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Cyberostracism and Social Monitoring: Social Anxiety's Effects on Reactions to Exclusion and Inclusion Online

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Abstract

Previous research has shown that ostracism – the equivalence of exclusion in a social situation – improves social monitoring abilities, which is a natural practice by individuals that serves to gather information through social cues about what is happening in their social worlds (Pickett, Gardner, & Knowles, 2004). Current knowledge on social anxiety, defined as a chronic fear of social situations that put one in the position of evaluation by others, indicates a hypersensitivity in social monitoring in individuals who experience higher levels of anxiety (Barlow, 2002; Craske, 1999). The current study investigated how those two constructs interacted in a cyberostracism paradigm.

We hypothesized that individuals in an exclusion situation, in contrast to those in an inclusion situation, would show higher levels of social monitoring ability, lower mood, and fewer feelings of satisfaction in relation to Williams' needs. We also predicted that individuals who were higher in social anxiety would show lower levels of social monitoring ability. Results showed that while participants with higher levels of social anxiety had stronger psychological reactions to being ostracized, they did not show decreased social monitoring abilities. However, participants who were high in social anxiety and also in the exclusion situation made different kinds of social monitoring errors based on the affect and intensity of the social cue.

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The tendency to build social bonds is a fundamental part of human nature. Whether it be within a family, at work, or even with the person the next seat over on a public bus, humans have an inclination, even a need, to form and maintain relationships (Baumeister & Leary, 1995). This desire for connection understandably causes one to feel distress when a relationship is not preserved. While traditionally these relationships operate through face-to-face communication, a common medium through which people are now creating and maintaining relationships is the internet. The widespread use of the internet for social communication is evident from recent statistics. Three quarters of teenagers report having a profile on social networking sites such as MySpace and Facebook, with the most common daily use being three to four hours (Pierce, 2009). The 500 million Facebook users spend an estimated total of 700 billion minutes per month on the website, with approximately half of the users logging in at least once every day (http://www.facebook.com/press/info.php?statistics).

With this substantial use, one could predict that this amount of internet communication is having a damaging effect on those who rely on it for social interaction. Some of the most severe effects of internet communication are due to the manipulation of social relationships and cyber-bullying that have been frequently published in popular news media, such as the death of teenager Megan Meier, whose story shows that the consequences of these events have been as devastating as suicide (Dretzin & Maggio, 2008; Maag, 2007). Meier, a thirteen-year-old Missourian, received a MySpace friend request she believed was from a boy named Josh. Weeks later, after maintaining a relationship online, Josh told Meier he no longer wanted to speak to her because he had heard that she was mean to her friends. After he continued to bully her, Meier hung herself in her closet. Later it was discovered that "Josh" was not a real person; A parent of one of Meier's friends had created the fake profile to get revenge on the damaged friendship between her daughter and Meier (Maag, 2007). This tragedy shows that phony

relationships, which are easily created with the anonymity cyberspace provides, can cause serious damage.

While the internet – a virtual channel of communication – may seem like a good way to meet many people and easily converse with them, research has shown that this medium can be as detrimental as it is beneficial with respect to social relationships. Over one to two years of internet use, high-use individuals were found to have higher probabilities of depression and loneliness than those who use it less frequently (Kraut et al., 1998). Research has shown that a possible reason for these effects is the internet's lack of face-to-face communication, which lessens the worth of the social exchanges (Kraut et al., 1998). Despite these harmful effects, internet communication is growing more popular.

With the increase in internet use–specifically, the use of social networking websites to create and maintain social relationships–it is important that its effects continue to be the subject of research. In the current study, we investigated the way being ostracized online affects an individual's ability to successfully interact with the social world, especially in the cases of individuals with social anxiety.

The proposed study investigated the relationship between three concepts: social rejection, social monitoring, and social anxiety. It was hypothesized that these phenomena operate together to yield positive or negative experiences with internet-based relationships, which result in good or bad effects on an individual, respectively. The following sections discuss the three concepts in detail.

Social Rejection

Ostracism

Ostracism, the equivalent of exclusion in a social situation, is a common phenomenon (Williams, 2007). Three components are necessary for ostracism to occur. The first is the

source, or the person who is actively inflicting the ostracism. The second is the target, or the person who is being ostracized. The third is the situation, or the circumstances that surround the act (Williams, 2001).

Ostracism may take three forms; the first and most obvious is physical ostracism, which involves the bodily removal of oneself from another. This type of ostracism is seen when the source leaves the room during a dispute or when the target is put in an isolated jail cell (Williams, 2001). The second type–social ostracism–takes on a more ambiguous nature. In these cases, a target is cut off emotionally. While the target may still be physically present, the source acts as if the person is not. Examples of this kind of ostracism are seen in situations in which the source gives the target the "silent treatment" or "cold shoulder" (Williams, 2001, p. 49). This type is considered vaguer because of the target's continued presence. While the physical type gives a clear signal of ostracism by leaving the situation, social ostracism confuses the source because the target's actions of ostracism are less clear. The motivation of the source is typically more difficult to decipher in social ostracism, due to the fact that the source may act in more confusing ways, such as ignoring the target when he or she is clearly still present (Williams, 2001). However, the third type–cyberostracism–is considered still more unclear. This type will be discussed in further detail at the end of the current section.

Two leading lines of research dominate the field of ostracism research. The first focuses on fundamental need depletion while the second concentrates on ego depletion.

The first ostracism paradigm focuses on the ostracism's effect of decreasing levels of what Williams considers to be four fundamental needs for human beings. The first need is belonging, which has two components: first, that one needs regular, positive contact with others and second, that this contact must be within a consistent and mutual relationship. This need is threatened by ostracism in that it poses the possibility that the target may lose the relationship he

or she has with the source. The second need is self-esteem, which is defined as one's feelings about oneself. Self-esteem is likely to decrease following ostracism because ostracism is usually a signal that the source finds something negative in the target. This negative regard will cause the target to feel less positive about him- or herself. The third need is control, which means that an individual feels that he or she can make an impact on his or her situation. Ostracism often makes the target feel that he or she cannot affect the source's behavior, decreasing their sense of control. The fourth need is meaningful existence, which is an individual's sense that their very self has worth. Ostracism can act as a representation of what the world would be like if the target did not exist, causing the individual to imagine that situation and even think as catastrophically as about their own death (Williams, 2001).

Williams' laboratory manipulations of ostracism are based on forcing the participant into experiential rejection situations. One key instrument is a computer program called Cyberball, which places the participant into a virtual ball-toss game. The game involves the participant and three other "players" – people whom the participant is deceived to believe are real but whom in fact are only products of the program. Participants are either included by the other players – meaning they receive the ball equally often as the other players – or excluded – meaning the other players throw the ball to everyone but the participant (Williams, 2006). These studies have produced results that show that participants who are ostracized in this way demonstrated substantial decreases in psychological well-being, as shown by a decrease in levels of satisfaction of the four fundamental needs, not only when they believe that they are being rejected by actual people but also when they are aware that the rejection is coming from a computer (Zadro & Williams, 2001; Zadro, Williams, & Richardson, 2004).

