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The effects of social-exclusion inducing stereotype threat

Michael Bartosek

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The Effects of Social-Exclusion Inducing Stereotype Threat

by

Michael Bartosek

Thesis
Submitted to the Department of Psychology
Eastern Michigan University
in partial fulfillment of the requirements
for the degree of
MASTER OF SCIENCE
in
Psychology

Thesis Committee:
Rusty McIntyre, Ph.D., Chair
Natalie Dove, Ph.D.
Eamonn Arble, Ph.D.

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Abstract

Stereotype threat occurs when one may feel as if they are confirming or representing a self-characteristic or a negative stereotype of one’s group. Social exclusion has been shown to threaten the need to belong. Both stereotype threat and social exclusion have many common links: Each affects an individual’s self-views, feelings, and each impact one’s ability to focus cognitive faculties to perform well on cognitive tests. This thesis sought to explain how social exclusion would increase the perceived threat on related tests of sociability. As such, participants were included or excluded during an online social game, and then received an ordinary or diagnostic test of sociability. It was hypothesized that social exclusion would have negative effects on reports of social needs compared to the act of inclusion, and being excluded would influence performance on a measure of sociability. Results indicated support only for the social needs. It was also hypothesized that diagnostic tests for sociability would produce more stereotype threat and reported stress than pilot tests. Results indicated marginal support for this second hypothesis. It was also suggested that the most threat would be seen for participants who were both excluded and given a diagnostic test as compared to participants who were not excluded or not given a diagnostic test. That hypothesis, however, was not supported. Implications for theoretical connections between social exclusion and stereotype threat are discussed.
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Introduction

Most people can relate to stories of outcasts becoming the hero. Recently the popular Harry Potter series revolved around this concept: An orphan boy who finally finds true love and friendship, or a geeky girl who is finally accepted and admired by her peers. A generation ago The Karate Kid focused on an outcast that was picked on only to win, fame and love. These examples are likely favored because they highlight common social experience, of being ostracized, but also present ways in which people can make social connections despite troubling threats to social inclusion. It is theorized that people need to be connected to others (Baumeister & Leary, 1995). People carry cell phones to maintain that need, have electronics to produce that need, systems of transport to facilitate and fulfill that need even over great distances. Positive social contact has been hypothesized as essential for psychological and physical health (DeWall, Baumeister, Chester & Bushman, 2016). People who feel socially alienated or rejected are susceptible to a host of behavioral, emotional, and physical problems, and reactions to these experiences suggests that human beings may possess a fundamental need to belong (Baumeister & Leary, 1995). Just as we have needs for food and water, we also have needs for positive and lasting relationships (DeWall, & Bushman, 2011). In fact, it has been posited that humans have evolved to be connected, and through social connections humans advanced as a species (Cacioppo, Patrick, 2008; Jaques, 1984). Nonetheless, a threat to being included, either by isolation or from the threat of exclusion, should be upsetting for most.

People also have a need to fulfill ideals and self-standards for performance (Swann, Pelham, & Krull, 1989). In situations where the ability to perform well is threatened, people can become upset and perform more poorly (Steele & Aronson, 1995). People everyday experience these feeling in many situations. Examples include women who perform worse on math tests
when they think the test will produce gender differences (Spencer, Steele, & Quinn, 1999). This is often referred to as stereotype threat. Stereotype threat refers to being at risk of confirming, as self-characteristic, a negative stereotype about one's group (Steele & Aronson, 1995, p. 798). For example, one study focused on African American and White athletes, in which both groups were given a task of putting a golf ball as close as possible to a hole (Stone, Lynch, Sjomeling, & Darley, 1999). When the task was described as a measure of intellectual strategy Africans Americans, fearing possibly confirming a negative stereotype about intelligence, performed poorer than did White athletes. When the task was described as a test of physical abilities the White athletes showed similar levels of underperformance. It was concluded that this occurred because of the negative stereotype of Whites underperforming in athletics compared to that of Blacks (Stone et al., 1999). People do not want to confirm a stereotype about a group for which they identify (Steele, 1997). The threat of the stereotype impairs or distracts cognitive functioning, working memory, and other various intellectual processes (Schmader & Johns, 2003). Stereotype threat also creates negative reactions in targets. Thus, with stereotype threat, individuals exposed to situations that might test for their fit within a domain react with negative feelings, a depreciated sense of self or group identity, a loss of feelings of control, and often demonstrate cognitive distraction.

With social exclusion, individuals experiencing exclusion react with negative feelings, a depreciated sense of self, and a loss of feelings of control, belongingness, meaningfulness, and often attempt to overcome such situations with corrective behaviors (Twenge, Baumeister, Tice, & Stucke, 2001). Stereotype threat also can cause negative feelings, and people attempt to correct that threat by either trying hard to dispel the threat or exiting the situation (Steele, Spencer, & Aronson, 2002). Both processes can cause individuals to ultimately “dis-identify”
with opportunities to dispel the threat to the self. The purpose of this thesis was to examine the relationship between social exclusion and subsequent stereotype threat. It was expected that being excluded might create a stereotype threat for individuals who believe they are in a situation that tests for social worth. It was hypothesized that the act of exclusion would have negative effects on cognitive abilities in social intelligence testing. Once a person is excluded from a situation, that experience will increase the stereotype threat on given tasks far more than not initially excluded. As such, this thesis attempted to describe the similarities between social exclusion and stereotype threat, examine a novel method for testing the relationships between these two social psychological processes.

Social Exclusion

Few people wish to suffer the consequence of being excluded (Baumeister & Leary, 1995). Instances of social exclusion start in early childhood, just as bonds with the outside world are beginning to form. For example, many individuals have experienced not being picked in gym, nor not receiving an invite to the party of a classmate. As such, people are likely to be very sensitive, and react in many ways to cues suggesting that they are being excluded. Studies have shown that social exclusion (in the form of exclusion, potential future fates, or even ostracism from others) affects people emotionally, cognitively, and affects physical health (Baumeister, Twenge, & Nuss, 2002; Cacioppo & Patrick, 2008). Williams (2007) states that there are several processes of ostracism, beginning with the initial act of being ignored or excluded, followed by coping. During the initial act, individuals begin to realize they are being left out, and thus begin to find ways to adjust to the setting. Coping can mean the person tries harder to be included. For example, people who are ostracized may be more likely to engage in behaviors that increase their future inclusion by complying, obeying orders, cooperating and
expressing attraction. According to Williams (2007), failure in the above behaviors can also lead to what is called resignation. That is, excluded people tend to discontinue any attempts or cope by making connections with others. People who have been ostracized to the point of resignation seem to dis-identify with the needs for social connection and are often less helpful and more aggressive to others. They exhibit increased anger and sadness, and long-term ostracism can cause depression, helplessness, and feelings of decreased self-worth (Williams, 2007). Once the initial pain of rejection has subsided, most people attempt to reappraise the situation and then develop a rationalization response (Williams, 2007). Many may ponder what caused them to be socially excluded? Once they reach some working explanation, they then attempt to avoid similar fates in the future. Nonetheless, one thing is true, being excluded is greatly upsetting to the target (Williams, 2007).

