THE ROLE OF ONLINE COMMUNICATION IN BUFFERING NEGATIVE EFFECTS OF OSTRACISM

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Ostracism, the ambiguous exclusion of individuals, can be detrimental to successful development and feelings of belonging. However, previous research has suggested that individuals who are low in Fear of Negative Evaluation (FNE) exhibit prosocial responses, including increased interest in face-to-face interaction, following an ostracizing experience. In this study, I sought to expand on this work by determining whether individuals who are high in Fear of Negative Evaluation benefit more from an online chat than having to meet someone in person. One hundred thirty five undergraduate students responded to a Fear of Negative Evaluation scale and were randomly assigned to one of four conditions: no chat with no face-to-face interaction expectation, no chat with a face-to-face interaction expectation, chat with no face-to-face interaction expectation, or chat with face-to-face interaction expectation. Psychological needs, including participants’ belongingness, were assessed prior to and after the aforementioned manipulations. Examining differences in psychological needs from pretest to posttest assessments did not reveal any significant effects or interactions involving FNE. However, additional analyses in which the posttest belongingness scores were examined revealed a significant interaction between FNE and the experimental manipulations. Although not
significant, fear of negative evaluation was positively related to belongingness scores among participants who chatted online but did not expect a face-to-face interaction. To varying degrees, FNE was negatively related to belongingness in all other experimental conditions. The implications of these findings for psychological responses to ostracizing experiences are discussed.

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# Table of Contents

Introduction ............................................................................................................. 1  
Method .................................................................................................................. 11  
Results ................................................................................................................. 16  
Discussion ........................................................................................................... 25  
Conclusion ......................................................................................................... 33  
References ........................................................................................................... 35 
Appendices .......................................................................................................... 43
The Role of Online Communication in Buffering Negative Effects of Ostracism

A man’s Social Self is the recognition which he gets from his mates. We are not only gregarious animals, liking to be in sight of our fellows, but we have an innate propensity to get ourselves noticed, and noticed favorably, by our kind. No more fiendish punishment could be devised, were such a thing physically possible, than that one should be turned loose in society and remain absolutely unnoticed by all the members thereof. If no one turned round when we entered, answered when we spoke, or minded what we did, but if every person we met “cut us dead,” and acted as if we were non-existing things, a kind of rage and impotent despair would ere long well up in us, from which the cruelest bodily tortures would be a relief; for these would make us feel that, however bad might be our plight, we had not sunk to such a depth as to be unworthy of attention at all. (James, 1890, p. 293-294)

The Need to Belong

In the above quotation, William James poignantly states the importance of being acknowledged and included in society, as the consequences of being rejected are physically, emotionally, and psychologically painful. More recently, Baumeister and Leary (1995)’s influential theorizing on the need to belong brought the construct of belongingness, the need to create and sustain stable relationships, to the forefront of social psychological research. The authors reviewed how belongingness has been discussed by others in the psychological field, from Freud discussing the importance of interpersonal contact (e.g., 1930) to Maslow’s inclusion of “love and belongingness” in his hierarchy of needs (1968), and stressed that the construct has been underemphasized in importance.

According to Baumeister and Leary, two criteria must be met in order for the belongingness drive to be satisfied. First, frequent and pleasant interactions with a few people must occur, and second, these interactions must take place in an enduring and temporally consistent context where all involved parties care about the others’ welfare. However, one’s belongingness needs are not always met due to several types of social phenomena including ostracism, social exclusion, rejection, and bullying. These four constructs are distinguishable by
each action’s intentionality. More specifically, ostracism is the more ambiguous ignoring of excluding of an individual (Gruter & Masters, 1986), where victims are usually unsure as to why they are being shunned. For example, certain societies value their traditions and rules stringently such that if an individual breaks one of their norms that person would be ignored by the society as punishment. Bullying represents the absolute deliberate action of employing strength or influence in order to gain compliance (Solberg & Olweus, 2003). Rejection can be considered a deliberate and painful exclusion from an interpersonal relationship, such as a romantic break-up (Ayduk, Mischel, & Downey, 2002; Williams, 2001) while social exclusion, a perceived shortage in belongingness due to being kept apart from others (Stillmann et al., 2009; Williams, 2007), can result from deliberate or ambiguous intentionality. Thus, belongingness needs may not be fulfilled due to a variety of social phenomena which differ in the extent to which actions are intentional and the reasoning behind the action’s intent.

**Consequences of Thwarted Belongingness Needs**

Although thwarts to belongingness needs may take different forms, a common theme across these negative social phenomena is that each may take a toll on physical and psychological well-being. Thwarts to belongingness may impair psychological responses such as the capacity for self-regulation and intelligent thought (for a review, see Baumeister, Brewer, Tice, & Twenge, 2007), and decrease one’s perceived belongingness (Baumeister & Leary, 1995). Additionally, thwarts to belongingness may precipitate negative consequences for individuals. Generally, research has demonstrated that positive affect is replaced with negative affect once belongingness is thwarted. More specific responses associated with unfulfilled belongingness needs include increased anxiety (Baumeister & Tice, 1990; Horney, 1945; Leary, 1990), depression (Leary, 1990), and jealousy (Reiss, Peterson, Gursky, & McNally, 1986).
Thus, various pieces of literature support the idea that thwarted belongingness needs both
decrease the availability of psychological resources that are critical for day-to-day functioning
and increase a range of negative emotional responses.

A relatively recent body of research has expanded work on thwarted belongingness to
consider more specific negative physiological responses that stem from unfulfilled belongingness
needs. Eisenberger, Lieberman, and Williams (2003) had participants play a virtual ball tossing
game (Cyberball; Williams, Cheung, & Choi, 2000) in which half of the participants were
excluded by other players (i.e., the players refrained from tossing the virtual “ball” to the
participant) while being monitored in an fMRI scanner. The anterior cingulate cortex (ACC), a
portion of the brain that is known to respond to physical pain, showed more activity during
exclusion than inclusion. Furthermore, this physiological reaction paralleled the participants’
self-reported distress. Thus, research utilizing fMRI technology has shown that the brain bases of
physical pain are similar to those of social pain (Eisenberger, Lieberman, & Williams, 2003).
Interestingly, acetaminophen has been shown to reduce social pain just as it reduces physical
pain (DeWall et al., 2010). More specifically, it weakens neural responses to rejection in the
brain regions controlling social and physical pain.

Previous research linking the experience of physical pain to aggressive behavioral
responses (e.g., Berkowitz, 1989, 1993) points to the possibility that an additional implication of
thwarted belongingness may be increased aggressive behavior. Indeed, consistent with this idea,
Twenge and colleagues demonstrated that after exclusion, there is an increase in the level of
aggression toward individuals not involved in the exclusion experience and potential new
interaction partners (Twenge, Baumeister, Tice, & Stucke, 2001). Analyses of school shootings,
an extreme example of aggressive behavior, provide additional support for the role of thwarted
belongingness in aggressive behavior. In their analysis of school shootings, Leary and colleagues (2003) concluded that nearly all the adolescents who aggressed towards their classmates did so after feeling extreme rejection by the victims (Leary, Kowalski, Smith, & Phillips, 2003). Therefore, it is evident that different types of rejection, including ostracism, can breed hostile, aggressive responses toward others.

As Twenge and colleagues (2001) argued, responding with increased aggression after feeling excluded and ostracized seems counterproductive, and perhaps maladaptive, for increasing one’s belonging. It would seem as though the most adaptive response following rejection would be to increase one’s appeal to try and gain entry into the group. Affiliative responses toward others may increase the chance for future inclusion by others. However, as demonstrated in Twenge et al.’s work, that is not the typical response of rejected individuals. Instead, the rejected usually aggress toward others, which would likely repel them and decreases the person’s likelihood of future inclusion. This paradox of behavior perpetuates, if not solidifies, the exclusion one is already enduring when subsequent positive interaction can actually diffuse the aggression (Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007).

Social Reconnection

Recent research has shown that some rejected individuals will try to forge social connections with new individuals, which may serve to replenish a sense of belonging (Maner, DeWall, Baumeister, & Schaller, 2007). Across a series of six studies, Maner et al. found that threats of social exclusion contributed to participants expressing more interest in making new friends and increasing their desire to work collaboratively. However, excluded individuals did not seek reconnection with their excluders or with new partners when no face-to-face interaction was expected. An important point raised in this paper is that the expectation of future face-to-
face interaction is key in restoring belongingness after a rejection experience. Additionally, Maner and colleagues identified fear of negative evaluation as a moderator in determining whether individuals will gravitate towards affiliative social contact after feeling ostracized. More specifically, individuals who did not fear negative evaluation from partners in future face-to-face interactions tended to seek social interaction in order to boost their sense of belonging. However, individuals who greatly feared negative evaluation avoided seeking reconnection.