This second leading line of ostracism research, pioneered by Baumeister, posits that social ostracism shows drastic effects on behavior. Additionally, studies by Twenge, Catanese,

and Baumeister showed that ostracism leads to a lack of emotion (2003). The few times emotion was found to be significant in results, the construct did not intervene between ostracism and the resulting behavior in the target. This approach also states that the main effect of ostracism is ego depletion, which is defined as an impermanent decrease in one's ability and readiness to actively participate in decision-making. The basis of the ego concept was created by Freud, who believed that the ego needed a certain amount of energy to work and to stay strong against the desires of the id and the superego (Baumeister, Bratslavsky, Muraven, & Tice, 1998). This ostracism paradigm is commonly applied to the source of ostracism rather than the target. A study by Ciarocco, Sommer, and Baumeister provided evidence that the participants who ostracized a confederate showed ego depletion as demonstrated by a lesser willingness to persevere on an anagram problem and a decreased performance on a task that required them to squeeze a handgrip for as long as possible (2001).

In contrast to Williams' method, Baumeister induces ostracism by having participants believe that they will spend the rest of their lives alone. Participants first complete a personality measure, which is only actually evaluated on the basis of extraversion. This evaluation is done to keep participants from becoming suspicious about the true nature of the study. After the personality measure, participants are randomly assigned to one of three groups, but are told that their group assignments reflect their results on the personality measure. The three groups are: future alone condition, in which the participant is told that he or she is destined to spend his or her life alone; the future belonging condition, in which the participant is told that his or her future will include many satisfying relationships; and the misfortune condition, in which the participant were told that their future is bleak but that he or she will not spend it alone (Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007.).

The present study focused on Williams' model for two reasons. First, his paradigm matches the current study's interest in the target rather than the source of ostracism. Second, his ostracism paradigm more closely fits the *in vivo* type of ostracism being studied, meaning that the participants experience rejection immediately rather than engaging in imagined future rejection. An experiential study was crucial to our results because of the instant gratifying nature of our technologically advanced world. People can view email, Facebook, Twitter, and text messages within seconds of receiving an update. As this study aimed to measure the effects of these popular ways of communicating, it was essential that the ostracism measure mimic them as closely as possible.

Cyberostracism. Cyberostracism includes all types of ostracism that occur over media that do not allow for either the source or the target to be physically present. Examples of these media include emails, telephone calls, social networking websites, online chat rooms, and text messages. Williams concludes that cyberostracism is the most ambiguous of the three types of ostracism for targets due to the fact that a target cannot attribute the reason for the ostracism to any sure cause. For instance, the source could in fact be ignoring the target, but he or she could also have stepped away from the communication device, rendering the lack of response accidental (Williams, 2001). This questioning of the motives for ostracism is one of the facets that makes ostracism so harmful for targets. In fact, Rintel & Pittam (1997) showed that individuals who communicate over the internet are likely to assume they were being ignored. This may be because internet communication removes many of the most common social cues and therefore does not allow for a clear attribution of the source's reason for ostracism. Cyberostracism also creates ambiguity by its deficiency in social cues that individuals typically use to make social judgments – auditory and facial cues (Williams, Cheung, & Choi, 2000).

Further cyber communication studies have shown that ostracism by text message is substantially harmful even though the social cues needed to determine the ostracism were not present. Participants also did not know for sure that their partner was truly ostracizing them. However, participants reacted negatively simply because the confederate they were texting did not answer them at all over an eight-minute period (Smith & Williams, 2004). This research supports both the ambiguity of cyberostracism and also its damaging effects. As text messages very closely resemble internet communication through lack of face time and therefore a deficiency in social cues, one could predict that ostracism over internet communication may have similar effects.

Social Monitoring

Another component to ostracism is the way in which people react in response to being rejected. Social monitoring is a natural practice by individuals that serves to gather information about what is happening in their social worlds (Pickett & Gardner, 2005). In order to socially monitor one's environment, one must pay attention to social cues. Social cues range from things as obvious as a slap in the face to things as subtle as such as tone of voice or eye contact. These social cues indicate meanings and intentions, and to successfully communicate, the receiver of these cues must correctly interpret them. If one is unable to do so, these mistakes may result in negative social consequences – most severely, ostracism (Gardner, Pickett, Jefferis, & Knowles, 2005). While social monitoring is an everyday, common practice, individuals engage in it more often after an ostracism situation in order to attempt to regain the social capital the individual has lost (Pickett & Gardner, 2005). The following sections will discuss two theories of social monitoring.

The Sociometer Hypothesis

In order to explain how people both manage and avoid social exclusion, Leary, Tambor, Terdal, & Downs (1995) propose the sociometer hypothesis. This theory states that the sociometer serves as a mechanism to determine an individual's extent of inclusion or exclusion at any given moment. The sociometer's monitoring allows for one to decide the most effective ways to either maintain one's included state or make changes in order to escape exclusion. Leary et al. suggest that the key indicator in the sociometer is self-esteem, which is a construct that describes an individual's emotions toward him- or herself (1995). While one may have dispositionally high or low self-esteem, the self-esteem changes detected by the sociometer are those that are due to the individual's situation, as this type of self-esteem changes regularly and therefore allows for more accurate monitoring than dispositional self-esteem, which remains more stable.

Self-esteem contains both a cognitive element and an affective element. Self-concept involves the beliefs one holds about oneself, a cognition without an emotional component. Self-esteem, however, is built upon self-concept and the feeling that self-concept evokes. If one has low self-esteem, one not only sees oneself in a bad light, but also feels the negative implications of that belief. In regards to the sociometer hypothesis, if one's situational self-esteem is high, it is likely that one is in an inclusion situation. Conversely, if one is experiencing exclusion, odds are that one's self-esteem is low. As high self-esteem counteracts negative feelings such a stress and depression, one is motivated to achieve inclusionary status because of its effects on self-esteem (Leary, Tambor, Terdal, & Downs, 1995).

The Social Monitoring System (SMS)

Pickett and Gardner (2005) propose a complementary model called the social monitoring system that integrates the sociometer into a more detailed mechanism. Similar to the aforementioned model, the social monitoring system's purpose is to call attention to social cues

that will direct an individual to inclusion. The SMS, however, comes into play only after the sociometer indicates that an individual's inclusionary status is low. This system allows an individual to assess his or her present inclusionary status based on the sociometer's reading and then use the SMS to call attention to social cues in the environment. If his or her sociometer declares his or her inclusionary status as satisfactory, the social monitoring system is not activated. However, if he or she evaluates it as unsatisfactory, the social monitoring system is set in motion, prompting the individual to scan the environment for types of social cues and chances to be included. Pickett and Gardner propose that this process will result in a successful social world for the individual.

The first stage of the model of belonging regulation, which is based on Pickett and Gardner's social monitoring system, illustrates initial sociometer activity. First, one assesses his or her present inclusionary status. Next, one observes his or her social environment in order to evaluate social cues that facilitate inclusion. Lastly, one uses those cues to find opportunities to make social connections and, therefore, to actively increase his or her inclusionary status (Pickett & Gardner, 2005). Both the sociometer and the social monitoring system are more active when one feels threats of exclusion; thus, heightened activity will bring more attention to social cues that will allow the one to determine the best way to remain or become included. If one is successful in interpreting these cues, one is more likely to be included (Gardner, Pickett, Jefferis, & Knowles, 2005).