A number of studies have shown the negative consequences of exclusion. Excluded people have an increase in impulsive behavior and less self-regulation (Baumeister, DeWall, Ciarocco, & Twenge, 2005; Maner, DeWall, Baumeister, & Schaller, 2007), and may also show an increase in risky behavior (Twenge, Cantanese, & Baumeister, 2002). Additionally, some research has found that people try to reconnect after exclusion, whereas others may respond to rejection with anger and lashing out (Maner et al., 2007). An individual may seek a sense of control and may become aggressive as a way to earn attention from others. Doing so can create a downward spiral, thus causing an increase in the amount of, or the duration of, being excluded. When people act aggressively, they are even less likely to be socially accepted, this aggressive behavior may also result in more exclusion. It seems that for some individuals, exclusion and aggression may be related processes, with each feeding on the other and causing increased frequency in each (Buckley, Winkel, & Leary, 2004). Exclusion can have emotional and
cognitive ramifications. Social rejection increases anger, anxiety, depression, jealousy and sadness (Williams, 2007). At the same time, social exclusion frequently causes increases in aggressive behavior. Unfortunate this aggression, as Coie and Koepppl (1990) have suggested, often elicits rejection by other children.

Many group members shy away from aggressive members, casting out that member, or excluding them from activities. Social exclusion from a group, for a brief or extended period, threatens belongingness with others, which in turn results in severe psychological, behavioral, and cognitive impairments, including poor immune-function (Kiecolt-Glaser, Garner, 1984), higher rates of psychopathology (Bhatti, Derezotes, Kim, & Specht, 1989; Hamachek, 1992), increased suicide tendencies (Trout, 1980), and involvement in crime (Sampson & Laub, 1993).

Some studies conclude that exclusion can produce sadness anger and hurt, whereas other studies show exclusion can be emotional numbing (Twenge, Catanese, & Baumeister, 2003). For instance, exclusion has been shown to be related to self-defeating behavior and changes in self-esteem. Self-defeating behavior often increases among socially excluded people (Twenge et al., 2002), and rejected people experience declines in self-esteem (Leary, Tambor, Terdal, & Downs, 1995). Prisoners who have been subjected to solitary confinement show an increase in psychotic behaviors (McGuire & Raleigh, 1986).

Of particular importance, social exclusion also decreases cognitive functioning (Baumeister et al., 2002). Being excluded seems to distract or impair the recall of information. In one experiment, participants were given a questionnaire, then the experimenter told the participants that the questionnaire could predict if they would end up alone in life. Participants were then randomly assigned to receive feedback about their level of extraversion. In the life alone condition, it was explained that though college students have many friends now, as they
leave school many lose contact and end up alone, and the results of the prior questionnaires indicate that these people would be alone. Two control conditions were also employed. The misfortune group who were told they would be accident prone and visit the hospital for injuries, this group wasn’t exposed to the manipulation for exclusion. The other control group was the opposite of the alone group, this group was told their future involved many friends and relationships. After this feedback, all participants were given a test of intelligence. The result showed that intelligence test performance was impaired by the threat of future social exclusion when compared to subjects in the future belonging and misfortune conditions (Baumeister et al., 2002). A second experiment used the same groups but tested for memory. Results showed that they future social exclusion group performed poorer than did the other groups. This experiment suggested a decrease in processing and executive function resulted from being excluded, which lead to the resulted in social exclusion and resulted in impaired cognitive functioning. In many ways, the negative emotional and cognitive outcomes of social exclusion seem to impair cognitive and emotion, and lead to similar behaviors as does the experience of stereotype threat (see Steele, Spencer, & Aronson, 2002).

**Stereotype Threat**

“Stereotype threat” is defined as a “sense that one can then be judged or treated in terms of the stereotype or that one might do something that would inadvertently confirm it” (Steele, Spencer, & Aronson, 2002, p. 389). Research has demonstrated that many experiences and situations may induce stereotype awareness (Beilock, Jellison, Rydell, McConnell, & Carr, 2006). Gender stereotypes associated with STEM fields are instilled at an early age this may contribute to performance SAT, ACT exams as well as interest in STEM fields later in life (Nosek & Smyth, 2011). White men perform more poorly on a math test when they think they
are being compared to Asian men (Aronson, 1999). Steele and Aronson (1995) demonstrated where as an intelligence test was stated as diagnostic of intelligence, African Americans students performed more poorly compared to White participants. The same effect holds true for Latinos compared to Whites (Schmader & Johns, 2003). Stereotype threat has also been shown to decrease working memory functioning (Schmader & Johns, 2003). Working memory is defined as a system that includes encoding, maintaining, and retrieving information, goals, and strategies necessary to perform a task (Unsworth & Engle, 2007). Schmader and Johns (2003) conducted three studies that examined the role of working memory in stereotype threat. These results of studies suggested that stereotype threat might impede working memory capacity. The studies had participants solve math problems and hold a set of words in their memory. Recollection of the words was used as an indication of working memory capacity. In experiment 1, participants were presented with a task described as requiring "quantitative capacity" that might include gender in math. As suggested above, women often experience stereotype threat from math tests. In that research, some participants were reminded of the stereotype that women were bad at math (i.e., threat groups), and the other participants were not (i.e., control groups). All participants then completed a math test while they were also asked to recall a string of information as part of a dual-task (memory-math) procedure. Only women in the stereotype threat condition recalled significantly fewer words, indicating reduced working memory capacity. These women also performed more poorly on the math items too. Experiment 2 showed almost identical results when comparing Latino and White students in which stereotype threat was framed as overall intelligence. It was found that Latino students under stereotype threat showed lower word recall. Experiment 3 manipulated stereotype threat by having women solve math problems in a group of other female students (control) or as the sole woman in a group of men (stereotype
threat). Working memory capacity and performance on a math task were both lower in the threat group, and the reduction on working memory capacity statistically mediated the relationship between stereotype threat and math performance. These studies suggest that stereotype threat can affect one's ability to focus on task-relevant information. Stereotype threat is produced by situations that present a serious threat to one’s self-integrity and group-integrity. This may lead to the impression that one is not valued in this environment (Steele 1988).

Several processes that may regulate stereotype threat effects include controlled attention, effortful processing, and active self-regulation (Spencer, Steele, & Quinn, 1999). Steele and Aronson (1995) conducted experiments that examined African American students and stereotype threat. For many years African American students have scored lower on standardized tests, took longer to graduate college, and achieved lower grade point averages. People rarely want to confirm a negative stereotype about themselves or a group they identify with (see Steele, 1997). Often people will first attempt to work harder on such tasks, but unfortunately do so at the same time that they are worrying about the negative stereotype. This extra task processing is theorized to impair functioning (Marx & Roman, 2002; McIntyre, Paulson, Taylor, Morin, & Lord, 2011). After experiencing repeated failures, many individuals resign themselves to no longer pursue such ability domains in a process known as task or domain disidentification (see Steele et al., 2002). As such, stereotype threat seems to induce similar experiences of social exclusion in that with both processes individuals experiencing these events first attempt to refute the experience, but soon after resigning themselves from trying.

Rationale and Hypotheses

The present study attempted to show how social exclusion might produce stereotype threat in testing for social intelligence. Social exclusion was expected to introduce feelings of
low belongingness, control, meaningfulness, and self-worth, and these low values would translate into fear of relevant social situations, thus interfering with testing for social intelligence. It was hypothesized that individuals who were excluded during an online social interaction would report lower scores on measures on belongingness, control, meaningfulness, and self-worth than individuals who were included (consistent with prior research on social exclusion). Hypothesis 2, participants who were told that a test they were taking was diagnostic of social ability would report more test-related concern and lower test scores than would participants who were told the test was a pilot study (consistent with prior research on stereotype threat). It was also expected that social exclusion would impair cognitive function related to these tests of sociability. Thus, it was anticipated (Hypothesis 3) that participants who were initially excluded during an online social interaction task and given a diagnostic test frame would report the most test related concern and lower test scores, compared to participants who were not excluded or participants who were given the test as a pilot study.
Methods

Participants

One hundred and eighteen participants (52% Caucasian; 66% Women) were recruited from Psychology classes via the SONA system. All included participants consented to participate (Appendix A).

