows are significantly different at the $p < .05$ based on Fisher's LSD post hoc paired comparisons.

Table 6

Study 2: Correlation of Investment Model Components

Variable	1	2	3	4
1. Commitment	–	.71**	.74**	-.25**
2. Satisfaction		–	.53**	-.15
3. Investments			–	-.18*
4. Alternatives				–

Note. All correlation coefficients represent Pearson's *r*.

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

Table 7

Study 2: Unstandardized Path Coefficients, Indirect, and Direct Effects and 95% Confidence Intervals From Moderated Mediation Analysis With Belonging Need Satisfaction as the Mediator Predicting Relationship Evaluations, Partner Evaluations and Proximity Seeking as the Outcomes

Path	Estimate	95% Confidence Interval	
		Lower	Upper
Relationship Evaluations			
Investment Model			
Commitment			
Direct effect (Men)	.14	-.86	11.13
Direct effect (Women)	-.42	-1.28	.45
Indirect effect (Men)	-.02	-.54	.50
Indirect effect (Women)	-.02	-.50	.43
Indirect effects difference	.00	-.09	.13
Satisfaction			
Direct effect (Men)	.12	-.78	1.03
Direct effect (Women)	.08	-.72	.87
Indirect effect (Men)	-.37	-.90	.09
Indirect effect (Women)	-.33	-.82	.08
Indirect effects difference	.04	-.11	.09
Investments			
Direct effect (Men)	-.25	-1.27	.78
Direct effect (Women)	-.68	-1.57	.20
Indirect effect (Men)	.40	-.13	1.00
Indirect effect (Women)	.36	-.13	.86

(*table continues*)

Path	Estimate	95% Confidence Interval	
		Lower	Upper
Alternatives			
Direct effect (Men)	-.49	-1.68	.70
Direct effect (Women)	-.47	-1.51	.56
Indirect effect (Men)	.43	-.26	1.15
Indirect effect (Women)	.38	-.23	.99
Indirect effects difference	-.05	-.42	.07
Partner Evaluations			
Secure Base & Safe Haven			
Direct effect (Men)	-.15	-.86	.56
Direct effect (Women)	-.07	-.68	.54
Indirect effect (Men)	-.04	-.45	.40
Indirect effect (Women)	-.04	-.40	.36
Indirect effects difference	.00	-.06	.14
Perceived Partner Responsiveness			
Direct effect (Men)	.15	-.44	.75
Direct effect (Women)	.26	-.26	.78
Indirect effect (Men)	-.44	-1.04	-.01
Indirect effect (Women)	-.39	-.91	-.01
Indirect effects difference	.05	-.06	.37
Proximity Seeking			
Desire to be with partner			
Direct effect (Men)	-.24	-.94	.46
Direct effect (Women)	-.33	-.94	.27

(*table continues*)

Path		Estimate	95% Confidence Interval	
			Lower	Upper
	Indirect effect (Men)	.11	-.24	.49
	Indirect effect (Women)	.10	-.22	.44
	Indirect effects difference	-.01	-.17	.03
Desired distance				
	Direct effect (Men)	2.77	-6.69	12.24
	Direct effect (Women)	4.83	-3.41	13.07
	Indirect effect (Men)	-4.54	-12.29	.16
	Indirect effect (Women)	-4.04	-10.15	.15
	Indirect effects difference	.49	-.76	4.14
Closeness				
	Direct effect (Men)	.05	-.83	.92
	Direct effect (Women)	-.11	-.86	.65
	Indirect effect (Men)	-.02	-.55	.48
	Indirect effect (Women)	-.02	-.51	.41
	Indirect effects difference	.00	-.08	.15
Ideal closeness				
	Direct effect (Men)	-.31	-1.04	.42
	Direct effect (Women)	-.09	-.72	.54
	Indirect effect (Men)	-.09	-.46	.25
	Indirect effect (Women)	-.08	-.40	.24
	Indirect effects difference	.01	-.04	.14

Note. Ostracism condition: Inclusion = 0; Ostracism = 1.