Although face-to-face interaction may be important for replenishing a diminished sense of belonging, other forms of communication may also have a similar effect. Interactions that occur via internet provide a comfortable environment to express what Bargh, McKenna, and Fitzsimons (2002) referred to as one’s “Real Me”. Bargh and McKenna (2000) outlined four distinct characteristics of online environments that set them apart from face-to-face environments: relative anonymity, reduced importance of physical appearance, attenuation of physical distance, and a greater control over time and pace of interactions. In general, anonymity facilitates an increase in self-disclosure (e.g., Joinson, 2001a; Levine, 2000; Parks & Floyd, 1996), which in turn produces more liking and closeness among the communicators (e.g., Henderson & Gilding, 2004; McKenna, Green, & Gleason, 2002). Due to the somewhat anonymous setting, individuals may feel less pressure regarding the interaction and may be able to express themselves without fear of backlash (Pennebaker, Colder, & Sharp, 1990; Pollock, Okdie, & Guadagno, 2011). Online communication has also been shown to reduce the focus of personal standards of behavior due to elevated anonymity (Matheson & Zanna, 1989; Postmes, Spears, Lea, 2002). Thus, previous research has supported the idea that various aspects of online communication facilitate positive outcomes in online interactions.
Online interaction also lessens the importance of physical cues such as attractiveness and facial expression as compared to face-to-face interaction (Amichai-Hamburger & McKenna, 2006; Morton, Zettelmeyer, & Silvia-Risso, 2003). A lack of physical cues may elicit positive effects such as placing less emphasis on the superficial aspects of interaction and decreasing discrimination based on gender, ethnicity, or physical attractiveness (Morton et al., 2003). Additionally, the lack of cues inherent in computer-mediated communication may increase attachment between the communicators due to the heightened rate of message exchange not being slowed by nonverbal cues (Walther, 1996). When comparing online communication to face-to-face communication, the lack of physical cues in online communication may lead to an increased quality of interaction.

Other aspects of online communication, such as a sense of “closeness” with a communication partner and control in the process of communicating, may also contribute to positive interactions. It has long been argued that individuals prefer to interact with others who are close in physical proximity to them (Brockner & Swap, 1976; Festinger, Schachter, & Back, 1950). More recently, McKenna and Bargh (2000) argued that closeness can be felt as a result of both physical and social proximity. They maintain that if individuals communicate within a chat-room, or another seemingly “shared” environment, they would feel close to each other and thereby interact in the same manner as if they were face-to-face. Additionally, the ability to type, retype and wait to reply gives the communicator more of an opportunity to think about the message they are attempting to convey and more time to form that message (McKenna & Bargh, 2000). This allows the communicator more time to think and respond to messages, thereby increasing the likelihood that the message intended will be the message conveyed. This work therefore indicates that online interactions can cultivate a sense of closeness and afford
possibilities for increased control of the interaction, which together may contribute to high-quality interactions.

In line with Maner and colleagues’ (2007) work supporting the role of individual differences in reactions to the prospect of face-to-face interactions following exclusion, there may be individual difference factors that clarify responses to online communication. There is accumulating evidence that Big 5 personality traits (Benet-Martinez & John, 1998) are important to consider in determining who will benefit from online communication. Individuals with low extraversion and high neuroticism are more likely to express themselves in online environments rather than face-to-face due to the safety elicited by the computer mediated communication (Amichai-Hamburger, Wainapel, & Fox, 2002). Individuals low in agreeableness are also more likely to self-disclose online than those high in agreeableness (Bargh, McKenna, Fitzsimons, 2002).

Beyond Big 5 personality factors, a recent study examined how individual differences in social anxiety may help determine the means of communication teenagers utilize (Pierce, 2009). Pierce found a positive relationship between social anxiety and choosing online networks by which to communicate. In other words, individuals higher in social anxiety gravitated more toward online and text-based means of communicating relative to their low social anxiety counterparts. Furthermore, Reid and Reid (2004) examined differences in communication via mobile phone between “texters” and “talkers”. The researchers found that individuals who prefer to text on their mobile phones were more lonely and socially anxious than individuals who opted to talk on their mobile phones. Furthermore, those lonely and socially anxious individuals who preferred to text reported positive and supportive relationships with those with whom they texted (Crabtree, Nathan, & Roberts, 2003). When considered together, this research indicates that
those high in loneliness and social anxiety were undaunted in creating productive relationships through texting, whereas they seemed to avoid the more stressful verbal communication. Thus, text-based communication mediums may afford lonely and socially anxious individuals the ability to converse in a “safe” environment which can lead to increased belongingness.

**Current Work**

Although Maner and colleagues (2007) showed that those high in Fear of Negative Evaluation did not respond positively to attempts for new relationships after exclusion, it is possible that in an online environment where negative evaluation may be less, and the possibility for strategic self-presentation might be greater, such individuals would respond relatively positively. An important aspect of this thesis project is that it will expand upon Maner and colleagues’ assertion that face-to-face interaction is the primary route to recovery from an exclusion experience. Specifically, I propose that following an exclusion experience, online communication may lead to similarly positive, or potentially even more positive responses than the prospect of face-to-face interaction. Additionally, drawing from the literature supporting positive effects of online communication among individuals with negative characteristics that are relevant to social interaction, such as social anxiety or neuroticism, I examined the possibility that the benefits of online communication are especially evident among those who strongly exhibit such negative characteristics (i.e., among those who are high in Fear of Negative Evaluation).

To examine these ideas, I maintained ostracism as a constant, leading all participants to feel ostracized. Participants completed a brief measure of Fear of Negative Evaluation to examine the potentially moderating role of Fear of Negative Evaluation in responses to online communication as well as a NEO-FFI to evaluate their levels of neuroticism, extraversion, openness,
agreeableness, and conscientiousness. Communication context was then manipulated by providing participants with the opportunity to communicate online or not with either explicit expectation of a face-to-face interaction or no expectation of a face-to-face interaction. To measure recovery following exclusion, belongingness needs were assessed at two time points – once directly following the exclusion experience and a second time following the online communication (or after a distracter task in the two no-chat conditions). A comparison of the effects of the chat and face-to-face interaction expectation provides insight into the extent to which the expectation of face-to-face interaction is critical in recovery from an exclusion experience. It was hypothesized that there would be an interaction between the variables representing the chat manipulation and face-to-face interaction expectation manipulation such that increases in belongingness following ostracism would be greatest when there was the experience of chatting with a partner while also anticipating a face-to-face interaction. Increases in belongingness were expected to relatively high, but potentially somewhat reduced by comparison among participants who chatted with a partner in the absence of the expectation of a face-to-face interaction. In the absence of a chat, increases in belongingness were expected to be lower with a significant difference expected between those who expected a face-to-face interaction and those who did not, such that those who anticipated a face-to-face interaction were hypothesized to respond with greater increases in belongingness compared to those who did not (and thus were expected to exhibit the lowest increases in belongingness because they had no communication experience or expectation of an interaction following the ostracism experience). Furthermore, consistent with Leary’s Sociometer theory (Leary, Tambor, Terdal, & Downs, 1995), I expected the analysis of self-esteem to mirror belongingness, and meaningful existence to also follow a similar pattern.
Additionally, it was hypothesized that Fear of Negative Evaluation may interact with the aforementioned chat and face-to-face expectation variables such that among those who fear negative evaluation, the chat experience without face-to-face interaction may lead to particularly high increases in belongingness relative to the other conditions in which face-to-face interaction is expected or there is no chat experience. More specifically, I expected that the analysis of belongingness and self-esteem gain scores would reveal a significant three-way interaction between Fear of Negative Evaluation scores and the chat and expectation of face-to-face interaction variables. I did not expect Fear of Negative Evaluation to be significantly related to belongingness gain scores when a chat did not occur and face-to-face interaction was not expected. However, Fear of Negative Evaluation was expected to be associated with belongingness and self-esteem in different ways, depending upon the expectation of face-to-face interaction and the chat experience. Specifically, because communication that includes face-to-face interaction is particularly threatening to individuals high in Fear of Negative Evaluation, I expected that, consistent with Maner and colleagues’ (2007) work, individuals higher in FNE would exhibit less positive responses (i.e., lower belongingness and self-esteem gain scores) relative to their low FNE counterparts when they anticipated having a face-to-face interaction with another person. In contrast, because communication that does not include the possibility of face-to-face interactions may be perceived as “safer” among those who fear negative evaluation, I expected that participants who greatly fear negative evaluation would respond to the online chat in a relatively positive manner. Low FNE individuals were expected to primarily satisfy their belongingness needs via outlets other than the chat experience (i.e., through face-to-face interactions) and were expected to exhibit lower gains in belongingness and self-esteem than high FNE individuals when a chat occurred without the additional expectation of a face-to-face
interaction. Therefore, the condition in which participants chatted with their partner but did not anticipate a face-to-face interaction was the only condition in which high FNE individuals were expected to respond with greater belongingness and self-esteem gain scores than their low FNE counterparts. Finally, participants’ sense of control and their levels on five personality variables were also examined in an exploratory manner.

