

OSTRACISM, SIMILARITY MESSAGE, AND AGGRESSION

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ABSTRACT

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Ostracism results in decreased levels of belonging, self-esteem, control, and meaningful existence, and can lead to aggression (Williams, 2001). It was predicted communication, in the form of a similarity message, would mitigate the effect of ostracism on aggression and would restore levels of fundamental needs. To test these predictions, participants were either ostracized or not ostracized, received either a similarity message or no message, and were measured for levels of aggression and fundamental needs. Ostracized participants felt less included and used more aggression than did non-ostracized participants. Message presence produced lower levels of meaningful existence for ostracized participants who did not receive a similarity message compared to participants who were not ostracized and ostracized participants who did receive a message. Message presence did not yield differences in the other three levels of fundamental needs. Results and implications for future research are discussed.

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Introduction

This study was designed to test how communication mitigates aggression resulting from ostracism. The central hypothesis is that a brief similarity message reduce the effect of ostracism on aggression. It is further hypothesized that a brief similarity message will restore threatened needs. This study breaks new ground by investigating whether communication after an ostracism episode would thwart aggressive tendencies and restore basic needs typically violated by exclusion. The need for inclusion in groups, the connection between ostracism and aggression, and the role of communicating similarity messages in mitigating aggressive responses to ostracism are described subsequently.

Literature Review

Williams (2001, 2007a) defines ostracism broadly as being excluded or ignored, using the term interchangeably with rejection and social exclusion. Ostracism “involves withdrawal of attention or recognition by others (Williams, 2001, p. 63).” It is distinct from other forms of negative social interaction such as bullying, insulting, or teasing because ostracism is marked by a total lack of verbal communication with and recognition of the target of ostracism. Other forms of aversive social interaction involve communication with the target person, even though the messages are aggressive or negative in nature. When people are ostracized, they are ignored and prevented from communicating with others.

People have a need for social connection (Jonassen, 1998) and when ostracized, that need is violated (Williams, 2001). People may react to ostracism in a variety of ways aimed at restoring needs thwarted by ostracism and gaining recognition from the source(s) of ostracism. Targets of ostracism are driven to gain this recognition from the group at any cost, even through such need restoring behaviors as aggression or violence (Baumeister & Leary, 1995; Williams, 2001). Research thus far has not investigated an ostracism target’s motivation to seek membership in other groups. Moreover, though ostracism and communication are inextricably linked, the relationships among communication, ostracism, and aggression has not been investigated.

When social isolates respond to exclusion with aggression, communities, schools, and workplaces suffer. Social exclusion results in both self-defeating behavior (Twenge, Catanese, & Baumeister, 2002) and a decrease in prosocial behavior (Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007). Prosocial behavior is enacted when people feel they are part of a community because they seek to support and aid each other (Twenge et al, 2007). Likewise, when

people are excluded from a community they have no incentive to contribute to the welfare of those excluding them. Thus, Twenge (2000) argues for the existence of a negative correlation between the number of social ties one has and whether one engages in aggressive behavior. At a community level, a lack of social ties has been associated with increased crime rates in violent juvenile offenders (Loeber & Farrington, 1999) and in adult males (Garbarino, 1999). In recent decades, society has seen a simultaneous increase in social isolation and violent, aggressive, and anti-social behavior (Twenge, 2000; Twenge, Baumeister, Tice, & Stucke, 2001).

Targets of ostracism feel a decrease in at least four fundamental needs: belonging, control, self-esteem, and meaningful existence (Williams, 2001) as well as experiencing an increase in anger and sadness (Williams, 2001). Specifically, denying someone communication can result in aggression and a decrease in their ability to meet fundamental needs (Baumeister & Leary, 1995), but communicating with an ostracism target might reverse these effects. Specifically, communicating with an ostracized person might restore fundamental needs typically threatened by ostracism and it might mitigate aggression from the excluded person.

People are social creatures, motivated to cultivate social connections and to avoid social ostracism (Jonassen, 1998; Moller, 1998). In all societies people have lived in groups (Mann, 1988) and people treat ingroup members more favorably than outgroup members (Tajfel, Billig, Bundy, & Flament, 1971). From an evolutionary perspective, individual survival was dependent upon the group, as evidenced by the fact that infants who have close contact with others have lower mortality rates than those who are deprived of close contact (Bowlby, 1980).

Forming connections through social relationships is advantageous for people, is something that we do quite readily, and may be an innate human drive (Williams, 2001). These groups can form for simple reasons, including the act of people categorizing themselves as members of the

same group or estimating the same number of dots on a screen as someone else. People readily develop a sense of belonging, identity, and group membership over even trivial similarities (Castano, Yzerbyt, Paladino, & Sacchi, 2002; Tajfel, 1970). The minimal group studies (Turner & Tajfel, 1986) produced evidence that people seek to belong to groups and provide in-group members with preferential treatment as compared to out-group members.

In spite of how important inclusion is for people, we frequently ignore or exclude each other from social interaction (for a review, see Williams, 2001). In fact, when people are ignored or excluded from group interaction they experience a host of psychological and physical effects.

When people are ignored or excluded from groups, they feel the effects of ostracism. A wide body of literature exists that documents these effects on an excluded person (Williams, 2001). Ostracism produces some unique negative outcomes in targets because unlike bullying, teasing, or physical altercations, ostracism denies recognition of the target by the group (Williams, 2001). Bullying, teasing, and physical altercations all are marked by interaction with others while ostracism alone is an isolating action. Because ostracism is distinct from other negative social interactions, Williams (2001, 2007a) argues that the effects of ostracism are unique as well.

Ostracism results in a violation of the needs for belonging, self-esteem, control, and meaningful existence (Williams, 2001). Williams' (2001) model of ostracism purports that ostracized people will experience a reduction in all four of these needs. Many studies on ostracism have found data consistent with his model (for a review, see Williams, 2001). Consistent with previous findings on ostracism, the first hypothesis predicts that these effects will be replicated in the present study. Specifically, targets of ostracism will report lower levels of needs when compared with people who have not been ostracized:

H₁: Ostracized participants will report lower levels of four fundamental needs compared with not-ostracized participants.

Ostracism can also result in physical and psychological problems (Baumeister & Leary, 1995), as well as increased compliance and attitude change (Williams, 2007b). Social exclusion can also result in adverse health effects (e.g., Gruter, 1986) and aggressive behavior (e.g., Williams, Bernieri, Faulkner, Grahe, & Gada-Jain, 2000). Following an ostracism episode, people can experience a host of negative psychological outcomes as well, including depression, anxiety, and withdrawal (Baumeister & Leary, 1995).