Procedure

As part of the study, participants were told their social skills would be tested in an online social interaction task, and in a written test. The online social interaction task would involve playing and online game (Cyberball), in which participants were instructed that players will throw a ball back-and-forth between two other players and themselves (see Figure 1). For half of the participants that were included in the game (received a fair share of throws during the game, e.g., 10 of 30 throws). The other participants were excluded (e.g., received little share, 3 of 30 throws; Appendix B). In reality, the game is a computer simulation of catch with no real players programmed to give the participant-controlled avatar a predetermined number of throws (Williams, Cheung, & Choi, 2000; Williams, Yeager, Cheung, & Choi, 2012). For the included participants, the throws to their avatar occurred at random intervals during the game. For
excluded participants, their low share of the throws occurred primarily at the beginning of the game with few or no throws for the remaining time.

<table>
<thead>
<tr>
<th>Cyberball</th>
<th>Including the Participant</th>
<th>Excluding the Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Cyberball Including Participant" /></td>
<td><img src="image2" alt="Cyberball Excluding Participant" /></td>
<td></td>
</tr>
</tbody>
</table>

*Figure 1. Cyberball screenshots characterizing the task dynamics for participants who were included as compared to excluded during the task*

All participants were told that they were playing with two other individuals who were stationed in similar laboratories. The cover story was augmented by staged phone calls to the other experimenters making sure that their participants were ready to go (e.g., the experimenter stepped into the hallway acting as if they were talking to another lab to indicate that their participant was ready). Immediately after the game of catch, participants completed a questionnaire that assessed their feelings of the fundamental needs for belongingness, control over outcomes, self-esteem, and meaningfulness in life. As suggested by Williams (2007), ostracism is painful because it affects four fundamental needs: belonging, self-esteem, control and meaningful existence. More than 20 papers on ostracism, mostly in highly respected
journals, have used the four needs self-report scale as the main dependent variable (Hartgerink, van Beest, Wicherts, & Williams, 2015). The four needs, 12-item scale developed by (Zadro, Williams, and Richardson 2004) with three items for each need. These are known as the needs-threat scale. The sub-scales have reasonable reliability, ranging from $\alpha \geq 0.66$ (Zadro et al., 2004) to $\alpha \geq 0.93$ (Wesselmann, Bagg & Williams, 2009). The scale has good validity and reliably discriminating needs threat in included and excluded groups. (Appendix C). Higher scores indicated an increased perception that the need in question was being fulfilled. The questionnaire contains several manipulations checks for inclusion/ostracism: “what percent of the throws were thrown to you?” “Control measure”, “I felt in control during the Cyberball game”), “Belongingness”, “I felt accepted during the Cyberball game”), “Meaningfulness”, “I felt as though my existence was meaningless during the Cyberball game”). Unless otherwise stated, all questions are rated on 9-point scales (where 1 = not at all, and 9 = very much so). In prior works by (Williams, Cheung, & Choi, 2000) the twelve items on the needs scale have been used repeatedly to represent each of the four needs. As such, these twelve items will be scored as composite variables for the four fundamental needs.

Afterwards, participants were instructed to complete a written test of social ability. As part of the test, students were informed the measure was examining social intelligence. In one condition, the test was described as a reliable and diagnostic measure of social intelligence (e.g., diagnostic condition; Appendix D). Participants read and were told the following:

The present project will collect performance data on Social Intelligence. Social Intelligence is an individual’s ability to make friends, to make bonds with others, and to interact well and be liked or included by others. Measures of social intelligence correlate highly with marriage, personal income, education, and occupation levels of an individual and their family. Your results will be compared to other students’ scores in order to make assessments about your ability. Please read each item carefully, as well as the options associated with each. You will be given up to 15 minutes to work on the items on the pages the follow. If you have a question, please
raise your hand and the administrator will help you. During the test, I will let you know when you have 5 minutes remaining, and when you have 1-minute remaining. It would be a good idea to just use that last minute to complete the item that you are currently working on and then stop. Please do not just try to guess randomly at the items. If you finish before the time has elapsed, just please sit quietly.

In the other condition, the test was described as a pilot survey of sociability (e.g., pilot condition; Appendix E): Participants read and were told:

This pilot study will look at things that might be tied into of one’s actions to make social connections, to get along with others, and basically little is known about this measure. Please read each item carefully, as well as the options associated with each. You will be given up to 15 minutes to work on the items on the pages that follow. If you have a question, please raise your hand and the administrator will help you. During the test, I will let you know when you have 5 minutes remaining, and when you have 1-minute remaining. It would be a good idea to just use that last minute to complete the item that you are currently working on and then stop. Please do not just try to guess randomly at the items. If you finish before the time has elapsed, just please sit quietly.

The test was GRE-V items that were reasoned to have had some relationship to social skills or interactions.

After the test, participants completed a post-measure survey that examined their perceptions of threat (e.g., How threatening did you find the test to be? How pressured did you feel to perform well on the test? How often did you think about the stereotype that some people do not do well on social tasks) on 10-point Likert scales (0 = not at all; 9 = extremely/very much). These items were aggregated to compute an average measure to threat on the test. Participants will also assess how much stress they perceived at that time on 10-point scales (0 = none; 9 = extremely; see Appendix F). Prior work (e.g., McIntyre et al, 2011) reasoned that threat is highlighted by stereotypic thinking, a sense of test fear, and also test expectations. As such, we examined how well these data conform to such a theorized grouping structure.
Afterwards all participants were debriefed assuring that the measure was in fact verbal ability items and not related to social belongingness (see Appendix G).
Results

In order to assess the three hypotheses, participant’s scores on the cyberball reaction questions were first examined to see if these items could be reduced into expected groupings (four factors of fundamental needs measure, and three factors for threat measure). As suggested by Williams (2001), ostracism is painful because it affects four fundamental needs: belonging, self-esteem, control and meaningful existence. Many papers on ostracism, mostly in have used the four needs self-report scale as the main dependent variable (Hartgerink, 2015). Four fundamentals needs and three questions for each need thus a 12-item scale developed by (Zadro, et al,2004). This scale became known as the needs-threat scale. The sub-scales have reasonable reliability, ranging from $\alpha \geq 0.66$ (Zadro et al., 2004) to $\alpha \geq 0.93$ (Wesselmann, et al, 2009). As mentioned previously this scale has good validity and reliably discriminating needs threat in included and excluded groups.