Research has shown that people with low self-esteem–both situational and dispositional–are more apt to sense threats to their inclusionary statuses, whether those threats are actual or falsely assumed (Pickett, Gardner, & Knowles, 2004). As low self-esteem can be both a cause and effect of rejection, these results can and have been generalized to individuals with rejection experiences. It is important to note that these sensed threats are often not obvious, especially in

situations in which the social interaction is occurring through cyberspace. These cues that are presented online are subtler because they do not provide the nonverbal information, such as facial expression and vocal tone, needed to interpret someone's actions. This lack is one of the reasons that when ostracism occurs online, the cues given in relation to it are not easily interpreted. However, following a rejection situation, the ability to interpret nonverbal cues in general has been shown to increase (Pickett, Gardner, & Knowles, 2004).

Signal detection measures have indicated that participants who wrote about an exclusion experience were significantly more correct in identifying a Duchenne smile (real) from a non-Duchenne smile (fake) than were participants who wrote about an inclusion situation or what they had done the previous evening (Bernstein, Sacco, Brown, Young, & Claypool, 2008). Subjects who experienced ostracism situations that were specifically related to social situations rather than non-social situations were also more accurate in detecting emotions in facial expressions (Pickett et al., 2004). These results imply that those who experience rejection are more likely to pay attention to social cues, therefore correctly determining the cues' true meanings, which will hopefully increase their inclusionary status (Bernstein et al., 2008).

The current study further investigated this increase in social monitoring ability in terms of a more specific cyberostracism situation. In order to measure social monitoring accuracy, participants were asked to interpret photos of facial expressions varying in intensity and emotion. Facial expressions are a vital social cue that people observe in others in order to determine how they themselves should act (Salovey & Mayer, 1990). The stimulus of a facial expression has been used to represent a social cue in previous studies in social monitoring (Gardner, Pickett, Jefferis, & Knowles, 2005; Neidenthal, Halberstadt, Margolin, & Innes-Ker, 2000; Bernstein et al., 2008). The current study employed the DANVA2, which was effectively used in Gardner et al.'s 2005 study.

Social Anxiety

Unfortunately, being highly attuned to social cues does not necessarily result in a more successful social world. Devoting an excessive amount of attention to social monitoring is a common symptom of social anxiety. Classified as the third most common mental disorder in the United States population, social anxiety is defined as a chronic fear of social situations that put one in the position of evaluation by others (Barlow, 2002; Craske, 1999). Individuals with social anxiety often fear that they will embarrass themselves in front of other people or that they will be scrutinized. They doubt their ability to make a good impression on others. Due to these fears, socially anxious individuals are likely to avoid social events that are likely to provoke the disorder's symptoms (American Psychiatric Association, 2000). While the most common fear reported in those with social anxiety is public speaking, other situations that cause distress include eating in public, attending parties, speaking in group meetings, going on dates, and starting conversations (American Psychiatric Association, 2000; Barlow, 2002).

However, social anxiety is more than a basic fear of being negatively evaluated. Individuals with social anxiety see themselves more negatively, are more likely to remember unsuccessful social situations and blame themselves for the outcome, and are more prone to perceiving social events in a negative way, even when they are wrong (Craske, 1999). Rather than a contributing source to the social world, a person with social anxiety sees himself or herself as a powerless object placed in the middle of a social situation (Clark & Wells, 1997). While those who are socially anxious realize that their fears are unreasonable and exaggerated, their own thoughts and actions keep them as victims to the anxiety.

Barlow (2002) presents a model of social anxiety that follows the information-processing view. Under this model, Barlow proposes a system that a socially anxious individual moves through when he or she encounters a possible rejection situation. The individual is first

presented with a stimulus that he or she must classify as either social or nonsocial. If the stimulus is social, the individual will turn his or her awareness to that stimulus. Due to an attentional bias, those with social anxiety will be more likely to interpret a stimulus as social. The second stage requires the individual to determine whether the stimulus is hostile. Due to an interpretation bias, individuals with social anxiety will tend to label the stimulus as hostile. The individual will then act as if the stimulus is hostile, later determining whether the stimulus was in fact a threat to his or her social well being. A selective memory bias will make it more likely that the individual will deem his or her negative interpretation to be correct (Barlow, 2002). Due to this inclination to assume adverse stimuli, social anxiety may act as a moderator in affecting an individual's accuracy in social monitoring. The current study suggested social anxiety as a possible factor in whether both an individual's sociometer and social monitoring system properly function, therefore resulting in either successful or unsuccessful social monitoring.

Present Study

The current study investigated the connection between these three concepts: ostracism, social monitoring, and social anxiety. While studies have examined all three previously, both separately and in a range of combinations, there is a gap in the literature with respect to how social anxiety moderates the relationship between ostracism and social monitoring.

By manipulating participants' exclusion or inclusion status through a series of Facebook experiences, the proposed study examined differences in an individual's social monitoring abilities in each manipulated condition and how these differ as a result of social anxiety levels. It was predicted that following either an inclusionary or exclusionary situation, and depending on the participant's level of social anxiety, the participant would perform differently in relation to social monitoring as measured by the ability to interpret facial expressions. Specifically, it was hypothesized that participants in the exclusion condition, whether high or low in social anxiety,

would perform more accurate social monitoring. Additionally, it was predicted that participants who were lower in social anxiety would perform more accurate social monitoring than participants who were higher in social anxiety, regardless of their condition assignment. Finally, it was predicted that social rejection would decrease an individual's mood as well as their sense of satisfaction of each of Williams' four fundamental needs.

Method

Participants

In the current study, 82 students from a midwestern university were recruited through an online research system. Participants were given credit in their general psychology classes through the Research Experience Program for participating. Analyses were conducted on data collected from 80 participants, with an exception of DANVA2 data, which was collected from only 75 participants due to DANVA2 program error. The following demographic information reflects that of the total 80 participants. The majority of participants were eighteen years old (M = 18.79, SD = 1.08) within an age range of eighteen to twenty-two, with a sex division of 48 women and 32 men. A majority of participants self-reported their race as Caucasian (82.5%). Participants were evenly divided between the two conditions with 39 participants in the inclusion manipulation and 41 in the exclusion manipulation. For more detailed demographic information, please see Table 1.

Measures

SAS – A (Social Anxiety Scale – Adolescents). The SAS-A measures an individual's level of social anxiety on three different subscales: (a) Social Avoidance and Distress General Scale (SAD-General), which measures general social anxiety, (b) Social Avoidance and Distress, Specific to New Situations or to Unfamiliar Peers Scale (SAD-New), which measures social anxiety in new situations, and (c) Fear of Negative Evaluation (FNE). The questionnaire

contains twenty-two items–eighteen that are self-descriptions and four that are filler items. Participants rate each item on a five-point Likert scale ranging from 1 (Not at all) to 5 (All the time) in order to indicate how much each item describes themselves. The measures' subscales have shown Cronbach's alpha scores ranging from .69 (SAD-General) to .78 (SAD-New) to .86 (FNE) (La Greca & Lopez, 1998).