Ostracized individuals may experience negative affect, as individuals located on the periphery of social networks are more likely to be unhappy compared to more centrally located individuals (Fowler & Christakis, 2008). A person with fewer social bonds is more likely to be unhappy compared to a person with more social bonds. Exclusion can produce negative affect even in trivial situations, such as not receiving text messages on a cellular phone when others do (Smith & Williams, 2004) and being excluded from a ball toss game (Williams & Jarvis, 2006).

Ostracism is painful. Exclusion can be so painful that people report negative affect even when they benefit financially from exclusion (van Beest & Williams, 2006) and when they are excluded from groups to which they do not wish to belong (Gonsalkorale & Williams, 2007). Rejection activates the same part of the brain that is activated when a person experiences physical pain (Eisenberger, Lieberman, & Williams, 2003). Given the many negative effects of exclusion, it is easy to see that people are motivated to avoid ostracism and to be included. Compounding the problem, when ostracized, people may react with aggressive tendencies.

Social by nature, people are driven to create communities (Jonassen, 1998) and in order to retain membership in these communities, people abide by and conform to consensual moral rules

(Fukuyama, 1999). In this way, groups provide socialization to the individual and foster pro-social behavior (Twenge, Tice, & Stucke, 2001). Remove the socializing influence of the group, and people may engage in antisocial behavior. As Warburton, Williams, and Cairns (2006, p. 2) state “Without the socializing influence of a group, prosocial behavior might fade, and aggressive behavior, the more instinctual and impulsive tendency, might emerge instead. Thus, exclusion from a group might lessen or overwhelm restraints against aggressive behavior.” After being ostracized, people exhibit higher levels of aggression than they would otherwise. It is reasonable to speculate that if not for groups, people would engage in antisocial behavior more readily and more often.

A clear relationship has been found between a lack of social connection and anti-social and aggressive behavior (Williams, 2001; Twenge et al., 2001). Experimental research has found evidence for ostracism preceding aggression temporally (Warburton, Williams, and Cairns, 2006; Twenge et al., 2001). As noted by Twenge et al. (2001), the causal order between ostracism and aggression might be bi-directional. It is likely that people might have evolved to reject or avoid community members who are aggressive, hostile, or violent, but ostracism can lead to aggression as well (Twenge et al., 2001; Williams, 2001).

Social psychologists have had difficulty agreeing on a definition of aggression (Geen, 1990) but one commonly used definition for aggression is “a response that delivers noxious stimuli to another organism (Buss, 1961, p. 1).” Other definitions have included the intent to harm on the part of the source of aggression (Dollard, Doob, & Miller, 1939) and the motivation of the victim to avoid that harm (Baron & Richardson, 1994). For the purposes of this paper, aggression is defined as a response that delivers noxious stimuli to another organism, when the source of aggression is intending to harm the target and when the target is motivated to avoid

the aggression (Geen, 1990).

It is clear that some ostracized people retaliate in aggressive ways to try to gain recognition from the group, to provoke a reaction (Williams, Bernieri, Faulkner, Grahe, & Gada-Jain, 2000), or to retaliate when insulted or provoked (Twenge et al., 2001). Certainly not all ostracized people retaliate with acts of violence, aggression or terrorism, but under some circumstances, some targets do respond with these strategies. Further, not all ostracized people who respond with aggression do so violently. Aggressive actions can take a more indirect form such as engaging in gossip or rumor spreading or ceasing to extend social invitations to a person.

It is clear that people who are ostracized may retaliate in aggressive ways and across different contexts. Tice and colleagues have presented evidence that ostracism leads to aggression without control deprivation as specified in Williams' (2001) model. In a host of contexts, ostracized participants (compared with others who were included or others who received adverse consequences other than rejection) "gave negative assessments to job applicants, cheated on tests, helped less, thought others to be less attractive, and competed more in a game in which cooperation would be mutually beneficial (Williams, 2001; p. 250)." Though Williams's (2001) model includes control as a moderator of ostracism and aggression, for the purposes of this study (and consistent with other literature) ostracism will be predicted to influence aggression directly. Consistent with these findings, the second hypothesis follows:

H₂: Participants who are ostracized will exhibit more aggression compared to those who are not ostracized.

Williams (2001) argues that rather than a direct relationship between ostracism and aggression, control moderates this relationship. He states that people want to have a sense of control over their social environments, and when control is denied people will react with

aggression to regain a sense of control. Williams (2001) argues that if targets of ostracism experience a decreased sense of control, they may react with behavioral strategies that help restore this threatened need, such as aggressive behavior. This behavioral aggression may be enacted to try to gain recognition from the group or to provoke a reaction (Williams et al., 2000).

Several school shooters reported that they were targets of ostracism before they acted violently toward others (Leary et al., 2003), and this illustration of ostracism and school shootings might be reflective of a larger relationship between social exclusion and aggression (Twenge et al., 2001). Although ostracized school students are not likely to react with extremely violent behavior, it is the case that those students who have reacted violently almost uniformly had been ostracized. These school students may have been attempting to exert control over their social environments. Put differently it is plausible that the effect of ostracism on aggression is moderated by control.

Further, restoring control has been found to minimize aggression in response to ostracism. Warburton, Williams, and Cairns (2006) found that people who have been excluded and are given the ability to control when and how quickly they are exposed to unpleasant stimuli are far less likely to be aggressive than excluded people who do not have control over unpleasant stimuli.

Even though Williams' (2001) model predicts that ostracism coupled with lack of control will produce aggressive responses, a great deal of evidence exists that shows ostracism can lead to aggression directly (Cantanese & Tice, 2005; Kirkpatrick, Waugh, Valencia, & Webster, 2002; Tweng, 2005), though decreased control might interact with ostracism to also lead to behavioral aggression (Warburton, Williams, & Cairns, 2006). Therefore, evidence suggests the relationship between ostracism and aggression may be linked by an interaction effect as well as a main effect.

In addition to a decreased sense of control, recalling social ties might also mitigate the

relationship between ostracism and aggression. People who recall existing social contacts, such as friends, family, or membership in other groups, exhibit minimized aggressive responses after an episode of social exclusion compared with people who are not prompted to recall social ties (Williams, Forgas, & von Hippel, 2005). Remembering that they are included in other social groups seems to thwart aggressive tendencies.