Participant reactions to social exclusion were analyzed first to test the Hypothesis1. Data on test perceptions and performance also analyzed for Hypothesis 2. A factorial analysis of variance was conducted to test the interaction of exclusion with threat evaluating hypothesis three. Additional exploratory analyses will also be examined. It was hypothesized that individuals who were excluded during an online social interaction would report lower scores on measures on belongingness, control, meaningfulness, and self-worth compared to individuals who were excluded (consistent with prior research on social exclusion). To test for this, the scores for each of the items that tested for belongingness, control, self-esteem, and meaningfulness fulfillment were summed to create a composite total on each fundamental need (see Williams, 2007). For each of these composite totals, items assessing each category of needs were analyzed for reliability and whether or not they loaded onto a single factor. For the items
testing belongingness, the reliability analyses indicated the scale was acceptably reliable, \( \alpha = .768 \). Additionally, each of the items loaded onto its single factor accounting for > 68.35\% of the variance in scores, all loadings > .697. For the items testing control, the reliability analyses indicated the scale was marginally reliable, \( \alpha = .718 \). Additionally, each of the items loaded onto its single factor accounting for > 63.95\% of the variance in scores, all loadings > .694. For the items testing self-esteem, the reliability analyses indicated the scale was a little low, \( \alpha = .664 \). Though low, the grouping of these values was confirmed onto one factor accounting for > 59.79\% of the variance in scores, all loadings > .718. Finally, for the items testing meaningfulness, the reliability analyses indicated the scale was marginally reliable, \( \alpha = .658 \). Additionally, each of the items loaded onto its single factor accounting for > 61.70\% of the variance in scores, all loadings > .664. As shown in Table 1, excluded participants reported lower need fulfillment than did included participants. For belongingness this effect occurred because included participants reported more fulfillment, than did excluded participants, \( F(1, 118) = 102.78, p < .001 \). For meaningfulness, this effect occurred because included participants reported more meaningfulness than did excluded participants, \( F(1, 118) = 77.40, p < .001 \). For control this effect occurred because included participants reported more control than did excluded participants, \( F(1, 118) = 60.98, p < .001 \). For esteem this effect occurred because included participants reported more esteem than did excluded participants, \( F(1, 118) = 4.01, p = 0.048 \).
Table 1. Average need fulfillment for participants who were included and excluded during a cyberball task (Hypothesis 1).

<table>
<thead>
<tr>
<th></th>
<th>Included</th>
<th>Excluded</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Belongingness</strong></td>
<td>17.20 (5.05)</td>
<td>8.52 (4.23)</td>
</tr>
<tr>
<td></td>
<td>63</td>
<td>57</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td>18.26 (5.37)</td>
<td>11.29 (4.27)</td>
</tr>
<tr>
<td></td>
<td>63</td>
<td>57</td>
</tr>
<tr>
<td><strong>Self-esteem</strong></td>
<td>15.32 (3.52)</td>
<td>13.89 (3.82)</td>
</tr>
<tr>
<td></td>
<td>63</td>
<td>57</td>
</tr>
<tr>
<td><strong>Meaningfulness</strong></td>
<td>19.82 (4.65)</td>
<td>12.05 (4.98)</td>
</tr>
<tr>
<td></td>
<td>62</td>
<td>57</td>
</tr>
<tr>
<td><strong>Average Need Fulfillment</strong></td>
<td>17.58 (3.47)</td>
<td>11.44 (3.19)</td>
</tr>
<tr>
<td></td>
<td>63</td>
<td>57</td>
</tr>
</tbody>
</table>

Note: Based on 3 items of a 9-point scale range 3-27. Standard deviations are in parentheses; n per group is in italics.
It was also hypothesized that participants who were told that the test they were taking was diagnostic of social ability would report more test-related concern and lower test scores than participants who were told the test is a pilot study (consistent with prior research on stereotype threat). The items for test-related concern were analyzed to explore the factor structure of the test-related thinking measure. That analysis indicated the 10 items loaded onto 3 factors, that accounted for greater than 60.74% of the variance (factor loadings > than .415; though this factor structure was confirmed. McIntyre et al. (2011) used this grouping in prior work on stereotype threat using these items). One factor consisted of items related to performance estimates on the sociability test (e.g., “How well did you think you performed”, “How difficulty was the test”). Those items, therefore, were totaled into a single composite measure of estimated test performance. For estimated performance, as shown in the top row of Table 2, participants in the diagnostic test condition estimated that they performed better, than did participant in the pilot test condition, $F(1, 116) = 5.60, p = 0.016$. As shown in the second row of Table 2, the diagnostic group experienced a higher sense of intimidation ($M = 14.20$) to pilot group ($M = 12.76$), however this difference was not significant, $F(1,116) = 1.431, p = 0.234$. Additionally, for participant reports of stereotyped related thinking, no differences were found, $F< 1, ns$. Finally, for test performance, a different pattern emerged. As shown in bottom row of Table 2, participants in the diagnostic test frame condition scored marginally lower ($M = 40.66\%$) on the test than did included participants ($45.61\%), F(1,115) = 3.762, p = 0.055.$
Table 2. *Average test performance and post-test reaction for participants who completed a diagnostic test of social ability or for those who completed a pilot measure of sociability (Hypothesis 2.)*

<table>
<thead>
<tr>
<th></th>
<th>Pilot Measure</th>
<th>Diagnostic Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated Test Performance</td>
<td>14.52 (4.53)</td>
<td>16.57 (4.58)</td>
</tr>
<tr>
<td></td>
<td>59</td>
<td>59</td>
</tr>
<tr>
<td>Rated Test Intimidation</td>
<td>12.76 (6.38)</td>
<td>14.20 (6.70)</td>
</tr>
<tr>
<td></td>
<td>59</td>
<td>59</td>
</tr>
<tr>
<td>Rated Stereotypic Thinking</td>
<td>9.64 (7.08)</td>
<td>10.01 (7.07)</td>
</tr>
<tr>
<td></td>
<td>59</td>
<td>59</td>
</tr>
<tr>
<td>Test performance</td>
<td>45.61 (14.5)</td>
<td>40.66 (13.0)</td>
</tr>
<tr>
<td></td>
<td>59</td>
<td>59</td>
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Note: standard deviations are in parentheses; n per group is in italics; Test performance was the percent of attempted items that each participant answered correctly, based on 3 items of a 9-point scale range 3-27.
It was also expected that participants who were excluded during an online social interaction task and given a diagnostic test frame would report the most test-related concern and lower scores overall, verses participants who were included or participants who were given the test as a pilot study. The measure of estimated performance was tested in a 2 (cyberball condition: included, excluded) X 2 (test frame: control, diagnostic) factorial ANOVA. As shown in Table 3A, ANOVA testing interactive hypothesis for estimated performance, however, did not find a significant effect of being included or excluded on how participants reacted under the different test descriptions, $F(1, 114) = 0.008, ns$. For that measure, however, a main effect of condition was found such that participants in the diagnostic condition estimated that they performed better ($M = 16.57$) than did participants in the pilot condition ($M = 14.52$), $F(1, 114) = 6.415, p = .013$. The same procedure was conducted for items associated with ratings of how the test may have intimidated participants (See Table 3B). For that analysis, a 2 X 2 ANOVA found only an effect of the exclusion manipulation, $F(1, 114) = 6.843, p = .01$. That effect occurred because participants who were included rated the test as more intimidating ($M = 14.89$) than did excluded participants ($M = 11.87$). No effects were significant on this measure. Finally, this same 2 X 2 ANOVA was conducted for items related to concerns about the stereotype about sociability (Table 3C). That analysis found, no significant differences as a function of the exclusion manipulation or the test frame, or the interaction thereof, $Fs < 1, ns$. 
Table 3A. *Mean post-test estimates of performance on the sociability measure for participants who were included or excluded in a cyberball task that also completed a diagnostic test of social ability or a pilot measure of sociability.*

<table>
<thead>
<tr>
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<tr>
<td>Pilot Measure</td>
<td>15.18 (3.94)</td>
<td>13.69 (5.15)</td>
</tr>
<tr>
<td></td>
<td>33</td>
<td>26</td>
</tr>
<tr>
<td>Diagnostic Test</td>
<td>17.23 (4.35)</td>
<td>15.89 (4.79)</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>29</td>
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Note: standard deviations are in parentheses; n per group is in italics. Based on 3 items of a 9-point scale range 3-27.
Table 3B. Mean post-test concerns about intimidation by the sociability test for participants who were included or excluded in a cyberball task that also completed a diagnostic test of social ability or a pilot measure of sociability.