Manipulation Check. Participants answered questions about what they viewed in the Facebook screenshots and video. These questions served to make sure participants were both paying close attention to the stimuli they were experiencing and that they understood the mechanisms of Facebook. Please see Appendices E and F for the exclusion and inclusion condition manipulation checks, respectively.

DANVA 2 (Diagnostic Analysis of Nonverbal Accuracy 2). The DANVA 2 assesses an individual's accuracy in facial expression interpretation. Twenty-four male and female faces, each of which demonstrates one of four emotions (happiness, anger, fear, and sadness) of either high or low intensity through their faces. After viewing each face for one second, participants are instructed to indicate which of the four emotions the face had displayed. Accuracy on the test is determined by the percentage of correctly identified facial expressions out of the twenty-four items. The DANVA2 scores also provide information on the type of error each participant made, including the number of errors on high or low intensity faces and the number of each of type of misattribution errors (e. g., the number of times a participant incorrectly labeled a happy face as angry). Twenty errors are possible: eight by intensity and twelve by affect. This test has demonstrated a .78 Cronbach alpha in college students with a .83 test-rest reliability (Baum & Nowicki, Jr, 1998).

PANAS (Positive and Negative Affect Schedule). The PANAS is a self-report measure that assesses individual's mood at a particular point in time. The measure may be used to

determine an individual's immediate mood or their most normative mood. In the current study, participants were instructed to "indicate how strongly you feel each feeling or emotion right now–that is, at the present moment" (Watson, Clark, & Tellegen, 1988), specifying a test of the participants' moods immediately following the experimental condition.

Twenty items–ten of which represent positive mood, ten of which represent negative mood–are presented in the form of emotions. The individual is instructed to rate each item on a scale of 1 (very slightly/not at all) to 5 (extremely) in order to indicate how much they associate with that emotion. This test has shown a Cronbach's alpha ranging from .86 to .90 in the positive affect subset and a range of .84 to .87 in the negative affect subset (Watson & Clark, 1988). Please see Table 8 for the current study's Cronbach's alpha values.

Williams' Fundamental Needs Scale. The items in this scale measure the extent to which an individual feels the loss of four basic needs that ostracism often diminishes: belongingness, control, self-esteem, and meaningful existence. The needs are measured on four different subscales that consist of emotion words: (a) Need to Belong subscale, which measures an individual's current desire for belonging, e.g.: "I felt 'disconnected'", (b) Meaningful Existence subscale, which evaluates an individual's current evaluation of how much their life is worth, e.g.: "I felt non-existent", (c) Need for Control subscale, which determines how much the individual currently feels that they can change their situation, e.g.: "I felt I was unable to influence the action of others", and (d) Self-Esteem, which measures an individual's current feeling about him- or herself, i.e.: "I felt good about myself". Subscales (a)-(c) all reported a Cronbach's alpha of greater than .73, while subscale (d) scored a Cronbach's alpha of .63 (Williams et al., 2002). Individuals indicate their degree of agreement with each statement on a five point Likert scale, with 1 being *not at all* and 5 being *extremely* (Sommer, Williams,

Ciarocco, & Baumeister, 2001). Please see Table 8 for the current study's Cronbach's alpha values.

Participants completed this scale both for their current needs–how they felt immediately following the experimental condition–and for their retrospective needs–how they recalled feeling during the experimental condition (e. g., while being excluded or included). Please see Appendix F for this questionnaire.

Experimental Stimuli

Through the computer program Jing ©, which allows the user to take screenshots and video of activity on a computer screen, two parallel experimental conditions were created to model exclusion and inclusion on Facebook.

Six Facebook profiles were created: an excluded person (Alex Jones), an included person (Jordan Lornell), a relationship partner for Alex (Casey Holakowski), a relationship partner for Jordan (Reese Zurowski), and two additional people to act as friends of both Alex and Jordan (Chris Iskietz and Sam McDowell). All profiles contained non-gender-specific names and profile pictures of either nature scenes or animals in order to remove any gender or racial biases. Experimenters manipulated the six profiles in order to create scenarios to capture through videos and images.

Five examples of either exclusion or inclusion on Facebook were created for each condition: (1) a private Facebook message, (2) a status comment, (3) a wall post, (4) a change in relationship status, and (5) a conversation on Facebook chat. In the exclusion condition, the examples were as follows: (1) a negative private message, (2) a negative status comment, (3) a wall post that does not receive a response, (4) a change of a relationship status from "in a relationship" to "single", and (5) a conversation on Facebook chat that is initiated but not

answered. In the inclusion condition, the examples were as follows: (1) a positive private message, (2) a positive status comment, (3) a wall post that receives a response, (4) a change of a relationship status from "single" to "in a relationship", and (5) a conversation on Facebook chat that is initiated and answered. Please see Appendix A for models of inclusion examples and Appendix B for models of exclusion examples.

Procedure

After filling out an informed consent sheet, participants were seated at a row of computers. Each computer station was separated from the next by two foam boards, one of either side of the computer. Prior to the manipulation, participants completed the SAS- A. Participants were then randomly assigned either to the included condition or the excluded condition.

In both the inclusion and exclusion situations, participants viewed screenshots and a video of different common Facebook interactions. Participants were instructed to imagine that what they were viewing was in fact their own Facebook page and to try to assess how they would feel were this condition true, in order to create a more *in vivo* experience. Please see Appendix C for the instructions the participants were given. During the experimental manipulation, participants answered questions about what they saw on each profile in order to serve as a manipulation check.

Following the inclusion/exclusion manipulation, participants completed the DANVA2, the PANAS, and Williams' four needs scale. After they finished, participants were thanked and given a thorough debriefing.

Results

Social Anxiety Levels

Participants' social anxiety levels were assessed via the subscales of the SAS-A: SAD-General, SAD-New, and FNE. While the creators of the SAS-A advise the use of a total score compiled of subscale scores in a clinical setting, they instruct that subscale scores should be used in research-oriented situations (La Greca, 1999). As the current study was interested in participants' anxiety in a non-clinical sense, subscales provided our basis for determining a participant's level of social anxiety.

In order to determine whether a person is socially anxious or not, the SAS-A employs cutoffs. These cutoffs, however, are for clinical use and therefore were not used to determine groups in the present study. Performing a median split on the total SAS-A score as well as on each of the SAS-A subscales resulted in relatively equal groups in terms of the division between high and low levels of social anxiety. Please see Tables 2 and 3 for specific frequencies in reference to both social anxiety levels and social anxiety divisions, and Table 4 for social anxiety divisions according to experimental condition.

Manipulation Check

Participants successfully answered the questions posed in the manipulation check in both the exclusion and inclusion conditions, indicating that participants took careful notice to the stimuli they were experiencing as well as that they understood the mechanisms of Facebook. Please see Appendices C and D for inclusion and exclusion manipulation checks, respectively.