However, when people have been excluded from a group, it is unknown how likely they will be to recall spontaneously other social ties and mitigate their own aggression. An external stimulus, like creating a new social contact or being reminded of existing group memberships, might be necessary to motivate the ostracized person to recall that he is included somewhere else. If social isolates communicate with someone after being ostracized from a group, they might be expected to become aware that they have other social ties. People are motivated to form groups even over trivial similarities (Turner & Tajfel, 1986) so communicating with another person should be sufficient to remind ostracized people that they have other social ties. Just as recalling other social ties mitigates the effects of ostracism (Williams, Forgas, & von Hippel, 2005), establishing social ties through communication should likewise mitigate the effects of ostracism.

If recalling other social ties can mitigate the effect of ostracism on thwarted needs as well as the effect of ostracism on aggression (Williams, Forgas, & von Hippel, 2005), then perceiving similarity with a stranger might produce similar outcomes: restoring fundamental needs and decreasing aggression. In fact, if people form group memberships readily, even over trivial similarities, establishing social ties by receiving a similarity message from a stranger might be sufficient to restore thwarted needs and mitigate aggressive responses.

Similarity is commonly linked to group membership and belonging. Similarity along key attributes which are important to the group promotes attraction between group members (Hogg,

Hardie, & Reynolds, 1995). Similarity between group members also contributes to entitativity of the group, or the extent to which a group is perceived to be a group (Campbell, 1958). Though similarity or homogeneity is important in establishing clear in-group and out-group memberships in stable groups over time, sharing minimal similar characteristics with strangers is enough to produce perceptions of group membership (Tajfel, 1970; Turner & Tajfel, 1986). Delivering similarity messages to ostracism targets might help them re-establish a sense of belonging. When ostracism targets perceive similarity with another group, they may experience immediate perceptions of belonging to an ingroup, consistent with the minimal group paradigm research (Tajfel, 1970). The perceived similarity may result in a reduction of aggression and an increase in fundamental needs.

Messages have rarely been studied in experiments on ostracism (for an exception, see Twenge et al., 2001). When messages have been varied in ostracism studies, they have been varied to alter the level of exclusion the targeted person perceives. Messages have not been produced to moderate the level of aggression exhibited by targets of ostracism after they have reported being excluded. Twenge, Zhang, Catanese, and Baumeister (2003) did find that when an experimenter gave participants a bag of candy and thanked them for coming following an episode of ostracism, aggression was decreased. The study was designed to test whether receiving a bag of candy would reduce the likelihood of aggression, but it is unclear whether the thanks or the candy mitigated the aggression in this study.

In summary, when an ostracism target receives a message that produces perceived similarity, it is reasonable to propose that aggression might be thwarted. Similarity messages are not thought to increase fundamental needs in people who are not ostracized. Thus, similarity messages are expected to moderate the relationship between ostracism and aggression. The third

hypothesis follows from this:

H₃: Aggression will be highest for participants who are ostracized and do not receive a similarity message compared to the other three conditions. No difference is anticipated between the other three conditions (not ostracized/no message, not ostracized/message, and ostracized/message).

Finally, it is necessary to consider whether people who are not ostracized and receive a similarity message will experience increased levels of needs compared with people who are not ostracized and do not make a connection with a stranger. Previous research indicates it is exclusion that decreases needs rather than inclusion increasing needs (Leary, 1995; Williams, 2007b). In a review of the ostracism research he has conducted over a period of 15 years with the ball-toss paradigm, Williams concludes, “It’s not that inclusion elevated these feelings (when compared to a no-ball-tossing control group), but rather that ostracism thwarted these fundamental needs (Williams, 2007b, p. 238).” Leary, Tambor, Terdal, and Downs (1995) came to a similar conclusion when the results of their study indicated that participants who were told they were included because a group decided to include them had the same levels of self-esteem as people who were included at random, but those who were excluded for personal reasons had lower self-esteem than those excluded at random. They state, “...the pattern of data suggests that this effect was attributable to the effects of exclusion rather than inclusion (Leary et al., 1995, p. 524).” Therefore, it is expected that people who have been included and who connect with another person will report the same levels of needs as people who have been included and who do not connect with another person. Thus,

H₄: Fundamental needs will be lowest for participants who are ostracized and who receive no message compared to the other three conditions. No difference is anticipated between the other

three conditions (not ostracized/no message, ostracized/message, and ostracized/no message).

In order to address these hypotheses, an experiment was designed to test the relationship between ostracism, aggression, and a similarity message. In this study, participants will be either included or ostracized from a social interaction and then will either be given a similarity message or no message. Four fundamental needs that are thwarted following a social ostracism interaction will be measured. Intention toward behavioral aggressive will also be measured by asking participants to respond to self-report items of behavioral intention. This study will include induction checks to assess if participants were aware of whether others chose to work with them or not. Ostracism will be varied by using two levels: ostracism and not ostracism. Message type will also be varied by using two levels: the presence of a similarity message following ostracism or no message following ostracism.

Method

Participants

One-hundred and five undergraduate students enrolled in communication courses at a mid-sized university on the East Coast served as participants in this study. Participants were offered course credit or extra credit for their participation. Participants ranged in age from 18 to 51 ($M = 21.48$, $sd = 4.50$).

Thirty-two participants reported they were male, 68 reported they were female, and five did not report sex. Of the 105 participants, 87 self-identified as Caucasian, five as African American, three as Latina or Latino, and eight as other. Two participants did not report race. When asked to report academic year, 10 participants reported they were Freshman, 20 reported Sophomore status, 37 Junior status, and 36 Senior status. Two participants did not report academic year.

Design

This study employed a 2 (ostracized/not ostracized) x 2 (similarity message/control message) independent groups design experiment. Ostracism and message type served as the independent variables. Self-esteem, sense of control, sense of belonging, meaningful existence, and behavioral aggression served as the dependent variables.

Procedure

The dominant paradigm to study social ostracism is the cyberball paradigm (Williams 1997, 2001) in which participants perceive that they are interacting with two other group members in a video game by tossing a ball to each other. In the inclusion version of cyberball, the game is programmed to toss the ball to the participant regularly throughout the duration of play. In the ostracism version, the game is programmed to toss the ball to the participant for a period of

time and then the two other virtual players toss to each other while excluding the participant (Eisenberger et al., 2003; Gonsakerale & Williams, 2004; Williams et al., 2000; Zardo et al. 2004). Though this paradigm has been shown to be quite effective in inducing ostracism, it may not approximate closely the ways in which adults exclude each other from social interaction. Thus, the methodology selected for this study differed from the predominant manner in which ostracism is typically studied in order to more closely approximate the way ostracism is experienced in every day life.