<table>
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<tr>
<td>Pilot Measure</td>
<td>14.15 (6.45)</td>
<td>11.00 (5.93)</td>
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<tr>
<td>Diagnostic Test</td>
<td>15.70 (5.85)</td>
<td>12.65 (7.25)</td>
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<tr>
<td></td>
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Note: standard deviations are in parentheses; n per group is in italics. Based on 3 items of a 9-point scale range 3-27.
Table 3C. Mean post-test ratings about thinking of the stereotype for participants who were included or excluded in a cyberball task that also completed a diagnostic test of social ability or a pilot measure of sociability.

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<tbody>
<tr>
<td>Pilot Measure</td>
<td>9.93 (7.12)</td>
<td>9.26 (7.15)</td>
</tr>
<tr>
<td></td>
<td>33</td>
<td>26</td>
</tr>
<tr>
<td>Diagnostic Test</td>
<td>9.63 (6.56)</td>
<td>10.41 (7.66)</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>29</td>
</tr>
</tbody>
</table>

Note: standard deviations are in parentheses; n per group is in italics. Based on 3 items of a 9-point scale range 3-27.
A similar factorial ANOVA was also conducted for test performance. That test, however, failed to confirm any interaction between social exclusion and test frame, $F(1,118) = 0.303, p = 0.583$. An effect, however, was found for test frame condition, $F(1, 115) = 3.762, p = 0.055$. Specifically, participants who were included and received a pilot test frame answered 46.32% correct compared to the excluded diagnostic group who answered 44.79% correct (see Table 4). No other effects of cyberball task performance were found. Studies have demonstrated that participants were told they would have a future of good social relationships performed worse on subsequent cognitive tasks that were framed as diagnostic of social skills compared to participants who received future alone or no feedback (DeWall et al., 2008).
Table 4. *Mean Test performance for participants who were included or excluded in a cyberball task that also completed a diagnostic test of social ability or a pilot measure of sociability.*

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<th>Included</th>
<th>Excluded</th>
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</thead>
<tbody>
<tr>
<td>Pilot Measure</td>
<td>46.32 (13.18) 31</td>
<td>44.79 (16.14) 27</td>
</tr>
<tr>
<td>Diagnostic Test</td>
<td>40.35 (12.31) 30</td>
<td>40.97 (13.99) 29</td>
</tr>
</tbody>
</table>

Note: standard deviations are in parentheses; n per group is in italics; Test performance was the percent of attempted items that each participant answered correctly. Note: standard deviations are in parentheses; n per group is in italics.
**Exploratory Analyses**

Prior ostracism research has taken into account possible demographic moderators (Smith & Williams, 2004; Zhang, Ye, & Ferreira-Meyers, 2017), but has not found significant moderation across these studies. As previously noted, ostracism is ubiquitously painful (Williams, 2007). For example, a similar study conducted in China also showed negative effects due to social exclusion (Ren, Wesselman, & Williams, 2013). This finding suggests that ostracism occurs cross-culturally. In the present study, ostracism was expected to affect participants who were initially excluded during an online social interaction task and given a diagnostic test frame, such that they would have lower scores overall, versus participants who were not excluded or participants who were given the test as a pilot study. Though there was not the explicit expectation that demographic variables should have moderated the observed effects for ostracism, there is some reason to assume that such factors may have affected the stereotype threat manipulations nonetheless (see Steele, 1997). As such, the main analyses were rerun using gender and race (e.g., Black and White) as potential moderators. The following analyses were conducted on two demographic groups (gender and ethnicity).

Gender of participants was examined for its effect on the needs measures (summed as a single composite measure of needs fulfillment). This study consisted of 79 women and 35 men. Gender, cyberball condition, and test frame were included in an ANOVA, but no main effect or interaction with gender was found ($F_{s} < 1$, $ns$), confirming past findings examining social exclusion (Bozin, & Yoder, 2008). Next, the effect of gender on test performance and post-test participant elevations was also examined. Including gender, cyberball condition, and test frame in an ANOVA found no significant interactions concerning gender ($F_{s} < 1, ps > .622$). An effect of gender however, was found, such that women outperformed men on the test of sociability.
(women’s $M = 45.32\%$, men’s $M = 39.52\%$), $F(1, 103) = 5.122, p = 0.025$). This unexpected effect was unexpected and was further examined in the following analyses. Similar analyses were explored for participant evaluation of their own estimated test performance, sense of intimidation of test and perception of the social stereotype. For estimated performance, only a marginal 3-way interaction was observed, $F(1, 106) = 3.713, p = 0.057$. That interaction occurred for included women in the diagnostic condition estimating better test scores ($M = 18.45$) than included women in the control test condition ($M = 14.41$). No other effects of gender were found. The effect of gender on both intimidation and social stereotype measures produced neither main effects nor interactions ($F_s < 1, ps = ns$).

The present study also evaluated effects due to ethnicity. This consisted of 46 African American and 50 White participants. Because the majority of participants indicated their ethnicity either African American or White, those who indicated ethnic backgrounds other than these two were excluded from this set of exploratory analysis. Ethnicity of participants was examined for its effect on the composite total needs measure. Ethnicity, cyberball condition, and test frame were included in ANOVA on the needs scores that found no main effects or interaction with ethnicity ($F_s < 1.00, ns$). Next, the effect of ethnicity on test performance and posttest participant elevations were examined. Including ethnicity, cyberball condition, and test frame in an ANOVA found no significant interactions with ethnicity on test performance ($F < 1.00, p > .748$). No main effect of ethnicity on test performance was found, $F(1,86) = 2.50, p = .118$. Similar analyses were explored for participant evaluation of their own estimated test performance, sense of intimidation of test and perception of the social stereotype. For estimated performance, a main effect of ethnicity was found, $F(1,88) = 5.93, p = .02$. This effect occurred because African American participants estimated they scored better ($M = 16.58$) than did White
participants ($M = 14.38$). Also, a marginal interaction between ethnicity and cyberball condition was found, $F(1,88) = 3.645, p = 0.059$. That effect occurred because included African Americans participants estimated they did better ($M = 18.50$) than did included White participants ($M = 14.37$) or excluded African Americans participants ($M = 14.50$). Further analysis of ethnicity found no appreciable effect on being initiated by the test or concern of social stereotype.
Discussion

Prior theory and research have demonstrated that social exclusion (Williams, 2007) and stereotype threat (Steele, Spencer, & Aronson, 2002) lead to undesirable consequences for individuals who experience these processes. The present thesis, sought to examine the extent to which these processes are related. Given the overall results of this research, however, at present there is no evidence suggesting the two processes might be co-related. The present study hypothesized that individuals who were excluded during an online social interaction would report lower scores on measures of belongingness, control, meaningfulness, and self-worth verses individuals who are included. This hypothesis was confirmed by the present findings, and are consistent with prior research. Williams’s (2007) need–threat model of ostracism, suggested that being excluded disrupts one’s feelings of belonging, self-esteem, control, and meaningful existence for a period of time following that event. Rejection in the cyberball game has been shown to increase desired need fulfillment and also reduces one’s self-esteem (Carter-Sowell, Chen, & Williams, 2008; Zadro, 2004). In fact, so ubiquitous is the effect of social exclusion, one study by Zadro and colleagues (2004) found that no matter what the source of the ostracism, whether it be a computer-controlled avatar or an in-group or out-group member, most people who experienced exclusion showed similar declines in their self-reports of social needs.