**Method**

**Participants and Design**

Participants were 135 undergraduate students from Morehead State University. Ten participants were excluded from the present data for various reasons including Cyberball freezing, or participants admitting they had been told by friends what to expect. Students completed the study as partial fulfillment of their research credit in an introductory psychology course or for extra credit in a Psychology course. The study was a 2 (chat: chat present vs. absent) x 2 (face-to-face expectation: face-to-face interaction expected vs. not expected) by Fear of Negative Evaluation (continuous) between participants design. Responses to the dependent variables (belongingness needs, self-esteem, control, meaningful existence) were assessed at baseline (prior to the manipulations) and following the manipulations.

**Procedure and Materials**

Ostracism can occur and affect individuals in social (face-to-face) and cyber (online) situations (Williams, Govan, Croker, Tynan, Cruickshank, & Lam, 2002). In the present study, a game of Cyberball (Williams, Cheung, & Choi, 2000) was used to manipulate ostracism. Williams, Cheung, and Choi (2000) created the web program Cyberball to examine how salient an ostracism manipulation needed to be in order to provide significant exclusion effects. Study 1 provided online access of Cyberball to 1,486 participants from 62 countries. The participants
were instructed to visualize the environment and ball-tossing game they were playing and to not focus on their own performances. Despite the artificial and remote circumstances in the virtual environment, the more participants were ostracized by the two other players (who were computer generated and controlled) the less control and sense of belonging they reported. Thus, the researchers established a controlled and efficiently manipulatable program by which to further investigate ostracism.

There are currently four versions of the Cyberball paradigm available for free download by Kip Williams at Purdue University. The programs provide increased control and manipulation of the ostracizing environment with such features as including or ostracizing participants, providing pictures and/or names of the participants (and confederates) playing the ball-tossing game, changing the number of players, recording the throws and receptions, and pre-setting the time (or number of trials) the participants are expected to engage in before the program ends.

In the present investigation, the experimenter changed the Cyberball settings to the exclusion condition before the participants arrived. Upon arrival to the laboratory, participants provided their consent to participate in the study via a written consent form (Appendix A). Participants were then given a brief preliminary social-anxiety assessment (Fear of Negative Evaluation) (Leary, 1983; Appendix B). Participants answered questions such as “I am frequently afraid of other people noticing my shortcomings” and “I often worry that I will say or do the wrong things” using a 1 = Not at all characteristic of me to 5 = Extremely characteristic of me scale. Responses to the items were reverse-coded when necessary and averaged such that higher scores represent more fear of negative evaluation (α = .91). Each of the sixty items on the NEO-FFI were scored on a 1 = Strongly Disagree to 5 = Strongly Agree scale to questions such as, “I often feel inferior to others” (neuroticism; Cronbach’s α = .84), “I laugh easily”
(extraversion; Cronbach’s $\alpha = .78$), “I have a lot of intellectual curiosity” (openness; Cronbach’s $\alpha = .68$), “Most people I know like me” (agreeableness; Cronbach’s $\alpha = .65$), and “I keep my belongings clean and neat” (conscientiousness; Cronbach’s $\alpha = .82$), with items reverse-coded when necessary and averaged to form indices of the various personality factors with higher numbers indicating a higher level of each factor (See Appendix C).

Participants were then shown the Cyberball home screen where the experimenter reviewed the instructions on how to play the game and the proposed reason for it (See Appendix D). The cover story for Cyberball was that participants would be playing the online game of ball tossing with two other players from the Cyberball network for five minutes. The Cyberball start page explicitly states to participants that the game has an online network where individuals are playing and that they will be paired with two of those players for their game (See Appendix D). These statements are crucial in persuading the participants that they are playing a game with random strangers. The screen was black and white and the players were more-or-less stick figures while the participants’ player was represented by a hand in the middle. Participants were told that it did not matter how well they performed the task of tossing the ball, but that the point was to use their imagination and come up with possible details of the environment in which they were playing (i.e. what the weather might be like, the appearance of the other participants, etc.). However, the true purpose of the Cyberball game was to make the participant feel excluded. Participants experienced a game in which the other “players” tossed the ball to the participant twice before ignoring him or her for the remainder of the game consisting of 33 more tosses. Thus, the participants were ignored for approximately 4 ½ minutes of the 5 minute game.

Immediately after the five minute Cyberball game ended, the participants filled out a brief questionnaire evaluating their four basic needs (Williams et al., 2002; See Appendix E)
including a manipulation check asking participants if they were excluded or included and approximately what percentage of tosses they received. More specifically, participants responded to statements such as, “I was excluded.” and “I was ignored.” using a 1 = Not at all to 5 = Extremely scale and wrote in a percentage to the final question “Assuming the ball should be thrown to each person equally (33%), what percentage of the throws did you receive?” Consistent with Williams et al.’s work, the assessment additionally evaluated the participants’ belonging, self-esteem, meaningful existence, control, and mood by asking five questions per need. Participants reported their answers using a 1 = Not at all to 5 = Extremely scale to questions such as, “I felt rejected” (belongingness; Cronbach’s α = .89), “I felt good about myself” (self-esteem; Cronbach’s α = .89), “I felt nonexistent” (meaning; Cronbach’s α = .90), “I felt powerful” (control; Cronbach’s α = .74), and “Good” (mood; Cronbach’s α = .94). Items were reverse-coded when necessary and averaged to form an index of each type of need such that higher scores reflect greater satisfaction of belongingness, self-esteem, meaning, and control needs, and more positive mood. Upon completion of the basic needs questionnaire, participants were randomly assigned to one of four communication conditions.

In order to investigate how different communication mediums can boost needs after an ostracizing experience, I manipulated communication mediums. To manipulate an online chat, the experimenter opened Gchat (the instant message chat box available on Gmail/Google Mail) and told the participants to have an online chat with another participant who was in another room for five minutes. The experimenter told the participant that the purpose of this communication was to get to know the other person by asking and answering general questions. The confederate, with whom the participant conversed, utilized a script (See Appendix F) in order to structure each interaction and make them as similar as possible.
To manipulate a face-to-face interaction expectation, the experimenter instilled in participants the expectation of a face-to-face interaction with a person not involved in the ostracizing experience. The experimenter told the participant that he or she will have a face-to-face interaction in order to get to know another participant. To ensure the participants were aware that their communication partners were not involved in ostracizing them, the experimenter stated “This participant showed up late so they weren’t able to play the game or take the other questionnaires”.

These two communication manipulations created four conditions to which participants were randomly assigned. The first condition contained 33 participants and required no online chat and no face-to-face interaction expectation. Instead, the experimenter gave participants a word search (See Appendix G) to work on for five minutes, which occupied the same amount of time as the online chats in other conditions. The second condition contained 39 participants and required no online chat but the experimenter did instill in the participants the expectation of a face-to-face interaction with a person not involved in the ostracizing experience. Therefore, these participants were given a word search to work on for five minutes and then told they would be meeting another person face-to-face. The third condition contained 33 participants and required an online chat but no expectation of a face-to-face interaction. Participants chatted online with a confederate for five minutes. The fourth condition contained 30 participants and required participants to chat online for five minutes and also to expect to meet this person face-to-face. Thus, the four conditions were no chat/no face-to-face, no chat/face-to-face, chat/no face-to-face, and chat/face-to-face. After their randomly assigned communication condition, their basic needs were then assessed for a second time (See Appendix E), but excluded the manipulation check.
component. Upon completing this task, the participant had finished the experiment and was debriefed (See Appendix H).

Results

According to the manipulation checks, Cyberball elicited the intended feelings of ostracism in participants. No participant reported receiving the ball more than half of the time and inspection of the means for participants’ estimates of the ball tosses they received revealed that these estimates were quite low ($M = 8.15\%, SD = 8.22, range = 0\%-50\%$). Only one participant reported receiving the ball 50% of the time, however this person also responded with the maximum (5) to feeling excluded and to feeling ignored. Overall, the mean for responses to the question “I was excluded” was high ($M = 4.38$ on a 5 point scale). Thus, these analyses indicate that the ostracism manipulation was successful and led participants to feel a high degree of exclusion.

To analyze change from pre-manipulation to post-manipulation, pretest needs scores were subtracted from post-test needs scores to create gain scores for each type of need. Higher scores represent an increase in belongingness, self-esteem, control, and meaningful existence need satisfaction from pre-manipulation to post-manipulation.

A two-way MANOVA was used to examine the impact of the chat and face-to-face interaction expectation manipulations on the gain scores for belongingness, self-esteem, meaningful existence, and control. The MANOVA revealed that there was a significant difference in need satisfaction gain scores between chat and no chat conditions $F(4, 128) = 4.82, p = .001$, such that overall there was more of an increase in needs from pre to post in the chat condition vs. the no chat condition. There was also a significant difference in need satisfaction gain scores between the face-to-face and no face-to-face conditions $F(4, 128) = 2.57, p = .041$,.
due to a larger increase in needs scores in the no face-to-face condition compared to the face-to-face condition. Inconsistent with predictions, there was not a significant interaction between chat and face-to-face interaction expectation, $F(4, 128) = 0.15, p = .961$.