One alternative exclusion paradigm to the cyberball paradigm is to lead participants to believe they may be selected to have future group interaction with other participants, if other participants choose to work with them (Twenge et al., 2001). Because it may more closely approximate naturalistic ostracism in adult interactions compared with the cyberball paradigm, this experiment used the future interaction paradigm.

Groups of three participants reported to the lab during each experimental session. They were immediately placed into separate rooms. Participants were told that during their time in the study that day, they would be asked to complete a brief introductory questionnaire, respond to a survey, play a computer game with a partner, and engage in a brief discussion. The consent form was thoroughly explained to each participant and after giving consent to participate, each participant completed the introductory questionnaire.

The introductory questionnaire items included age, hometown, favorite band, and a brief open-ended item about their attitudes toward a proposed renovation project on campus. After the participants completed their questionnaires, the experimenter collected them and left the room. After a short time, the experimenter entered the room and gave everyone the same two bogus questionnaires, supposedly from the other two participants, which had been completed before the

experimental session. Each participant was asked to select with whom he or she would most like to work, based on the information on the questionnaires. Following instructions from Twenge et al. (2001, p. 1063), the participants were told, “We are interested in forming groups in which the members like and respect each other. Below, please select the person out of the questionnaires you read today with whom you would most like to work.” After selecting one of the bogus questionnaires, the experimenter collected these sheets and stated that she would return shortly with the group assignments.

The experimenter returned to each participant and gave a message aimed at inducing levels of ostracism. Each participant number was randomly assigned to be in the ostracism condition or non-ostracism condition. Participants in the **not-ostracism** condition were told, “Hmm. Seems like everyone has chosen you as someone they’d like to work with (Twenge et al., 2001, p. 1063).” Participants in the **ostracism** condition were told, “Hmm. Looks like no one chose you as someone they wanted to work with (Twenge et al., 2001, p. 1063).”

The experimenter then took each participant, one at a time, to another room. Approximately one-half of the participants were randomly pre-assigned to the **similarity** condition and the non-similarity condition. In the **similarity** condition, while the participant and experimenter are exiting the first room, the experimenter referenced an item on the questionnaire; the favorite band. The experimenter casually looked at the questionnaire and said, “Please come with me to the next room. I also like [band, e.g. *The Beatles*].” The minimal group paradigm (Tajfel, 1970; Turner & Tajfel, 1986) and evidence that recalling other social ties thwarts aggression (Williams, Forgas, & von Hippel, 2005) provide compelling evidence that such a similarity message would be sufficient to decrease aggressive responses in participants.

In the **non-similarity condition**, the target and experimenter left the room and the

experimenter said, “Please come with me to the next room.” Once escorted to the new room, participants were asked to play a brief electronic game and complete a questionnaire with self-report measures related to ostracism, measuring levels of self-esteem, control, belongingness, and meaningful existence, and behavioral aggression.

Following ostracism, participants were asked to play a computer game designed to measure how quickly they can react to a visual image displayed on the screen. The game is the competitive reaction time (CRT) task which was developed to measure laboratory aggression (Bushman & Baumeister, 1998). This game has been shown to be reliable and valid in previous research and is used frequently to measure aggression in laboratories (e.g. Anderson & Bushman, 1997; Bernstein, Richardson, & Hammock, 1987).

In this study, the procedure and instructions for the game were similar to those employed in a previous study that measured behavioral aggression (Twenge et al., 2001). Instructions for the game stated, “We are asking you to play a computer game against an opponent, no one from the questionnaires you viewed today but a new research participant. This game is aimed at measuring how quickly you can respond to a visual cue. You will have to press a button as quickly as you can after you see a box on the computer screen turn from green, to yellow, to red. If you lose, you will hear an unpleasant noise that the other person set in volume and duration. If you win, the other person will hear the volume and duration of the noise you set. You will only have the chance to play the game one time.” Each participant then set in advance the intensity and duration of the noise and played one game.

Participants then completed the second questionnaire which measured self-esteem, control, meaningful existence, belonging, and demographic items. These items are described below in the instrumentation section.

Debriefing. The experimenter fully debriefed each participant at the end of the study. First, the experimenter told the participant that he or she was randomly assigned to the ostracized or not ostracized condition. To fully explain this point, participants were told that no one looked at their information and then decided whether or not to work with them. Rather, before they ever reported for the study they were randomly assigned to be told that others had chosen to work with them or not. Then, the experimenter told the participants that the two initial informational questionnaires were completed before the study ever began. Those two people did not exist. The experimenter then asked the participants how many “real” people saw their information and decided to work with them. This question checked participant perceptions of the study to ensure the debriefing process was successful. The participants were asked to not speak about the study with others to prevent future participants from discerning the nature of the research. Finally, participants were thanked for their time and dismissed.

Dependent measures. Zardo, Williams, and Richardson (2004) used a cyber version of the ball toss paradigm and employed items serving as induction checks as well as items measuring the extent to which four needs – belonging, self-esteem, control, and meaningful existence – were met during the social interaction. Their analysis yielded internally consistent items measuring each variable. These items were adapted for use in this study. Correlations between all dependent variables may be found in Table 1.

Induction checks. The questionnaire contained three manipulation check items designed to assess the self-reported levels of ostracism experienced by the participants (Zardo, Williams, & Richardson, 2004). Induction check items included: “How many people chose to work with you?”, “To what extent were you included by the other participants today,” and an item stating, “I felt _____ by the other participants” anchored by the bipolar adjectives “rejected” and “accepted.”

The first item had response options of 0, 1, or 2. The other two items were measured on 9-point scales with higher numbers indicating greater inclusion. Each induction check item was found to differentiate between ostracized and non-ostracized participants playing the ball toss game in the Zardo, Williams, and Richardson (2004) study.