Of the planned hypotheses, that exclusion would negatively affect the ratings of the needs measure was confirmed, and the hypothesis, that test diagnosticity would affect test scores, was partially confirmed. The hypothesis that exclusion and threat would interact, however, was not confirmed. As such, the results of the thesis showed mixed results. Because of this, exploratory analyses examining the effects of participant gender and ethnicity were also conducted. It is important to note, however, that past work by Williams and others (Corbie-Smith, Thomas,
Williams, & Moody-Ayers, 1999) has found that these variables seldom moderate the effects of social exclusion. Other work on stereotype threat has found these variables can moderate threat, provided there is a cultural history between the identity category (e.g., gender, ethnicity) and the specific focal stereotype. Nonetheless, to get a clearer picture of the data, gender and ethnicity were explored as potential moderators.

It was also expected that participants who were told that a test they are taking was diagnostic of social ability would report more test-related concern and lower test scores than participants who were told the test was a pilot study. At least for the test performance component of that hypothesis, the results were in support of this line of thinking. Participants who were under a diagnostic stereotype threat (e.g., people similar to yourself tend to do poorly on these measures) performed more poorly on the test than did participants who were not under the diagnosticity threat. Prior studies on stereotype threat (Aronson et al., 1997; Spencer, Steele, & Quinn, 1997; Steele & Aronson, 1995), for instance, have found that presenting a test as diagnostic of a stigmatized ability commonly leads to lower scores on tests framed in this way. As such, these results are seen as producing performance threat and help contribute to the large body of research on stereotype threat. For the other component of that hypothesis, that participants in the diagnostic condition would report more extra-test thinking, was not confirmed. Prior theorizing by Shapiro and Neuberg (2007), however, has indicated that not all “threats” function in the same manner. Some threats, stereotype threats, occur because of group stigmas and often disrupt performance as a consequence of extra-test thinking (see Schmader & Johns, 2003). Other threats (e.g., identity threats), however, occur at the self-identity level and possibly only affect self-thinking and performance. As the present study assessed extra-test thinking more at the level of self-stigma (i.e., some people such as yourself sometimes score poorly on
these types of measures), these results are not too surprising. In hindsight, it may have been
advisable to instead examine the linkage between exclusion and group-level stigmatization.
Prior work, for instance, has demonstrated that people also react to group-level stigma, but do so
in ways that are different from self-related experiences (Crocker & Major, 1989).

It was also hypothesized that participants who were initially excluded during an online
social interaction task, and given a diagnostic test frame, would report the most test related
concern and lower test scores, verses participants who are not excluded or participants who are
given the test as a pilot study. This hypothesis was not supported by the results. Instead, the
findings suggest that exclusion and threat may be independent processes. As such, it is possible
that though the situation created a sense of social loss, it did not create a sense of stereotype
threat or stereotype awareness. Research has demonstrated that many situations may induce
stereotype threat awareness (see Beilock, Jellison, Rydell, McConnell, & Carr, 2006). Not all of
those situations, however, create a threat to one’s self-esteem. It is believed, that the exclusion
task may have affected self-esteem, but not performance or task esteem that might be seen in
situations of stereotype threat. According to Leary (1999), a blow to self-esteem may create a
sense of threat, but only to one’s self-view or task-related esteem (e.g., efficacy). As such,
individuals will look toward behaviors that may increase their assessed self-esteem, namely by
making or increasing social connections. In the present study, it is possible that the performance
on the test, even though it was pitched as a predictor of sociability, was not sufficient to increase
self-esteem bolstering or affirming reactions (e.g., doing well on the test probably did not ensure
people that they would be liked or viewed positively by others). Future work in this area,
therefore, might instead examine whether or not completion of such diagnostic tests has an effect
on expected esteem. In such settings, it might then be possible to find some integration between these two processes.

Additionally, the present thesis expected that the exclusion manipulation might have had some effect on test performance. Possibly, the strength of the manipulation was insufficient to produce the effect, because that expectation was not supported by the data. This suggests that perhaps, social exclusion does not impair test performance. Prior research in exclusion, however, has shown such an effect. Baumeister and colleagues (2002) found impairment to working memory for individuals who were excluded. That work, however, assessed a different form of cognitive processing than did the present study, namely recall. Perhaps the measure as used by Baumeister and colleagues was sufficiently relevant to the experience of social exclusion. In the present work, the key outcome measure was performance as assessed by correctness of item options. As such, it is presently uncertain that this methodological difference may have accounted for the lack of effect. Future research examining these two processes might instead use a diagnostic test of recall, rather than of verbal reasoning. Beyond the planned tests for this research, other exploratory effects were seen as potentially important to this area of research. In the present study, two additional factors (gender and ethnicity) were considered for further investigation as predictors of stereotype bias.

An effect of gender was found for the test scores, such that women outperformed men on the test of sociability. This result, however, was only observed on the performance test and did not seem to be related to the needs measures or the self-report measures of rumination. In a meta-analytic review of exclusion research, Blackhart, Nelson, Knowles, and Baumeister (2009) observed that the gender composition of a study sample was a significant predictor of effect for affect measures only. For the social needs values, however, gender was not a significant
moderator. The present results, though not including affect, confirm these findings by Blackhart and colleagues (2009). The results for the test portion of the outcome measures, however, are consistent with stereotype threat. Research on stereotype threat finds that demographic variables, such as gender, are related to the stereotype threat if gender is stigmatized on that domain (Spencer et al., 1999). Although a gender difference did occur, this was unexpected as the threat that was presented in this work was directed more at a level of the self, and not necessarily toward one’s group identities. Thus, it is unclear at present, why women seemed to demonstrate a threat effect. Furthermore, it was found that African American participants reported higher estimates of task performance than did White participants. Although this effect was unexpected, it was not entirely contradictory with prior research examining stereotype threat (see Steele et al., 2002). Again, in situations where there is a negative stereotype highlighted, many individuals are likely to demonstrate performance decrements due to stereotype threat. Exactly why this was connected to ethnicity is unclear at the moment. Future research examining how participants construed the foci of the threat, however, might shed more light on this finding.

A final possibility in this work was that scores on the needs measures, test performance, and rumination measure may have occurred on an individual-by-individual basis. Future studies may seek to obtain a base-line of needs fulfilled prior to cyberball conditions. This may be a good indication of how being included improves the needs fulfillment. To address the effects of memory deficits, a pre-study word association test could be given prior to exclusion to establish a baseline. For stereotype threat, a baseline of threat could be established using a questionnaire regarding threat. Fragmented word association tests with primed and self-generated related constructs have been used (Steele, & Aronson, 1995).
Limitations

One potential limitation of this work may have been the strength of the exclusion task. Cyberball is seen as an acute, albeit, robust manipulation of exclusion with almost no mediation (Zadro et al., 2004). As such, the ability for added threats to combine with this experience may be unlikely to occur. Perhaps a manipulation that is more subtly induces social exclusion would be more telling. Other research (Baumeister et al., 2002), for instance, used a personality test to induce exclusion. Upon finishing a personality test the participants in the exclusion group were informed they would end up alone later in life. Thus, perhaps having a more moderate and future oriented model of exclusion may have then allowed for the added concern of the stereotype to have a role in participants processing such that the two processes could thus combine.

Additionally, prior work on stereotype threat has indicated reliable findings for abilities and group identities that have been more chronically stigmatized (Aronson et al., 1999). In the present research, the ability of social-skills was assessed and subsequently threatened for some participants. This present study used a threat that had low external validity. Perhaps testing groups known to have sociability challenges might have proved more reliable, such as adult autistic participants. Such considerations would enable more accurate or reliable assessments of threat.