The MANOVA was then followed up with two-way Univariate ANOVAs to examine the influence of the chat manipulation, the face-to-face expectation, and the interaction between these variables on each need individually.

**Belongingness**

The Univariate two-way ANOVA for belongingness did not reveal a significant effect of face-to-face interaction expectation, $F(1, 131) = 2.51, p = .116$. However, there was a marginally significant main effect of chat, $F(1, 131) = 3.72, p = .056$. As indicated in Table 1, participants who had the opportunity to chat had marginally higher increases in belongingness satisfaction than participants who did not chat with another person. Inconsistent with predictions, chat did not interact with the face-to-face interaction expectation to predict belongingness gain scores, $F(1, 131) = 0.44, p = .510$ (see means in Table 2).

**Self-Esteem**

The Univariate two-way ANOVA for self-esteem revealed a significant effect of face-to-face interaction expectation, $F(1, 131) = 6.84, p = .010$. Those who did not expect a face-to-face interaction had higher gain scores than those who did expect a face-to-face interaction. There was also a significant main effect of chat $F(1, 131) = 11.73, p = .001$. As indicated in Table 1, participants who had the opportunity to chat had significantly higher increases in self-esteem satisfaction than those who did not chat. However, inconsistent with predictions, chat did not interact with the face-to-face interaction expectation to predict self-esteem gain scores, $F(1, 131) = 0.12, p = .729$, as indicated in Table 2.
Meaningful Existence

The Univariate two-way ANOVA for meaningful existence revealed a significant effect of face-to-face interaction expectation, \( F(1, 131) = 5.37, \ p = .022 \). As indicated in Table 1, participants who did not expect a face-to-face interaction had significantly higher increases in meaningful existence satisfaction than those who did expect a face-to-face interaction. However, there was no significant effect of chat \( F(1, 131) = 0.35, \ p = .556 \), and chat did not interact with the face-to-face interaction expectation to predict meaningful existence gain scores, \( F(1, 131) = 0.13, \ p = .717 \) as indicated in Table 2.

Control

The Univariate two-way ANOVA for control revealed a significant effect of face-to-face interaction expectation, \( F(1, 131) = 8.80, \ p = .004 \). As indicated in Table 1, participants who did not expect a face-to-face interaction had significantly higher increases in control satisfaction than those who did expect a face-to-face interaction. Contrary to prediction, there was no significant effect of chat \( F(1, 131) = 1.50, \ p = .223 \). Furthermore, chat did not interact with the face-to-face interaction expectation to predict control gain scores, \( F(1, 131) = 0.38, \ p = .542 \) as indicated in Table 2.

To provide insight into the surprising findings in which individuals who did not anticipate a face-to-face interaction exhibited higher gain scores than those who did anticipate a face-to-face interaction, a MANOVA was used to examine pretest scores. The analysis revealed a marginally significant effect of face-to-face interaction expectation, \( p = .098 \). Univariate ANOVAs were then conducted to examine the effect of face-to-face expectation on each of the four needs’ pretest scores (See means in Table 3).
The results of these Univariate analyses revealed a significant effect of the face-to-face manipulation on belonging: $F(1, 131) = 4.37, p = .038$, self-esteem: $F(1, 131) = 4.53, p = .035$, meaningful existence: $F(1, 131), 6.63, p = .011$, and control: $F(1, 131), 6.67, p = .011$. In all cases, pretest scores were higher in the face-to-face expected condition than in the no face-to-face interaction expected condition. These findings suggest that the primary reason that needs gain scores were lower in the face-to-face condition than the no face-to-face condition is that participants started out higher in the face-to-face expected condition, leaving less room for change from pretest to posttest.

To further explore these unexpected findings involving expectation of face-to-face interaction, a MANOVA was conducted to examine posttest needs scores. This analysis did not reveal any Multivariate or Univariate effects of face-to-face interaction expectation on posttest scores (all $ps > .30$), which remained non-significant when a MANCOVA was conducted on posttest needs scores controlling for pretest needs scores (all $ps > .14$). Together, these analyses indicate that the unexpected effects of face-to-face expectation on needs gain scores were due to initial differences at the pretest assessment. Although the face-to-face interaction expectation manipulation had not occurred before participants reported their pretest needs scores, participants in that group started with significantly higher needs scores than the other groups.

**Role of Fear of Negative Evaluation**

A series of regression analyses were used to explore the moderating role of Fear of Negative Evaluation as a continuous variable. Fear of Negative Evaluation scores were first centered before entering this variable into the regression analyses. This variable, along with the variables representing the chat and expectation of face-to-face interaction manipulation were entered in the first step of the regression. The second step of the regression contained three two-
way interactions between FNE and the chat and expectation of face-to-face interaction variables. Finally, the third step of the regression contained the three way interaction between FNE, chat, and expectation of face-to-face interaction.

**Belongingness.** The regression analysis of belongingness gain scores did not reveal a significant effect of FNE, *t*(131) = -1.14, *p* = .259, β = -.10. Mirroring the results of the ANOVA, neither the effect of face-to-face expectation, *t*(131) = -1.63, *p* = .105, β = -.14, nor chat, *t*(131) = 1.85, *p* = .067, β = .16, were significant. The second step of the analysis did not reveal any two-way interactions (three *ts* < 1, *ps* > .46). Finally, the predicted three way interaction between FNE, chat and face-to-face expectation was not significant, *t*(127) = -0.33, *p* = .743, β = -.05.

Although the primary predictions were focused on belongingness gain scores, on an exploratory basis I examined the interplay between FNE and the manipulations in predicting the belongingness post scores only. There was not a significant effect of face-to-face expectation, *t*(131) = .81, *p* = .419, β = .07, however there was a significant effect of chat, *t*(131) = 3.61, *p* < .001, β = .29. The second step of the analysis did not reveal any two-way interactions (three *ps* > .18). Finally, the predicted three way interaction between FNE, chat and face-to-face expectation was significant, *t*(127) = -2.14, *p* = .034, β = -.33. It is worthwhile to note that this pattern was also present when controlling for pretest scores.

Further regression analyses were conducted to follow up on this significant three-way interaction by examining the interaction between FNE and the chat manipulation in each of the face-to-face interaction expectation conditions. FNE significantly interacted with the chat manipulation in the no face-to-face interaction expectation condition *t*(62) = 2.63, *p* = .011, β = .39. Higher FNE participants responded with less belonging satisfaction than their low FNE
counterparts in the no chat/no face-to-face interaction expectation condition, $t(31) = -3.30, p = .002, \beta = -.51$, however the relationship between FNE and belongingness was positive (although not significant) when participants chatted with a partner but did not expect a face-to-face interaction, $t(31) = 0.49, p = .627, \beta = .088$ (see left panel of Figure 1). When face-to-face interaction was expected, there was no significant FNE by chat interaction, $t(65) = -0.48, p = .636, \beta = -.07$. FNE was negatively related to belongingness satisfaction regardless of the chat condition, however this effect was significant in the chat/face-to-face interaction expectation condition, $t(28) = -2.28, p = .031, \beta = -.40$, but not in the no chat/face-to-face interaction expectation condition, $t(37) = -.57, p = .572, \beta = -.093$ (see right panel of Figure 1).

**Self-esteem.** The regression analysis of self-esteem gain scores did not reveal a significant effect of FNE, $t(131) = -0.11, p = .909, \beta = -.01$. Mirroring the results of the ANOVA, the effect of face-to-face expectation, $t(131) = -2.64, p = .009, \beta = -.22$, and chat, $t(131) = 3.41, p = .001, \beta = .28$, were significant. The second step of the analysis did not reveal any two-way interactions (three $ts < 1, ps > .72$). The predicted three way interaction between FNE, chat and face-to-face expectation was not significant, $t(127) = .06, p = .955, \beta = .01$.

**Exploratory Moderator Analyses Involving Other Needs and Mood**

Beyond belongingness and self-esteem, exploratory regression analyses were conducted on gain scores for control, meaning, and mood. Because online communication that does not include face-to-face interaction affords control over an interaction, and such control may be especially important to those who fear negative evaluation by others, it was possible that participants high in Fear of Negative Evaluation would have higher control gain scores in the chat-only condition than those lower in Fear of Negative Evaluation. The relationship between Fear of Negative Evaluation and control gain scores may be weaker or in the opposite direction...
in the other communication conditions. Thus, an interaction between FNE and the chat and face-to-face interaction expectation variables was predicted. In contrast, there was no apriori reason to expect that Fear of Negative Evaluation scores would relate to meaningful existence or mood scores, or that these relationships will differ as a function of the communication condition.

**Control.** The regression analysis of control gain scores did not reveal a significant effect of FNE, \( t(131) = -0.99, p = .324, \beta = -.08 \). Mirroring the results of the ANOVA, the effect of face-to-face expectation was significant, \( t(131) = -3.02, p = .003, \beta = -.25 \), and the effect of chat was not, \( t(131) = 1.16, p = .250, \beta = .10 \). The second step of the analysis did not reveal any two-way interactions (three \( ts < 1.21, ps > .23 \)). The predicted interaction between FNE, chat and face-to-face expectation was not significant, \( t(127) = -0.09, p = .928, \beta = -.02 \).

