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Accessibility for aggression and negative self-views following ostracism

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ACCESSIBILITY FOR AGGRESSION AND NEGATIVE SELF-VIEWS FOLLOWING OSTRACISM

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DEDICATION

This dissertation is dedicated to my parents, John and Marian Oberleitner. I am forever thankful for their constant support, caring, and guidance.

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CHAPTER 1

Literature Review

Overview

"Loneliness and the feeling of being unwanted is the most terrible poverty" - Mother Theresa

Being included, socially, has numerous benefits for the individual. Baumeister and Leary (1995) argued that there is an evolutionary basis for the desire to belong to social groups, which has been labeled the "need to belong" (Williams, 2001; Williams, Cheung & Choi, 2000). Humans' evolutionary need to belong was argued to be derived from the earliest social groups and the role belonging had on their survival in those social groups, as well as the earliest social interactions individuals had with caregivers (Ainsworth, 1989; Bowlby, 1969, 1973; Barchas, 1986). Being left out of a social group could lead to a lack of food, resources, reproductive partners and security. Thus, experiencing negative feelings after exclusion may have developed to help ensure our species survival, by reinforcing the urge to maintain cohesive groups. Conversely, it could be argued that inclusion could have numerous positive advantages, such as increased resources, better mate selection, increased security, greater social-support and greater support systems to help the individual survive (Cohen & Wills, 1985). As with the quote above by Mother Theresa, exclusion, or merely the feeling of being excluded, is a powerful influence on an individual.

Social exclusion (ostracism) is defined as “being ignored or excluded” (see Williams, 2007, for a review). Empirical demonstrations of ostracism have included

Cyberball (Williams, Cheung & Choi, 2000) and the Life-Alone personality feedback manipulation (Twenge, Baumeister, Tice & Stucke, 2001). Cyberball is a simulated computer game in which participants are included or excluded by computer-controlled players, and the Life-Alone task is a false personality-feedback paradigm where participants are told projective information that they will have either a life filled with social connections, or a life absent of social connections. Both are widely used to create feelings of social exclusion in a laboratory setting. The present research examines the role of social exclusion, accessibility, and changes in accessibility that can lead to altered self-perceptions, as well as possible increases in aggressive behavior.

Research on accessibility (Tversky & Kahneman, 1973) has found that people focus most closely and readily on issues that are important to their current desires, mood and wishes. Accessibility can be conceptualized as the ease with which something is retrieved from cognition (Schwarz, 1998). Something that is readily available and easy to recall is said to be more cognitively accessible, and as a consequence has greater potential for influencing judgments, compared to less accessible concepts. Processes shown to increase accessibility include concept priming (Bargh, Chen & Burrows, 1996), mood states (Isen, Shalker, Clark & Karp, 1978), recency of experience with related content (Higgins & King, 1981), prior experience (Srull & Wyer, 1980), and personal relevance (Dodgson & Wood, 1998). Greater accessibility for certain concepts more strongly influences perceptions of the environment, one's self, and in turn, the way one interacts with others and his or her environment, compared to cognitions lower in accessibility (Markus, 1977; Rothman &

Hardin, 1997; Schwarz, 1998; Schwarz , Bless, Strack, Klumpp, Rittenauer-Schatka, & Simmons, 1991; Wanke, Schwarz & Bless, 1995).

Moreover, research has shown that greater accessibility for concepts can influence behaviors such as aggressive responses and aggressive ideology (Anderson, Benjamin, & Bartholow, 1998; Bartholow & Heinz, 2006; Berkowitz & LePage, 1967; Dill, Anderson, Anderson & Deuser, 1997). For example, Berkowitz and LePage (1967) have shown that presenting individuals with images of weapons resulted in increased aggressive behavior, compared to those presented with neutral images. It may be presumed that viewing weapons led to increased accessibility for concepts related to aggressive behaviors that, in turn, led to increases in aggressive behavior in their study.

The goal of the present research was to examine the relationship between the feelings and changes in self and social perception that accompany ostracism and to link that with changes in accessibility for positive and negative aspects of one's self-concept, concepts relating to intimacy (positive inclusive behaviors), aggressive behavior and weapons. It also sought to examine how these changes influence aggressive behavior. Furthermore, the present research sought to demonstrate comparable effects of exclusion paradigms on aggressive responses, as previous research has only examined this via one methodology per published article. The present research also explored how different ways one might experience social exclusion may lead to similar changes in accessibility and aggression. The present research consisted of two experiments. Experiment 1 explored ostracism via the "Cyberball" methodology. It examinined both its role on accessibility of weapons and positive and negative self-descriptors and actions, as well as its role on aggressive behavior and how aggression (as measured

via self-report data following the exclusion methodology) may influence overt aggressive behavior. There is an absence of studies that have attempted to link the accessibility of negative thinking caused by exclusion to aggressive responses.

Experiment 2 examined the same outcomes, but by using the "Life-Alone" methodology. The second experiment was designed to test a parallel set of dependent variables, similar to those used by the Cyberball methodology, to better examine the impacts of inclusion and exclusion on individuals' self-concepts. These items corresponded closely to the items used to assess the effectiveness of Cyberball, but were tailored to the Life-Alone task. There is a lack of studies that have tested whether indirect or prospective exclusion (Experiment 2) leads to increased accessibility of negative cognitions, or how this increased accessibility is related to increased aggressive responses toward bystanders. Further, Experiment 2 examined how rejection sensitivity and rejection anxiety is affected by social exclusion.

Both Experiments 1 and 2 were designed to show that exclusion results in increased accessibility for negative and aggressive concepts. Experiment 1 sought to demonstrate that heightened accessibility leads to aggressive behavior toward the perceived source of the exclusion; whereas Experiment 2 sought to demonstrate that increased aggression can be targeted toward others who were not part of the exclusion but were in the same location as the exclusion target.

Social Exclusion

Social exclusion has been examined via several methodologies, with each having similar outcomes for the excluded individuals. One of these methodologies uses observation of bullying and aggression, with reports from those who were the targets of

the bullying or ostracism. Work by Nansel, Overpeck, Haynie, Ruan, and Scheidt (2003), as well as Reijntjes, Thomaes, Bushman, Boelen, de Castro, and Telch (2010) have found that being left out and being bullied in everyday situations (such as on a school playground) can cause aversive reactions to the excluded individual, with similar sociocognitive ramifications for both the bullied and the ostracized (Juvonen & Gross, 2005). In-person exclusion, although unfortunate for the victim, does provide compelling evidence toward the aversive and powerful nature of social exclusion. Exclusion in this form, however, is not easily produced via experimental design. Because of the inherent difficulties of examining exclusion after the event takes place in a real-life setting, several lines of research have created empirically testable methodologies.

Cyberball

The first of these methodologies involved laboratory-based, in-person, social exclusion (Williams, 1997; Williams, 2001; Williams & Sommer, 1997), with two confederates including or excluding a participant in a game of tossing a ball, during the time they supposedly were waiting for the actual study to begin. The game decreased participants' feelings of belonging, control, self-esteem, meaningfulness of life, and magnified negative moods for those who were excluded. Williams (2001) labeled these constructs as "fundamental needs." In his 2001 book, Williams creates the argument that these are fundamental based upon prior research on each of these constructs. Williams argues that humans have an instinctual drive to fulfill each of these needs. Additionally, Baumeister and Leary (1995) argue that the need to belong is fundamental, Burger (1992) argues that control is fundamental, Tesser (1988) argues

that self-esteem is fundamental, and Greenberg, Pyszczynski and Solomon (1986) argue that the need for meaningful existence should be labeled as fundamental.

Given the labor-intensive nature of in-person ostracism, a computer-mediated form was created, "Cyberball" (Williams, Cheung & Choi, 2000). The Cyberball program mimics in-person ostracism, in that players play a game of toss via a computer simulation. The participant is instructed that they will be playing with other participants over the internet, but in reality, the game is fully computer controlled. In some conditions, the computer will include the participant by throwing them the ball an equal number of times as the other players (approximately 10 throws), and in other conditions the participant will only be thrown the ball three times, whereas the ball is tossed to the other simulated players more regularly. Research using Cyberball has shown similar ramifications to the individual as if they have been excluded in a face-to-face encounter. Players excluded by the computer show decreased feelings of belonging, control, self-esteem, beliefs that life has meaning, and increased negative emotions. Zadro, Williams and Richardson (2004) furthered these findings by showing the same pattern of deleterious effects using an updated measurement of each construct, even when telling participants the game was fully computer controlled. Thus, one can argue that exclusion is such a powerful event that even lack of reality in the situation has little effect; hints of exclusion from sources seen, not seen, or not even real, can result in deleterious effects on the ostracized individual.

The line of research using Cyberball has been extended in numerous ways to show how ostracism is perceived, how it changes one's self-concept and alters our view of others. Work by Gonsalkorale and Williams (2007) found that the same deleterious

effects of ostracism were present even when members of an outgroup exclude the individual. In their study, they examined how Indigenous Australians reacted when being excluded by supposed members of a hate group toward the Aborigines. Even though the exclusion came from a hate group, the experience was still aversive, similar to what has been demonstrated previously via Cyberball. A further extension of this area showed that even when a monetary reward was given to individuals during exclusion events and a monetary fine was imposed on inclusion events, the same deleterious effects were found as in previous Cyberball studies (Van Beest & Williams, 2006). Carter-Sowell, Chen and Williams (2008) demonstrated that excluded individuals showed greater social susceptibility than people who were included, and Goodwin, Williams and Carter-Sowell (2010) found that ostracism can also be viewed as a form of racism/discrimination, in certain contexts. Lastly, Eisenberger, Lieberman and Williams (2003) found that individuals' brains interpret social exclusion similarly to physical pain (via activation of the anterior cingulate cortex). These findings help demonstrate that physical and emotional pain are similarly aversive on a biological level. Furthermore, examining each of these disparate Cyberball studies shows that this manipulation is powerful and versatile for creating feelings of exclusion in numerous contexts.

Life-Alone task

In real-life, face-to-face settings, as well as in Cyberball, individuals who are excluded are feeling this way because of a direct exclusion, or perceived direct exclusion, from other people. Twenge, Baumeister, Tice and Stucke (2001) extended the exploration of ostracism through the creation of the "Life-Alone" task, where participants were given false feedback, ostensibly based on a personality survey. The

false feedback varied by condition. In some conditions, participants were told that based on their personality profile, they would have a life filled with social connectivity (inclusion), whereas other conditions participants receive feedback that their social connections will diminish and finish as they age (exclusion). Twenge and colleagues reasoned that the feedback creates feelings of inclusion and exclusion, without needing the participant to be explicitly included or excluded by a present moment event or person. Twenge and colleagues found that the mere anticipation of exclusion was enough to impact the individual. Self-esteem and feelings of belonging were diminished when the feedback indicated that participants could expect a future alone, in a similar pattern as is seen during face-to-face exclusion.

Baumeister, Twenge and Nuss (2002) extended the findings of the original Life-Alone task by finding that those who were told they would experience social exclusion in the future had diminished intellectual capacity. These findings are important as it shows that like face-to-face ostracism, the Life-Alone task can bring about swift changes in cognitive and behavioral patterns. Extending the exploration of behavioral changes following the anticipation of exclusion in the "Life-Alone" task, Twenge, Baumeister, DeWall, Ciarocco and Bartels (2007) also found that those who thought they would end up alone in life (anticipated exclusion) exhibited less prosocial behaviors than those who were anticipating inclusion. This demonstrates that accessibility of behavioral intentions changes for the ostracized. The creation and study of this form of ostracism is important as it shows that the anticipation of exclusion alone can bring about powerful changes in the way people view themselves and their social world, and that ostracism can be impactful even in the absence of others. Furthermore, decreased prosocial behavior

corresponds well to the Twenge and colleagues (2001) study that found that those who were anticipating a future alone lashed out more aggressively. Decreased prosocial behavior and increased aggression could both be the result of changes in accessibility, with either decreases in the accessibility of positive self-thoughts, or increases in aggression accessibility.

As the above research demonstrates, social exclusion negatively affects how one views themselves and their social position in the world, and that this can lead to distinct changes in thought and behavior. Thus, ostracism in any form can be viewed as a powerful agent of change in human thought and behavior.

Accessibility

Concept accessibility, or simply accessibility, can be thought of as the degree to which something can be drawn upon cognitively. For example, if primed with the idea of cat, personal experience toward cats, objects related to cats, and cat exemplars may all come readily to mind. A variety of factors, such as context, mood, and personal experience have been shown to influence what is most accessible.

One, however, should not be caught in a tautological loop (circular reasoning) when thinking about the concept of accessibility. Just because a concept is readily available in one's memory and may be drawn upon, does not ensure that concept will be drawn upon most readily in all situations and at all times. Personal relevance, experience, and contextual issues like one’s mood may alter what is most accessible in a given situation (Schwarz, 1998). Availability of course can influence accessibility, however, this relationship can be influenced by a variety of factors. Factors such as one's current environment, history, and background, may all influence the relationship

between accessibility and availability. For example, if a child is asked to describe an average grandparent, depending on the experiences upon which the child has to draw, the description they give will likely match one of their own grandparents. Children's personal context will influence what grandparents are to them. Their exemplar will likely differ from others due to differing background experiences. Their relational schema affects what is most accessible to them. However, if you were to ask that child 10 years later, that child will likely have a more generalized and robust description because of their continued encounters with other peoples' grandparents. Experiences will shift what is most accessible, but not necessarily what is available. If they have had bad experiences with their grandparents and are in a negative mood, that negative mood may color the perception.

The critical component in understanding accessibility is to realize that just because something is readily available does not mean that it will always be most accessible, but rather, that what is available, along with the situation and other factors such as mood or personal relevance, will determine what is most accessible and utilized by altering ease of retrieval. For example, Bargh (1982) found that when examining attention, self-relevant information is recalled more easily, in that greater attention is paid to self-relevant information, and few cognitive resources are needed for this attention. In another example, Bargh and Tota (1988) looked at accessibility and depression. They found that depressed individuals were faster at categorizing negative descriptors as applicable to the self than were individuals who were not depressed. They found this when comparing these individuals to other participants who were assigning these descriptors as being normal to others, and when also under a cognitive

load (holding 6 numbers in their memory). This demonstrates that although the cognitive load slowed down nondepressed individuals, it only slowed down depressed individuals when the words were not applicable to themselves and of a negative nature. When the words were congruent to their depressive state, they were more accessible and more quickly categorized.

In a seminal paper exploring the concept of accessibility, Tversky and Kahneman (1973) found that ease of retrieval and familiarity with a concept could have a great impact on the degree to which that concept was drawn on and thus, was cognitively accessible. Numerous studies have then continued to examine accessibility and ease of retrieval through basic experimental research (Bem, 1972; Higgins, 1996; Taylor, 1982 for a review).

Priming

One of most common ways to increase accessibility has been through the process of priming. Numerous studies (Bargh, 2006; Bargh, Chaiken, Govender & Pratto, 1992; Bargh & Chartrand, 1996; Bargh, Lombardi, & Higgens, 1988; Caruso, 2008) have used priming as a means to increase what is most likely to be accessible in a given situation or time period. Across these studies, priming was used as a means to increase accessibility. For example, how might being forced to think about negative emotions influence the way individuals perceives their current life, immediately after the priming task? Likely, thinking about negative emotions will prime and make negative thoughts more accessible in the present moment. Further, increased accessibility can act automatically on individuals and alter their perception of the self and others, based upon what was primed, and consequently, what becomes most accessible following the

priming. After time and cumulative experiences, increased accessibility can lead to thoughts and cognitions that become chronically accessible. That is, they become the dominant cognition that is accessed across numerous situations. Tversky and Kahneman (1973) argued that this can lead to misattributions and mistakes in judgment, because what is chronically accessible may be drawn upon inappropriately.