Belonging. Four items were used to measure belonging: “I felt poorly accepted by the other participants,” “I felt as though I had made a “connection” or bonded with one or more of the participants during the study,” and “I felt like an outsider during the study.” A five-point Likert-type response set was used to measure these items, with lower scores indicating higher levels of belonging. Higher numbers indicated greater reported sense of belonging. These items were adapted from items used in a previous study, in which they demonstrated sufficient internal consistency with Cronbach’s $\alpha = .74$ and $.71$ in two studies (Zardo, Williams, & Richardson, 2004). In this study, Cronbach’s $\alpha = .71$ ($M = 3.04$, $sd = .90$).

Control. Three items were used to assess perceived control, “I felt that I was able to choose with whom I wanted to work,” “I felt somewhat frustrated during the study,” and “I felt in control during the study.” A five-point Likert-type response set was used to measure these items, with lower scores indicating higher levels of control. These items were adapted from a previous study, in which they demonstrated sufficient internal consistency with Cronbach’s $\alpha = .72$ and $.80$ in two studies (Zardo, Williams, & Richardson, 2004). In this study, the second item had extremely low correlations with the first and third item ($r < .01$). Thus, it was excluded from the scale. The remaining two items demonstrated poor reliability, with Cronbach’s $\alpha = .44$ ($M = 3.00$, $sd = 1.01$).

Self-esteem. Three items were used to assess self-esteem after the ball toss game, “During the study, I felt good about myself,” “I felt that the other participants failed to perceive me as a

worthy and likeable person,” and “I felt somewhat inadequate during the study.” A five-point Likert-type response set was used to measure these items, with lower scores indicating higher levels of self-esteem. These items were adapted from a previous study, in which they demonstrated sufficient internal consistency with Cronbach’s alpha = .70 and .76 in two studies (Zardo, Williams, & Richardson, 2004). In this study, Cronbach’s alpha = .65 ($M = 2.47$, $sd = .74$).

Meaningful existence. Meaningful existence was assessed using five items, three of which were adapted from previous research “I felt that my answers on the questionnaire [e.g. age, where I was from] had some effect on the direction of the study,” “I felt non-existent during the study,” and “I felt as though my existence was meaningless during the study.” A five-point Likert-type response set was used to measure these items, with lower scores indicating higher levels of meaningful existence. These three items demonstrated moderate internal consistency with Cronbach’s alpha = .66 and .69 in two studies (Zardo, Williams, & Richardson, 2004). Thus, two additional items were used to increase reliability, “I felt that my presence was meaningful to the study” and “It didn’t matter if I was there today or not.”

The first item demonstrated a low, negative correlation with other items and was excluded from analysis. The other four items yielded a scale with a Cronbach’s alpha of .71 ($M = 2.14$, $sd = .66$). Thus, the first item was excluded from the scale index.

Assessing Unidimensionality of Scale Items. Scale items were assessed for unidimensionality by testing whether items that cluster on one dimension pass tests of internal consistency and parallelism (Hunter & Gerbing, 1982). Confirmatory factor analysis revealed for internal consistency all root mean squared errors of approximation (RMSEA) for each scale

were less than .08. RMSEA for parallelism analysis were less than .14. Factor loadings were ample and can be found in Table 2. RMSEA for parallelism analyses can be found in Table 3.

Self-report of behavioral aggression. Participants were asked to self-report their noise intensity and duration levels from the software. Two items will then measure behavioral intention, the first on a 10-point scale with higher numbers indicating greater volume, “At what intensity did you set the noise?” and the second with a maximum of five seconds “How long (in seconds) did you set the noise last?”

Behavioral aggression. The aggression software records participant-set levels of noise intensity and duration. Noise intensity was measured on a 10-point scale, with higher numbers indicating greater volume. Noise duration was measured on a 10-point scale, ranging from half a second to five seconds in duration.

Results

Induction checks. The first manipulation check item asked participants how many people chose to work with them. A main effect was predicted for ostracism on this item such that people who were in the **ostracized** condition would report that fewer people (zero) chose to work with them while people in the **not-ostracized** condition would report that more people (two) chose to work with them. Consistent with the prediction, 48 of the 51 participants in the ostracized condition reported correctly that zero people had chosen to work with them. Of the 54 not ostracized participants, 52 reported correctly that two people had chosen to work with them.

$$\chi^2(2) = 97.07, p < .001.$$

A main effect was predicted for the second item, “To what extent were you included by the other participants today?” such that participants in the **ostracized** condition will report lower levels of inclusion than will participants in the **not-ostracized** condition. For the third item, “I felt _____ by the other participants”, participants in the **ostracized** condition were expected to report lower levels of acceptance than were participants in the **not-ostracized** condition.

Ostracized participants reported lower levels of inclusion ($M = 1.94, sd = 1.95$) than not-ostracized participants ($M = 6.60, sd = 2.89$), $t(99) = -9.45, p < .001, r = -.69$. Ostracized participants reported lower levels of acceptance ($M = 3.34, sd = 2.11$) than not-ostracized participants ($M = 7.26, sd = 2.23$), $t(101) = -9.17, p < .001, r = -.67$. These results indicate that the induction worked such that people in the ostracized condition felt greater ostracism than people in the not-ostracized condition. As predicted, message condition was not significantly related to any of the induction check items.

Hypotheses. The first hypothesis was intended to replicate previous findings on ostracism and thwarted fundamental needs. Specifically, this hypothesis predicts that participants who are

ostracized will report lower levels of belonging, control, self-esteem, and meaningful existence compared with participants who are not ostracized. In order to test this hypothesis, four t-tests were conducted. Ostracism condition was the independent variable and belonging, control, self-esteem, and meaningful existence were the dependent variables. Message and interaction effects are reported in hypothesis four.

Data were consistent with the hypothesis. Ostracized participants reported lower levels of belonging ($t(102) = -7.62, p < .001, r^2 = .60$), control ($t(102) = 2.53, p < .05, r^2 = .24$), self-esteem ($t(102) = 5.32, p < .001, r = .47$), and meaningful existence ($t(102) = 2.60, p < .05, r = .25$) compared with not ostracized participants. Means and standard deviations are reported in Table 4.

Hypothesis two predicted that participants who are ostracized would exhibit greater levels of aggression compared to participants who were not ostracized. To test this relationship, two independent samples t-tests were conducted. Ostracism was the independent variable. Behavioral noise intensity and duration, as well as self-report noise intensity and duration were the dependent variables. Data were consistent with the hypothesis. As predicted, ostracized participants used greater volume, $t(87) = 2.57, p < .05, r = .26$, and duration, $t(87) = 3.00, p < .01, r = .30$, of unpleasant noise levels compared to not ostracized participants. Self-report measures of noise intensity and duration produced similar results, $t(102) = 2.72, p < .01, r = .26$, and duration, $t(102) = 2.34, p < .05, r = .23$. Means and standard deviations are reported in Table 4.