**Meaningful existence.** The regression analysis of meaningful existence gain scores did not reveal a significant effect of FNE, \( t(131) = -1.60, p = .112, \beta = -.14 \). Consistent with the results of the ANOVA, the effect of face-to-face expectation was significant, \( t(131) = -2.36, p = .020, \beta = -.20 \), however the effect of chat was not, \( t(131) = 0.48, p = .636, \beta = .04 \). The second step of the analysis did not reveal any two-way interactions (three \( ts < 1, ps > .43 \)). The three way interaction between FNE, chat and face-to-face expectation was not significant, \( t(127) = 0.13, p = .894, \beta = .02 \).

**Mood.** The regression analysis of mood gain scores did not reveal a significant effect of FNE, \( t(131) = -1.05, p = .297, \beta = -.09 \). The effect of face-to-face expectation was marginally significant, \( t(131) = -1.80, p = .074, \beta = -.15 \), and the effect of chat was significant, \( t(131) = 2.62, p = .010, \beta = .22 \), such that mood scores were higher among those who chatted compared to those who did not chat. The analysis did not reveal any two-way interactions (three \( ts < 1.05, ps \)
(.29) and the three way interaction between FNE, chat and face-to-face expectation was not significant, \( t(127) = 0.50, p = .616, \beta = .08 \).

**Exploratory Analyses Involving Personality Factors**

Similar to the regression analyses exploring FNE, a series of regression analyses were used to explore the moderating role of the Big Five Personality factors: Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. One centered personality variable, along with the variables representing the chat and expectation of face-to-face interaction manipulation were entered in the first step of the regression. The second step of the regression contained the two-way interactions between the personality variable and the chat and expectation of face-to-face interaction variables. Finally, the third step of the regression contained the three way interaction between the personality factor, chat, and expectation of face-to-face interaction. For the sake of brevity, main effects of the chat condition and face-to-face expectation variables are not reported.

**Role of Neuroticism**

**Belongingness.** The regression analysis of belongingness gain scores did not reveal a significant effect of Neuroticism, \( t(131) = -1.17, p = .245, \beta = -.10 \) or any interactions (all ts < 1.05, ps > .29).

**Self-esteem.** The regression analysis of self-esteem gain scores did not reveal a significant main effect of Neuroticism, \( t(131) = -.49, p = .625, \beta = -.04 \). However, there was a significant two-way interaction between Neuroticism and chat, \( t(128) = 2.01, p = .047, \beta = .67 \). Higher neuroticism scores were associated with marginally lower self-esteem gain scores when no chat occurred, \( t(70) = -1.78, p = .079, \beta = -.21 \). Although not significant, a positive
relationship was observed when a chat occurred, $t(61) = 1.13, p = .264, \beta = .14$. The other interactions were not significant ($ts < 1, ps > .64$).

**Role of Extraversion**

**Belongingness.** The regression analysis of belongingness gain scores did not reveal a significant main effect of Extraversion, $t(131) = 1.16, p = .250, \beta = .10$ or any interactions ($ts < 1.45, ps > .15$).

**Self-esteem.** The regression analysis of self-esteem gain scores did not reveal a significant main effect of Extraversion, $t(131) = 1.51, p = .134, \beta = .12$, or any interactions ($ts < 1.43, ps > .15$).

**Role of Openness**

**Belongingness.** The regression analysis of belongingness gain scores did not reveal a significant main effect of Openness, $t(131) = 0.31, p = .758, \beta = .03$, or any interactions ($ts < 0.92, ps > .36$).

**Self-esteem.** The regression analysis of self-esteem gain scores did not reveal a significant main effect of Openness, $t(131) = 1.76, p = .082, \beta = .14$, or any interactions ($ts < 0.57, ps > .57$).

**Role of Agreeableness**

**Belongingness.** The regression analysis of belongingness gain scores did not reveal a significant main effect of Agreeableness, $t(131) = -0.11, p = .913, \beta = -.01$. The second step of the analysis revealed a significant interaction of Agreeableness and chat, $t(128) = -2.19, p = .030$, $\beta = -.25$. Although only marginally significant, higher agreeableness scores were associated with lower belongingness gain scores when a chat occurred, $t(61) = -1.81, p = .076, \beta = -.23$. The relationship between agreeableness and belongingness gain scores was in the opposite direction.
when a chat did not occur, $t(70) = 1.18, p = .242, \beta = .14$. There were no other significant interactions ($ts < 0.79, ps > .43$).

**Self-esteem.** The regression analysis of self-esteem gain scores did not reveal a significant main effect of Agreeableness, $t(131) = .11, p = .912, \beta = .01$, or any interactions ($ts < 1.60, ps > .11$).

**Role of Conscientiousness**

**Belongingness.** The regression analysis of belongingness gain scores did not reveal a significant main effect of Conscientiousness, $t(131) = 0.24, p = .809, \beta = .02$, or any interactions ($ts < 1.66, ps > .09$).

**Self-esteem.** The regression analysis of self-esteem gain scores did not reveal a significant main effect of Conscientiousness, $t(131) = -.69, p = .489, \beta = -.06$, or any interactions ($ts < 1.81, ps > .07$).

**Discussion**

One purpose of the current study was to expand upon Maner and colleagues’ (2007) work which demonstrated that exclusion experiences can promote interest in affiliating with others in face-to-face interactions. An important implication of Maner and colleagues’ theorizing is that interaction following a rejection experience may serve the function of restoring a sense of belonging that was thwarted as a result of the rejection experience. Although Maner and colleagues imply that expectation of face-to-face interaction is key in restoring belongingness needs, in the present work the restorative effects of expecting a face-to-face interaction were compared to the effects of communicating with a partner through an online chat experience. To examine whether belongingness needs were restored following an ostracizing experience all participants were ostracized via Cyberball and randomly assigned to one of four conditions in
which participants were either led to expect a face-to-face interaction with a partner or not, and either chatted online with a partner or did not. When participants expected to have a face-to-face interaction with a partner increases in belongingness and self-esteem were hypothesized to be similar across the chat conditions (or potentially somewhat higher when there was the additional experience of chatting with a partner). In contrast, when there was no expectation of face-to-face interaction, participants who chatted with a partner were hypothesized to experience a significantly greater increase in belongingness and self-esteem than those who did not chat with a partner. This hypothesized pattern suggests that the chat and face-to-face interaction variables should interact with each other to predict an increase in belongingness.

The results from this study did not support this hypothesis and the predicted interactional pattern of belongingness gain scores. Participants who chatted, regardless of whether face-to-face interaction was expected, had higher gains in self-esteem and marginally higher gains in belongingness than those who did not chat. Additionally, the gains in belongingness did not vary as a function of participants’ level of Fear of Negative Evaluation or levels on many of the Big 5 personality traits, indicating that participants who were both high and low in Fear of Negative Evaluation and personality traits experienced similar gains in belongingness as a result of chatting with a partner.

Considering that self-esteem and belongingness increased as a result of chatting online regardless of whether face-to-face interaction was expected is interesting in light of prior findings. Maner and colleagues (2007) showed that in order for ostracized individuals to seek reconnection with a novel individual unrelated to the ostracizing experience, expectation of a face-to-face interaction was necessary. Although Maner and colleagues demonstrated that some individuals are interested in having face-to-face interactions following an exclusion experience,
the current findings do not indicate that the prospect of a face-to-face interaction has the effect of restoring belongingness needs or self-esteem. However, this study only used the expectation of a face-to-face interaction instead of actual face-to-face contact while the chat actually occurred. Therefore conclusions drawn from comparisons between the face-to-face interaction expectancy group and the online chat group may be limited since interaction only occurred in the chat group.

It is also interesting to note that individuals high in agreeableness had marginally less belongingness gains than those lower in agreeableness when a chat occurred. This supports prior work which showed that individuals low in agreeableness are also more likely to self-disclose online than those high in agreeableness (Bargh, McKenna, Fitzsimons, 2002). Perhaps this finding occurred because of those low in agreeableness self-disclosing more during the chat. This is an idea that could be examined in the future by analyzing the content of the chat to examine whether those lower in agreeableness self-disclosed more than those higher in agreeableness. It would also be interesting to examine whether self-disclosure mediates a change in belongingness scores.

Individuals higher in neuroticism had marginally lower self-esteem gain scores than their low neuroticism counterparts when no chat occurred. However, extraversion, openness, and conscientiousness were not predictive of who would benefit from the online chat. This is especially interesting considering individual differences, such as personality traits, can influence the likelihood one will gravitate toward reconnection and the extent to which he or she will benefit from that reconnection. Therefore, the fact that chatting boosted self-esteem and belongingness regardless of face-to-face interaction expectation and the benefits of the chat experience were not limited to individuals who were high or low in fear of negative evaluation,
or many personality factors, is important in further understanding what will help ostracized individuals regain two of their four basic needs.