Examining specific ways that accessibility can be manipulated, Schwarz and colleagues (1991) manipulated ease of recall. They had participants think about concepts (i.e., times that they were assertive or times that they were not assertive) and they were told to recall a certain number of instances of that concept. Across several conditions, difficulty of the task was manipulated via the number of examples the participants had to produce for a given topic. When recalling under easy recall constraints, that which was recalled was made more accessible to the participant, but when recalling under more difficult constraints, the participant did not demonstrate increased accessibility. Fuller, McIntyre and Oberleitner (in press) explored accessibility via fluency and ease of retrieval. In their study, participants were asked to recall three versus nine instances that they were successful or unsuccessful. When listing three things (easy retrieval), participants rated themselves as having greater success academically than when listing nine times they were successful, as retrieval was difficult. This led to a subsequent behavioral change in that difficult retrieval was viewed as meaning they had less success, and this in turn led to changed behavior, specifically, less success at an academic task. The converse was found when looking at three versus nine listing of times they were failures. Nine instances led to greater feelings of success and greater success on an academic abilities task. Thus, accessibility can alter

not only self-perceptions, but also subsequent behavior. Furthermore, relative accessibility can create changes in the way one views themself and that one's experiences can influence what is most accessible for a given individual. Related to this change in self-view, work by Dijksterhuis and van Knippenberg (1998), as well as Dijksterhuis and Bargh (2001) explored how changes in the accessibility of abilities may be related to automaticity in performance and behavior, finding that changes in accessibility may result in behavioral changes corresponding to the change in accessibility. For example, in Dijksterhuis and van Knippenberg (1998), participants who were primed with the concept of professors (ostensibly a smart stereotype) performed better at a trivial pursuit task than those primed with a less smart stereotype (soccer hooligan).

Aggression Accessibility and Aggression Following Exclusion

In case-study research examining victims of bullying and ostracism, Nansel and colleagues (2003) as well as Reijntjes and colleagues (2010) found that individuals who were victims of exclusion and bullying acted out more aggressively than did included individuals, and this increased aggressive behavior was often directed at the perceived source of the bullying. Targets of bullying or exclusion can feel negatively about themselves, as an explanation for their experience. They may also feel angry about why they were "chosen" to be the victim. Increased anger or feelings of hostility may arise. The increased feelings of frustration and negative moods may prime the individual for later aggression. The research also supports that those who experience bullying or ostracism in real life often act out aggressively because of their plight. Sometimes this aggression can be directed toward the self (Kaminski & Fang, 2009) in the form of self-

harm and suicide, but the aggression also can be directed toward others. Often, those who were the source of the bullying or exclusion (Reijntjes et al., 2010; Warburton, Williams & Cairns, 2003) as well as innocent bystanders (Twenge, Baumeister, Tice, & Stucke, 2001) who were not directly involved with the event, may become the target for lashing out through aggressive behavior. Leary, Kowalski, Smith, and Philips (2003) theorized that exclusion can be a possible trigger in many school shooting occurrences. These studies raise the question of whether exclusion might increase the accessibility of aggression.

In a study by Berkowitz and LePage (1967), the linkage between accessibility and aggression was explored. Accessibility for aggression was manipulated by having guns (a shotgun and .38 revolver) for some participants, or neutral objects such as a badminton racquet, or no stimuli for others. In conditions where guns were present, participants were told to disregard the guns as a researcher had been using them as stimuli in an earlier research experiment. Similar instructions were used in the conditions where the neutral objects were present. The amount of electric shock participants thought they were administering to a confederate was the target dependent variable. It was found that the mere presence of a gun in the room was enough to increase accessibility for aggressive behaviors, in that those who had the weapon present administered significantly longer shocks, than did those with more innocuous (or lack of) stimuli; this was labeled the weapons effect. Having a weapon made accessible (visible), even though it was not part of the study, caused individuals to have greater cognitive accessibility for weapon-related object or behaviors. The increased weapon-relevant accessibility then resulted in aggressive behavior. Similar results were

found in research by Anderson, Benjamin and Bartholow (1998), who found that being exposed to words related to weapons could serve as a prime to increase accessibility of aggression-relevant thinking, and subsequently, increase aggressive behaviors. Similarly, Bartholow and Heinz (2006) found that exposure to primes that are not directly associated with aggression or weapons can bring about this effect when those cues are stereotypically related to aggression. In their study, exposure to alcohol primes (via a lexical decision task) served to increase accessibility for aggressive behavior, and subsequently, increased behavioral aggression. In Experiment 1, participants who were primed with images related to alcohol (e.g., silhouettes of a martini glass, beer bottle) were significantly faster at identifying aggression related words in a lexical decision task, than those who were primed with images of plants. They did not, however, differ significantly from people primed with actual images of weapons. Alcohol primes and weapons primes produced statistically similar results, as both increased accessibility for aggression due to their association with aggressive behavior (i.e., weapons are often used as a means to aggress, and drinking often increases aggressive behaviors in individuals). In Experiment 2, this was extended to show that exposure to alcohol primes resulted in greater interpretation that an ambiguous stimuli was aggressive, compared to controls. Thus, aggression-related cues can serve as a trigger for the accessibility of aggression.

Social exclusion may also be able to trigger this aggression-cognition linkage. Cyberball and Life-Alone tasks may prime the individual for negative feelings associated with exclusion. With exclusion experienced, thoughts related to exclusion, such as retaliation toward those responsible or merely present, may become heightened. For

example, if one is bullied and excluded, or becomes angry at the thought of spending their future alone, this may trigger hostility toward those who have bullied them in the distant or recent past, and may trigger feelings of hostility and anger to those he or she believe have a brighter, more social future than him or herself. The exclusion itself may not directly be aggressive, but through spreading activation of concepts, it may nonetheless increase the accessibility of aggressive feelings or behaviors in the excluded individual.

Several studies have found that ostracism events can trigger increased aggression in individuals who were excluded. Warburton and colleagues (2003) used the Cyberball task as a means to exclude, and following the inclusion or exclusion, used a hot sauce administration task as a behavioral measure of aggressive. The authors led participants to believe that a confederate, who ostensibly had excluded them in the Cyberball game, did not like hot sauce, but that each participant had to administer a small amount to the other participant as part of a subsequent task. Excluded participants delivered significantly more hot sauce to the confederate than did included participants, ostensibly as a means to "get back" at them for the previous exclusion. It was argued that exclusion served to increase accessibility for aggressive behavior, and much like real-life explorations of schoolyard bullying, the victim of ostracism is primed for more aggressive behavior to attack back at those who ignored them. Twenge and colleagues (2001) did a similar study, but instead of Cyberball, used the Life-Alone task. Participants who were "excluded" by hearing that their personality indicated a future without social connectivity, and who just heard a confederate in the study receive information that their future would have great amounts of social connectivity, were

significantly more likely to aggress toward the confederate. In other words, the exclusion is reasoned here to have increased the accessibility of aggression-behaviors, causing participants to lash-out at anyone near them.

In both the Warburton and colleagues (2003) as well as Twenge and colleagues (2001) studies, increased aggression was found in those who were excluded, and increased accessibility for aggression based upon being included or excluded was argued to be a fundamental cause of this aggression. To explore the accessibility of aggression following an ostracism event, Oberleitner, McIntyre, Fuller and Welker (unpublished manuscript) employed Cyberball as the means to include or exclude. The accessibility of related content was measured across two studies via a lexical decision task. In Experiment 1, included participants were significantly faster at identifying intimacy (positive inclusive) words in the lexical decision task, whereas excluded individuals were marginally faster at identifying weapon/aggression words. In Experiment 2, excluded individuals were significantly faster at identifying negative self-descriptive words, compared to positive self-descriptors, which included participants were faster in responding. Participants' belongingness, self-esteem, control, and meaningfulness of life scores partially mediated reaction time scores in the lexical decision task. What is still needed, however, is to examine the relations between exclusion, accessibility, and aggressive behavior. In short, although some studies have measured aggression and argued for accessibility as a driving force behind the aggression, no known studies have examined the combination of these processes as they relate to exclusion.

Purpose of Study, Hypotheses and Rationale

The goal of this dissertation was to extend the work on exclusion (Cyberball, Life-Alone) and to explore how exclusion relates to the accessibility of relevant content, and how this accessibility is related to aggressive behavior. Furthermore, the present research sought to extend the findings of Leary and colleagues (2005), who found exclusion to be an antecedent to school shootings, by establishing a causal link between exclusion, accessibility for aggression and negative self-views, changes in self- and world perceptions and increased propensity for aggression. Previous research (Williams, 2007; Williams, Cheung & Choi, 2001; Zadro et al., 2004) has shown that social exclusion has a predictable pattern of deleterious effects on those who are excluded. These effects can include increased negative affect, decreased feelings of belonging, control, self-esteem, and meaningfulness of life. Further, research by Oberleitner and colleagues (unpublished manuscript) has found that individuals who are excluded via the Cyberball ostracism manipulation have several distinct changes in what is most accessible to them. Excluded participants in these studies were found to have faster recognition for weapon words (e.g., bomb, rifle, gun) and negative self-descriptors (e.g., detested, worthless, weak), and slower responses for intimacy words (hug, helpful, friendship) and positive self-descriptors (e.g., confident, worthy, liked), as compared to individuals who were included during the Cyberball game. Research has shown that when excluded, individuals are more likely to attribute neutral stimuli as aggressive (Dewall, Twenge, Gitter, & Baumeister, 2009), as well as act out more aggressively (Warburton, Williams & Cairns, 2006). The proposed research will link these domains by exploring Williams' Cyberball outcome measures (fundamental

needs) and items that are newly created to compare with these items, reaction time for intimacy (positive inclusive), and weapons/aggression words, self-report measures of state aggression postostracism event, as well as examining the degree to which individuals will respond with an aggressive action following exclusion.

Specifically, it was hypothesized in Experiment 1 that individuals who were excluded would show higher levels of negative affect, less endorsement regarding feelings that they belong, less belief that they have control in their life, less belief that life has meaning, and lowered self-esteem. More importantly, it was hypothesized that excluded individuals would respond faster to weapons/aggression words than included individuals, and would be slower at responding to positive inclusion related words, as measured via a lexical decision style task. It was hypothesized that participants who are excluded via Cyberball would report higher levels of state aggression following the task. It was also hypothesized that excluded individuals would be faster at categorizing negative self-descriptor words than included individuals, and be slower at categorizing positive self-descriptors. Furthermore, it was hypothesized that individuals who were excluded would administer more hot sauce, as a behavioral measure of aggression. It was also hypothesized that excluded individuals' fundamental needs scores (belonging, control, meaningfulness of life, and self-esteem), and/or their self-reported feelings of aggression would mediate the amount of hot sauce that was administered, as well as their reaction times in the lexical decision task. Lastly, traditional gender differences in aggression (i.e., males reporting higher levels of aggression than females) were also hypothesized.

The goal of Experiment 2 was to extend the findings of Experiment 1 by using another exclusion methodology. As previously discussed, research by Twenge, Baumeister, Tice, and Stucke (2001) found that feelings of social inclusion and exclusion could be induced in the lab via feedback that contained deceptive information. The exclusion and inclusion has been accomplished using false feedback given to participants, based on a supposed result of a personality questionnaire. The feedback given to participants indicated that based on aspects of their personality, they would have a future social life that was either full of, or absent of, social connections. Twenge and colleagues (2001) argued that when the personality feedback was given stating the participant would have a future lacking social connections, this feedback induced feelings of social exclusion, with similar effects of Cyberball, such as increased negative mood, lowered self-esteem and threat to the need to belong.

Experiment 2 sought to examine how individuals who are either included (personality feedback that the future is full of social connections) or excluded (personality feedback that the future will lack social connections) differ in mood, self-esteem, feelings of belonging, control, and meaningfulness of life. It also examined how quickly participants could identify the same categories of words as used in Experiment 1: weapons/aggression, positive inclusive, negative self-descriptors, and positive self-descriptors. Further, like Experiment 1, Experiment 2 examined how included versus excluded individuals may use hot sauce as a proxy for aggression against someone who they feel was just included, but in no way caused their own experience of inclusion/exclusion. Experiment 2 sought to extend the hypothesized findings in Experiment 1 by showing that personality feedback as a method of ostracism can

produce changes in accessibility for aggression and negative self-views, and that seeing another participant being included is enough to cause an excluded individual to aggress toward them.

Specifically, for Experiment 2 it was hypothesized that individuals who were told they would eventually end up excluded in their lives would show higher levels of negative affect, less endorsement that they belong, have control in their life, that life has meaning, and would report lowered self-esteem. Furthermore, it was hypothesized that excluded individuals would respond faster to weapons/aggression words than would included individuals, and would be slower at responding to positive inclusive words, as measured via a lexical decision task. It was hypothesized that excluded individuals would be faster at categorizing negative self-descriptor words than individuals who were included, and would be slower than included individuals at categorizing positive self-descriptors. It was also hypothesized that individuals who were excluded would administer more hot sauce, as a proxy measure of aggression, and that fundamental needs scores (belonging, control, meaningfulness of life, and self-esteem) would mediate the amount of hot sauce administered, as well as individuals' reaction time scores in the lexical decision task. Also, it was hypothesized that participants' self-report aggression scores would influence the amount of hot sauce administered, with greater feelings of aggression corresponding to higher amounts of hot sauce administered. Hypotheses regarding gender and aggression were also made, matching those in Experiment 1.

CHAPTER 2

Methods

Experiment 1

Participants

Eighty-eight Wayne State University undergraduate students participated for research credit in their psychology course. Of these, 44 were randomly assigned to the inclusion condition, and 44 were randomly assigned to the exclusion condition. Of these 88 participants, 39 were male (44.3%) and 49 were female (55.7%) and gender was evenly distributed between conditions. Participants were aged between 18-50 years (average age of 23.5 years). Of the 88 participants, 44 (50%) were Caucasian, 23 (26.1%) were African American, 14 (15.9%) were Arab American, 2 (2.3%) were Hispanic, 2 (2.3%) were Asian, and 3 (3.4%) did not disclose their ethnic identity.

Procedure

Prior to arrival at the lab, participants were seated in a waiting area outside of the laboratory space. A confederate research assistant arrived after the participant had called to notify the researcher they had arrived, and the confederate also called and said they were there for the same study as the participant. The confederate was one of five research assistants who ranged in age from 20-24 years of age. Two were male, and three were female, with four Caucasian, and one of Middle-Eastern ancestry. After arriving at the lab, the participant and confederate were each escorted to a separate room and seated in front of a computer. At that computer was the information sheet for the experiment. Participants were then given time to read the information sheet and after reading it, the major aspects of the study, including all risks and benefits of

participating, was fully explained to them. However, participants were not told that the other “participant” was a confederate and they were deceived in believing that the hot sauce administration was for taste testing purposes. The information sheet and all aspects of the study were approved by the Wayne State University Human Investigation Committee. An information sheet was used to increase the anonymity of the participants and no identifiers were used that would allow responses to be traced to a specific participant. Any questions about the information sheet were responded to at this time. Following this, the participant and confederate were told that they would each be participating in the same study - this was deception and it was used to make the participant feel they were doing the study with another real participant, and thus, act more naturally in the lab. The participant would then play the game Cyberball (Williams, Cheung & Choi, 2000; a game of virtual ball tossing to other people), and it was explained that they would be playing with the person in the other room, as well as two others in a different lab space within the same building. In reality, the game was fully computer controlled. Stratified randomization was used, in that participants would be randomly assigned to be either included or excluded by the game, with an equal distribution of gender occurring in each study condition. Those who were included by the game received the ball 10 times out of 30 throws, whereas those who were excluded received the ball 3 times of 30 throws. Confederates did not play any game, and instead sat quietly until later in the experimental procedure.