Mood and Williams' Needs Satisfaction

PANAS. Participants' PANAS scores were analyzed in order to determine their moods directly after the experimental manipulation. A 2 (Exclusion, Inclusion) x 2 (Positive Affect Total Score, Negative Affect Total Score) *ANOVA* showed that the condition manipulation showed no significant effects on participants' moods as measured by the PANAS, according to

both the positive affect and negative affect subscales, respectively (F (1, 68) < .68, p > .41). Please see Table 5 for more detailed descriptives.

WFNS. Participants' responses on the WFNS were analyzed in order to determine whether participants experienced a decline in the four basic needs outlined in Williams' ostracism theory. Please see Table 6 for more detailed descriptives.

Current needs. A 2 (Exclusion, Inclusion) x 3 (Current Belonging, Current Meaningful Existence, Current Need for Control) *ANOVA* showed that experimental condition had no effect on participants' current need satisfaction (F (1, 72) < 1.37, p > .25).

Retrospective needs. Contrary to the current needs, all of participants' retrospective need levels differed depending on which condition manipulation they had experienced. A 2 (Exclusion, Inclusion) x 4 (Retrospective Belonging, Retrospective Self-Esteem, Retrospective Meaningful Existence, Retrospective Need for Control) *ANOVA* indicated that participants in the exclusion condition reported significantly lower levels of all four of Williams' needs: belonging (F (1, 72) = 143.91, p = .000, p^2 = .65), self-esteem (F (1, 72) = 153.43, p = .000, p^2 = .66), meaningful existence (F (1, 72) = 193.71, p = .000, p^2 = .71), and need for control (F (1, 72) = 82.91, p = .000, p^2 = .52).

Social Monitoring

Three 2 (Exclusion, Inclusion) x 2 (High [General, New, FNE] Anxiety, Low [General, New, FNE] Anxiety) *MANOVA*s with Total Errors, Happy Errors, Sad Errors, Angry Errors, Fearful Errors, High Intensity Errors, and Low Intensity Errors as dependent variables indicated that no interaction effects were found for experimental manipulation condition on any of the SAS-A subscales analyzed with social monitoring abilities as measured by the total number of errors committed on the DANVA2 (F (1, 66) < .56, p > .46). Main effects were similarly not

found based on condition for social monitoring abilities as measured by the total number of errors for affect (F (1, 66) < 2.83, p > .10) or for intensity (F (1, 66) < 1.51, p > .223).

No main effects were found for social anxiety level – according to any of the three subscales – on social monitoring abilities as measured by total number of errors made on the DANVA2 (F (1, 66) < 1.36, p > .25). Main effects were similarly not found for social anxiety level on social monitoring abilities as measured by the total number of errors for affect (F (1, 66) < 2.44, p >.12) or for intensity (F (1, 66) < 1.84, p > .18).

Exploratory Analyses

Exploratory analyses were conducted in order to see whether any differences existed in social monitoring depending on condition and social anxiety level when the construct was analyzed through the type of errors made on the DANVA2 rather than the total number of errors committed. These analyses examined whether participants made different errors depending on the affect and intensity of the facial stimuli presented.

Condition effects. Two *ANOVAS* were run to determine whether experimental condition had an effect on the type of errors participants made; the first a 2 (Exclusion, Inclusion) x 8 (Happy High Intensity, Sad High Intensity, Angry High Intensity, Fearful High Intensity, Happy Low Intensity, Sad Low Intensity, Angry Low Intensity, Fearful High Intensity) *ANOVA* and the second a 2 (Exclusion, Inclusion) x 12 (Happy for Sad, Happy for Angry, Happy for Fearful, Sad for Happy, Sad for Angry, Sad for Fearful, Angry for Happy, Angry for Sad, Angry for Fearful, Fearful for Happy, Fearful for Sad, Fearful for Angry) *ANOVA*. Participants who were excluded were more likely to make errors on happy facial stimuli of high intensity (M = .03, SD = .16) than participants who were included (M = .000, SD = .000) (F = (1, 64) = 4.77, p = .03, p^2 = .06). Participants who were included were marginally more likely to make errors on angry facial

stimuli of high intensity (*M* = .24, *SD* = .49) than participants who were excluded (*M* = .08, *SD* = .28) (*F* (1, 64) = 2.88, *p* = .095, p^2 = .04). All other results were not significant.

Social anxiety effects.

General social anxiety. The same 2 x 8 and 2 x 12 *ANOVAS* were run, with the exception of the first fixed factor being 2 (High General Social Anxiety, Low General Social Anxiety) rather than 2 (Exclusion, Inclusion) to analyze whether participants made different types of errors depending on their level of general social anxiety. Regardless of condition assignment, participants who were higher in general social anxiety were also more likely to commit errors on happy facial stimuli of high intensity (*M* = .03, *SD* = .19) than participants who were lower in general social anxiety (*M* = .000, *SD* = .000), (*F* (1, 64) = 4.77, *p* = .03, p^2 = .06). All other results were not significant.

New situation anxiety. The same 2 x 8 and 2 x 12 *ANOVAS* were run, with the exception of the first fixed factor being 2 (High New Situation Anxiety, Low New Situation Anxiety) rather than 2 (Exclusion, Inclusion) to analyze whether participants made different types of errors depending on their level of new situation anxiety. Participants who reported lower new situation anxiety were more likely to misattribute fear to sad faces (*M* = .57, *SD* = .09) than participants who reported higher new situation anxiety (*M* = .50, *SD* = 1.3) (*F* (1, 64) = 4.38, *p* = .04, p^2 = .06). All other results were not significant.

Fear of negative evaluation. The same 2 x 8 and 2 x 12 *ANOVAS* were run, with the exception of the first fixed factor being 2 (High Fear of Negative Evaluation, Low Fear of Negative Evaluation) rather than 2 (Exclusion, Inclusion) to analyze whether participants made different types of errors depending on their level of fear of negative evaluation. Marginally, participants with lower scores in fear of negative evaluation were more likely to label sad faces

as happy (M = .09, SD = 29) than participants with higher scores in fear of negative evaluation (M = .000, SD = .000) (F (1, 64) = 3.44, p = .07, p^2 = .05). All other results were not significant.

Condition and social anxiety interaction effects.

General social anxiety. Two *MANOVAs* were conducted in order to determine whether participants made different types of errors depending on both their general social anxiety level and their experimental condition assignment. The first was a 2 (Exclusion, Inclusion) x 2 (High General Social Anxiety, Low General Social Anxiety) *MANOVA* with Happy High Intensity, Sad High Intensity, Angry High Intensity, Fearful High Intensity, Happy Low Intensity, Sad Low Intensity, Angry Low Intensity, and Fearful Low Intensity as dependent variables. The second was a 2 (Exclusion, Inclusion) x 2 (High General Social Anxiety, Low General Social Anxiety) with Happy for Sad, Happy for Angry, Happy for Fearful, Sad for Happy, Sad for Angry, Sad for Fearful, Angry for Happy, Angry for Sad, Angry for Fearful, Fearful for Happy, Fearful for Sad, and Fearful for Angry as dependent variables.