Finally, it is possible that the cyberball task itself was too contrived or even removed as an example of exclusion. Most people can relate to being excluded at some time, it happens to most of us. For many, these instances of exclusion occur between actual relationships (e.g., employment, family, romantic). Cyberball- based exclusion, however, occurs more at a peripheral level, occurring with people participants do not know or are even familiar with.
Perhaps anecdotal examples of people who were excluded and then in some way threatened, might shed light on these processes. One timely example might be that of Nikolas Cruz, the shooter at Marjory Douglas Stoneman High in Parkville Florida. In this case, Cruz had experienced exclusion (his Mother had died), and he had been removed from the public schools. Cruz was expelled from Marjory Stoneman for “disciplinary problems,” with one report saying bullets were discovered in his backpack. Cruz was also experiencing mental and other health issues, including Attention-deficit/hyperactivity disorder (ADHD) and Obsessive-Compulsive Disorder (OCD), and took medication as treatment. Cruz's lawyer said client was "a broken human being". Exclusion and the labeling as a problem student combined to behavior and ultimate actions. Williams (2007) has noted that most reactions to ostracism at least are rather immediate and relatively short lived. Thus, after people are left out of a task, they engage in that reflexivity to cope with the exclusion (e.g., looking for ways to fulfill the social needs), and eventually, had those needs fulfilled. Perhaps in the case of Nikolas Cruz, the threat to his needs were more chronic, and the labels of “broken” and “expelled” were too much for him to even attempt to cope or reconnect. As noted by exclusion and isolation are seen as robust contributors to shootings and as such remain as potential contributing factor in the case of Nikolas Cruz.

Conclusion

The present study replicated previous research that was conducted on social exclusion and stereotype threat. Previous studies have shown that people who have been ostracized, even for a short period of time, report worsened mood, increased anger, and lower levels of the four state measures of needs proposed by Williams (2007). Additionally, prior studies have also found that stereotype threat is an aversive experience too (see Steele, 1997). Though the two processes did not seem to intersect in this work, the research presented herein still demonstrated
the pernicious effects of each process. Future work is needed, however, to more definitively indicate the relationship between social exclusion and stereotype threat.
References


APPENDICES

Appendix A: Informed Consent Form

Testing Social Belongingness

Informed Consent Form

The person in charge of this study is Michael Bartosek. Throughout this form, this person will be referred to as the “investigator.”

Purpose of the study

You are being asked to volunteer for a research study of social belongingness and social intelligence. This study is being conducted at Eastern Michigan University.

What will happen if I participate in this study?

Participation in this study involves

- Playing a game of online catch with other players.
- Completing measures of sociability, social intelligence, and general measures of self-perception, belongingness, control, and meaningfulness.
- These materials are experimental in nature and some differences in experimental treatments will occur. As you may know, in some research the procedures are straightforward and provide participants with a high degree of face validity. You may also be aware that some research may involve some degree of deception concerning the purposes of the study, the design of the study, and even what the specific instruments
measure. As such, this is one of those latter studies. Please realize, however, any use of deception will be fully disclosed upon completion of the experimental session.

- In the study, you will play catch, take a test of sociability, and complete a closing questionnaire including demographics.
- The study will last approximately 50 minutes (but not more than 60 minutes), and will require only one session.

**What are the anticipated risks for participation?**

There are no anticipated physical or psychological risks to participation.

The primary risk of participation in this study is a potential loss of confidentiality. This study, however, only asks that you sign a consent form and no linkages between that form and your responses will be used.

Additionally, some of the personal descriptions you list, as well as the closing survey questions might be personal in nature and may make you feel uncomfortable. You do not have to answer any questions that make you uncomfortable or that you do not want to answer. Moreover, it is possible that some students may experience heightened anxiety as a result of the research experience. That anxiety, however, is usually temporary and typically dissipates during, or shortly after, the research experience. If during the study you experience an uncomfortable level of anxiety or psychological discomfort, please let the experimenter know about this, and they will stop the study at once, and take you to the Counseling and Psychological Services (CAPS) in 313 Snow Health Center (phone (734) 487-1118).

**Are there any benefits to participating?** As a participant in this research study, you will not benefit personally from the study. The research, will also help to inform the scientific community
as a presentation or publication (but no information linking you to the study will be used). **What are the alternatives to participation?**

The alternative is not to participate

**How will my information be kept confidential?**

We will keep your information confidential by only including your name on this consent form. No other identification materials will be used and no the consent will not be linked to any materials you compete as part of the procedure today. We will make every effort to keep your information confidential, however, we cannot guarantee confidentiality. There may be instances where federal or state law requires disclosure of your records. Other groups may have access to your research information for quality control or safety purposes. These groups include the University Human Subjects Review Committee, the Office of Research Development, the sponsor of the research, or federal and state agencies that oversee the
review of research. The University Human Subjects Review Committee reviews research for the safety and protection of people who participate in research studies.

We may share your information with other researchers outside of Eastern Michigan University. If we share your information, we will remove any and all identifiable information so that you cannot reasonably be identified.

The results of this research may be published or used for teaching. Identifiable information will not be used for these purposes.

**Storing study information for future use**

Your responses will be labeled with a code and not your name. That information will be stored in a password-protected or locked file. That de-identified information may also be shared with allow us to store your information:

__________Yes  ___________No

**Are there any costs to participation?**

Participation will not cost you anything.

You will be responsible for your transportation costs to and from the study.

**Will I be paid for participation?**

researchers outside of Eastern Michigan University. Please initial below whether or not you allow us to store your information:

__________Yes  ___________No

**Are there any costs to participation?**

Participation will not cost you anything.

You will be responsible for your transportation costs to and from the study.

**Will I be paid for participation?**
allow us to store your information: researchers outside of Eastern Michigan University. Please initial below whether or not you allow us to store your information:

________ Yes  __________ No

**Are there any costs to participation?**

Participation will not cost you anything.

You will be responsible for your transportation costs to and from the study.

**Will I be paid for participation?**

You will not be paid to participate in this research study.

**Study contact information**

If you have any questions about the research, you can contact Michael Bartosek at mbartose@emich.edu, phone (734) 482-8591, or his faculty advisor Dr. Rusty McIntyre at the following phone number (734) 487 – 2406, or by email rmcinty4@emich.edu.

For questions about your rights as a research subject, contact the Eastern Michigan University Human Subjects Review Committee at human.subjects@emich.edu or by phone at 734-487-3090.

**Voluntary participation**

Participation in this research study is your choice. You may refuse to participate or may choose to leave the study at any time, even after signing this form, with no penalty or loss of benefits to which you are otherwise entitled. If you leave the study, the information you provided will be
kept confidential. You may request, in writing, that your identifiable information be destroyed. However, we cannot destroy any information that has already been published.

**Statement of Consent**

I have read this form. I have had an opportunity to ask questions and am satisfied with the answers I received. I give my consent to participate in this research study.

**Signatures**

Name of Subject

Signature of Subject                                   Date

I have explained the research to the subject and answered all his/her questions. I will give a copy of the signed consent form to the subject.