A counterbalanced study design was incorporated, such that half of the participants then completed a series of questionnaires before the word categorization task, with the remainder completing the word categorization before completing the

questionnaires. Following Cyberball, some of the participants were randomly selected to complete the word categorization task before the self-report questionnaires. For the word categorization task, participants completed a short lexical decision style task that presented words in a random order, one at a time, and participants were instructed to categorize the type of words that were presented. Words consisted of aggressive/weapons words (e.g., rifle, punch), positive inclusive words (e.g., cared for, hugged), positive self-descriptors (e.g., loved, nurtured) and negative self-descriptors (e.g., hated, despised). Participants were instructed to press the "F" key if they felt the word was positive or pleasant, and to hit the "J" key if they felt the word was negative or related to aggression. Participants were also told to go as fast as possible, and to try and be as accurate as possible. Following the lexical decision task, participants then filled out several short surveys on the computer assessing the traditional Cyberball manipulation check (fundamental needs) of, belonging, perceptions of control, meaningfulness of life, self-esteem, mood, as well as self-report feelings of aggression. Other participants completed the same procedures except that the self-report questions preceded the word-categorization task.

After participants had completed the survey, they then listened to a 3-minute long audio file that contained short sound clips placed at random intervals. These sounds were loud, and aversive. Sounds included things such as babies crying, screaming, or grinding noises. Warburton, Williams and Cairns (2006) found that aggression is more likely after a lack of control situation following exclusion. All participants listened to the audio file without control in the current study (they were instructed to not take off the headphones or adjust the volume during the listening task), as it was shown by

Warburton and colleagues that excluded individuals aggressed more when they lacked control over aversive noises (see Warburton et al., 2006), but that the aversive noises and lack of control did not influence included participants. A cover story with deception was used, with the research assistant explaining to participants that the audio file was designed to oversaturate their sensory modality of hearing, and that when any of one's sensory modalities have been oversaturated, the remaining four senses are heightened. It was explained that this would help them be more accurate in their taste judgments in the upcoming taste-testing task.

Following this task, participants were told that the study was now done, but were asked if they would mind staying for a short beverage taste test, pilot testing drink mixers, that were possibly going to be used as part of an upcoming alcohol administration study that another lab would be conducting in the future. All participants agreed to this. Participants were told that a Bloody Mary has been shown to mask the taste of alcohol effectively, but that there are several ways that it can be made. Further, they were instructed that a Bloody Mary consists of tomato juice with spices, a type of liquor, and hot sauce. It was explained that each participant would be creating a nonalcoholic Bloody Mary mix, and that after making the mixer, would be rating how good they perceived the mix to taste. It was further explained that, as there is a positivity bias for things that one creates themselves, they would be creating the Bloody Mary mix that the other participant would taste, so as to eliminate that positivity bias. The participant and confederate were then each asked verbally how much they: 1) drink Bloody Mary's; 2) enjoy tomato based drinks; 3) enjoy hot sauces; and 4) if they had any known allergies to any of the ingredients. The confederate would always reply

second to each question, and would always indicate that, on a scale of 0 through 20, with 0 indicating a strong dislike of hot sauce, that they were "about a 2", indicating they strongly disliked spicy things. This was done so that it was obvious to the participant that a spicier Bloody Mary (with more hot sauce included) would be aversive to the other participant (confederate). They were then both instructed that after the mix was created, they would trade mixes, and rate the taste on several variables, and that the amounts of each liquid (tomato juice and hot sauce) would be recorded. In reality, no participant would actually taste or consume any of the hot sauce. They would then have a bowl of hot sauce, a shot glass, a tall glass, and a bottle of tomato juice placed in front of them. They were then instructed to first spoon as much hot sauce into the shot glass as they wish, and that this would then be mixed into the main drink.

After they were finished with this, they were instructed that the study was now over and they were fully debriefed. During the debriefing, it was explained that the Cyberball game was completely controlled by the computer and was designed to either include, or exclude, and that the condition they were in was randomly selected. It was further explained that the study was exploring differences in word reaction time tasks after being included or excluded. It was also explained that the audio file was created as a distracter task and to limit feelings of control. Lastly, it was explained that the other participant was actually a confederate, and that the use of a confederate and deception was employed to create a more naturalistic lab experience, and that the taste-testing task was also fake and used simply as a way to measure the amount of hot sauce administered. Any questions were then answered, and the researcher asked if they understood how and why deception was used. All participants reported they understood

this and were not troubled by the manipulation. Participants were thanked for their time and escorted out of the lab. The shot glass with hot sauce in it was then weighed, with the weight of the shot glass subtracted, so that a total weight of hot sauce administered was recorded.

Measures

All measures are provided in the appendix.

***Ostracism manipulation check*.** Following playing the game Cyberball, participants completed the Zadro and colleagues (2004) survey that measured self-esteem, need to belong, control, meaningfulness of life, feelings of rejection and mood. Each construct (e.g., belonging) was measured via three questions that used Likert-scales (1 = “Not at all”; and 9 = “Very Much”). For example, one of the questions assessing control was: “I felt I was able to throw the ball as often as I wanted during the game”. For each construct, at least one of the items was reverse coded. Once reverse coded items were transformed, a sum motive score of the items for each of the constructs was created, with lower scores representing lesser (more "threatened") endorsement for that construct (i.e., lowered self-esteem or feelings of belonging). Mood was assessed by instructing participants to rate how they felt at that particular moment using a multipoint bipolar rating scale anchored by “bad” and “good”, "happy" and "sad", "included" and "rejected", as well as "tense" and "relaxed".

Ostracism rumination questions. Following the Cyberball methodology, participants completed several items (developed by the author) assessing participants' thoughts. These included feelings of anger toward the researcher, the other participant (confederate), as well as concepts regarding desire for retaliation, and how common

exclusion feels to the participant. Each item was measured via a Likert-style 1 - 9 scale, anchored by "Strongly Disagree" (1) and "Strongly Agree" (9). An example for an item assessing typical feelings of exclusion was: "The online game I played felt similar to my normal social interactions." Specific hypotheses regarding these items were not made, however, they will be used for additional analyses beyond the scope of the dissertation.

Feelings of Aggression. Following Cyberball, participants completed the Buss and Perry (1992) aggression questionnaire. The questionnaire assessed feelings of aggression, and was presented after the ostracism manipulation, thus, was treated as a measurement of aggression as a temporary state. Four subscales (total of 29 items) were present in the questionnaire, each consisting of several Likert-style questions that were summed to create a composite score for each item. The four subscales were: Anger (alpha = .83), Hostility (alpha =.77), Physical Aggression (alpha = .85), and Verbal Aggression (alpha = .72; total scale alpha = .89).

Lexical decision task. Following Cyberball, participants completed a lexical decision task that assessed four categories of words: Positive Inclusion (i.e., romance, hug, cuddle), Weapons (i.e., bomb, rifle, knife), Positive Self-Descriptors (i.e., worthy, liked, included) and Negative Self-Descriptors (i.e., detested, hated, rejected). Each category had ten words, and each word was presented twice. Participants were instructed to press one of two keys on a computer keyboard, depending on the category of the word that was presented, and were instructed to go as fast as possible, but to also be as accurate as possible in their identifications. Participants were instructed to press one key if the word was a positive inclusive word, or a positive self-descriptive word, and another key if the word was weapon/aggression related, or a negative self-

descriptive word. Each category then had all items averaged, to create an average response time (in milliseconds) per category.

Behavioral Aggression. Upon completion of all other measures and tasks, a behavioral measure of aggression was administered. Participants were told they would be administering hot sauce to another participant (the confederate), as part of a taste-testing paradigm. With this task, participants spooned hot sauce into a small shot glass that was provided to them. The weight of the shot glass was recorded before administration, and was then rerecorded following the hot sauce administration. The weight before the administration was subtracted from the weight of the shot glass after administration, to determine the total amount of hot sauce that was administered. The scale used to weight the glass and hot sauce was accurate to .01 grams.

CHAPTER 3

Results of Experiment 1

Ostracism Manipulation Check - Fundamental Needs

The 12 items assessing fundamental needs were summed for each need, with higher scores representing greater endorsement of that need (e.g., feeling more in control; higher self-esteem). No participants were removed, and missing data was handled in all analyses (both in Experiment 1 and Experiment 2) via mean substitution. As can be seen in Table 1, each need score was found to be significantly affected by ostracism condition (via one-way analysis of variance - ANOVA), with excluded participants reporting significantly less feelings of belonging, $F(1, 87) = 114.17$, $p < .001$, $\eta_p^2 = .570$, control $F(1, 87) = 75.32$, $p < .001$, $\eta_p^2 = .467$, meaningfulness $F(1, 87) = 91.60$, $p < .001$, $\eta_p^2 = .516$, and self-esteem $F(1, 87) = 66.31$, $p < .001$, $\eta_p^2 = .435$.

Table 1. Mean fundamental needs scores for participants who were included or excluded during a game of Cyberball (Experiment 1).

	Cyberball Condition	
	Included	Excluded
Need for belonging	**19.11**	**9.14*****
	(3.53)	(5.09)
Need for control	**18.43**	**9.52*****
	(5.04)	(4.58)
Need for self-esteem	**22.32**	**13.34*****
	(4.79)	(5.52)
Need for meaningful existence	**21.02**	**11.36*****
	(4.08)	(5.30)
Total of all needs	**80.89**	**43.36*****
	(14.09)	(17.24)

Note: Standard deviations are in parentheses, ***p < .001 All *Fs*(1, 87) > 66.31. Means are in bold, with standard deviations in parentheses.

All four needs scores were then summed together, to create a composite needs score, which was also found to be significant $F(1, 87) = 125.43$, $p < .001$, $\eta_p^2 = .59$, with excluded participants reporting lowered scores (greater threat) on their needs (M = 43.36, SD = 17.24) than did included participants (M = 80.89, SD =14.03).

For each of the four mood items, excluded participants reported significantly more negative moods than did included participants. When excluded, participants

reported feeling more bad than good ($F(1, 87) = 12.05$, $p < .001$, $\eta_p^2 = .123$), more sad than happy ($F(1, 87) = 23.050$, $p < .001$, $\eta_p^2 = .211$), more tense than relaxed ($F(1, 87) = 6.04$, $p < .016$, $\eta_p^2 = .066$), and more rejected than accepted ($F(1, 87) = 38.96$, $p < .001$, $\eta_p^2 = .312$). Thus, the ostracism manipulation was viewed as successfully impacting needs' scores as hypothesized.

Reaction Times in the Lexical Decision Task

Experiment 1 was designed to test the role of accessibility for different word types (positive inclusive, positive self-descriptive, negative self-descriptive, weapons), following an inclusion or exclusion task. Accessibility was measured by a modified lexical decision task[1] that had participants categorize positive descriptive words, negative descriptive words, weapons words and positive inclusive words. Reaction time scores were first screened for possible outliers by creating a mean reaction time total for each category of word for each participant. To control for the possible effects of extreme outliers, any word reaction time score that was above or below three SD's of the mean were truncated for that word type. The truncated value was the mean, plus 3 SD's. This was done to account for impossibly long responses (e.g., 15 second responses due to a participant taking a break to sneeze repeatedly) or impossible quick responses (e.g., 15 millisecond responses where the participant hit the key the exact time the word appears without processing the word), and this was done for each participant based on their reaction time averages for each word type. A repeated measures ANOVA was conducted with each word type being a within subjects factor and condition as the between subjects factor. Word type as a within subjects factor was significant (F (3, 258) = 80.363, $p < .001$, $\eta_p^2 = .483$); however, the interaction of word type reaction times

by condition was not significant (F (3, 258) = .019, p = .996, η_p^2 = .000). The within subjects factor of word type was significant due to participants being fastest at identifying prosocial inclusive words, followed by weapon/aggression words, positive self-descriptive words, and were slowest at identifying negative self-descriptive words (see Table 2).The between subjects factor of condition was also not significant (F (1, 86) = .044, p = .834, η_p^2 = .001). Thus, it appears the hypothesis that the ostracism manipulation would increase accessibility for different types of words was not supported.

Table 2. Word type reaction times (in milliseconds) means and standard deviations for participants who were included or excluded during a game of Cyberball (Experiment 1).

	Cyberball Condition	
	Included	Excluded
Positive Inclusive Words	**698.30** (125.91)	**692.99** (114.42)
Positive Self-Descriptive Words	**800.56** (158.19)	**791.76** (133.09)
Negative Self-Descriptive Words	**893.52** (235.70)	**884.83** (207.89)
Weapons/Aggression Words	**747.70** (167.15)	**744.07** (140.00)

Note: Means are in bold, with standard deviations in parentheses.

Hot Sauce Aggression Manipulation

The amount of hot sauce for each participant was totaled after they had left the lab. To calculate this total, the shot glass that had the hot sauce was preweighed, and then weighed again after the hot sauce was administered. It was hypothesized that participants who were excluded would administer more hot sauce to the confederate who they believed had been one of the people in the Cyberball game leaving them out, compared to included participants. A univariate ANOVA was conducted to test for the effect of condition on the amount of hot sauce given. It was found that excluded participants gave a significantly greater amount of hot sauce (M = 9.81 grams, SD = 11.26) than did included participants (M = 5.61 grams, SD = 4.34) $F(1, 87) = 5.53$, p = .02, η_p^2 = .06 (see Figure 1).

Figure 1.

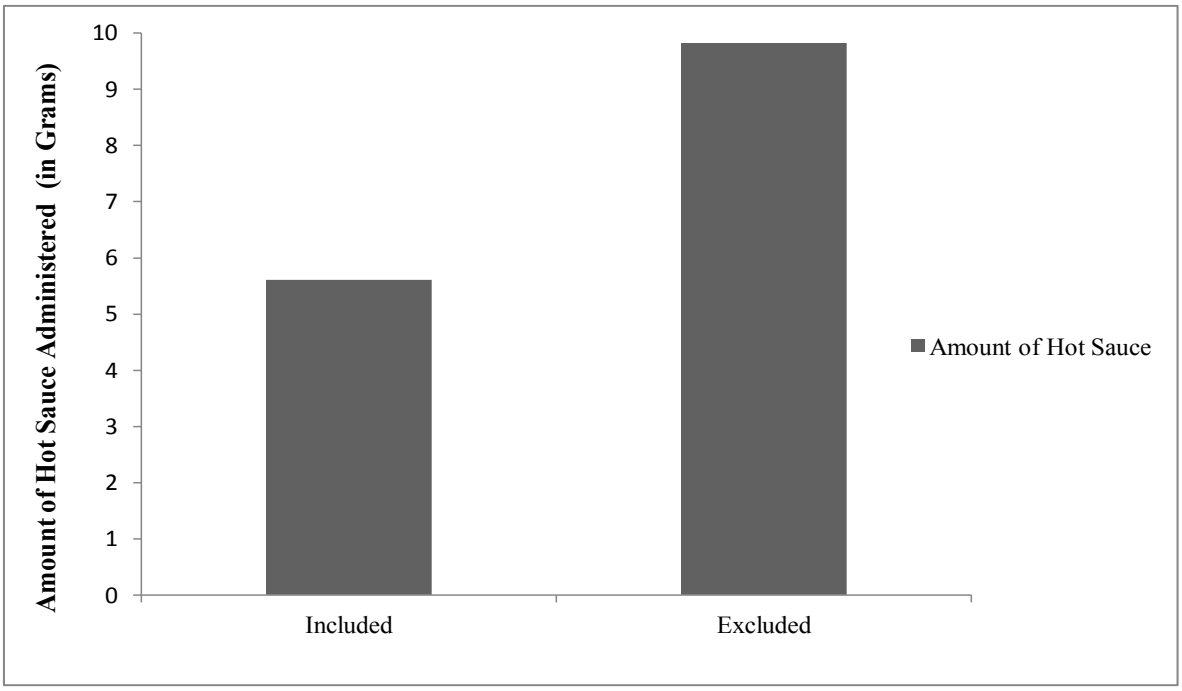

Figure 1. Amount of hot sauce administered (in grams) by condition following the Cyberball manipulation (Expt.1) .