A significant interaction was found between general social anxiety level and experimental condition on misattributing happiness to fearful faces (F (1, 60) = 7.21, p = .01, p^2 = .09). Simple effects tests showed that participants with higher anxiety were more likely to misinterpret fear as happiness when excluded than participants with lower anxiety (F (1, 71) = 3.94, p = .05) and than when they were included (F (1, 71) = 5.42, p = .02).

A marginally significant interaction was also found between general social anxiety level and experimental condition on misattributing sadness to fear (F (1, 60) = 3.54, p = .06, p^2 = .05). Simple effects tests indicated that participants with lower anxiety were more likely to misinterpret fear as sadness when excluded than when included (F (1, 71) = 3.85, p = .05).

A significant interaction was also found between general social anxiety level and experimental condition on misattributing ager to fearful faces (F (1, 60) = 4.60, p = .04, p^2 =

.06). Simple effects tests indicated that participants with lower anxiety were marginally more likely to misinterpret fear as anger when they were excluded than participants with higher anxiety (F (1,71) = 3.44, p = .07).

New situation anxiety. Two *MANOVAs* were conducted in order to determine whether participants made different types of errors depending on both their new situation anxiety level and their experimental condition assignment. The first was a 2 (Exclusion, Inclusion) x 2 (High New Situation Anxiety, Low New Situation Anxiety) *MANOVA* with Happy High Intensity, Sad High Intensity, Angry High Intensity, Fearful High Intensity, Happy Low Intensity, Sad Low Intensity, Angry Low Intensity, and Fearful Low Intensity as dependent variables. The second was a 2 (Exclusion, Inclusion) x 2 (High New Situation Anxiety, Low New Situation Anxiety) with Happy for Sad, Happy for Angry, Happy for Fearful, Sad for Happy, Sad for Angry, Sad for Fearful, Angry for Happy, Angry for Sad, Angry for Fearful, Fearful for Happy, Fearful for Sad, and Fearful for Angry as dependent variables.

A marginally significant interaction was found between new situation anxiety level and experimental condition on misattributing happiness to fear (F (1, 60) = 3.23, p = .08, p^2 = .04). Simple effects tests showed that participants higher in this type of anxiety were marginally more likely to misinterpret fear as happiness when excluded than when they were included (F (1, 71) = 3.03, p = .09).

A significant interaction was found between new situation anxiety level and experimental condition on misattributing sadness to happiness (F (1, 60) = 5.81, p = .02, p^2 = .08). Simple effects tests indicated that participants with higher anxiety were more likely to misinterpret happiness as sadness when excluded than participants with lower anxiety (F (1, 71) = 5.11, p = .03). Participants with higher anxiety were also more likely to make this error when excluded than when included (F (1, 71) = 4.23, p = .04).

A significant interaction was found between new situation anxiety level and experimental condition on misattributing anger to fear (F (1, 60) = 5.24, p = .03, p^2 = .07). Simple effects tests showed that participants with lower anxiety were more likely to misinterpret fear as anger when excluded than participants with higher anxiety (F (1, 71) = 6.77, p = .01).

Fear of negative evaluation. Two *MANOVAs* were conducted in order to determine whether participants made different types of errors depending on both their fear of negative evaluation level and their experimental condition assignment. The first was a 2 (Exclusion, Inclusion) x 2 (High Fear of Negative Evaluation, Low Fear of Negative Evaluation) *MANOVA* with Happy High Intensity, Sad High Intensity, Angry High Intensity, Fearful High Intensity, Happy Low Intensity, Sad Low Intensity, Angry Low Intensity, and Fearful Low Intensity as dependent variables. The second was a 2 (Exclusion, Inclusion) x 2 (High Fear of Negative Evaluation, Low Fear of Negative Evaluation) with Happy for Sad, Happy for Angry, Happy for Fearful, Sad for Happy, Sad for Angry, Sad for Fearful, Angry for Happy, Angry for Sad, Angry for Fearful, Fearful for Happy, Fearful for Sad, and Fearful for Angry as dependent variables.

A significant interaction was found between fear of negative evaluation level and experimental condition (F (1, 60) = 4.44, p = .04, p^2 = .06). Simple effects tests indicated that participants with higher anxiety were marginally more likely to misinterpret happiness as fear when included than when excluded (F (1, 71) = 3.75, p = .06).

Please see Table 7 for error type descriptives based on experimental condition and anxiety level.

Discussion

The present study provides information on how individuals respond to exclusion and inclusion in a cyberspace environment in terms of their social monitoring abilities. It also shows how these reactions are affected by an individual's level of social anxiety. This study contains

implications for online communication, a growing method of relating to others that has shown to have both benefits and detrimental effects.

The current study confirmed the hypothesis that participants who were excluded had stronger psychological reactions to be ostracized, but did not support the hypothesis that participants would not show greater deficits in social monitoring if they were either included or had higher levels of social anxiety. Exploratory analyses were completed in order to see whether deficits in social monitoring could be seen based on different types of error participants made. Due to the fact that the analyses were exploratory, no predictions were made. Results of the exploratory analyses showed that participants made different types of social monitoring errors based on the affect and intensity of the social cue, depending on both their experimental condition assignment and their social anxiety level.

Psychological Effects of Ostracism

Williams' needs satisfaction. It was hypothesized that participants who were excluded would experience a greater depletion of Williams' four fundamental needs. This study confirmed this hypothesis as well as supported the results of previous ostracism research. The current study showed that participants who were excluded reported lower levels of retrospective belonging, self-esteem, meaningful existence, and control. These results indicate that the experimental manipulation was effective in creating both exclusion and inclusion conditions that were significantly different. Results also show that individuals experience this decrease in needs whether or not they experience a significant amount of social anxiety. The fact that retrospective and not current needs were depleted suggests that while participants did successfully interpret their respective conditions of exclusion and inclusion, they did not become so fully immersed in

the experimental condition that they forgot that the examples they were viewing had not actually occurred in their lives.

While social networking websites have long been a subject of concern for reasons ranging from being an avenue for sexual predators to serving as a procrastination tool, the current study adds a further worry to this list. This study also furthers proof that rejection through an online medium – specifically, Facebook – is powerful enough to have effects on fundamental needs equal to those felt during a face-to-face rejection situation (Zadro, Williams, and Richardson, 2004; Smith & Williams, 2004). These results posit that an ignored wall post or a negative status comment may be as detrimental as a snubbed conversation or a vocal insult.

Perhaps more surprisingly, this experimental manipulation demonstrated the ability to ostracize participants even when they were, while told to imagine that the profile they were viewing was their own, fully aware that the scenarios they experienced had not occurred in their own lives. This study shows that participants still feel ostracized and therefore feel a decrease in satisfaction of needs following a rejection situation in which they are merely imagining what it would be like to be the rejected individual.