These findings dovetail nicely with work that has examined the psychological benefits of online communication. In Shaw and Grant’s (2002) work, participants engaged in seven spaced-out chat sessions with an anonymous partner and were evaluated throughout this discourse on depression, loneliness, perceived social support, and self-esteem. Results showed that those who engaged in the chats had significant decreases in depression and loneliness while significant gains were seen in social support and self-esteem. In fact, recent work has looked at Facebook’s impact on users’ self-esteem and although the findings are mixed, there have been positive relationships shown such as Facebook use enhancing “social self-esteem”, or the validation received from others about things like physical appearance and romantic appeal (Valkenburg, Peter, & Schouten, 2006), or simply reaping the benefits of countless social opportunities provided by the social networking site (Ellison, Steinfield, & Lampe, 2007). The results of the current study are therefore consistent with the growing body of research showing that internet communication can result in higher self-esteem and other positive consequences.

Contrary to previous research (McKenna & Bargh, 2000), having the ability to chat did not increase the perception of control. This unexpected finding could be attributed to the scale by which control was measured. Perhaps the self-reported rating of 1-5 was not sensitive enough to detect changes in participants’ feelings of control. A measure more honed to detect even slight changes in control might have been able to show that chat increases perceived control as previous research has. Another factor that may explain this lack of effect could be the chat itself. In order for each participant to engage in as much the same chat experience as all other participants a list of predetermined questions was provided to them. Moreover, the confederate
only responded to these questions with predetermined answers that were neutral and brief in nature. The fact that the chat was actually very restricted could attribute to the lack of control increases in those who chatted. Therefore, there are plausible reasons as to why control gains were not seen in participants who engaged in the chat.

Additionally, there were unexpected effects of face-to-face interaction on several types of needs, including meaningful existence, control, and self-esteem such that there were larger increases in needs when no face-to-face interaction was expected than when face-to-face interaction was expected. More specifically, those who did not expect a face-to-face interaction had larger gains in self-esteem, meaningful existence, and control than those who did expect a face-to-face interaction.

In an attempt to explain these unexpected results, pretest scores were examined and the results showed that those participants expecting a face-to-face interaction had significantly higher scores in belonging, self-esteem, meaningful existence, and control than those who did not expect a face-to-face interaction. However, this effect is puzzling considering the communication manipulation was imposed on participants after they reported their pretest needs scores. Although proper protocol was employed to randomly assign subjects to experimental conditions, random assignment could have failed here. Random assignment does not work perfectly in all cases and can create instances in which individual differences on important variables are not evenly distributed across all experimental conditions due to sampling error. Another possible explanation of the lopsided pretest scores of participants expecting a face-to-face interaction was that the experimenters were not blind to the experimental conditions. Perhaps because the experimenters were privy to the experimental conditions they were running, they unknowingly gave off subtle cues based on their knowledge of the condition and the
expected hypothesis for each condition. Therefore, since participants expecting face-to-face interaction started out with higher needs scores, this would hinder large gains in needs acquisition and therefore seems to explain why these participants reported lower gains in needs.

**The Role of Fear of Negative Evaluation**

The online communication literature has considered negative characteristics such as social anxiety or neuroticism and how they are relevant to social interaction. Therefore I examined the possibility that the benefits of online communication are especially evident among those who strongly exhibit such negative characteristics (i.e., among those who are high in Fear of Negative Evaluation). The results showed, unexpectedly, that FNE had no moderating role in the prediction of belongingness gain scores. However, in examining only the posttest scores of belongingness, FNE did interact with chatting and FNE interacted with chatting and expectancy of a face-to-face interaction as well. Maner and colleagues (2007) found FNE to be an important moderator of responses to exclusion experiences such that only those low in FNE showed increased interest in reconnecting with others following an exclusion experience. This result led to my hypothesis that among those high in FNE, an online chat may be a less threatening experience, perhaps leading to larger gains in belongingness and self-esteem relative to other conditions. Surprisingly, my results did not corroborate Maner and colleagues’ (2007) finding that FNE was an important moderator of responses to exclusion experiences.

This interaction suggests that FNE tended to be negatively associated with belongingness in conditions in which face-to-face interaction was expected, as one would expect. FNE also tended to be negatively associated with belongingness when there was no face-to-face interaction expected and no chat experience. Although there was not a significant association between FNE and belongingness in the key chat with no face-to-face expectation condition, it is noteworthy
that this relationship was in the predicted positive direction in this condition only. Therefore, participants with high FNE did glean increased belongingness from the chat when there was no pressure of a face-to-face interaction, as was predicted. In sum, some promising patterns did emerge although not all predictions were supported by these data.

**Limitations and Future Directions**

Overall, the predicted effects were heading in the right direction, but perhaps stronger manipulations could strengthen these effects for more definitive conclusions. Specifically the weak relationship between FNE and belongingness in the key chat with no face-to-face interaction expectation was disappointing, however it was heading in the predicted direction. Future research should consider some adjustments in order to yield a stronger effect for those who are high in FNE. Perhaps making the chat longer than just five minutes would more strongly impact those who are high in FNE. When more time is spent chatting in a non-threatening environment, more information is exchanged which leads to greater likeability and closeness (Henderson & Gilding, 2004; McKenna, Green, & Gleason, 2002). If the chat was extended, participants high in FNE may feel closer to their partner and this may more strongly boost belongingness.

Another way to potentially strengthen the relationship between FNE and belongingness in the chat with no face-to-face interaction expectation condition is to structure the chat differently. Building in more control for the participants could help strengthen the relationship between FNE and belongingness. For example, instead of having a scripted list of questions for the participants to ask and answer, the experimenter could simply tell participants to get to know their partner by chatting. With no stringent parameters, there may be a wide array of topics and discourse, however participants may feel as if they do have the control in what questions they
ask and how they ask those questions. They would then be able to talk about things that interest 
them and find commonalities and differences with their partners. This imitates real-life 
conversation that is not stifled by restrictions and makes for a more organic experience. 
Moreover, if the confederates could reply with their own unscripted answers and ask questions 
that also interest them, the entire experience would reduce the artificiality of the experience to 
provide a more natural progression. The confederates’ response content was neutral, however 
perhaps a bland neutral chat is not enough to increase belongingness for someone who is already 
high in FNE. Finally, to further strengthen the relationship between FNE and belongingness in 
the chat, cues of acceptance could be embedded in the chat. Perhaps if confederates agreed with 
the participants and confirmed their statements or ideas, participants high in FNE would feel 
validated and accepted, which may in turn lead to increased belongingness.

Much of the focus of this study was on FNE related to belongingness when a chat 
ocurred without a face-to-face interaction expectation. In order for an interaction to be 
significant, the relationship between FNE and belongingness would need to be rather different in 
other conditions. There is a possibility that the mere expectation of a face-to-face interaction was 
a manipulation that would not cause the high FNE participants to respond differently enough 
from the other groups. Perhaps a future study could include an actual face-to-face interaction as 
an additional condition or in place of the expectation of the face-to-face interaction condition in 
the current study. An actual face-to-face interaction may provide more stress to individuals high 
in FNE than merely expecting a face-to-face interaction. Therefore, a face-to-face interaction 
condition could yield more robust results in high FNE individuals and could be a more valid 
comparison to the chat condition.
Finally, the effect of chat on self-esteem and belongingness gain scores was not moderated by FNE or many personality factors. This raises the question, of whether other personality or individual difference factor(s) may play a stronger moderating role in responses to chatting with a partner. One factor that may be playing a role is technology self-efficacy, or the confidence one has in oneself to operate technological devices (Huffman, Whetten, & Huffman, 2013; McDonald & Siegall, 2001). Many students are simply not equipped with skills necessary to master technology at the same quick pace as others (McCoy, 2010) due to socioeconomic status and technology availability. If a participant is not proficient in his typing skills and if his speed lags compared to the confederate, that uneasiness could definitely decrease the benefits received from chatting online. Furthermore, there could be different individual difference factors that more directly interact with gaining benefits from online chatting than a person’s fear of negative evaluation. For example, people vary greatly in rejection sensitivity (Downey & Feldman, 1996; Mogg, Philippot, & Bradley, 2004), the extent to which they identify threatening social cues and how they respond to them. Individuals with high rejection sensitivity would view their exclusion experience as much more threatening than those low in rejection sensitivity and would therefore “bristle” more if presented with an opportunity for reconnection. Future research should examine rejection sensitivity and other individual difference factors that could be more strongly related to receiving chat benefits.

Conclusions

The current study, building on the work of Maner and colleagues (2007), investigated an alternative way in which basic needs can be boosted following an exclusion experience. Counter to predictions, individuals high in fear of negative evaluation did not have higher increases in needs following an online chat than those lower in fear of negative evaluation. However, chatting
online boosted self-esteem and belongingness (marginally) regardless of whether individuals expected a face-to-face interaction or if they were high or low in fear of negative evaluation. More work needs to be done in this important area of research in order to establish what will make ostracized individuals feel like reconnecting and feeling as if they are a part of a cohesive group.
References


Emotion, 17, 277-293.