The third hypothesis predicted that aggression would be highest for participants who are ostracized and who did not receive a similarity message. No difference was expected for the other three conditions. In order to test this hypothesis, two Two-way ANOVA tests were conducted with ostracism and message as the independent variables and noise volume and duration as the

dependent variables. Data were not consistent with the hypothesis. Ostracism condition produced a main effect on both noise volume ($F(1, 85) = 6.15, p < .05, \eta^2 = .07$) and noise duration ($F(1, 85) = 8.59, p < .01, \eta^2 = .09$), but neither message nor the interaction of ostracism and message were significantly related to aggression measures. Self-report measures of aggression produced similar results for self-report of volume used, ($F(1, 100) = 7.23, p < .01, \eta^2 = .07$) and noise duration ($F(1, 100) = 5.45, p < .05, \eta^2 = .05$), See Table 5 for means and standard deviations.

The fourth hypothesis predicted a similar effect for the fundamental needs. In order to test this hypothesis, four two-way ANOVA tests were conducted with ostracism and message as the independent variables and the four needs as the dependent variables. Both ostracism ($F(1, 100) = 6.64, p < .05, \eta^2 = .06$) and message type ($F(1, 100) = 3.89, p = .05, \eta^2 = .03$) produced main effects on meaningful existence. As predicted participants who received a message regardless of ostracism condition, and ostracized participants who received a message all had similar group means for meaningful existence. Also as predicted, these group means were lower (lower numbers indicating higher meaningful existence) than ostracized participants who did not receive a message. Thus, ostracized participants who did not receive a message had lower meaningful existence compared to the other three groups. However, the interaction effect failed to meet the a priori alpha level of .05, ($F(1, 100) = 2.10, p = .15, \eta^2 = .02$) though the means trended in the predicted pattern. Means and standard deviations are reported in Table 5.

The data were not consistent with the hypothesis for belonging, control, or self-esteem. Though ostracism significantly predicted scores on these three needs, neither message type nor the interaction of message type and ostracism did. Means and standard deviations are reported in

Table 5.

Discussion

Past research looking at ostracism has demonstrated the effect of ostracism on fundamental needs (see Williams 2001, 2007) and aggression (Warburton, Williams, & Cairns, 2006). The few studies that have examined variables that moderate the relationship between ostracism and aggression have focused on internal, psychological variables like recalling social ties (Williams, Forgas, & von Hippel, 2005) and restoring a sense of control (Warburton, Williams, & Cairns, 2006). The results of these studies indicate that at least two moderators affect the relationship between ostracism and fundamental needs and aggression.

For these two moderators, people who are ostracized report lower needs and exhibit greater aggression compared to people who were not ostracized and to people who were ostracized but did recall other social ties or experience restored control. Though ostracism is inherently a social phenomenon, the affect of communication on outcomes of ostracism has not been studied. For the first time in the present study, a message was used to vary the relationship between ostracism, and fundamental needs and aggressive behavior. The central hypothesis was that receiving a similarity message would mitigate aggressive responses and restore levels of fundamental needs following ostracism.

Research on the minimal group paradigm indicates that people form groups readily over even trivial similarities. The process of recalling social ties seems to remind people that even if they have been ostracized in one particular interaction, they still are accepted by other people elsewhere. It was predicted in this study that receiving a similarity message would function comparably to the minimal group paradigm research and would be enough to establish a feeling of group membership with another person. Similar to recalling social ties, these similarity messages were predicted to result in decreased aggression and restored fundamental needs

following ostracism.

Consistent with Williams' ostracism model and previous research (2001, 2007), ostracized participants reported lower levels of fundamental needs than participants who were not ostracized. This finding provides additional support for the drive to cultivate social relationships. In addition, ostracized participants were more likely to show aggression than not ostracized participants.

The similarity message influenced scores on meaningful existence in the predicted direction. Ostracized participants who did not receive a message reported the lowest levels of meaningful existence (lower scores indicated greater meaningful existence) while not ostracized participants who received a message reported the greatest level of meaningful existence. However, these predicted patterns were not evidence for the other three fundamental needs in the ostracism model.

It could be that different messages restore different needs. When discussing the relationship between ostracism and meaningful existence, Williams (2001) states, "Ostracism, perhaps more than any other form of aversive control, is a poignant metaphor for what life would be like if the target did not exist (pg. 63)." Williams (2001) argues that "ostracism symbolizes death" because people are forced to consider what it would be like to not exist in the social world. Perhaps the similarity message provided the ostracism target with recognition and restore a sense of meaningful existence, but a trivial similarity with another person may not have been enough to affect self-esteem, sense of control, or sense of belonging. Another alternative explanation of these results is that the fundamental needs may be restored in a particular order. The relationship between the fundamental needs should be studied in future research to ascertain whether a causal structure exists amongst them. For example, perhaps increased levels of meaningful existence is

necessary to produce increased levels of self-esteem.

Similarly, a similarity message may not be enough to affect the relationship between ostracism and aggression. Williams (2001) argues that aggressive responses are an attempt for ostracism targets to gain any recognition, and other scholars argue that aggressive responses are anti-social in nature (Tice, Twenge, & Schmeichel, 2002). Both of these explanations are likely accurate under different conditions. In this study, rather than attempting to gain recognition, people responded to rejection and ostracism with anti-social behavior. Because a similarity message affected meaningful existence but not aggression, it seems participants perceived they were recognized but still responded anti-socially. If they were already perceiving that they were recognized by the group (meaningful existence), they had no reason to seek further recognition from the group. Thus, anti-social behavior rather than recognition may be the best explanation for the aggression.

Limitations

One limitation of this study is the reliability of the control items. Though previous research found acceptable reliability of scale items, the items in this study did not meet satisfactory levels for Cronbach's alpha. Because the scale exhibited low reliability, the results of this study that include control items may be misleading or inaccurate. In future research, additional items should be included to measure control.

Another limitation was the ostracism paradigm. Though the noise blast software did measure aggression in an experimental setting, ostracism paradigms should continue to evolve to more closely approximate the ways in which adults react to ostracism. It is unlikely a person would respond to ostracism in a real world setting by delivering a loud noise. Aggressive reactions could take the form of ignoring communication attempts, disparaging a person to others,

or other real world reactions.