Results also indicated differences in both current and retrospective need satisfaction in terms of levels of social anxiety on all three SAS-A subscales. Individuals with high levels of both general social anxiety and new situation anxiety reported lower levels of current meaningful existence, as well as lower levels of current belonging status for those with higher new situation anxiety. Individuals high in fear of negative evaluation reported lower levels of current belonging, current meaningful existence, retrospective belonging, and retrospective self esteem. These results indicate that individuals high in social anxiety generally experience lower levels of satisfaction of these needs no matter whether they are in an exclusion or inclusion situation.

Mood. The present study hypothesized that mood would decrease following the exclusion experimental condition. Results did not support this hypothesis. One interpretation of this finding indicates that the effects of ostracism cannot simply be measured or observed simply by an individual's mood. Ostracism's effects may be more subtle and less obvious to the social network of the target, which could explain why bullying and other forms of abuse continue to occur. If those surrounding the target cannot clearly tell whether the target is suffering, they may be more likely to step in and try to assist. This also may contribute to the numerous teenage suicides discussed earlier; the signs of the effects of ostracism may not always present themselves obviously and therefore targets may not receive the support or aid they need.

It is also possible that, as the current study's experimental manipulation explicitly told participants that they had only to pretend that the exclusion or inclusion was happening to them, they did not feel significant changes in mood because that fact was always in the back of their mind. In actual bullying and ostracism situations, wherein the individuals are not merely imaging a situation, mood may be affected.

Social Monitoring

While the study's original hypotheses that people differing in levels of social anxiety and in experimental manipulation would show deficits in social monitoring as measured by the number of errors made on the DANVA2 were not supported, exploratory analyses showed significant differences. Rather than demonstrating shortcomings in social monitoring as determined by the quantity of their errors, participants exhibited social monitoring deficiencies in the quality of their errors – either by affect or intensity – depending on both their level of social anxiety and the condition that they experienced.

Effects of condition. Participants showed significantly different kinds of errors depending on whether they experienced the exclusion or the inclusion manipulation. Main effects of condition were only present in terms of the facial cue's degree of intensity. Participants who were excluded were more likely to make interpretation mistakes on facial cues that presented a happy face of high intensity. As the four facial stimuli fall into four categories – happy, sad, angry, and fearful – and then can be easily divided into two types – negative, of which there are three possible emotions (sad, angry, and fearful), and positive, of which there is only one (happy) – this result can more broadly state that excluded participants were more likely to interpret clear positive emotional expressions as negative emotional expressions. This result may be explained by the fact that after being excluded, individuals may be accustomed to seeing negative social cues and therefore be more likely to assume that the cues they would receive in the future would be negative, leading to their misinterpretation of the DANVA2 stimuli.

Participants who were included were more likely to misinterpret facial stimuli that showed an angry face of high intensity. The aforementioned four categories can also be divided into two further types: emotions that a person experiences more internally (happiness, sadness, and fear) and an emotion that is both caused by and directed toward someone else (anger). As these participants had recently experienced a social scenario during which they received positive feedback, they may be less likely to assume that this type of emotion would be directed at them and therefore misread this type of facial cue. As those participants were most likely feeling safely included following their experimental condition, faces depicting anger may have been less obvious to them.

Effects of social anxiety.

General social anxiety. Participants who were high in general social anxiety committed the same type of error – attributing negative emotions to positive facial expressions – as those who were excluded. This result suggests that, in terms of social monitoring, the effects of general social anxiety may be similar to those that result from exclusion. According to these results, individuals who suffer from high social anxiety have similar social monitoring deficits to those that result from being excluded. This gives further insight into the qualities of social anxiety, showing evidence that having a high level of general social anxiety produces consequences that resemble those brought about by social exclusion.

New situation anxiety. Participants who had high levels of new situation anxiety were more likely to mislabel fearful facial stimuli as sad. This result may simply be explained by the fact that this type of anxiety leaves a type of social monitoring deficit – more specifically, the fact that people who feel social anxiety most when in new situations or when meeting new people have trouble deciphering the differences between negatively emoting faces due to the fact that they are feeling such strong negative emotions themselves.

Fear of negative evaluation. Participants with high levels of fear of negative evaluation demonstrated the tendency to misinterpret happy faces as sad. This result is along the same vein as the outcomes from those who were high in general social anxiety: Participants who highly feared negative evaluation were more likely to perceive a positive emotion as a negative one.

The general pattern that emerges from the current study's data is that social anxiety tends to result in facial expression interpretation in terms of emotion that misattributes negative emotions to positive emotional expressions, even when the expression is considered obvious. This finding is consistent with the qualities commonly associated with social anxiety – being prone to both seeing social events in a more pessimistic light and remembering these events as

negative, often exaggerating how negative the event actually was, even to the point at which they are falsifying the occurrence entirely (Craske, 1999). The fact that participants are committing these errors based solely on social anxiety level shows that individuals higher in social anxiety tend to make these mistakes in social situations that involve both inclusion and exclusion. While these factors certainly play a part in the quality of social monitoring an individual engages in, these results shed light on how powerful social anxiety can be in affecting the interpretation of a social situation and therefore how an individual responds to it.

Interaction effects of condition and social anxiety.

General social anxiety. Following the trend, participants who were high in general social anxiety and who were also excluded made more errors on facial stimuli that were happy and of high intensity, once again indicating that participants with this combination of experiences tended to label obviously positive emotional expression as negative. This finding is not surprising, with the two main effects found for both experimental condition and social anxiety.

Perhaps less expected was the result that participants who had low levels of general social anxiety were more likely to misattribute sadness to fearful faces when included than when excluded. It is possible that this result is due to the fact that fear is not a common emotion individuals low in social anxiety experience in social situations. Combined with the fact that these individuals had also just experienced an inclusion situation, it is unlikely that they would be expecting to receive negative social cues. Individuals in this category were able to detect the negative nature of the social cue but, perhaps being less experienced with this particular emotion themselves, they misread the specificity of the expression.

Participants with high levels of general social anxiety were more likely to misattribute happiness to fear following exclusion than following inclusion. They were also more likely to

commit this error than excluded participants who were low in general social anxiety. Individuals who labeled the fearful face as happy may have been trying to seek out more positive social cues in an effort to increase their inclusionary status, but due to their social monitoring deficits from their social anxiety, may have seen positive emotions where none existed.

Participants who were low in general social anxiety were more likely than participants who were high in general social anxiety to misattribute anger to a fearful facial stimuli following exclusion. It is possible that the exclusion the participants experienced was powerful enough to cause them to expect to see more directed negative emotions toward themselves, despite their low level of social anxiety. As these participants had recently been rejected, they may have been experiencing lingering feelings of that exclusion and therefore may have been expecting to see more negative social cues – especially ones that were directly specifically at them. Therefore, these participants may have been able to interpret the facial expression as negative but attributed that negative emotion to something personally related to themselves rather than to a more ambiguous source.

New situation anxiety. Participants who were higher in new situation anxiety were more likely than participants who were lower in new situation anxiety to mislabel happy faces as sad following exclusion. Again, these participants were attributing a negative emotion to a happy one, therefore continuing the findings that participants who experience either exclusion, social anxiety, or both are more likely to see negative emotions, even when a positive one is presented to them. Participants in this category were also more likely to misattribute happiness to fearful faces than participants who were excluded but had lower anxiety levels. These participants were also more likely to commit this error following exclusion following inclusion. Like the generally

socially anxious participants who made this error, these individuals may have been searching for positive social cues that would lead to social inclusion.