There was not a significant main effect on the amount of hot sauce administered by gender ($F(1, 87) = .05$, $p = .82$, $\eta_p^2 = .001$), nor was there an interaction between gender and condition on the amount of hot sauce administered ($F(1, 87) = .37$, $p = .54$, $\eta_p^2 = .004$). Thus, it appears that the hot sauce administration task confirmed the hypothesis.

Measures of Aggression

For the purpose of this study, aggression was assessed following the Cyberball manipulation. The four aggression subscales were considered to be measures of state aggression, rather than trait aggression. Half of the total sample had aggression measured following Cyberball. The aggression scale consisted of four types of aggression, each assessed by multiple items that were summed to create a total score

for that type of aggression, with higher scores representing greater amounts of aggression. The four types of aggression measured were anger, hostility, physical aggression, and verbal aggression. A series of ANOVAs were conducted to test for differences in each type of aggression. Anger was not found to differ by condition (F(1, 45) = .25, p = .62, η_p^2 = .006), nor did physical aggression (F(1, 45) = .89, p = .35, η_p^2 = .02) or verbal aggression (F(1, 45) = 2.08, p = .16, η_p^2 = .05). Hostility did, however, significantly differ by condition (F(1, 45) = 6.6, p = .01, η_p^2 = .13), with excluded participants reporting higher levels of hostility than did included participants (see Table 3 for means and standard deviations).

Table 3. State aggression for participants who were included or excluded during a game of Cyberball (Experiment 1).

	Cyberball Condition	
	Included	Excluded
Anger	**14.61**	**13.87**
	(5.63)	(4.25)
Hostility	**16.52**	**21.17***
	(5.37)	(6.81)
Physical Aggression	**21.35**	**23.35**
	(7.31)	(7.05)
Verbal Aggression	**15.52**	**13.87**
	(3.91)	(3.87)

Note: * $p < .05$ Means are in bold, with standard deviations in parentheses. Higher scores represent higher levels of aggression.

There were no main effects for gender[2] or interactions of gender X condition for anger, hostility, or physical aggression, however, there was a main effect of gender on verbal aggression ($F(1, 45) = 4.81$, $p = .03$, $\eta_p^2 = .10$), with men ($M = 15.91$, $SD = 4.34$) reporting higher levels of verbal aggression compared to women ($M = 13.58$, $SD = 4.32$). The interaction of gender X condition was also significant ($F(1, 45) = 4.62$, $p = .04$, $\eta_p^2 = .10$). Simple effects tests revealed that there were no differences in verbal aggression for included participants ($F(1, 22) = .001$, $p = .98$), however, there was a significant differences between gender for excluded participants ($F(1, 22) = 12.36$, $p =$

.00), with females who were excluded reporting less feelings verbal aggression (*M* = 11.67, *SD* = 3.11) than did men (*M* = 16.27, *SD* = 3.17)

Additional Analyses

To further test the relationship between the amount of hot sauce that was administered, fundamental needs, lexical decision task word category speed, and the four types of state-level aggressiveness that was measured, correlations were first computed (see Table 4 for all correlations from Experiment 1).

None of the word types were significantly correlated with the fundamental needs, or the amount of hot sauce that was given (all *p's* > .17). However, when examining the four aggression subscales, hostility was significantly correlated with the amount of hot sauce that was administered ($r(46) = .34$, $p = .02$), meaning the more participants endorsed items associated with hostility, the more hot sauce was administered. Hostility was further significantly correlated with belonging [$r(46) = -.35$, $p = .02$), control ($r(46) = -.31$, $p = .04$], self-esteem [$r(46) = -.513$, $p < .001$], and meaningfulness of life [$r(46) = -.41$, $p = .004$], meaning higher scores for hostility were strongly associated with diminished needs. The amount of hot sauce that was administered was also significantly correlated to control [$r(88) = -.26$, $p = .01$], self-esteem [$r(88) = -.28$, $p = .01$], and meaningfulness of life [$r(88) = -.24$, $p = .02$], meaning higher amount of hot sauce administered was related to lower (such as after Cyberball) needs scores for all but the need to belong [$r(88) = -.13$, $p = .24$].

Table 4. Correlations between all outcome variables and condition (Exp. 1)

	Condition	Hot Sauce	Pos Inc	Pos SDW	Neg SDW	Weapon	Anger	Hostility	Phys Agg	Verb Agg	Belonging	Esteem	Control	Meaning	Needs Tot
Condition	1														
Amount of Hot Sauce	.241*	1													
Positive Inclusive Words	-.022	-.058	1												
Positive Self-Descriptive Words	-.030	.100	.801**	1											
Negative Self-Descriptive Words	-.020	-.024	.721**	.808**	1										
Weapons/Aggression Words	-.012	.007	.683**	.808**	.824**	1									
Anger	-.076	.189	-.103	-.124	-.192	-.187	1								
Hostility	.362*	.341*	-.101	-.221	-.201	-.208	.249	1							
Physical Aggression	.141	.273	-.123	-.131	-.202	-.100	.269	.046	1						
Verbal Aggression	-.212	-.038	-.106	-.070	-.142	-.036	.346*	.034	.366*	1					
Belonging	-.755**	-.128	-.019	-.029	-.028	.011	.092	-.353*	-.079	.202	1				
Self-Esteem	-.660**	-.277**	.052	.042	.037	.070	.121	-.513**	-.057	.160	.777**	1			
Control	-.683**	-.263*	-.046	-.028	.035	.071	-.001	-.310*	-.067	.229	.777**	.792**	1		
Meaningfulness of Existence	-.718**	-.344*	-.074	-.028	-.020	.010	.005	-.413**	.015	.211	.793**	.772**	.730**	1	
Total of Fundamental Needs	-.770**	-.250*	-.023	-.011	.007	.044	.061	-.439**	-.051	.218	.915**	.915**	.912**	.913**	1

Note: * = $p < .05$, ** = $p < .01$.

Each of the items that was correlated to the hot sauce were then tested as a covariate to determine possible mediation (see Baron & Kenny, 1986). Condition was no longer significant for the amount of hot sauce administered (with excluded participants administered more hot sauce) when covarying the needs of control $F(1, 86) = .658$, $p = .201$, $\eta_p^2 = .019$, or self-esteem $F(1, 86) = .56$, $p = .456$, $\eta_p^2 = .007$, or meaningfulness of life $F(1, 86) = .83$, $p = .365$, $\eta_p^2 = .010$. It was also no longer significant when using hostility as a covariate $F(1, 86) = 2.32$, $p = .135$, $\eta_p^2 = .051$. As this implies each of these may be a mediator for the condition X hot sauce main effect, a Sobel test was conducted for each potential mediator. The following conditions were met for the Sobel test: (1) condition significantly predicted hot sauce amounts ($\beta = .24$, $t(94) = 2.31$, $p = .023$); (2) regression analyses were conducted with condition regressed onto each mediator (control, self-esteem, meaningfulness of life, and hostility) and it was found that condition significantly predicted each of the mediators.

Control A regression conducted with condition as step 1, and control as step 2 was significant ($R^2 = .058$, $F(2, 87) = 3.51$, $p = .034$). In block 2, control (the mediator) did not significantly add to the variance accounted for in hot sauce ($\Delta R^2 = .018$, $p = .201$). The coefficient for new control was not significant ($\beta = -.18$, $t(87) = -1.288$, $p = .201$). When control was entered into block 2, the coefficient for condition decreased to ($\beta = .116$, $t(87) = .811$, $p = .419$); however, a Sobel test did not show significant mediation ($z = 0.765$, $p = .444$).

Self-Esteem A regression conducted with condition as step 1, and self-esteem as step 2 was significant ($R^2 = .083$, $F(2, 87) = 3.846$, $p = .025$). In block 2, self-esteem (the mediator) did not significantly add to the variance accounted for in hot sauce ($\Delta R^2 =$

.025, p = .134).The coefficient for self-esteem was not significant (β = -.209, t(87) = -1.512, p = .134). When self-esteem was entered into block 2, the coefficient for condition decreased to (β = .104, t(87) = 0.749, p = .456); however, a Sobel test did not show significant mediation (z = 0.712 , p = .476).

Meaningfulness of Life A regression conducted with condition as step 1, and meaningfulness of life as step 2 was significant (R^2 = .069, F (2, 87) = 3.129, p = .049). In block 2, meaningfulness of life (the mediator) did not significantly add to the variance accounted for in hot sauce (ΔR^2 = .010, p = .336).The coefficient for meaningfulness of life was not significant (β = -.145, t(87) = -0.967, p = .336). When meaningfulness of life was entered into block 2, the coefficient for condition decreased to (β = .137, t(87) = 0.911, p = .365); however, a Sobel test did not show significant mediation (z = 0.847 , p = .397).

Hostility A regression conducted with condition as step 1, and hostility as step 2 was significant (R^2 = .16, F (2, 45) = 4.137, p = .023). In block 2, there was a trend for hostility (the mediator) adding to the variance accounted for in hot sauce (ΔR^2 = .058, p = .092). The coefficient for hostility was marginally significant (β = .258, t(45) = 1.725, p = .092). When hostility was entered into block 2, the coefficient for condition decreased to (β = .228, t(45) = 1.523, p = .135); however, a Sobel test did not show significant mediation (z = 1.262 , p = .207).

Brief Discussion for Experiment 1

The findings in Experiment 1 indicate that several of the hypotheses were supported. Specifically, the Cyberball manipulation hypothesis was met in that excluded (compared to included) participants reported feeling less belonging, control, meaningfulness in their life and self-esteem. Negative mood ratings were higher for excluded participants than for included participants as expected. Further, the hypothesis regarding the amount of hot sauce was confirmed. Excluded participants administered significantly more hot sauce than did included participants. The hypotheses regarding possible mediators of the amount of hot sauce, as well as expected gender differences were not supported. Although evidence from regressions supported the possibility of mediation, Sobel tests did not confirm that hypothesis. Further, the hypothesis regarding changes in accessibility in the word categorization task was not supported.

Regarding the hot sauce mediation and gender, it may be the case that the aversive nature of the incident, as well as the evolutionary basis for the negative feelings associated with exclusion, were powerful enough to overcome traditional gender norms regarding aggressive behavior. Further, it may be that any hint of exclusion is enough to push the individual towards lashing out against others, and that this effect is powerful enough that any changes in the Cyberball manipulation checks (fundamental needs) results in strong aggressive responses. Also, it may be that the accessibility task (modified lexical decision task) was simply too easy for participants, with the traditional word versus nonword discrimination aspect of a true lexical decision task (which was not used in the current study) being needed to see changes in accessibility. Alternatively, previous research by Oberleitner et al. (unpublished

manuscript) used only one category of positive and one category of negative words in the task, which may have contributed to the changes in accessibility being more apparent when the data was analyzed. These hypotheses regarding the null findings that were found and other alternate explanations will be discussed in greater depth in the general discussion.

Experiment 2 attempted to replicate what was found in Experiment 1, but with a different exclusion methodology (Life-Alone task). Although the accessibility measure was not significant in Experiment 1, the general procedures used for in the accessibility task was repeated in Experiment 2 to determine if it is a failure of Cyberball to change accessibility for the different word types (replicating work by Oberleitner et al. (unpublished manuscript), or if the task itself is nondiagnostic of changes in accessibility following exclusion. Further, a measure of rejection sensitivity and anxiety was added to account for possible differences amongst participants in their reactions to the rejection procedure.

CHAPTER 4

Experiment 2

Methods

Participants

Ninety-two Wayne State University undergraduate students participated for research credit in their psychology course. Of these, 31 were randomly assigned to the inclusion feedback condition, 31 were randomly assigned to the control condition, and 30 were randomly assigned to the negative feedback condition. Stratified randomization was used to ensure equal distribution gender across conditions. Of these 92 participants, 44 were male (47.8%) and 48 were female (52.2%) and were evenly distributed between conditions. Participants were aged between 18-46 years (average age of 21.65 years). Of the 92 participants, 40 (43.5%) were of Caucasian ancestry, 18 (19.6%) were African American, 14 (15.2%) were Arab American, 4 (4.3%) were Hispanic, 5 (5.4%) were Indian, 5 (5.4%) were Asian American, 1 (1.1%) was Native American and 5 (5.4%) chose to not disclose their ethnic identity.

Procedures

Prior to arrival at the lab, participants were seated in a waiting area outside of the laboratory space. A confederate research assistant would arrive after they had called to notify the researcher they had arrived, and the confederate would also call and check in with the lab, and would say they were there for the same study as the participant. The confederate would be one of five research assistants who ranged in age from 20-24 years of age. Two were male, and three were female, with four being Caucasian, and one being of Middle-Eastern ancestry. After arriving at the lab, the participant and

confederate were each escorted to a separate room and seated in front of a computer. At the computer was an information sheet, and after the participant was given time to read it, their rights and responsibilities as a participant was fully explained to them by the researcher. Any questions from the participant were also addressed at this time. The Wayne State University Human Investigation Committee approved all aspects of the present study. An information sheet was used to increase anonymity of participants in that no written record of participants was kept in the lab, and no identifiers were used that could allow for tracing the responses to a specific participant. Following this, the participant and confederate were jointly told that they would each be participating in the same study - this was deception and it was used to make the participant feel they were doing the study with another real participant, and thus, act more naturally in the lab. In order to make participants feel included or excluded, the "Life-Alone" task (Twenge et al., 2001) was then administered. As part of this task, the participant filled out a questionnaire that consisted of several short personality scales all taken from the International Personality Item Pool (IPIP) (Goldberg et al. 2006). Upon completion, the research assistant collected the personality questionnaire from both the participant and confederate to be "scored." No scales were actually scored, but instead, the researcher spent approximately 2 minutes pretending to analyze the responses, and printing off a sheet of paper for both the participant and the confederate that had the feedback they would receive based upon the experimental condition they were assigned. The researcher would then explain that the personality questionnaire had the predictive ability to determine the approximate number of social connections a person would have later in life, and that this had been analyzed by the computer and printed off. Three

conditions were employed. In the first "future-belonging" condition, which was intended to induce feelings of inclusion, the researcher told the participant that:

> "You're the type who has rewarding relationships throughout life. You're likely to have a long and stable marriage and have friendships that will last into your later years. The odds are that you'll always have friends and people who care about you."

The second "future-alone" condition was intended to induce exclusion. Participants in this condition were told that based on their personality questionnaire:

> "You're the type who will end up alone later in life. You may have friends and relationships now, but by your late-20s most of these will have drifted away. You may even marry or have several marriages, but these are likely to be short-lived and not continue into your 30s. Relationships don't last, and when you're past the age where people are constantly forming new relationships, the odds are you'll end up being alone more and more." [3]

In the third condition, participants filled out the personality questionnaire, but no feedback about inclusion or exclusion later in life was provided, and the personality questionnaire was not discussed further. This condition acted as a control group. In either the first or second conditions (inclusion or exclusion), the confederate was always given his or her feedback first, and it was always the future-belonging statement. Feedback was first given to the confederate so that in the inclusion condition the participant would see that they both shared the same personality "future", whereas in the exclusion condition, they would have just heard a supposed other participant receive

an ostensibly brighter or more positive personality outlook, compared to the one they then received.