Table 8

Study 2: Unstandardized Path Coefficients, Indirect, and Direct Effects and 95% Confidence Intervals From Moderated Mediation Analysis With Control Need Satisfaction as the Mediator Predicting Relationship Evaluations, Partner Evaluations and Proximity Seeking as the Outcome

Path	Estimate	95% Confidence Interval	
		Lower	Upper
Relationship Evaluations			
Investment Model			
Commitment			
Direct effect (Men)	-.01	-.85	.83
Direct effect (Women)	-.64	-1.40	.11
Indirect effect (Men)	.13	-.01	.50
Indirect effect (Women)	.21	-.02	.43
Indirect effects difference	.08	-.05	.43
Satisfaction			
Direct effect (Men)	-.32	-1.10	.46
Direct effect (Women)	-.37	-1.06	.33
Indirect effect (Men)	.07	-.05	.36
Indirect effect (Women)	.12	-.11	.44
Indirect effects difference	.05	-.04	.34
Investments			
Direct effect (Men)	.06	-.82	.94
Direct effect (Women)	-.48	-1.26	.30
Indirect effect (Men)	.09	-.02	.39
Indirect effect (Women)	.15	-.05	.45
Indirect effects difference	.06	-.03	.37

(*table continues*)

Path	Estimate	95% Confidence Interval	
		Lower	Upper
Alternatives			
Direct effect (Men)	.11	-.90	1.12
Direct effect (Women)	.19	-.71	1.09
Indirect effect (Men)	-.17	-.61	.02
Indirect effect (Women)	-.28	-.70	.03
Indirect effects difference	-.11	-.49	.08
Partner Evaluations			
Secure Base & Safe Haven			
Direct effect (Men)	-.26	-.87	.34
Direct effect (Women)	-.23	-.76	.30
Indirect effect (Men)	.07	-.01	.30
Indirect effect (Women)	.13	-.02	.36
Indirect effects difference	.05	-.03	.28
Proximity Seeking			
Desire to be with partner			
Direct effect (Men)	-.16	-.76	.43
Direct effect (Women)	-.29	-.82	.25
Indirect effect (Men)	.03	-.04	.19
Indirect effect (Women)	.05	-.08	.20
Indirect effects difference	.02	-.03	.17

(*table continues*)

Path	Estimate	95% Confidence Interval	
		Lower	Upper
Desired distance			
Direct effect (Men)	-.68	-8.82	7.46
Direct effect (Women)	2.55	-4.72	9.81
Indirect effect (Men)	-1.08	-4.78	.16
Indirect effect (Women)	-1.76	-4.55	.38
Indirect effects difference	-.68	-.76	4.14
Closeness			
Direct effect (Men)	-.12	-.86	.62
Direct effect (Women)	-.40	-1.05	.25
Indirect effect (Men)	.15	-.01	.44
Indirect effect (Women)	.27	.10	.56
Indirect effects difference	.12	-.08	.42
Ideal closeness			
Direct effect (Men)	-.49	-1.11	.13
Direct effect (Women)	-.33	-.88	.21
Indirect effect (Men)	.09	-.01	.30
Indirect effect (Women)	.17	.03	.40
Indirect effects difference	.08	-.03	.31

Note. Ostracism condition: Inclusion = 0; Ostracism = 1.

Table 9

Study 2: Unstandardized Path Coefficients, Indirect, and Direct Effects and 95% Confidence Intervals From Moderated Mediation Analysis With Mood as the Mediator Predicting Relationship Evaluations, Partner Evaluations and Proximity Seeking as the Outcome

Path	Estimate	95% Confidence Interval	
		Lower	Upper
Relationship Evaluations			
Investment Model			
Commitment			
Direct effect	-.25	-.92	.42
Indirect effect (Men)	.05	-.36	.45
Indirect effect (Women)	.06	-.43	.49
Satisfaction			
Direct effect	.01	-.59	.62
Indirect effect (Men)	-.44	-1.08	-.02
Indirect effect (Women)	-.11	-.46	.23
Investments			
Direct effect	-.48	-1.16	.20
Indirect effect (Men)	-.29	-.07	.75
Indirect effect (Women)	-.40	-.08	.89
Alternatives			
Direct effect	-.43	-1.21	.36

(*table continues*)

Path	Estimate	95% Confidence Interval	
		Lower	Upper
Partner Evaluations			
Secure Base & Safe Haven			
Direct effect	-.14	-.61	.33
Indirect effect (Men)	-.01	-.38	.32
Indirect effect (Women)	.01	-.30	.31
Perceived Partner Responsiveness			
Direct effect	.08	-.32	.48
Indirect effect (Men)	-.34	-.69	-.04
Indirect effect (Women)	-.23	-.76	.13
Proximity Seeking			
Desire to be with partner			
Direct effect	-.21	-.68	.26
Indirect effect (Men)	-.02	-.41	.31
Indirect effect (Women)	.08	-.19	.38
Desired distance			
Direct effect	1.45	-4.62	8.13
Indirect effect (Men)	-1.39	-5.40	1.13
Indirect effect (Women)	-2.94	-8.38	1.50
Closeness			
Direct effect	-.23	-.80	.34
Indirect effect (Men)	.08	-.37	.55
Indirect effect (Women)	.17	-.22	.52

(*table continues*)

Path	Estimate	95% Confidence Interval	
		Lower	Upper
Ideal closeness			
Direct effect	-.24	-.73	.24
Indirect effect (Men)	.08	-.30	.45
Indirect effect (Women)	-.13	-.45	.23

Note. Ostracism condition: Inclusion = 0; Ostracism = 1.