Table 1

Estimated Marginal Means and Standard Errors of Need Satisfaction Difference Scores for Main Effects of Communication Manipulations

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<th>No Chat</th>
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<td>M</td>
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Table 2

Estimated Marginal Means and Standard Errors of Need Satisfaction Difference Scores as a Function of Chat and Face-to-Face Interaction Expectation Conditions

<table>
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<tr>
<th>Type of Need</th>
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<th>No FTF</th>
<th>FTF</th>
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<td>1.00</td>
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<td>0.21</td>
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<td>0.22</td>
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<td>0.33</td>
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<td>0.16</td>
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<td>0.68</td>
<td>0.17</td>
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<td>0.37</td>
<td>0.16</td>
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Table 3

Estimated Marginal Means and Standard Errors of Pretest Need Satisfaction Scores as a Function of Chat and Face-to-Face Interaction Expectation Conditions

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<tr>
<th>Type of Need</th>
<th>No Chat</th>
<th>Chat</th>
<th>No FTF</th>
<th>FTF</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SE</td>
<td>M</td>
<td>SE</td>
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<tr>
<td>Belongingness</td>
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<td>3.11</td>
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<td></td>
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<td>2.70</td>
<td>0.20</td>
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<td>2.97</td>
<td>0.21</td>
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<tr>
<td>Self-Esteem</td>
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<td>3.15</td>
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<td></td>
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<td>0.17</td>
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<td>2.55</td>
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</tr>
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<td></td>
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<td>2.59</td>
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</table>
Figure 1. Belongingness as a function of FNE, chat condition, and expectation of face-to-face interaction.
Appendix A

INFORMED CONSENT STATEMENT: “Gaming and Communication Study”

This research is being conducted by Skye Wingate, graduate student in the Psychology Department at Morehead State University. This project is supervised by Dr. David A. Butz. You must be at least 18 years of age in order to participate. As part of this project you will be playing a computer game. You will be asked to respond to a questionnaire concerning personality factors and feelings.

The time commitment today will be about 30 minutes. You will receive 1 credit toward your Introduction to Psychology class for today’s participation.

Your participation is totally voluntary and you may stop participation at any time. You are free not to answer specific items or questions, or to complete any part of the process. If you decide to stop your participation today or at any time during your other sessions, you will not be penalized. You may choose to do something else for credit in your psychology class in consultation with your instructor.

Your responses today will remain confidential to the extent allowed by law. Your name will not appear on any of the results. No individual responses will be reported. Only group findings will be reported. We are required by law to report to the proper authorities any information that a person under the age of 18 is being abused or neglected by a family member, and/or that physical abuse has occurred between married persons. Aside from those cases, only members of the research team will have access to your responses. Data will be kept in a locked filing cabinet in Reed Hall on the campus of Morehead State University.

Participating in this research is not expected to pose more than minimal risk. This study has been reviewed to determine that it poses little or no threat to participants, and there appear to be minimal risks or discomfort associated with completing any part of the study. Your responses on the surveys, computer game, and study instruments will be assigned a random identification number to ensure that your responses remain completely anonymous and cannot be tied back to your name. Your instructor will be notified of your participation in order to assign course credit, however he/she will not have access to any of your responses from the study.

You will be providing researchers with valuable knowledge about the factors that increase imagination and attention processes.

You may contact Skye Wingate (vswingate@gmail.com) if you have questions about the research project. If you feel discomfort because of your participation in the study, you are encouraged to contact Dr. David Butz in the Psychology department (606) 783-2313 or the MSU Counseling and Health Services Center (112 Allie Young, 606-783-2123).

I have read and understood the explanation of the study and agree to participate. I understand that by signing and dating this form I have given consent to participate in the study.
Appendix B

Brief Fear of Negative Evaluation Scale
Leary (1983)

Read each of the following statements carefully and indicate how characteristic it is of you according to the following scale:

1 = Not at all characteristic of me
2 = Slightly characteristic of me
3 = Moderately characteristic of me
4 = Very characteristic of me
5 = Extremely characteristic of me

_____ 1. I worry about what other people will think of me even when I know it doesn't make any difference.
_____ 2. I am unconcerned even if I know people are forming an unfavorable impression of me. (R)
_____ 3. I am frequently afraid of other people noticing my shortcomings.
_____ 4. I rarely worry about what kind of impression I am making on someone. (R)
_____ 5. I am afraid others will not approve of me.
_____ 6. I am afraid that people will find fault with me.
_____ 7. Other people's opinions of me do not bother me. (R)
_____ 8. When I am talking to someone, I worry about what they may be thinking about me.
_____ 9. I am usually worried about what kind of impression I make.
_____ 10. If I know someone is judging me, it has little effect on me. (R)
_____ 11. Sometimes I think I am too concerned with what other people think of me.
_____ 12. I often worry that I will say or do the wrong things.

Appendix C

NEO-FFI

Please respond below placing the number in the blank next to each item that best describes your experiences in life with regard to that issue. Use the following scale:
5 = Strongly Agree;
4 = Agree;
3 = Neutral/Neither Agree nor Disagree;
2 = Disagree;
1 = Strongly Disagree

_____I am not a worrier.
_____I like to have a lot of people around me.
_____I don’t like to waste my time daydreaming.
_____I try to be courteous to everyone I meet.
_____I keep my belongings clean and neat.
_____I often feel inferior to others.
_____I laugh easily.
_____Once I find the right way to do something, I stick to it.
_____I often get into arguments with my family and co-workers.
_____I’m pretty good about pacing myself so as to get things done on time.
_____When I’m under a great deal of stress, sometimes I feel like I’m going to pieces.
_____I don’t consider myself especially “light-hearted.”
_____I am intrigued by the patterns I find in art and nature.
_____Some people think I’m selfish and egotistical.
_____I am not a very methodological person.
_____I rarely feel lonely or blue.
_____I really enjoy talking to people.
_____I believe letting students hear controversial speakers can only confuse and mislead them.
_____I would rather cooperate with others than compete with them.
_____I try to perform all the tasks assigned to me conscientiously.
_____I often feel tense and jittery.
_____I like to be where the action is.
_____Poetry has little or no effect on me.
_____I tend to be cynical and skeptical of others’ intentions.
_____I have a clear set of goals and work toward them in an orderly fashion.
_____Sometimes I feel completely worthless.
_____I usually prefer to do things alone.
_____I often try new and foreign foods.
_____I believe that most people will take advantage of you if you let them.
_____I waste a lot of time before settling down to work.
_____I rarely feel fearful or anxious.
_____I often feel as if I’m bursting with energy.
_____I seldom notice the moods or feelings that different environments produce.
_____Most people I know like me.
_____I work hard to accomplish my goals.
_____I often get angry at the way people treat me.
_____I am a cheerful, high-spirited person.
I believe we should look to our religious authorities for decisions on moral issues.

Some people think of me as cold and calculating.

When I make a commitment, I can always be counted on to follow through.

Too often, when things go wrong, I get discouraged and feel like giving up.

I am not a cheerful optimist.

Sometimes when I am reading poetry or looking at a work of art, I feel a chill or wave of excitement.

I’m hard-headed and tough-minded in my attitudes.

Sometimes I’m not as dependable or reliable as I should be.

I am seldom sad or depressed.

My life is fast-paced.

I have little interest in speculating on the nature of the universe or the human condition.

I generally try to be thoughtful and considerate.

I am a productive person who always gets the job done.

I often feel helpless and want someone else to solve my problem.

I am a very active person.

I have a lot of intellectual curiosity.

If I don’t like people, I let them know it.

I never seem to be able to get organized.

At times I have been so ashamed I just wanted to hide.

I would rather go my own way than be a leader of others.

I often enjoy playing with theories of abstract ideas.

If necessary, I am willing to manipulate people to get what I want.

I strive for excellence in everything I do.
Appendix D

Cyberball Start page

Welcome to Cyberball, the Interactive Ball-Tossing Game Used for Mental Visualization

In the upcoming experiment, we test the effects of practicing mental visualization on task performance. Thus, we need you to practice your mental visualization skills. We have found that the best way to do this is to have you play an on-line ball tossing game with other participants who are logged on at the same time.

In a few moments, you will be playing a ball tossing game with other students over our network. The game is very simple. When the ball is tossed to you, simply click on the name of the player you want to throw it to. When the game is over, the experimenter will give you additional instructions.

What is important is not your ball tossing performance, but that you **MENTALLY VISUALIZE** the entire experience. Imagine what the others look like. What sort of people are they? Where are you playing? Is it warm and sunny or cold and rainy? Create in your mind a complete mental picture of what might be going on if you were playing this game in real life.

Okay, ready to begin? Please click on the following link to begin: Start Playing Now
Appendix E

Assessment of manipulations, need satisfaction, and mood following ostracism

(Williams, Govan, Croker, Tynan, Cruickshank, & Lam, 2002).