A counterbalanced study design was used, such that half of the participants then completed a series of questionnaires before the accessibility word categorization task, with the remainder completing the accessibility word categorization before completing the questionnaires. For those completing the accessibility task first, following the Life-Alone feedback, participants then completed a short modified lexical decision task where they were presented words in a random order, one at a time, and they were instructed to categorize the type of words that were presented. Words consisted of aggressive/weapons words (e.g., rifle, punch), intimacy words (e.g., cared for, hugged), positive self-descriptors (e.g., loved, nurtured) and negative self-descriptors (e.g., hated, despised). Participants were also instructed to press the "F" key if they felt the word was positive or pleasant, and to hit the "J" key if they felt the word was negative or related to aggression. Participants were also told to go as fast as possible, and to try and be as accurate as possible. Following the lexical decision task, participants would then fill out several short surveys on the computer assessing the "fundamental needs" of mood, belonging, perceptions of control, meaningfulness of life, self-esteem and anger toward the researcher or the confederate, as well as scales assessing feelings of aggression, and feelings regarding rejection sensitivity and anxiety. Other participants completed the same procedures except that the self-report questions preceded the word-categorization task

After they had completed this survey and lexical decision task, participants, per the Warburton, Williams and Cairns (2006) findings, listened to a three minute long

audio file that contained short sound clips placed at random intervals as in Experiment 1, and using the same cover story as in Experiment 1. Following the audio task, the researcher explained to the participant that they would be taking part in a beverage taste test with the other participant, as part of an upcoming alcohol administration study that another lab would be conducting in the future, replicating the methodology utilized in Experiment 1. After this, the same debriefing procedure was employed as was used in Experiment 1, other than altering the feedback to explain that the personality feedback they received was predetermined based upon study condition (rather than Cyberball feedback).

Measures

***Ostracism manipulation check*.** Following the Life-Alone manipulation feedback, participants completed a short questionnaire created by the author that contained measures self-esteem, need to belong, control, meaningfulness of life, feelings of rejection and mood. Each construct (ex: belonging) was measured via three Likert-style 1 - 9 scales, anchored by “Not at all” (1) and “Very Much” (9). For example, one of the questions assessing control is: “I feel like I will have less control over my life in the future.” These items were created to correspond closely to the type of items administered following the Cyberball manipulation. For each construct, at least one of the items was reverse coded. Once reverse coded items were transformed, a sum motive score of the items for each of the constructs was created, with higher scores representing a more “threatened” need. Mood was assessed by instructing participants to rate how they felt at that particular moment using a multipoint bipolar rating scale anchored by “bad” and “good”, "happy" and "sad" as well as "included" and "rejected".

Ostracism rumination questions. This measure was used in same manner as described in Experiment 1.

Need to Belong*.* To measure possible changes in participant's feelings of belonging, a need to belong was following administered both before and after the Life-Alone ostracism manipulation. The need to belong scale was developed by Leary, Kelly, Cottrell, & Schreindorfer (2005). Items were measured on a 1 - 5 Likert style scale, anchored by the responses of "Strongly Disagree (1)", to "Strongly Agree (5)." Several items were reverse coded. An example of an item is "If other people don't seem to accept me, I don't let it bother me."

Self-Esteem. To measure the participant's self-esteem following the Life-Alone task, a scale created by the International Personality Item Pool (Goldberg et al., 2006) was used (Alpha = .84). Items were measured on a 1- 7 Likert style scale, anchored by the responses of "Strongly Disagree (1)", to "Strongly Agree (7)". Several items were reverse coded. An example of an item is: "I feel comfortable with myself."

Feelings of Aggression**.** This measure was used in same manner as described in Experiment 1.

Lexical decision task. This measure was used in same manner as described in Experiment 1.

Rejection Sensitivity and Anxiety. Following the Life-Alone manipulation feedback, participants completed the Rejection Sensitivity scale created by Downey and Feldman (1996). This scale consisted of 18 one sentence topics that each had two associated Likert-style items: one assessing rejection sensitivity, and one assessing rejection anxiety. An example topic sentence would be "You ask your

boyfriend/girlfriend to come home to meet your parents." A rejection anxiety item would be then be **"**How concerned or anxious would you be over whether or not your boyfriend/girlfriend would want to meet your parents?" and a rejection sensitivity item for that topic would be "I would expect that he/she would want to meet my parents." All items were measured on a 1-6 Likert-style response scale anchored by "very unconcerned/very unlikely" (1) or "very concerned/very likely" (6). The alpha for the scale was .83.

Behavioral Aggression. This measure was used in same manner as described in Experiment 1.

CHAPTER 5

Results

Experiment 2

Ostracism Manipulation Check - Fundamental Needs

The twelve items that were created to approximate the four fundamental needs measures (Cyberball manipulation checks) tested in Experiment 1 were first screened and reverse scored where appropriate. Three of the twelve items each corresponded to one of the four needs. A similar methodology was employed as in Experiment 1, with the three scale items corresponding to each fundamental need summed to create a composite needs score for belonging, control, self-esteem and meaningfulness of life. The four composite needs scores were then summed to create an overall needs score. As with Experiment 1, lower scores represented greater feelings of exclusion. An ANOVA was conducted to examine each of the life alone manipulation measures (which corresponded to the needs measures used in Cyberball), to determine if the ostracism manipulation was successful. None of the four composite scores for belonging, control, self-esteem, and meaningfulness of life, or the overall needs score, was found to be significant (all less than $F(2, 91) = 1.75$, $p = .179$, see Table 5).

Table 5. Mean fundamental needs scores for participants who were included or excluded during via the Life-Alone task (Experiment 2).

	Life-Alone Condition		
	Future Inclusive	Control (No Feedback)	Future Exclusive
Need for belonging	**19.42**	**19.61**	**20.57**
	(3.40)	(3.34)	(3.70)
Need for control	**18.48**	**17.45**	**18.30**
	(2.11)	(2.28)	(2.54)
Need for self-esteem	**22.61**	**22.68**	**23.03**
	(2.14)	(2.94)	(2.77)
Need for meaningful existence	**23.23**	**23.87**	**24.03**
	(3.76)	(3.22)	(3.12)
Total of all needs	**83.74**	**83.61**	**85.93**
	(6.75)	(8.74)	(8.18)

Note: Standard deviations are in parentheses, *$p < .05$, **$p < .01$. *** $p < .001$. Means are in bold, with standard deviations in parentheses. Higher scores represent higher levels of aggression.

Each individual item was then tested from the scale. Using an ANOVA, the items "In most situations, I feel I can control my actions" (one of the control items), "I felt the personality feedback I received was accurate" (a single item manipulation check) and "I feel that the personality feedback I received will be true in the future" (a second single item manipulation check) all differed significantly by condition ($F(2, 91) = 4.91$, $p = .010$,

η_p^2 = .099, *F*(2, 91) = 90.52, *p* < .001, η_p^2 = .670, and *F*(2, 91) = 134.49, *p* < .001, η_p^2 = .751, respectively). Unexpectedly, participants felt more in control when receiving the exclusion feedback (*M* = 8.13, *SD* = .900) than did participants who received the inclusion feedback (*M* = 7.65, *SD* = 1.112) or no feedback (*M* = 7.23, *SD* = 1.134). They also believed the personality feedback was less accurate when they received the exclusion feedback (*M* = 2.43, *SD* = 1.591) than the inclusive feedback (*M* = 7.65, *SD* = 1.670). This pattern was the same for the item assessing the feedback accuracy in the future, with excluded participants believing the feedback was less accurate (*M* = 2.03, *SD* = 1.326) than did included participants (*M* = 7.29, *SD* = 1.510). Four mood items (the same as in Experiment 1) were analyzed using ANOVA to determine if the manipulation resulted in a main effect of altered mood. No items were found to differ by condition (all less than *F*(2, 91) = .385, *p* = .682, η_p^2 = .009).

The rejection sensitivity scale was also then analyzed via ANOVA. This scale was administered following the Life-Alone feedback manipulation. Eighteen items assessed rejection sensitivity and 18 items assessed anxiety towards rejection. None were reverse coded. Thus, the 18 items for each subscale were summed to create values representing an average sensitivity and average anxiety to rejection. It was found that participants who received the exclusion feedback did not differ on rejection sensitivity (*F*(2, 91) = .697, *p* = .501, η_p^2 = .015), but did significantly differ on how anxious they felt regarding the possibility of rejection (*F*(2, 91) = 3.983, *p* = .022, η_p^2 = .082). This occurred due to excluded participants feeling significantly higher levels of rejection anxiety than did included participants (*M* = 69.800, *SD* = 17.719 vs. *M* = 57.387, *SD* = 17.716, *p* = .017 by Tukey's), but not with participants who did not receive

any feedback (*M* = 64.581, *SD* = 16.327, *p* = .468). There was also no significant difference when comparing the inclusion feedback and control conditions (*p* = .234). This provides mixed support regarding the self-reports of the life-alone manipulation.

To further test the effectiveness of the manipulation, the need to belong scale was examined. First, all reverse coded items were recoded, and a composite need to belong score was developed. An ANOVA was conducted, to test the effect of condition on the need to belong scale, and it was not found to be significant ($F(2, 91) = .73$, $p = .484$), with only one of the individual items that made up the scale ("It bothers me a great deal when I am not included in other people's plans") found to be marginally significant ($F(2, 91) = 2.47$, $p = .091$, $\eta_p^2 = .053$; remaining items all less than $F(2, 91) = 2.35$, $p = .101$).

From the above results, there is limited evidence that the life-alone manipulation impacted participants' self-response data. Analyses on the behavioral dependent variables were still conducted, however, as there may have been demand effects, reactance, or embarrassment associated with the manipulation that kept participants from responding honestly, even though they were still impacted by the manipulation.

Reaction Times in the Lexical Decision Task

Experiment 2 was designed to replicate the methodologies of Experiment 1, by looking at accessibility for different word types (positive inclusive, positive self-descriptive, negative self-descriptive, weapons) after feedback designed to induce feelings of inclusion and exclusion, via false personality feedback. Reaction time scores in the lexical decision task were first screened for possible outliers by creating a mean reaction time total for each category of word for each participant. To control for the

possible effects of extreme outliers, any word reaction time score that was above or below three SD's of the mean were truncated for that word type. The truncated value was the mean, plus 3 SD's. This was done to account for impossibly long responses (e.g., 15 second responses due to a participant taking a break to cough repeatedly) or impossible quick responses (e.g., 15 millisecond responses where the participant hit the key the exact time the word appears without processing the word), and this was done for each participant based on their reaction time averages for each word type. A repeated measures ANOVA was first conducted with each word type being a within subjects factor and condition as the between subjects factor. Word type as a within subjects factor was significant (F (3, 267) = 83.18, $p < .001$, $\eta_p^2 = .483$); additionally, the interaction of word type reaction times by condition was significant (F (6, 267) = 2.17, $p = .046$, $\eta_p^2 = .046$). The between subjects effect of condition was also marginally significant (F (2, 89) = 2.71, $p = .072$, $\eta_p^2 = .057$). Reaction times were then assessed via ANOVA for each word type with condition as the between subjects factor. Of the four word types, only the negative self-descriptive words significantly differed by condition ($F(2, 89) = 3.70$, $p = .029$, $\eta_p^2 = .077$; all others less than $F(2, 89) = 2.003$, $p = .141$, $\eta_p^2 = .043$) as participants in the exclusion feedback condition were significantly quicker at identifying the negative self-descriptive words (M = 781.039ms, SD = 130.830ms) than were participants in the inclusion feedback condition (M = 887.690ms, SD = 163.311ms) or the control condition (M = 905.867ms, SD = 259.555ms). See Table 6 for all reaction time scores.

Table 6. Word type reaction times (in milliseconds) means and standard deviations for participants who were included or excluded during via the Life-Alone task (Experiment 2).

	Life-Alone Condition		
	Future Inclusive	Control (No Feedback)	Future Exclusive
Positive Inclusive Words	**681.37**	**694.36**	**651.18**
	(90.70)	(117.39)	(68.56)
Positive Self-Descriptive Words	**774.50**	**785.73**	**717.76**
	(134.46)	(171.94)	(111.59)
Negative Self-Descriptive Words	**887.69**	**905.86**	**781.04**
	(163.31)	(259.56)	(198.72)
Weapon/Aggression Words	**727.75**	**712.40**	**680.67**
	(151.56)	(128.56)	(86.27)

Note: Standard deviations are in parentheses and Means are in bold. Higher scores represent slower response times.

Tukey HSD posthoc analyses were then conducted, which showed that for the negative self-descriptive words, excluded participants significantly differed from neutral (no feedback) participants (p = .035) and differed marginally from participants receiving inclusive feedback (p = .084). Thus, there is some behavioral evidence that the anticipation of future exclusion may impact accessibility for negative self-descriptive words.

Hot Sauce Aggression Manipulation

The same methodology to measure the amount of hot sauce administered that was used in Experiment 1 was replicated here. It was hypothesized that participants who were given false feedback that their future lives would have little social interaction would administer more hot sauce to the confederate who they had previously heard receive feedback that their future lives would be filled with social connectivity, compared to participants who heard the same positive feedback as the confederate. A univariate ANOVA was conducted to test for the effect of condition and the effect of gender on the amount of hot sauce given, as well as the interaction between gender and condition on the amount of hot sauce administered. It was found that participants who received the negative (exclusion focused) feedback gave a significantly greater amount of hot sauce (M = 8.050 grams, SD = 6.625) than did participants who received inclusion focused feedback (M = 4.710 grams, SD = 3.188) or no feedback (M = 4.871 grams, SD = 3.560) $F(2, 91) = 4.93$, $p = .009$, $\eta_p^2 = .103$ (see Figure 2).

Figure 2.

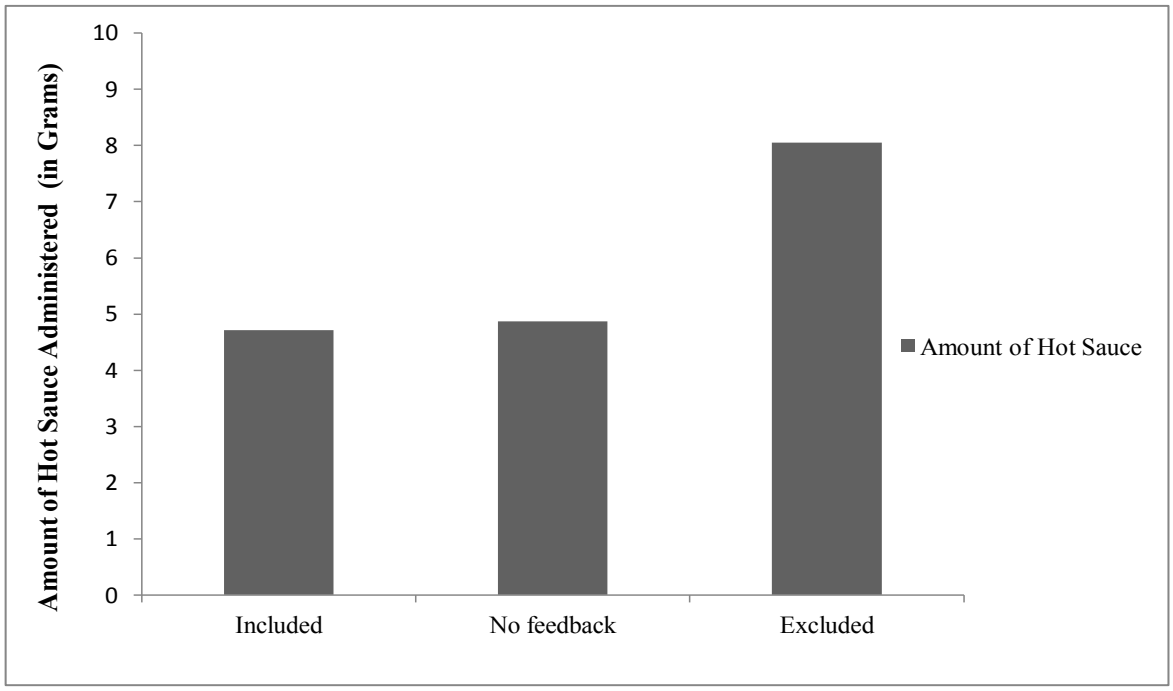

Figure 2. Amount of hot sauce administered (in grams) by condition following the Life-Alone manipulation (Expt. 2).