Table 10

Study 2: Correlation of Value of Belonging and Control Needs and Outcome Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12
Value of need												
1. Belonging	–	.41**	-.05	-.02	-.03	-.16	-.02	-.03	.01	-.08	-.11	-.06
2. Control		–	-.24**	-.25**	-.18*	.30*	-.17*	-.13	-.27**	.09	-.30**	-.09
Relationship evaluations												
3. Commitment			–	.71**	.74**	-.26**	.69**	.47**	.46**	-.20*	.54**	.31**
4. Satisfaction				–	.53**	-.15	.69**	.71**	.48**	-.21*	.60**	.34**
5. Investments					–	-.18*	.59**	.31**	.44**	-.33**	.48**	.41**
6. Alternatives						–	-.21*	-.20*	-.20*	.04	-.25**	-.25**
Partner evaluations												
7. Secure base & safe haven							–	.65**	.45**	-.23**	.48**	.23**
8. Partner responsiveness								–	.34**	-.10	.42**	.27**
Proximity seeking												
9. Desire to be with partner									–	-.47**	.41**	.36**
10. Desire distance										–	-.21*	-.17*
11. Closeness											–	.59**
12. Ideal closeness												–

Note. All correlation coefficients represent Pearson's *r*.

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

Table 11

Study 2: Regression Examining Ostracism Condition and Value of Control as Predictors of Relationship Evaluations, Partner Evaluations and Proximity Seeking

Model	*B*	*SE B*	β	Partial *r*	R^2
Outcome measure: Commitment					.06
(Constant)	7.89	.19			
Ostracism condition	-.14	.28	-.04	-.04	
Value of control	-.16	.08	-.22*	-.17	
Ostracism X value of control	-.03	.18	-.13	-.08	
Outcome measure: Satisfaction					.07
(Constant)	7.81	.17			
Ostracism condition	-.20	.25	-.07	-.07	
Value of control	-.13	.07	-.20	-.16	
Ostracism X value of control	-.07	.12	-.07	-.05	
Outcome measure: Investments					.03
(Constant)	7.32	.20			
Ostracism condition	-.09	.29	-.03	-.03	
Value of control	-.13	.08	-.17	-.14	
Ostracism X value of control	-.01	.13	-.01	-.00	
Outcome measure: Alternatives					.11
(Constant)	4.41	.22			
Ostracism condition	-.17	.32	-.04		-.05
Value of control	.35	.09	.40***	.32	
Ostracism X value of control	-.22	.15	-.15	-.13	

(*table continues*)

Model	*B*	*SE B*	β	Partial *r*	R^2
Outcome measure: Secure base & safe haven					.03
(Constant)	6.03	.13			
Ostracism condition	-.10	.20	-.04	-.04	
Value of control	-.10	.06	-.20	-.16	
Ostracism X value of control	.05	.09	.06	.05	
Outcome measure: Desire to be with partner				.08	
(Constant)	6.13	.13			
Ostracism condition	-.14	.19	-.06	-.06	
Value of control	-.11	.05	-.21*	-.17	
Ostracism X value of control	-.07	.09	-.08	-.07	
Outcome measure: Closeness					.10
(Constant)	5.03	.16			
Ostracism condition	-.08	.23	-.03	-.03	
Value of control	-.23	.06	-.36***	-.29	
Ostracism X value of control	.12	.11	.11	.09	

Note. Ostracism condition: 0= inclusion, 1=ostracism.

* $p < .05$, ***$p < .001$

Table 12

Study 2: Correlation of Endorsement of Agentic and Communal Goals and Outcome Variables

Variable	Agentic Goals	Communal Goals
Goals		
1. Agentic	–	.16
2. Communal	.16	–
Relationship evaluations		
3. Commitment	-.20*	.10
4. Satisfaction	-.10	.15
5. Investments	-.03	.06
6. Alternatives	.23**	-.011
Partner evaluations		
7. Secure base & safe haven	-.09	.15
8. Partner responsiveness	-.13	.12
Proximity seeking		
9. Desire to be with partner	-.17*	.10
10. Desire distance	-.01	-.04
11. Closeness	-.08	.01
12. Ideal closeness	.01	-.03

Note. All correlation coefficients represent Pearson's *r*.