Name of Person Obtaining Consent

Signature of Person Obtaining Consent                                   Date
Appendix B: Cyberball Conditions

<table>
<thead>
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<th>Cyberball</th>
<th>Including the Participant</th>
<th>Excluding the Participant</th>
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Appendix C: Cyberball Post-Test

Cyberball Survey Questions

How bored did the experiment make you?
1 2 3 4 5 6 7 8 9
Very Bored Not at all Bored

To what extent were you included by the other participants during the game?
1 2 3 4 5 6 7 8 9
Not at all Included Very Included

How much would you enjoy playing another game?
1 2 3 4 5 6 7 8 9
Not at all Very Much

I felt poorly accepted by the other participants.
1 2 3 4 5 6 7 8 9
Strongly Disagree Strongly Agree

I felt as though I had made a "connection" or bonded with one or more of the participants during the Cyberball game.
1 2 3 4 5 6 7 8 9
Strongly Disagree Strongly Agree

I felt like an outsider during the Cyberball game.
1 2 3 4 5 6 7 8 9
Strongly Disagree Strongly Agree

I felt that I was able to throw the ball as often as I wanted during the game.
1 2 3 4 5 6 7 8 9
Strongly Disagree Strongly Agree

I felt somewhat frustrated during the Cyberball game.
1 2 3 4 5 6 7 8 9
Strongly Disagree Strongly Agree

I felt in control during the Cyberball game.
1 2 3 4 5 6 7 8 9
Strongly Disagree Strongly Agree

During the Cyberball game I felt good about myself.
1 2 3 4 5 6 7 8 9
Strongly Disagree Strongly Agree

I felt that the other participants failed to perceive me as a worthy and likable person.
1 2 3 4 5 6 7 8 9
Strongly Disagree Strongly Agree
Appendix D: Cover Page Diagnostic Test

DIAGNOSTIC EXAM
of
SOCIAL INTELLIGENCE
Do Not Turn the Page Until Instructed
Appendix: F Post-test Questionnaire

Please circle the choice that best fits your feelings to the following questions.

How well do you feel you did on the test?
0 1 2 3 4 5 6 7 8 9 extremely
not at all

How difficult did you find the test to be?
0 1 2 3 4 5 6 7 8 9 extremely
not at all

How anxious did the test make you?
0 1 2 3 4 5 6 7 8 9 extremely
not at all

How threatening did you find the test to be?
0 1 2 3 4 5 6 7 8 9 extremely
not at all

How pressured did you feel to perform well on the test?
0 1 2 3 4 5 6 7 8 9 very much
none at all

How often did you think about performing poorly while you completed the test?
0 1 2 3 4 5 6 7 8 9 very much
not at all

How often did you think about the stereotype that some people are bad at social tasks during the test?
0 1 2 3 4 5 6 7 8 9 very much
not at all

How much did you think that the stereotype of some people being poor at social tasks compared to others influenced your performance on the test?
0 1 2 3 4 5 6 7 8 9 very much
not at all

How much do you believe the researcher thinks that people like you have less social ability because of how you did on the test?
0 1 2 3 4 5 6 7 8 9 very much
not at all
Instructions: For each of the statements below, indicate the degree to which you agree or disagree with the statement by writing a number in the space beside the question using the scale below:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Slightly Disagree</td>
<td>Neither Agree nor Disagree</td>
<td>Slightly Agree</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

I am good at making friends.
Other people help me whenever I need help.
Other people are willing to share what they have or think with me.
I get along well with others.
Other people often do nice things for me.
I ask others if I can be of help.
I lead a purposeful and meaningful life.
My social relationships are supportive and rewarding.
I am engaged and interested in my daily activities.
I actively contribute to the happiness and well-being of others.
I am competent and capable in the activities that are important to me.
I am a good person and live a good life.
I am optimistic about my future.
People respect me.
Appendix G: Debriefing

Debriefing

Dear Student,

Thank you for participating in the study entitled “Experiments Examining Social Belongingness.” As you may know, one purpose of involving students in psychological research is to provide the student with additional knowledge of psychology. You may also know that some research involves deception. The project you completed did involve some deception. Specifically, the study’s purpose was to examine if the negative stigmatization of you was related to your responses on the social intelligence test and on the closing questionnaire.

The project paired together two lines of research showing how individuals are affected by social psychological processes. One line of research involves social inclusion/exclusion. That research was tested using the online-social-interactions you completed, otherwise known as Cyberball. Cyberball is a simulated game of catch, where participants are led to believe they are playing with other humans. In reality, it is a computer program. The purpose of that was to show how being excluded or included affected your thinking about how well you felt you were currently being included by others, as well as your sense of control over outcomes and your self-esteem. Please note, that you DID NOT actually interact with any real people, and the online experience was completely computer generated. For some participants they were “included” during the game, others were “excluded”. Please note that this was by random assignment and in NO WAY is predictive of how people typically treat you.

The second line of research involves the process of stereotype threat, a type of test related anxiety that can cause performance decrements. Typically, people who are told that the test they are taking is diagnostic can sometimes experience this type of test threat. The purpose of our study was to pair together the processes of social exclusion and stereotype threat to show how each could contribute to how individuals might experience social intelligence stereotype threat. We hope to later develop measures or training that can help people cope with this type of process. Please note, that for some participants the test was described in a way that could increase feelings of anxiety. Please note that these feelings are natural and that they should dissipate in a short time afterward.

We apologize for the deception used in our study. In an ideal world, we would tell students upfront about the purposes of our studies. Doing so, however, would confound our ability to make causal statements based upon our findings. Thus, to tackle the issue of stereotype threat, we used some degree of deception.

If you have any questions, concerns, comments, or further interest in the study entitled “Social Intelligence,” please feel free to email Rusty McIntyre at 734 487 2406 or rmcmnty4@emich.edu.

Finally, because the research is part of a continuing project, please do not discuss the details and the procedures of the experiment with any other students. Your cooperation is greatly appreciated.

Sincerely,
Rusty McIntyre, Ph.D.
Appendix H: IRB Approval

RESEARCH @ EMU

UHSRC Determination: EXPEDITED INITIAL APPROVAL DATE: October 21, 2016  TO:
Michael Bartosek, B.S Eastern Michigan University  Re: UHSRC: # 961304-1 Category:
Expedited category 7 Approval Date: October 21, 2016 Expiration Date: October 20, 2017  Title:
Testing Social Belongingness Your research project, entitled Testing Social Belongingness, has
been approved in accordance with all applicable federal regulations. This approval included the
following: 1. Enrollment of 250 subjects to participate in the approved protocol. 2. Use of the
following study measures: Cyberball; Diagnostic Exam of Social Intelligence 3. Use of the
following stamped recruitment materials: SONA Recruitment text 4. Use of the stamped:
Informed Consent form; Debriefing Renewals: This approval is valid for one year and expires on
October 20, 2017. If you plan to continue your study beyond October 20, 2017, you must submit
a Continuing Review Form by September 20, 2017 to ensure the approval does not lapse.
Modifications: All changes must be approved prior to implementation. If you plan to make any
minor changes, you must submit a Minor Modification Form. For any changes that alter study
design or any study instruments, you must submit a Human Subjects Approval Request Form.
These forms are available through IRBNet on the UHSRC website. Problems: All major
deviations from the reviewed protocol, unanticipated problems, adverse events, subject
complaints, or other problems that may increase the risk to human subjects or change the
category of review must be reported to the UHSRC via an Event Report form, available through
IRBNet on the UHSRC website Follow-up: If your Expedited research project is not completed
and closed after three years, the UHSRC office requires a new Human Subjects Approval
Request Form prior to approving a continuation beyond three years. Please use the UHSRC
number listed above on any forms submitted that relate to this project, or on any correspondence with the UHSRC office. Good luck in your research. If we can be of further assistance, please contact us at 734-487-3090 or via e-mail at human.subjects@emich.edu. Thank you for your cooperation.

Sincerely,

- 2 - Generated on IRBNet

Joan Cowdery, PhD Vice Chair University Human Subjects Review Committee