Tukey HSD posthoc analyses were then conducted, which found that participants in the negative feedback condition differed significantly from the inclusion feedback (p = .017) and the no feedback conditions (p = .025) on how much hot sauce they administered. Thus, it appears that the results of the hot sauce administration task confirm the original hypothesis. For gender, however, the expected difference was not seen, in that there was no main effect of gender on the amount of hot sauce administered (F(2, 91) = 1.71, p = .194, η_p^2 = .020) and the interaction between condition and gender on the amount of hot sauce administered was also not significant (F(2, 91) = 1.12, p = .334, η_p^2 = .025).

Measures of Aggression

Given that the measure of aggression was assessed following the Life-Alone manipulation, for the purposes of the present study, the four aggression subscales were

considered to be measures of state aggression, rather than trait aggression. The aggression scale consisted of four types of aggression, each assessed by multiple items that were summed to create a total score for that type of aggression, with higher scores representing greater amounts of aggression. The four types of aggression measured were anger, hostility, physical aggression, and verbal aggression. A series of univariate ANOVAs were conducted to test for differences in each type of aggression. Anger was not found to differ by condition ($F(2, 91) = .38$, $p = .684$, $\eta_p^2 = .009$), nor did hostility ($F(2, 91) = 1.38$, $p = .257$, $\eta_p^2 = .031$) physical aggression ($F(2, 91) = .25$, $p = .783$, $\eta_p^2 = .006$) or verbal aggression ($F(2, 91) = 1.71$, $p = .187$, $\eta_p^2 = .038$) (see Table 7 for means and standard deviations).

Table 7. State aggression scores for participants who were included or excluded during via the Life-Alone task (Experiment 2).

	Life-Alone Condition		
	Future Inclusive	Control (No Feedback)	Future Exclusive
Anger	**14.90**	**15.19**	**14.00**
	(5.95)	(4.83)	(5.01)
Hostility	**19.74**	**19.68**	**17.73**
	(5.48)	(5.09)	(6.07)
Physical Aggression	**21.32**	**22.10**	**21.00**
	(7.26)	(6.94)	(8.09)
Verbal Aggression	**15.32**	**14.77**	**13.57**
	(4.43)	(3.91)	(3.89)

Note: Standard deviations are in parentheses and Means are in bold. Higher scores represent higher self-reported feelings of aggression.

Regarding the expected differences by gender, and a condition by gender interaction, for anger, neither the main effect of gender ($F(2, 91) = 1.84$, $p = .187$, $\eta_p^2 = .021$) or the interaction ($F(2, 91) = 1.37$, $p = .258$, $\eta_p^2 = .031$) were significant. The same was true for hostility, with neither the main effect of gender ($F(2, 91) = 2.40$, $p = .125$, $\eta_p^2 = .027$) or the interaction of gender and condition ($F(2, 91) = .30$, $p = .743$, $\eta_p^2 = .007$) being significant. For physical aggression, the main effect of gender was significant ($F(2, 91) = 23.27$, $p < .000$, $\eta_p^2 = .213$), with men reporting higher state level endorsement of physical aggression than women, but the interaction of condition and gender was not

significant ($F(2, 91) = 1.73$, $p = .184$, $\eta_p^2 = .039$). The same pattern was found for verbal aggression, with a main effect of gender ($F(2, 91) = 4.11$, $p = .046$, $\eta_p^2 = .046$), with men reporting a higher endorsement of verbal aggression than women, but the interaction of gender and condition was not significant ($F(2, 91) = .69$, $p = .503$, $\eta_p^2 = .016$).

Additional Analyses

All independent and dependent variables were analyzed to see which may be correlated, to then be tested as covariates or mediators/moderators. No items were correlated with the amount of hot sauce that was administered (all less than ($r(88) = .160$, $p = .129$). Similar results were seen when looking at the one word type that significantly different (negative self-descriptive), with no other items being significantly correlated (all less than $r(88) = .181$, $p = .085$). See Table 8 for all outcome and condition correlations.

Table 8. Correlations between all outcome variables and condition (Exp. 2)

	Condit	Hot Sauce	Pos Inc	Pos SDW	Neg SDW	Weap	Anger	Hostile	Phys Agg	Verb Agg	Belong	Esteem	Control	Mean	Rej Anx	Rej Sen
Condition	1															
Amount of Hot Sauce	.278**	1														
Positive Inclusive Words	-.128	-.042	1													
Positive Self-Descriptive Words	-.161	-.096	.770**	1												
Negative Self-Descriptive Words	-.218*	-.028	.802**	.725**	1											
Weapons/Aggression Words	-.153	-.061	.738**	.682**	.655**	1										
Anger	-.070	-.072	-.134	-.065	-.129	-.082	1									
Hostility	-.147	-.056	-.089	.007	-.098	-.017	.372**	1								
Physical Aggression	-.017	.114	.056	.067	-.001	-.021	.382**	.232*	1							
Verbal Aggression	-.175	-.030	-.031	.023	-.042	-.079	.422**	.355**	.404**	1						
Belonging	.134	.032	.007	-.032	-.017	-.068	-.032	-.298**	.046	-.113	1					
Self-Esteem	.066	.160	-.064	-.049	-.105	-.026	-.098	-.209*	-.135	-.205	.453**	1				
Control	-.034	.066	-.062	-.020	-.038	-.062	.014	.021	-.089	.045	-.022	.237*	1			
Meaningfulness of Existence	.099	-.012	.045	.085	.060	-.047	-.029	-.334**	-.122	-.145	.371**	.400**	-.032	1		
Rejection Anxiety	.285**	.128	-.050	-.079	-.136	-.029	.009	.101	-.055	.019	.010	-.094	-.110	.064	1	
Rejection Sensitivity	.021	.114	-.177	-.083	-.086	-.079	-.017	-.164	-.175	.093	.341**	.445**	.091	.332**	-.042	1

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

Brief Discussion

Experiment 2 provided partial confirmation of the original hypotheses. Examination of the self-report data found that none of the scales differed by condition as hypothesized, other than the rejection sensitivity and anxiety scale, with excluded participants reporting significantly higher levels of rejection anxiety (but not sensitivity). This may be due to exclusion not influencing the individual difference of rejection sensitivity as, given the evolutionary basis of exclusion, people are highly sensitive to it regardless of experimental condition. Rejection anxiety, however, may be influenced by condition, as the experience of exclusion is aversive and temporarily results in heightened worry of experiencing exclusion again. The Life-Alone measures that were developed for the purpose of the current study to map onto fundamental needs items assessed in Cyberball (Experiment 1) may have had face validity, but did not tap into the desired construct adequately, as the present findings do no replicate changes in the need to belong as previous research has found. Additionally, participants may have been reactant toward the aversive feedback and thus, made attempts to quell their responses to the exclusion feedback and face valid attempts such as the Life-Alone measure were thus not sensitive enough to pick up any group difference.

Although these findings seem to imply a lack of success for the Life-Alone manipulation, some of the behavioral outcomes measures did confirm the initial hypotheses. Specifically, the negative self-descriptive words did confirm the initial hypothesis that excluded participants would be significantly faster at identifying that word type, compared to participants in the control or inclusion conditions. Further, the hot sauce administration task also confirmed the original hypothesis, in that excluded

participants administered significantly more hot sauce than did participants in the control condition, or the inclusion condition. The original hypotheses regarding possible mediators, as well as possible gender differences in the amount of hot sauce given, were not supported. It may be the case that the feedback was aversive enough that participants felt the need to lash out at the innocent bystander (confederate) and that this urge was a more powerful contributor to the aggressive behavior that was displayed than what would be normally seen in standard aggression paradigms examining gender. Given these mixed findings, there may have been certain demand characteristics in the design such that participants were reacting against the negative feedback they received, by not filling out the questionnaires truthfully for how they actually felt. The item assessing if participants believed the personality feedback to be true supports this, in that participants reported they believed the feedback significantly less when in the exclusion condition. With that, however, they may still (unconsciously) have been affected by the manipulation, which explains why the behavioral measures, which they ostensibly would have less ability to monitor their responses towards, have greater confirmation of the initial hypotheses. Further explanations for the findings in the present study are discussed in the general discussion.

CHAPTER 6

General Discussion

The present study explored the relationship between current feelings of inclusion or exclusion, or the anticipation of inclusion or exclusion, with changes in self-concept, changes in accessibility for aggressive thoughts and negative self-views, and propensity for aggressive behavior. Across two experiments, in which the type of ostracism experienced was manipulated, it was hypothesized that: 1) excluded participants (as compared to included participants) would report less feelings of belonging, control, meaningful existence, positive self-esteem and positive emotions; 2) excluded participants (compared to included participants) would have greater accessibility, as measured via a modified lexical decision task, for aggressive words (compared to positive inclusive words) and for negative self-descriptive words; 3) excluded participants (compared to included participants) would administer greater quantities of hot sauce as a proxy for true aggression; and 4) changes in fundamental needs, changes in accessibility and state-level aggression would mediate the amount of hot sauce that was administered. In Experiment 1, the hypothesis regarding self-reports of belonging, control, meaningful existence, self-esteem and mood was confirmed, in that participants who experienced an exclusionary event via the Cyberball methodology reported lowered feelings of belonging, control, meaningful existence, less positive self-esteem and increased negative mood states. This confirms previous findings using the Cyberball methodology (e.g., Williams, Cheung & Choi, 2000; Zadro, Williams & Richardson, 2001). The hypothesis regarding changes in concept accessibility, however, was not supported. There were no differences in average speed of recognition

for any of the four word types (positive and negative self-descriptors, aggressive words and positive inclusion words) by condition in Experiment 1. The hypothesis regarding the amount of hot sauce administered was supported. This corresponds to the findings in Warburton and colleagues (2006). Excluded participants administered significantly more hot sauce than did included participants. Lastly, the hypothesis regarding possible mediators was not supported. No outcome variable was found to influence the amount of hot sauce administered. Only higher levels of hostility were associated with greater amounts of hot sauce administered, but this finding was not confirmed with a Sobel test for mediation[4].

In Experiment 2, the hypothesis that excluded participants would report less feelings of belonging, control, meaningful existence, lowered self-esteem and mood, was not supported. None of the factors were found to significantly differ by condition. Examining the single items that were significant, the scores were opposite of the expected pattern as well. These findings were highly unexpected, and may imply that newer scale development for generalizable ostracism items are needed. Also, there were no mood items differences between conditions. These findings are contrary to the manipulation checks used by Twenge and colleagues (2001), however this may be due to different measures assessing the same construct being used. Furthermore, unlike Experiment 1, none of the four aggression subscales differed by condition. This may indicate that the manipulation was not successful; however, the rejection anxiety scale did have a significant difference by condition in the expected pattern with excluded participants feeling greater anxiety for rejection, compared to included participants or participants in the control condition. The differences seen in rejection anxiety is a novel

finding, and does give some support to the Life-Alone ostracism task having successfully induced feelings of anticipation for inclusion or exclusion. It may be the case that ostracism is an aversive enough experience that those who experience it develop an immediate (but temporary) increase in anxiety associated with repeating the negative experience. It may also prime (increase accessibility) exclusion and the negative feelings associated with it, which might explain this finding. Furthermore, given the lack of change in rejection sensitivity, it may be the case that exclusion as a whole is aversive enough, and apparent enough that individuals are equally sensitive to experiencing it, and that changes in that aspect of the scale would not be altered by experiencing exclusion or inclusion. In other words, the lack of difference for rejection sensitivity by condition may be in that it is not altered by experiencing exclusion, but is simply a more traditional individual difference that varies across people, and thus, varied equally across all conditions, whereas the anxiety was magnified for those participants who had just experienced exclusion.

For the Experiment 2 behavioral measures, there was a significant difference for the negative self-descriptive words, with excluded participants being significantly faster at identifying that word type, compared to participants in the inclusion condition or the control condition. The other words types, however, did not significantly differ by condition. There was also a significant main effect of condition with the amount of hot sauce that was administered, with excluded participants administering significantly more hot sauce, compared to included participants or participants in the control condition. These findings to correspond to what was seen in Twenge and colleagues (2001).

Given these findings, there is some behavioral support for the Life-Alone manipulation being successful, as some of the hypotheses were supported.

These findings confirm more than just previous findings of Cyberball manipulation checks of the fundamental needs. Specifically, in both Experiments 1 and 2, the hot sauce manipulation functioned as hypothesized, with greater amounts of hot sauce administered for participants who had experienced exclusion. This replicates previous work by Twenge et al. (2001) and Warburton et al. (2006), but also provides for a novel new methodology for administering the hot sauce, via a mock taste-test methodology. This provides support that the manipulations in both experiments were successful, which is especially important when interpreting Experiment 2, where there had been a lack of self-report changes for many of the items. By creating a novel new methodology for administering the hot sauce, and not doing it as a form of direct punishment as seen in previous studies, the present research may be useful for future exclusion or aggression studies that want to have an increased masking of behavioral measures of aggression. Future studies using the same hot sauce administration task, but extending it to other forms or primes for aggression may be useful.

Given the mixed findings in both studies, there are several conclusions that can be drawn from the data. The first of these is that although the Cyberball manipulation in Experiment 1 did not alter the accessibility for the different word types, the self-report data did confirm the majority of the hypotheses. Although the self-report data did not support what was hypothesized in Experiment 2, one of the word types (negative self-descriptors) was impacted by the manipulation. It may be the case, however, that given an altered accessibility task was used compared to the Oberleitner et al. (unpublished

manuscript) measure of accessibility, the task became too easy for the participants, which ameliorated the hypothesized differences. In the work by Oberleitner et al. (unpublished manuscript), comparisons were made in one experiment between positive and negative self-descriptive words and another experiment examined weapons/aggressive words with positive inclusive words. By combining these words types and using all four in the accessibility task in the present study, it may have become too easy for participants to simply select positive versus negative overall, ameliorating the effects. More importantly, the behavioral outcome of the hot sauce administration also confirmed the original hypotheses and demonstrated that exclusion increases aggression across different experimental paradigms.

Second, the hypotheses regarding self-report measures of aggression in both Experiments 1 and 2 were not met, nor were the hypotheses related to gender and the self-report measures of aggression met. There are several explanations for this. Research has shown (Archer, 2004; Bjorkqvist, Osterman, & Lagerspetz, 1994); Eagly & Steffen, 1986) that there are predictable differences in self-reports of aggression and gender, but these may have been ameliorated by the exclusion methodologies used in each experiment, in that the self-report measures were conducted after the manipulation. Thus, it may be the case that aggression as a trait typically results in differences across gender, but when measuring it as a temporary state following inclusion or exclusion, the manipulation results in the gender effects becoming ameliorated because of the effect of the exclusion manipulation. Further, given that Experiment 1 was a direct form of exclusion, and that participants believed the confederate was responsible for that exclusion, it may explain why state hostility was

increased for excluded participants, in that they felt more directly hostile towards the other participant. This explains why that effect is not present in Experiment 2, in that no direct exclusion occurred, and there was no direct person to feel hostile towards, given that the exclusion manipulation was creating ostensibly feelings of anticipation for exclusion. The lack of a target for hostility results in less state-level hostility, as seen in the self-report aggression measures.