Sample size may have been another limitation of the study. Though the interaction of ostracism and message on meaningful existence trended in the right direction, the result failed to reach conventional statistical significance difference. Participants who were not ostracized and who received a message had the greatest levels of meaningful existence. This effect might be detectible at the level of statistical significance with the collection of additional research participants.

Future Research

Prior to this study, there is very scant research on the relationship between messages and reactions to ostracism. As research in this area continues, future studies will be better able to make predictions about how variance in messages will produce variance in reactions to ostracism.

More investigation is needed to understand the affects of message characteristics on ostracism and fundamental needs and aggression. Other types of messages may affect the other fundamental needs. For instance, if the participants receive a message that is complimentary or indicative of their strengths, self-esteem may be restored but not control. It is possible that the levels of the four fundamental needs vary independently of each other, or are affected in different ways by different messages.

Further, these data suggest that even if one fundamental need is restored, ostracism may still lead to aggression. The literature is inconsistent when explaining whether aggression is an attempt at gaining recognition or an anti-social response. It is likely that aggression is used for either of these reasons in different circumstances. Future research should measure the degree to which people are responding to punish or engage in other anti-social behaviors following

ostracism.

Also, in order to continue expanding and revising the ostracism model, future research should continue to examine message, source, and dyadic characteristics to better predict what additional variables will alter the relationship between ostracism and aggression. The source of the message in this study was the experimenter, someone with an inherent power differential from the participant. Future research should consider how varying the source might vary levels of fundamental needs and aggression. The effect may be different if the source is a peer, the person who ostracized the target, or a close friend or family member.

Conclusions

Ostracized people exhibit greater levels of aggression and lower levels of fundamental needs than not ostracized people. Fundamental needs may be restored independently of one another depending on what needs a message restores. Establishing a minimal group membership with another person may not be enough to restore all fundamental needs and mitigate aggression, though gaining recognition from another person following ostracism seems to be enough to restore a meaningful existence. Clearly, developing our understanding of how messages affect ostracism and aggression is important.

Appendix
Document Tables

Table 1. Correlations between Dependent Variables

	Volume	Duration	S.R. Volume	S.R. Duration	Belonging	Meaningful Existence	Self- Esteem	Control
Volume	-							
Duration	.73**	-						
Self-report Volume	.95**	.71**	-					
Self-report Duration	.72**	.94**	.72**	-				
Belonging	.13	.08	.16	.07	-			
Meaningful Existence	.20	.04	.27**	.14	.48**	-		
Self-esteem	.11	.02	.20*	.10	.69**	.54**	-	
Control	-.02	-.05	-.01	.02	.31**	.14	.34	-

** Correlation is significant at the .01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

Table 2. Factor Loadings for Scale Items

Scale Items	Belonging	Self-esteem	Control	Meaningful Existence
1	.91	.55	.53	.70
2	.46	.55	.70	.78
3	.69		.64	.44
4				.56

Table 3. Parallelism RMSEA between Factors

	Belonging	Self-esteem	Control	Meaningful Existence
Belonging	-			
Self-esteem	.12	-		
Control	.08	.11	-	
Meaningful Existence	.14	.14	.07	-

Table 4. Ostracism Condition and Fundamental Needs

	Ostracized		Not Ostracized	
	Mean	SD	Mean	SD
Belonging	3.59	0.70	2.52	0.73
Control	3.25	0.98	2.76	1.00
Self-esteem	2.83	0.76	2.14	0.56
Meaningful Existence	2.32	0.70	1.99	0.59
Self-report Noise Volume	6.48	2.88	5.10	2.32
Self-report Noise Duration	3.18	1.48	2.55	1.28
Behavioral Noise Volume	6.73	2.62	5.38	2.37
Behavioral Noise Duration	3.22	1.38	2.38	1.27

Note: For the fundamental needs, lower scores indicate greater levels of reported need.

Noise volume was measured from one to ten.

Noise duration was measured in seconds from half a second to five seconds.

Table 5. Ostracism and Message Predicting the Four Needs, Self-report Behavior, and Behavior

	Ostracized				Not Ostracized			
	No Message		Message		No Message		Message	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Belonging	3.53	0.63	3.67	0.79	2.56	0.82	2.48	0.64
Control	3.29	0.98	3.21	0.99	2.63	1.00	2.89	1.00
Self-esteem	2.74	0.69	2.92	0.83	2.11	0.54	2.16	0.59
Meaningful Existence	2.52	0.73	2.09	0.60	2.02	0.56	1.95	0.62
Self-report Noise Volume	6.54	3.19	6.44	2.60	5.07	2.27	5.11	2.41
Self-report Noise Duration	3.14	1.70	3.22	1.26	2.33	1.16	2.76	1.38
Behavioral Noise Volume	6.76	2.84	6.71	2.51	5.22	2.39	5.57	2.38
Behavioral Noise Duration	3.35	1.67	3.13	1.16	2.17	1.21	2.64	

Note: For the fundamental needs, lower scores indicate greater levels of reported need.

Noise volume was measured from one to ten.

Noise duration was measured in seconds from half a second to five seconds.

REFERENCES

REFERENCES

- Anderson, C. A., & Bushman, B. J. (1997). External validity of “trivial” experiments: The case of laboratory aggression. *General Psychology Review*, 1, 19-41.
- Baron, R. A., & Richardson, D. (1994). *Human Aggression*. New York: Plenum.
- Baumeister, R. F., & Leary, M.R. (1995). The need to belong: Desire for Interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117, 497-529.
- Bernstein, S., Richardson, D., & Hammock, G. (1987). Convergent and discriminant validity of the Taylor and Buss measures of physical aggression. *Aggressive Behavior*, 13, 15-24.
- Bowlby, J. (1980). *Attachment and loss* (Vol. 1). London: Hogarth.
- Bushman, B. J., & Baumeister, R. F. (1998). Threatened egotism, narcissism, self-esteem, and direct and displaced aggression: Does self-love or self-hate lead to violence? *Journal of Personality and Social Psychology*, 75, 219-229.
- Buss, A. H. (1961). *The Psychology of aggression*. New York: Wiley.
- Campbell, D.T. (1958). Common fate, similarity, and other indicies of the status of aggregates of persons as social entities. *Behavioral Science*, 3, 14-25.
- Dollard, J., Doob, L.W., & Miller, N.E. (1939). *Frustration and Aggression*. New Haven: Yale University Press.
- Eisenberger, N. I., Lieberman, M. D., & Williams, K. D. (2003). Does rejection hurt? An fMRI study of social exclusion. *Science*, 302, 290-292.
- Fowler, J.H., & Christakis, N.A. (2008). Dynamic spread of happiness in a large social network: longitudinal analysis over 20 years in the Framingham Heart Study. *British Medical Journal*, 337, a2338.
- Gabarian, J. (1999). *Lost boys: Why our sons turn violent and how we can save them*. San Francisco: Jossey-Bass.
- Geen, R.G. (2001). *Human aggression* (2nd ed.). Buckingham, UK: Open University Press.
- Gonsalkorale, K., & Williams, K. D. (2007). The KKK won’t let me play: Ostracism even by a despised outgroup hurts. *European Journal of Social Psychology*, 37, 1176-1186.
- Gruter, M. (1986). Ostracism on trial: The limits of individual rights. *Ethology and Sociobiology*, 7, 271-279.