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

Table 13

Study 2: Regression Examining Ostracism Condition and Agentic Goals as Predictors of Relationship Evaluations and Partner Evaluations

Model	*B*	*SE B*	β	Partial *r*	R^2
Outcome measure: Commitment					.03
(Constant)	7.88	.19			
Ostracism condition	-.18	.28	-.05	-.05	
Agentic goals	-.21	.23	-.10	-.08	
Ostracism X agentic goals	-.42	.34	-.14	-.11	
Outcome measure: Alternatives					.08
(Constant)	4.38	.22			
Ostracism condition	-.11	.32	-.03	-.03	
Agentic goals	.98	.26	.42***	.31	
Ostracism X agentic goals	-.99	.39	-.28*	-.21	
Outcome measure: Desire to be with partner					.05
(Constant)	6.12	.13			
Ostracism condition	-.19	.19	-.08	-.08	
Agentic goals	-.09	.16	-.06	-.05	
Ostracism X agentic goals	-.36	.23	-.17	-.13	

Note. Ostracism condition: 0= inclusion, 1=ostracism.

* $p < .05$, *** $p < .001$

Appendix B

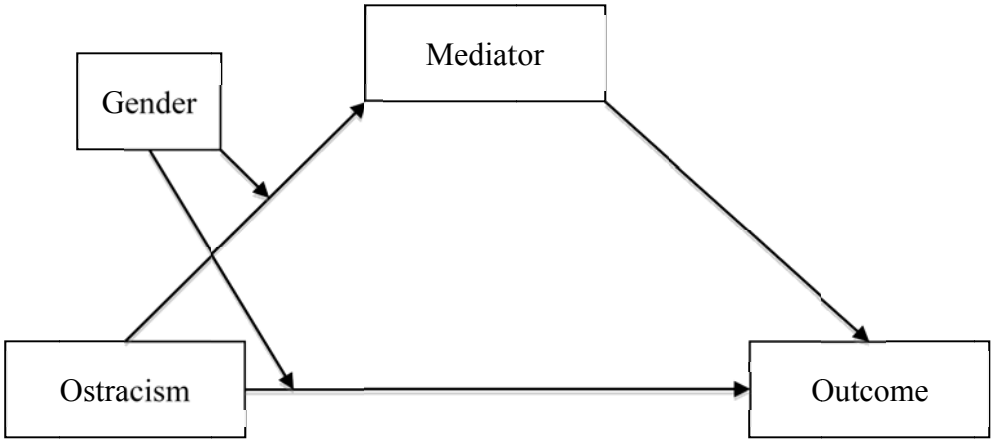

Figure 1. Study 2: Conceptual model for Model 8 to test moderated mediation.

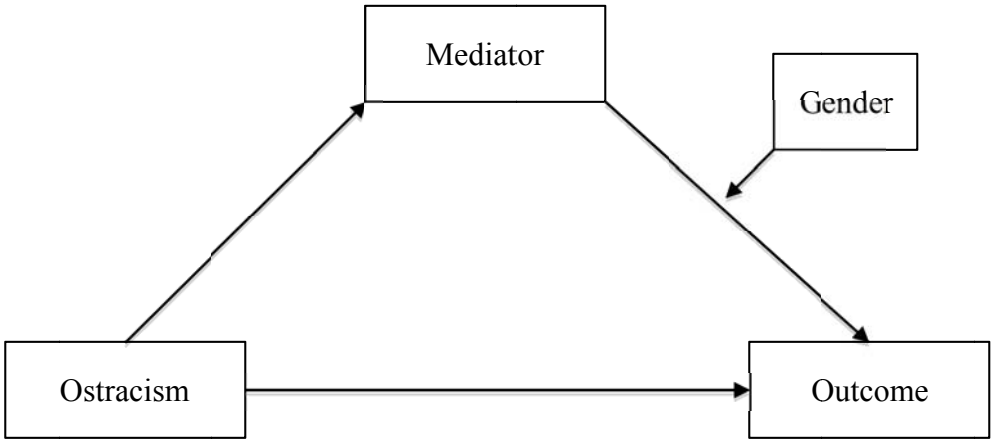

Figure 2. Study 2: Conceptual model for Model 14 to test moderated mediation.