Third, the lack of self-report differences in Experiment 2 may have occurred due to participants monitoring their self-report responses to appear unaffected by the manipulation. Participants reported that they felt significantly less belief that the feedback they received in the exclusion condition was true. It may be the case that unconsciously, the participants were still affected by the manipulation, but had enough cognitive control to enable them to monitor their self-report responses to present that they were not influenced by the personality feedback. Since the behavioral data still, for the most part, confirmed the original hypotheses, it is likely that participants were still influenced by the manipulation. In other words, the manipulation may have been successful, but the measurement of self-report data was too easily altered by participants monitoring their responses to appear that they were not influenced by the exclusion feedback.

Limitations and Future Directions

Given the findings in the present study, there are several ways that the present research could be reexamined and extended. First, future research could use the Oberleitner et al. (unpublished manuscript) methodology (i.e., a lexical decision task using only one type of positive and negative category, rather than two, as was used in

the present study) to examine changes in accessibility, given the lack of findings in the present research. It may be the case that the methodology for the present research was too easy for participants and needs to be split up to examine each word type and its opposite pairing more discreetly. Alternatively, using a traditional lexical decision task, with word versus nonword judgments, as well as only examining positive versus negative self-descriptors, and then repeating that again with weapons versus positive inclusive words, may result in the expected changes in accessibility becoming more apparent, as was hypothesized. By creating a more challenging task for the participants, the changes in accessibility may become more apparent. For example, with the go/no-go (GNAT) task (Nosek & Banaji, 2001) the use of comparisons between contrasting concepts is examined, however, there is also an added component incorporating (typically) those comparisons and how positive or negative those concepts are. This is very similar to the more widely used Implicit Association Test (IAT - Greenwald, McGhee, & Schwarz, 1998). With both of these alternatives (compared to the modified lexical decision style task used in the present research), there is the added component that some type of secondary task is used (i.e., deciding the category of word, as well as the degree of positivity associated with it), beyond just the basic categorization. It may be that using one of these types of tasks, or making the task used in the present research, making it more difficult by some means (i.e., using 4 keys to identify each type of word category that was present) would allow for greater diagnostic ability for seeing changes in accessibility.

In both Experiments 1 and 2, the aggression self-report data was only collected after the manipulation. Furthermore, across both experiments, there were only three

main effects with differences in gender across state-level aggression, but these were not associated with a condition by gender interaction. Given the lack of replication regarding gender and aggression, it may have been the case that exclusion and inclusion experiences become an equally powerful influence on both genders, resulting in the lack of differences on those measures. Although Experiment 2 found that men had higher state-level reporting of physical aggression, verbal aggression also showed men having higher levels than women, which is often not seen in previous research (see Eagly & Steffen, 1986, for a review). In future works, by administering the measures both before and after the manipulation, differences between state and trait aggression could be seen, and from this, it could be seen how exclusion specifically impacts self-reported feelings of aggression.

Future studies should seek to create a more generalizable measure of exclusion than is found for the traditional Cyberball manipulation checks (the "fundamental needs"), and that could also correspond equally well to the Life-Alone manipulation or other forms of exclusion. Given the interchangeability in the literature regarding the ramifications of bullying and exclusion, measures that could tap into changes in the self-concept for all of these experiences would be ideal. The Williams' Cyberball items seems to be extremely robust across numerous studies, but the lack of extension and generalizability to other forms of exclusion is a weakness. Furthermore, the title given to these items ("fundamental needs") may be viewed contentiously, as one may argue that numerous aspects of the human psyche are "fundamental" to our existence and healthy psychological functioning (or perhaps even more "fundamental", i.e., breathing). By changing the label, and more importantly, creating items that generalize to any type of

exclusion and inclusion event, future research could more easily compare differences between face-to-face exclusion versus the anticipation of exclusion as seen in the Life-Alone methodology. Related to this, future research could use these new items (as the present research attempted to create in Experiment 2) to compare how exclusion versus bullying may differ, as the literature currently does not differentiate how these are different, as it may be the case that closely related experiences may impact individuals differently.

Also, future research should explore not just the negative consequences of exclusion. Research by Maner, Dewall, Baumeister and Schaller (2007) have found that behavior associated with seeking out new social bonds and affiliations is at times an equally probable outcome following exclusion, as is aggressive behavior. Examinations exploring why differences are seen in individuals in regards to lashing out versus becoming more prosocial, has not been explored. It may be the case that certain personality traits may push the individual towards one or the other of those outcomes. Further, given the lack of distinction between the numerous types of exclusion one may experience (e.g., face-to-face exclusion vs. the anticipation of exclusion vs. bullying) in day to day life, it may be the case that these subtle differences in exclusion or bullying experience may help explain why prosocial or aggressive responses are seen. As numerous researchers have found (e.g., Baumeister, Smart & Boden, 1996, for a review; Twenge & Campbell, 2003) that narcissism can affect how aggressive someone is in response to exclusion, greater attention to the nuances of individuals differences acting in conjunction with different types of exclusion needs to be explored. For example, someone high in narcissism may be more "hurt" by the Life-Alone task, which

gives them direct negative feedback about who they are, rather than the Cyberball task being simply left out of a game, without direct judgment of their personal characteristics.

Additionally, future research would also be advised to create new accessibility paradigms to explore other changes in accessibility beyond just increased aggression or negative self-views. For example, bullying and exclusion have been found to, in some cases, result in the target of the bullying or exclusion acting out aggressively not to others, but to one's self, in the form of cutting or self-harm (i.e., suicide). By examining how words and concepts related to self-harm and self-hate may be changed via exclusion, greater understanding of the full changes in the self can be gained. Furthermore, as mentioned in the previous point, concepts related to helping may also be impacted. It may also be the case that different past experiences, and factors such as depression, may affect what becomes most accessible following exclusion and what behaviors are most likely to occur for the victim of exclusion after the experiences has occurred. Frequency and chronicity of the experiences may also play a role.

Related to this, the Life-Alone paradigm is intended to be administered to traditional college-age students, given the exclusion feedback discusses lack of social connectivity throughout the life-span. Although this is an interesting and useful tool for exploring exclusion in a college-aged population, it may not generalize to the population as a whole, given the majority of humans are older than early 20's. It may be the case that the language needs updated more completely, rather than just upwardly adjusting the ages as was done in the present study (and limiting the upper age limit as was also done in the present study). For example, someone in their late 60's may be able to brush off the negative feedback more easily simply by looking back over their past and

seeing that they had, and continue to have, social connections. By focusing more specifically on end of life experiences and exclusion associated with those experiences, the paradigm may be of greater use to a wider array of ages, making it more generalizable than the current form.

Future research may also be advised to explore the nuance between rejection sensitivity and rejection anxiety. As was seen in Experiment 2, rejection anxiety was affected by exclusion, but not sensitivity. It may be the case that exclusion is an aversive enough experience that everyone has an equal sensitivity to it, especially given the evolutionary consequences for exclusion as was previous discussed (Baumeister & Leary, 1995). However, once one has experienced exclusion, the experience may be aversive enough as to result in the increased anxiety as was seen in Experiment 2, creating a fearfulness that one may go through that experience again. Related to this, exploring how long that increased anxiety is present, may also impact the degree to which changes in accessibility for negative self-views become a chronically accessible concept versus a fleeting change in accessibility.

Given the wide range of findings in the field of exclusion research regarding negative outcomes to exclusion, future studies should attempt to find ways to ameliorate the aversive nature of exclusion. By finding ways, for example, to alter accessibility towards more positive, rather than negative self-views, or prosocial rather than aggressive accessibilities, treatments and interventions may be created that could have a practical applicability to the field. For example, if it is seen that bullying and exclusion both equally can cause aggressive behavior in children or adults, there may be ways to immediately remind children (or adults) of the positive connections they have,

immediately following the ostracism event, and thus, stop the aggressive thoughts and behaviors from occurring. If, for example, one experiences face-to-face exclusion, and is then given an experience similar to the inclusive Life-Alone task, it may be the case that the negative consequences of exclusion are not seen, or at least lessened.

Lastly, the hot sauce administration task used in the present research was a novel new way to present a methodology for participants to act aggressively in the lab. Many forms of lab-based aggression seen in previous ostracism studies (i.e., Warburton et al., 2006) were presented as forms of punishment to participants, for an incorrect response or behavior during a laboratory task, much like the original studies of Stanley Milgram (Milgram, 1963). In this variation, however, aggression and punishment is completely absent during the methodology, in that participants believed they were simply taste-testing a spicy beverage, and that they would create the beverage they would give to the confederate, and receive a drink from the confederate to taste. The lack of over punishment as part of the task may help reduce priming effects for aggression, result in a truer diagnostic ability for in-lab aggression. This is a new approach and could be useful for future studies and thus should be replicated in future work. It may be especially useful to extend this new methodology to other aggression primes, and paradigms outside of exclusion research. By creating a new tool to create and measure aggressive behaviors in the lab, the present studies provide an easy and practical means to study aggression across many domains. For example, research involving implicit biases and discriminatory behaviors may be able to use this new paradigm to study aggression towards outgroups, or groups that the target participants feel derogated toward, similar to research conducted on the shooter effect and weapon

bias against African-Americans (Correll, Urland, & Ito, 2006). Furthermore, this paradigm may be useful to those studying the role of stressors and the relationship between daily hassles and life-stress with aggressive responses, given in non-punitive and easily applicable methodology. Also, given the taste-test methodology, it may of value to researchers exploring aggression and alcohol use, as it provides for a logical continuation of the study and for measuring aggressive behaviors after alcohol is consumed, or after a placebo administration occurs. Relatedly, it would be interesting to explore how gender differences for who is administering the beverage and who is receiving the beverage may result in different amounts of hot sauce being administered. Although no differences in the amount of hot sauce administered was seen when comparing gender in the present study, differences in the amount administered from a male to a female or female to a male was untested. This could be especially relevant, and a useful extension of the hot sauce paradigm created here, when exploring aggression toward women, as is often seen explored in the literature regarding alcohol use and domestic violence. The more natural methodology that takes away the punishment aspect or overt aggression seen in other paradigms may help extend previous findings in this domain.

Conclusions

Although there was mixed support in the findings with what was hypothesized, the present research does add a unique component to the knowledge base regarding the consequences of exclusion, and importantly, adds an entirely new methodology to study exclusion aggression in a laboratory setting, via taste-test methodology. This new methodology for measuring aggression via the taste-testing task can be of practical

value to a wide array of researchers in disparate domains that have aggression as an aspect of study. By seeing what works and what at times does not work as an outcome of exclusion, future research can continue to engage and explore the cognitive and behavioral changes associated with exclusion, and perhaps find new ways to combat the aversive effects. For example, although the Life-Alone manipulation checks did not work, it does provide a groundwork for ways to create exclusion items that could be used for numerous types of exclusion and situations where a person may feel left out or bullied, rather than specific scale items useful with only one type of exclusion (i.e., fundamental needs items and Cyberball). Furthermore, although a causal pathway between exclusion as a stimuli and changes in accessibility altering aggressive behavior was not established in the present research, the mixed findings do provide a springboard to more refined future studies. Given the pervasive nature of exclusion and the universality of the experience, the greater the knowledge base of exclusion becomes, the greater the chance society will have to create methodologies to support individuals who are experiencing exclusion.

CHAPTER 7

Footnotes

1. The present study used a modified lexical decision task, in that there was no comparison between real words versus nonwords, which is required for a true lexical decision task. Although the methodology of the task was presented in a lexical decision style, it could be better interpreted as a single item IAT examining either positive or negative words when in a positive or negative state. Four categories of words were given, with two types being broadly defined as positive, and two types being broadly defined as negative, with all words being real.

2. Analyses regarding gender were not initially hypothesized, however, they were conducted at the request of a member of the dissertation committee.

3. Given that some participants were nontraditional University students, ages were adjusted upwardly in the future-alone condition if the participant was obviously older than early 20's.

4. There are alternative practices that may have been used that could possibly have found mediation. The most common of these is a form of bootstrapping (Preacher & Hayes, 2004) that has been shown to be less stringent than Sobel methodology, due to resampling that is able to boost power within the sample. Given the robust sample size for a Cyberball study, it was felt that Sobel should be adequate and more appropriate, and lead to less possible spurious results. Bootstrapping methodology may be useful for future analyses outside of the present dissertation, where less stringent methodologies (and additional analyses that were not proposed) could be more useful and appropriate.

APPENDIX

Measures

1.Did the game connect to the server quickly?

1 2 3 4 5 6 7 8 9

No Yes

2.Were the pictures in the game clear and recognizable?

1 2 3 4 5 6 7 8 9

No Yes

3.Are you confident in your ability to use a computer?

1 2 3 4 5 6 7 8 9

No Yes

4.How bored did the experiment make you?

1 2 3 4 5 6 7 8 9

Very Bored Not at all Bored

5.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

6.How much would you enjoy playing another game?

1 2 3 4 5 6 7 8 9

Not at all Very Much

7. I felt poorly accepted by the other participants.

1 2 3 4 5 6 7 8 9

Strongly Disagree Strongly Agree

8. 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

9. I felt like an outsider during the Cyberball game.

1 2 3 4 5 6 7 8 9

Strongly Disagree Strongly Agree

10. 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

11. I felt somewhat frustrated during the Cyberball game.

1 2 3 4 5 6 7 8 9

Strongly Disagree Strongly Agree

12. I felt in control during the Cyberball game.

1 2 3 4 5 6 7 8 9

Strongly Disagree Strongly Agree

13. During the Cyberball game I felt good about myself.

1 2 3 4 5 6 7 8 9

Strongly Disagree Strongly Agree

14. 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

15. I felt somewhat inadequate during the Cyberball game.

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

16. I felt that my performance {eg., catching the ball, deciding whom to throw the ball to} had some effect on the direction of the game.

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

17. I felt non-existent during the Cyberball game.

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

18. I felt as though my existence was meaningless during the Cyberball game.

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

19. I felt angry during the Cyberball game.

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

20. I enjoyed playing the Cyberball game.

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

21. I enjoyed the word recognition task (pressing the F or J key).

1	2	3	4	5	6	7	8	9
Strongly Disagree								Strongly Agree

22. Which did you enjoy more?
    - Cyberball or Word Recognition task?

23. Bad	1	2	3	4	5	6	7	8	9 Good
24. Sad	1	2	3	4	5	6	7	8	9 Happy
25. Tense	1	2	3	4	5	6	7	8	9 Relaxed
26. Not- Aroused	1	2	3	4	5	6	7	8	9 Aroused
27. Included	1	2	3	4	5	6	7	8	9 Rejected
28. Angry	1	2	3	4	5	6	7	8	9 Calm

29. Are you male or female? _____
30. What is your age? _____
31. What is your ethnicity? _____
32. To what extent are you currently mad?

1	2	3	4	5	6	7	8	9
Little								Very

33. To what extent are you currently sad?

1	2	3	4	5	6	7	8	9
Little								Very

34. How often do you feel others include you in real life?

1	2	3	4	5	6	7	8	9
Never								Always

35. To what extent would you return the favor and ignore or include select Cyberball players if you had the chance?

1 2 3 4 5 6 7 8 9

Not at All Very Much

36. To what extent would you retaliate against the Cyberball players by administering a noise or electric shock, if you could?