For each question, please circle the number to the right that best represents the feelings you were experiencing during the game.

<table>
<thead>
<tr>
<th>Belonging</th>
<th>Not at all</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel “disconnected” (R)</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>I feel rejected (R)</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>I feel like an outsider (R)</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>I feel I belong</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
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<table>
<thead>
<tr>
<th>Self-Esteem</th>
<th>Not at all</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel good about myself</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
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<tr>
<td>My self-esteem is high</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
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<tr>
<td>I feel liked</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
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<tr>
<td>I feel insecure (R)</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>I feel satisfied</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
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<table>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Extremely</th>
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</thead>
<tbody>
<tr>
<td>I feel invisible (R)</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>I feel meaningless (R)</td>
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<td>3</td>
<td>4</td>
<td>5</td>
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<td>I feel nonexistent (R)</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>I feel important</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>I feel useful</td>
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<td>2</td>
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<td>4</td>
<td>5</td>
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<table>
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<th>Control</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel powerful</td>
<td></td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
I feel I have control

1 2 3 4 5

I feel I have the ability to

significantly alter events

1 2 3 4 5

I feel I am unable to influence

the action of others (R)

1 2 3 4 5

Mood

<table>
<thead>
<tr>
<th>Mood</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<td></td>
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<tr>
<td>Bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Friendly</td>
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<td>Unfriendly</td>
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<td>Angry</td>
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<td>Happy</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Sad</td>
<td></td>
<td></td>
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</table>

Manipulation check

For each question, please circle the number to the right that best represents the feelings you were experiencing during the game:

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<tr>
<th>Not at all</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>I felt I belonged to the group</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>I felt the other players interacted</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>with me a lot</td>
<td></td>
</tr>
<tr>
<td>I felt I had control over the course</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>of the game</td>
<td></td>
</tr>
<tr>
<td>I felt the other plays decided</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>everything</td>
<td></td>
</tr>
</tbody>
</table>
For the next three questions, please circle the number to the right (or fill in the blank) that best represents the thoughts you had during the game:

I was ignored 1 2 3 4 5
I was excluded 1 2 3 4 5

Assuming that the ball should be thrown ___% to each person equally (33% if three people; 25% if four people), what percentage of the throws did you receive?
Appendix F

Confederate’s Online Chat Questions

Where are you from?
What is your major?
What is your favorite movie?
What is your favorite color?
What is your favorite genre of music?
In what cities have you lived?
Are you an only child?
What are your parents’ occupations?
What do you want to be when you grow up?
What is your favorite book?
What are your hobbies?
Do you play, or have you played, any sport?
Do you have a significant other?
What is your favorite college class?
Who is your idol?
Do you have any pets?
What is your favorite food?
Who would you want with you if you were stranded on a deserted island?
If money was no object, what would you do all day?
Where do you most want to travel, but have never been?
What is your favorite memory?
Who is your favorite author?
What was your favorite activity in gym class?
What has been your biggest challenge?
What is your biggest success up until now?
What does your perfect day look like?
What is the one thing that should be taught in school that isn’t already?
If you were to create a piece of art, what would the subject be?
What one thing would you change if you had to do it over?
If you could go back in time, what year would you travel to?
What does your life say about you?
How would your friends describe you?
# Appendix G

## Distractor Task

| B | T | W | P | D | R | N | C | M | Q | C | M | N | R | O | E | Z | Y | Y | X | M | A | Y | Y |
| V | A | N | U | Z | V | M | B | C | M | V | S | M | E | N | J | U | N | G | I | C | Y | N | Q | F |
| A | R | A | X | Y | R | R | E | B | W | A | R | T | S | I | I | G | Z | G | D | L | R | F | V | Y |
| I | Y | W | Q | J | T | N | X | O | K | H | B | N | M | U | S | Y | E | Q | T | P | K | I | T | E |
| B | A | Q | Y | Z | S | U | E | F | L | F | F | F | B | J | Q | L | C | H | E | R | R | Y | T | H |
| P | P | H | X | Z | K | Z | B | K | G | S | C | Y | S | E | M | U | L | P | V | Z | M | X | C |
| E | W | D | S | D | G | E | L | W | M | V | P | A | N | A | N | A | B | R | P | T | R | M | C | C |
| X | N | S | V | D | C | J | I | L | M | I | A | Z | U | R | Y | Y | V | P | Q | T | U | E | P |
| L | G | I | O | M | Y | N | D | Y | I | I | N | T | O | V | R | R | N | R | A | K | U | R | H | I |
| V | H | M | F | T | F | J | L | Z | W | Q | R | D | K | A | E | G | O | V | B | C | X | V | J | N |
| E | G | F | U | P | G | Y | C | V | S | R | T | T | P | J | I | P | L | E | D | U | S | G | O | A |
| D | S | Y | V | F | Z | R | U | C | A | D | G | E | I | J | T | X | N | I | J | U | O | T | M | P |
| E | Y | R | F | W | I | C | T | U | I | X | P | O | R | O | T | K | R | Y | S | T | V | A | A | P |
| B | V | L | R | A | Q | T | C | L | A | D | N | Q | M | F | A | N | O | S | Q | E | T | T | L |
| Q | U | E | D | Z | T | M | E | U | O | S | T | I | M | N | E | C | N | P | H | Y | O | O | E |
| P | M | C | N | C | S | W | L | M | C | X | P | O | R | C | O | L | Z | G | S | P | N | N | D | T |
| E | I | R | Q | O | A | W | J | B | C | Z | S | N | A | X | Z | Z | O | U | E | P | F | B | B | E |
| A | O | X | V | M | B | B | A | E | O | A | P | X | D | M | O | J | I | N | A | R | W | D | V | G |
| C | U | J | U | A | K | W | B | R | R | O | W | O | I | F | F | L | P | F | V | A | I | D | B | N |
| H | O | T | B | I | E | K | Q | A | B | C | B | Q | S | D | P | P | Y | U | L | M | A | N | C | A |
| A | E | M | D | T | I | U | I | I | G | X | Y | H | H | M | S | Z | B | X | G | R | A | P | E | R |
| X | J | S | G | W | I | I | X | I | B | E | Y | Y | O | P | U | M | M | W | Y | K | T | D | M | O |
| O | T | J | I | F | M | E | D | P | J | F | Q | W | R | X | E | N | I | G | P | A | M | Q | Y | L |
| K | E | Y | F | P | B | J | X | D | Q | L | L | H | D | L | D | A | I | A | S | A | B | G | O | F |

| APPLE | PINEAPPLE |
| BANANA | PLUM |
| BROCCOLI | POTATO |
| CABBAGE | RADISH |
| CARROT | STRAWBERRY |
| CHERRY | TANGERINE |
| CORN | TOMATO |
| CUCUMBER | TURNIP |
| GRAPE | WATERMELON |
| KIWI | YAM |
| LETTUCE |
| ONION |
| ORANGE |
| PEACH |
| PEELED |
Appendix H
Written Debriefing

In this study we were primarily interested in understanding responses to ostracism and the factors that determine recovery from ostracism experiences. In order to do this, we had participants play an online game, Cyberball, in which they initially received two tosses of the digital ball and then were ignored the rest of the game. This induced ostracism. Then the participants either communicated online with the expectation of a subsequent face-to-face interaction, communicated online without the expectation of a subsequent face-to-face interaction, completed a word search with an expectation of a subsequent face-to-face interaction, or completed a word search with no expectation of a subsequent face-to-face interaction. The purpose of this study was to see how one’s belongingness needs are increased in each condition, and then to compare the increase of those needs between conditions. We believed that belongingness needs would be increased more in the communication conditions when compared to the control conditions. It is important to understand that all participants were intentionally left out of the game of Cyberball. The experimenter had changed the settings before you arrived in order to program the online game to ostracize you. There was nothing you did to elicit ostracism. Being ostracized was necessary in this study in order to evaluate what improves people’s sense of belonging following social rejection.

We would like to emphasize that the responses you provided will remain completely anonymous. In fact, we did not enter any information into the computer or on the survey beyond the identification number you were assigned, which cannot be tied back to your name. You may recall that you provided your signature on the consent form at the beginning of the session, and this form will be stored in a separate location such that your name can never be tied to the data you provided. In addition, we would like to mention that we are not interested in the responses of individuals, but are instead focusing on how groups of people respond on this task and series of questions. Therefore, your data will be pooled with data collected from other college students. Because we will be pooling the data, we cannot provide feedback on how you personally responded on the computer task or survey. However, if you are interested in learning more about the study and the results, we would be happy to provide additional information to you at the conclusion of this project. You may contact Skye Wingate, the graduate researcher for this project, or Dr. David Butz, the faculty sponsor for this project using the contact information on a piece of paper you will take with you to receive this additional information or if you have questions or concerns about the project.

Can we count on you to keep the details of this study secret?

Thanks again for your participation in this study!

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If you feel distress as a result of participating in this study and think you need to talk to a professional, please contact the Morehead State University Counseling Center at (606) 783-2123.