- Fukuyama, F. (1999). The great disruption. *Bulletin of the Centre for the Study of Democracy*, 6, 1-3.
- Hogg, M.A., Hardi, E.A., & Reynolds, K.J. (1995). Prototypical similarity, self-categorization, and depersonalized attraction: A perspective on group cohesiveness. *European Journal of Social Psychology*, 25, 159-177.
- Hunter, J. E., & Gerbing, D. W. (1982). Unidimensional measurement, second order factor analysis, and causal models. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior* (Vol. 4, pp. 267-320). Greenwich, CT: JAI Press.
- Jonassen, D.H. (1998). Designing constructivist learning environments. In C.M. Reigeluth (Ed.), *Instructional design theories and models: Their current state of the art*, 2nd Ed. Mahwah, NJ: Lawrence Erlbaum Associates.
- Leary, M. R., Kowalski, R. M., Smith, L., & Phillips, S. (2003). Teasing, rejection, and violence: Case studies of the school shootings. *Aggressive Behavior*, 29, 202-214.
- Leary, M.R., Tambor, E.S., Terdal, S.K., & Downs, D.L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. *Journal of Personality and Social Psychology*, 68, 518-530.
- Loeber, R., & Farrington, D.P. (Eds.). (1999). *Serious and violent juvenile offenders: Risk factors and successful interventions*. Thousand Oaks, CA: Sage.
- Mann, L. (1988). Cultural influence on group processes. In M. H. Bond (Ed.), *The cross cultural challenge to social psychology* (pp. 182-195). Thousand Oaks, CA: Sage.
- Moller, L. (1998). Designing communities of learners for asynchronous distance education. *Educational technology research and development*, 46, 115-122.
- Smith, A., & Williams, K. D. (2004). R U there? Ostracism by cell phone messages. *Group Dynamics: Theory, Research, and Practice*, 8, 291-301.
- Tajfel, H. (1970). Experiments in intergroup discrimination. *Scientific American*, 223, 96-102.
- Tajfel, H., Billig, M.G., Bundy, R.P., & Flament, C. (1971). Social categorization and intergroup behaviors. *European Journal of Social Psychology*, 1, 149-178.
- Tice, D.M., Twenge, J.M., & Schmeichel, B. (2002). Social exclusion and prosocial and antisocial behavior. In J.P. Forgas & K.D. Williams (Eds.), *The social self: Cognitive, interpersonal, and intergroup perspectives*. Philadelphia: Psychology Press.
- Turner, H. & Tajfel, H. (1986). The social identity theory of inter-group behavior. In S. Worchel and L.W. Austin (eds.), *Psychology of Intergroup Relations*. Chicago: Newlson Hall.

- Twenge, J. M. (2000). The age of anxiety? Birth cohort change in anxiety and neuroticism, 1952-1993. *Journal of Personality and Social Psychology*, 79, 1007-1021.
- Twenge, J.M., Catanese, K.R., & Baumeister, R.F. (2002). Social exclusion causes self-defeating behavior. *Journal of Personality and Social Psychology*, 83, 606-615.
- Twenge, J.M., Baumeister, R.F., DeWall, C.N., Ciarocco, N.J., & Bartels, J.M. (2007). Social exclusion decreases prosocial behavior. *Journal of Personality and Social Psychology*, 92, 56-66.
- Twenge, J.M., Baumeister, R.F., Tice, D.M., & Stucke, T.S. (2001). If you can't join them, beat them: Effects of social exclusion on aggressive behavior. *Journal of Personality and Social Psychology*, 81, 1058-1069.
- van Beest, I., & Williams, K. D. (2006). When inclusion costs and ostracism pays, ostracism still hurts. *Journal of Personality and Social Psychology*, 91, 218-228.
- Warburton, W.A., Williams, K.D., & Cairns, D.R. (2006). When ostracism leads to aggression: The moderating effects of control deprivation. *Journal of Experimental Social Psychology*, 42, 213-220.
- Williams, K.D. (2001). *Ostracism: The power of silence*. The Guilford Press: New York, New York.
- Williams, K.D. (2007a). Ostracism. *Annual Review of Psychology*, 58, 425-452.
- Williams, K.D. (2007b). Ostracism: The kiss of social death. *Social and Personality Psychology Compass*, 1, 236-247.
- Williams, K.D., Bernieri, F., Faulkner, S., Grahe, J., & Gada-Jain, N. (2000). The Scarlet Letter study: Five days of social ostracism. *Journal of Personal and Interpersonal Loss*, 5, 19 – 63.
- Williams, K.D., Cheung, C.K.T., & Choi, W. (2000). CyberOstracism: Effects of being ignored over the Internet. *Journal of Personality and Social Psychology*, 79, 748-762.
- Williams, K.D., Forgas, J.P., & von Hippel, W. (Eds.). (2005). *The social outcast: Ostracism, social exclusion, rejection, and bullying*. New York: Psychology Press.
- Williams, K. D., & Jarvis, B. (2006). Cyberball: A program for use in research on ostracism and interpersonal acceptance. *Behavior Research Methods, Instruments, and Computers*, 38, 174-180.
- Zardo, L., Williams, K.D., & Richardson, R. (2004). How low can you go? Ostracism by a computer is sufficient to lower self-reported levels of belonging, control, self-esteem, and

meaningful existence. *Journal of Experimental Social Psychology*, 40, 560-567.