1 2 3 4 5 6 7 8 9

Not at all Very Much

37. To what extent would you "blow your top" if another person made you mad today?

1 2 3 4 5 6 7 8 9

Not at all Very Much

38. To what extent does your interest in the feelings of others seem to matter right now?

1 2 3 4 5 6 7 8 9

Not at all Very Much So

39. To what extent did you feel left out during the Cyberball game?

1 2 3 4 5 6 7 8 9

Not at all Very Much So

40. Do you often feel like an outsider in real life?

1 2 3 4 5 6 7 8 9

Never Always

41. How familiar did the Cyberball game feel to you?

1 2 3 4 5 6 7 8 9

Not at all Very Much So

42. How similar did the Cyberball game feel to your regular social situations?

1 2 3 4 5 6 7 8 9

Not at all Very Much So

43. How much would you like to yell at the other players from the Cyberball game?

1 2 3 4 5 6 7 8 9

Not at all Very Much So

44. How much would you like to meet the players from the Cyberball game?

1 2 3 4 5 6 7 8 9

Not at all Very Much So

45. How angry do you feel toward the experimenter right now?

1 2 3 4 5 6 7 8 9

Not Angry Very Angry

46. How warm did the experimenter seem?

1 2 3 4 5 6 7 8 9

Very Cold Very Warm

47. How angry do you feel toward the other participants?

1 2 3 4 5 6 7 8 9

Not Angry Very Angry

Life-Alone Personality Survey

Extraversion:

1. I feel comfortable around people.

1 2 3 4 5 6 7

strongly disagree strongly agree

2. I keep in the background.

1	2	3	4	5	6	7
strongly disagree						strongly agree

3. I am skilled in handling social situations.

1	2	3	4	5	6	7
strongly disagree						strongly agree

4. I am the life of the party.

1	2	3	4	5	6	7
strongly disagree						strongly agree

5. I don't like to draw attention to myself.

1	2	3	4	5	6	7
strongly disagree						strongly agree

6. I have little to say.

1	2	3	4	5	6	7
strongly disagree						strongly agree

7. I make friends easily.

1	2	3	4	5	6	7
strongly disagree						strongly agree

8. I would describe my experiences as somewhat dull.

1	2	3	4	5	6	7
strongly disagree						strongly agree

9. I know how to captivate people.

1	2	3	4	5	6	7
strongly disagree						strongly agree

10. I don't talk a lot.

1	2	3	4	5	6	7
strongly disagree						strongly agree

Neuroticism

1. I often feel blue.

1	2	3	4	5	6	7
strongly disagree						strongly agree

2. I dislike myself.

1	2	3	4	5	6	7
strongly disagree						strongly agree

3. I rarely get irritated.

1	2	3	4	5	6	7
strongly disagree						strongly agree

4. I am often down in the dumps.

1	2	3	4	5	6	7
strongly disagree						strongly agree

5. I seldom feel blue.

1	2	3	4	5	6	7
strongly disagree						strongly agree

6. I feel comfortable with myself.

1	2	3	4	5	6	7
strongly disagree						strongly agree

7. I have frequent mood swings.

1	2	3	4	5	6	7
strongly disagree						strongly agree

8. I panic easily.

1	2	3	4	5	6	7
strongly disagree						strongly agree

9. I am not easily bothered by things.

1	2	3	4	5	6	7
strongly disagree						strongly agree

10. I am very pleased with myself.

1	2	3	4	5	6	7
strongly disagree						strongly agree

Openness to Experience

1. I believe in the importance of art.

1	2	3	4	5	6	7
strongly disagree						strongly agree

2. I have a vivid imagination.

1	2	3	4	5	6	7
strongly disagree						strongly agree

3. I am not interested in abstract ideas.

1	2	3	4	5	6	7
strongly disagree						strongly agree

4. I avoid philosophical discussions.

1	2	3	4	5	6	7
strongly disagree						strongly agree

5. I tend to vote for liberal political candidates.

1	2	3	4	5	6	7
strongly disagree						strongly agree

6. I do not like art.

1	2	3	4	5	6	7
strongly disagree						strongly agree

7. I carry the conversation to a higher level.

1	2	3	4	5	6	7
strongly disagree						strongly agree

8. I do not enjoy going to art museums.

1	2	3	4	5	6	7
strongly disagree						strongly agree

9. I tend to vote for conservative political candidates.

1	2	3	4	5	6	7
strongly disagree						strongly agree

10. I enjoy hearing new ideas.

1	2	3	4	5	6	7
strongly disagree						strongly agree

Social/Personal/Emotional Intelligence

1. I am able to fit into any situation.

1	2	3	4	5	6	7
strongly disagree						strongly agree

2. I have the ability to make others feel interesting.

1	2	3	4	5	6	7
strongly disagree						strongly agree

3. I know what makes others tick.

1	2	3	4	5	6	7
strongly disagree						strongly agree

4. I get along well with people I have just met.

1	2	3	4	5	6	7
strongly disagree						strongly agree

5. I don't know how to handle myself in a new social situation.

1	2	3	4	5	6	7
strongly disagree						strongly agree

6. I am good at sensing what others are feeling.

1	2	3	4	5	6	7
strongly disagree						strongly agree

7. I know what to say to make people feel good.

1	2	3	4	5	6	7
strongly disagree						strongly agree

Agreeableness

1. I have a good word for everyone.

1	2	3	4	5	6	7
strongly disagree						strongly agree

2. I believe that others have good intentions.

1	2	3	4	5	6	7
strongly disagree						strongly agree

3. I suspect hidden motives in others.

1	2	3	4	5	6	7
strongly disagree						strongly agree

4. I get back at others.

1	2	3	4	5	6	7
strongly disagree						strongly agree

5. I respect others.

1	2	3	4	5	6	7
strongly disagree						strongly agree

6. I accept people as they are.

1	2	3	4	5	6	7
strongly disagree						strongly agree

7. I insult people.

1	2	3	4	5	6	7
strongly disagree						strongly agree

8. I make people feel at ease.

1	2	3	4	5	6	7
strongly disagree						strongly agree

9. I have a sharp tongue.

1	2	3	4	5	6	7
strongly disagree						strongly agree

10. I cut others to pieces.

1	2	3	4	5	6	7
strongly disagree						strongly agree

Social-Confidence

1. I feel comfortable around people.

1	2	3	4	5	6	7
strongly disagree						strongly agree

2. I don't mind being the center of attention.

1	2	3	4	5	6	7
strongly disagree						strongly agree

3. I am good at making impromptu speeches.

1	2	3	4	5	6	7
strongly disagree						strongly agree

4. I lack the talent for influencing people.

1	2	3	4	5	6	7
strongly disagree						strongly agree

5. I often feel uncomfortable around others.

1	2	3	4	5	6	7
strongly disagree						strongly agree

6. I don't like to draw attention to myself.

1	2	3	4	5	6	7
strongly disagree						strongly agree

7. I express myself easily.

1	2	3	4	5	6	7
strongly disagree						strongly agree

8. I have a natural talent for influencing people.

1	2	3	4	5	6	7
strongly disagree						strongly agree

9. I hate being the center of attention.

1	2	3	4	5	6	7
strongly disagree						strongly agree

10. I have little to say.

1	2	3	4	5	6	7
strongly disagree						strongly agree

Need to Belong Scale

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:

1 = Strongly disagree
2 = Moderately disagree
3 = Neither agree nor disagree
4 = Moderately agree
5 = Strongly agree

_____ 1. If other people don't seem to accept me, I don't let it bother me.

_____ 2. I try hard not to do things that will make other people avoid or reject me.

_____ 3. I seldom worry about whether other people care about me.

_____ 4. I need to feel that there are people I can turn to in times of need.

_____ 5. I want other people to accept me.

_____ 6. I do not like being alone.

_____ 7. Being apart from my friends for long periods of time does not bother me.

_____ 8. I have a strong need to belong.

_____ 9. It bothers me a great deal when I am not included in other people's plans.

____ 10. My feelings are easily hurt when I feel that others do not accept me.

Self-Esteem

1. I feel comfortable with myself.

1	2	3	4	5	6	7
strongly disagree						strongly agree

2. I just know that I will be a success.

1	2	3	4	5	6	7
strongly disagree						strongly agree

3. I dislike myself.

1	2	3	4	5	6	7
strongly disagree						strongly agree

4. I seldom feel blue.
   1 2 3 4 5 6 7
   strongly disagree strongly agree

5. I like to take responsibility for making decisions.
   1 2 3 4 5 6 7
   strongly disagree strongly agree

6. I am less capable than most people.
   1 2 3 4 5 6 7
   strongly disagree strongly agree

7. I feel that my life lacks direction.
   1 2 3 4 5 6 7
   strongly disagree strongly agree

8. I question my ability to do my work properly.
   1 2 3 4 5 6 7
   strongly disagree strongly agree

9. I know my strengths.
   1 2 3 4 5 6 7
   strongly disagree strongly agree

10. I feel that I'm unable to deal with things.
    1 2 3 4 5 6 7
    strongly disagree strongly agree

Life-Alone (Experiment 2) new measures to compare to Cyberball

1. I currently feel in control of my life.
   1 2 3 4 5 6 7 8 9
   Strongly Disagree Strongly Agree
2. In most situations, I feel I can control my actions.
   1 2 3 4 5 6 7 8 9
   Strongly Disagree Strongly Agree

3. I feel like I will have less control over my life in the future.
   1 2 3 4 5 6 7 8 9
   Strongly Disagree Strongly Agree

4. I feel like an outsider.
   1 2 3 4 5 6 7 8 9
   Strongly Disagree Strongly Agree

5. I currently feel included by others.
   1 2 3 4 5 6 7 8 9
   Strongly Disagree Strongly Agree

6. I anticipate being popular in the future.
   1 2 3 4 5 6 7 8 9
   Strongly Disagree Strongly Agree

7. The older I get, the less meaning life will have.
   1 2 3 4 5 6 7 8 9
   Strongly Disagree Strongly Agree

8. The actions I take in life feel meaningless.
   1 2 3 4 5 6 7 8 9
   Strongly Disagree Strongly Agree

9. I feel that I will live a full and interesting life.
   1 2 3 4 5 6 7 8 9
   Strongly Disagree Strongly Agree

10. I feel competent at nearly all tasks.
    1 2 3 4 5 6 7 8 9
    Strongly Disagree Strongly Agree

11. When I am older, people will view me as a failure.
    1 2 3 4 5 6 7 8 9
    Strongly Disagree Strongly Agree

12. People see me as a likable person
    1 2 3 4 5 6 7 8 9
    Strongly Disagree Strongly Agree

13. I enjoyed receiving personality feedback.
    1 2 3 4 5 6 7 8 9
    Strongly Disagree Strongly Agree

14. I enjoyed the word recognition task (pressing the F or J key).
    1 2 3 4 5 6 7 8 9
Strongly Disagree Strongly Agree

15. Which did you enjoy more?
    - Personality feedback or Word Recognition task?

16. Bad 1 2 3 4 5 6 7 8 9 Good
17. Sad 1 2 3 4 5 6 7 8 9 Happy

18. Tense 1 2 3 4 5 6 7 8 9 Relaxed
19. Not- Aroused 1 2 3 4 5 6 7 8 9 Aroused
20. Included 1 2 3 4 5 6 7 8 9 Rejected
21. Angry 1 2 3 4 5 6 7 8 9 Calm
22. Are you male or female? _____
23. What is your age? _____
24. What is your ethnicity? _____
25. To what extent are you currently mad?

1 2 3 4 5 6 7 8 9
Little Very

26. To what extent are you currently sad?

1 2 3 4 5 6 7 8 9
Little Very

27. How often do you feel others include you in real life?

1 2 3 4 5 6 7 8 9
Never Always

28. To what extent would you retaliate against the other participant by administering a noise or electric shock, if you could?

1 2 3 4 5 6 7 8 9
Not at all Very Much

29. To what extent would you "blow your top" if another person made you mad today?

1 2 3 4 5 6 7 8 9
Not at all Very Much

30. To what extent does your interest in the feelings of others seem to matter right now?

1 2 3 4 5 6 7 8 9
Not at all Very Much So

31. To what extent did you feel left out during the during today's study?

1 2 3 4 5 6 7 8 9
Not at all Very Much So

32. Do you often feel like an outsider in real life?

1 2 3 4 5 6 7 8 9
Never Always

33. How accurate did the personality feedback feel to you?

1 2 3 4 5 6 7 8 9
Not at all Very Much So

34. How similar did the personality feedback feel to your current life?

1 2 3 4 5 6 7 8 9
Not at all Very Much So

35. How much would you like to yell at the other participant?

1 2 3 4 5 6 7 8 9
Not at all Very Much So

36. How much would you like to interact with the other participant?

1 2 3 4 5 6 7 8 9
Not at all Very Much So

37. How angry do you feel toward the experimenter right now?

1	2	3	4	5	6	7	8	9
Not Angry								Very Angry

38. How warm did the experimenter seem?

1	2	3	4	5	6	7	8	9
Very Cold								Very Warm

39. How angry do you feel toward the other participant?

1	2	3	4	5	6	7	8	9
Not Angry								Very Angry

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ABSTRACT

ACCESSIBILITY FOR AGGRESSSION AND NEGATIVE SELF-VIEWS FOLLOWING OSTRACISM

by

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Advisor: Dr. Rusty McIntyre

Major: Psychology (Social)

Degree: Doctor of Philosophy

Previous research has found that ostracism (being excluded or ignored by others) can cause deleterious effects to one's sense of belonging, control, meaningfulness of life and self-esteem, as well as increasing negative moods. Exclusion has been studied using several methodologies including *Cyberball* and the *Life-Alone* task. Additionally, research has demonstrated that individuals react more aggressively following an ostracism event as compared to an inclusion event. Other research finds that ostracized individuals have greater accessibility for aggressive words, and negative self-descriptive words as compared to individuals who are included. These domains have not, however, been explored together to examine how these concepts may interact. Consequently, there is a need for research regarding the relationship between accessibility of concepts following ostracism and how the changes in accessibility relate to the likelihood of aggressive behavior. It was hypothesized that when excluded, either by the Cyberball or the Life-Alone task, participants would demonstrate greater accessibility (measured via reaction time) for weapon words and negative-self descriptive words , as well as slower reaction times to positive inclusion

words) and positive self-descriptive words. The Cyberball task and Life-Alone task were each used to explore whether increased aggressiveness toward other participants would be seen when the other "participant" (a confederate) had an active role in the exclusion (Cyberball) or when the other participant was merely a bystander to the exclusion (Life-Alone). Experiment 1 found that excluded participants (compared to included participants) had lowered feelings of belonging, control, self-esteem, and that life has meaning. Excluded participants also administered significantly greater amounts of hot sauce than included participants. In Experiment 2, excluded participants (compared to included or control conditions) were significantly faster at identifying negative self-descriptive words, had significantly higher levels of rejection anxiety, and administered significantly greater amounts of hot sauce to another participant. The present research can help explain the aggressive responses seen in real-world cases of exclusion, and why victims of exclusion act aggressively toward both the perpetrators of the exclusion, as well as innocent bystanders who have no direct role in the exclusion.

AUTOBIOGRAPHICAL STATEMENT

David E. Oberleitner

David completed his undergraduate degree from the University of Toledo in 2003, receiving a B. A. in psychology, with a minor in instrumental music. He joined the graduate psychology program at Wayne State University in August, 2004. David's research interests lay broadly in the area of social cognition. Specifically, David is interested in the ramifications of social exclusion, and the ramifications that exclusion has on the individual in real world situations. David also has research interests in attitude consistency and attitude change , accessibility and recall fluency, as well as educational pedagogy. During his time at Wayne State University, David has been a researcher team member in the Social Perception Lab, under the guidance of Dr. Antonia Abbey as well as in the Social Cognition Lab, under the guidance of Dr. Rusty McIntyre. David was awarded the Steven A. Lewis award for independent graduate research in 2011. As part of his time at WSU, David has had the opportunity to teach numerous courses including Social Psychology, Introduction to Psychology, Elements of Psychology, Personality, and several lab courses. David was awarded the 2008 Outstanding Graduate Teaching award from the Department of Psychology for his teaching of independent lectures. He was also awarded the Department Service Award in 2007 for work at WSU, including work with the Psychology Graduate Student Organization, the Graduate Employee Organizing Committee, and departmental work setting up the online research recruitment pool. David will begin working as an Assistant Professor of Psychology at the University of Bridgeport, in August 2012.