Participants who were both low in this type of anxiety and who were excluded tended to misattribute anger to fearful faces more often than participants with higher levels of anxiety and who were excluded as well as participants with equal levels of anxiety but who were included. As described before, out of the four available emotions presented on the DANVA2, anger is the only one that is obviously directed outward and toward another person. The fact that participants who were low in social anxiety made this type of error more frequently than participants higher in this type of anxiety following an exclusion situation suggests that exclusion may be powerful enough to create social monitoring deficits greater than those experienced solely depending on social anxiety.

Fear of negative evaluation. Participants who were higher in fear of negative evaluation tended to mislabel happy faces as fearful more often that participants who were lower in fear of negative evaluation following an exclusion situation. This result follows the pattern of individuals with higher social anxiety and who experienced exclusion of interpreting positive emotional stimuli as negative. More specifically, participants in this category mislabeled the positive emotion as the very emotion that defines their own feelings in social situations. As participants high in this type of social anxiety had recently experienced exclusion, it is likely that they had felt this fear realized. Therefore, it makes sense that these individuals were more likely to see their own emotion in other social stimuli.

Limitations and Future Directions

As this study was done at a small undergraduate university, the participant pool for research was minimal, especially after it was divided amongst several researchers. Therefore, the number of participants in this study is quite low. This low *N* results in an initially small power, a power made even lower following a median split. Due to this small *N*, some analyses could not be conducted, such as comparing differences in social monitoring when examining both social anxiety levels and experimental condition in comparison to a combination of intensity- and affect-related errors. This study also faced technical errors, including the loss of five DANVA2 score reports due to computer error. This unfortunate incident further lowered the study's *N*.

Due to the nature of social anxiety, as with any mental disorder, we were unable to create sufficiently equal groups in regards to social anxiety level. While participants were evenly split between the inclusion and exclusion conditions, and while a median split generally divided the participant pool into equal groups of high and low socially anxious people, when these two constructs were combined, we found that there was a severely low number of participants in the exclusion condition who had high social anxiety. A higher *N* would have diminished this problem by making it more likely for a greater number of participants to fall in this category. However, as participants were randomly assigned to groups before being assessed on social anxiety levels, this problem was unavoidable in the current study.

Future research should attempt to replicate the current study, preferably with a bigger population of participants in order to see if further differences in social monitoring emerge. This larger participation pool would also allow researchers to take analyses a step further in order to analyze the errors made in terms of affect combined with intensity. Future studies should also strive for greater variation in the population, studying different age groups to determine whether

these effects are solely found in a college-age population or if people both young and old experience cyberostracism in this way. A more diverse population in terms of race would offer a cross-cultural perspective on the subject.

Future research should also attempt to create an experimental manipulation that avoids the participants having to only pretend that the events they are viewing on a social networking website. The current study was unable to manipulate this due to ethical restrictions, but perhaps future studies can come up with a novel way to simulate ostracism to allow participants to experience the situation in an even further *in vivo* way.

Benefits of Current Study

The current study expanded upon Williams' ostracism studies by broadening the definition of social anxiety. Williams' studies use the Fear of Negative Evaluation Scale as the sole measure of social anxiety. While this measure did produce results that signified differences between those with and without social anxiety, the concept of social anxiety encompasses more than simply the fear of being negatively evaluated. This limited view of social anxiety makes it difficult to conclude that social anxiety is truly the cause of the differences found because simply having this one fear does not mean that social anxiety is present. The current study's use of the SAS-A, which covers three aspects of social anxiety – general, fear of new situations and people, and fear of negative evaluation – provides a more thorough view of the reactions to ostracism in social anxious individuals (Oaten, Williams, Jones, & Zadro, 2008).

This study also provides evidence for the use of a new ostracism paradigm that is easily relatable to modern day social interaction. While Williams' Cyberball model has proven to be successful in making participants feel rejected (Williams & Jarvis, 2006), it is unlikely that individuals in their everyday lives regularly encounter a parallel experience in the real world.

The current Facebook paradigm provides researchers with a more contemporary tool that may be more effective in ostracizing participants due to the fact that the mechanism is through a medium that most participants are used to encountering in their daily lives.

Implications

The current study has many implications concerning social anxiety, ostracism in general, and cyberostracism through social networking media. In terms of social anxiety, this study shows that individuals who suffer from social anxiety's symptoms are not deficient in social monitoring as a whole. Specifically, following social exclusion, individuals with social anxiety do not necessarily withdraw or become unable to handle the situation. This is good news for the large number of people who struggle with social anxiety in their daily lives. While social anxiety certainly has its effects on the social lives of these individuals, perhaps the impact that social anxiety has is not as debilitating as it is assumed to be.

This study also concludes that mood is not an all-encompassing indicator of ostracism. While it is not ludicrous to assume that most individuals certainly do not welcome or enjoy ostracism, the true effects of ostracism can be seen in less obvious areas, as demonstrated by the hit participants in this study took in their Williams' needs satisfaction following exclusion. These results suggest that when outside observers – people from psychologists and teachers to parents and friends – look at a group of people, they may be missing the intricacies of the group's interaction because those people being ostracized may not show noticeable changes in mood. This study suggests that those who have power in terms of group dynamics should pay close attention to the social interaction taking place so that the subtler signs of ostracism become clearer and therefore can hopefully be prevented or alleviated.

Finally, this study's dealings with cyberostracism present implications for the ever-growing popularity of online communication. While many people write off cyberspace communication as superficial, insincere, and artificial, the interactions millions of people have online every day have proved to be the exact opposite of that. The current study shows that being excluded in cyberspace is just as powerful as being excluded in person, providing an understanding into the unfortunate suicides that have resulted from internet bullying and abuse. It is not to say that social networking websites have no benefits nor to say they should not be used; however, precautions should be taken when using such websites. Individuals often put forth a wealth of personal information on these websites, and this information is certainly more widespread when shared on the internet than when shared in person, thereby making individuals more vulnerable to negative feedback and perhaps unwanted opinions.

In using websites such as Facebook or MySpace, individuals should exercise the same care they would in their offline relationships. While typing a quick message under someone's status or commenting on a photo may seem harmless and unimportant, the effects of this communication can be more substantial than the casual nature these websites assume. While people using these websites believe that reaching out through cyberspace allows them a certain distance that offline interactions do not, the truth is that this apparent separation is no more real than thirteen-year-old Megan Meier's "Josh".

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Table 1
Sample Demographics

Characteristic	Frequency	Percent
Age		

18	43	53.8
19	21	26.3
20	9	11.3
21	4	5.0
22	3	3.8
Sex		
Male	32	40.0
Female	48	60.0
Year in School		
Freshman	54	67.5
Sophomore	17	21.3
Junior	6	7.5
Senior	3	3.8
Race/Ethnicity		
Asian-American	4	5.0
African-American	4	5.0
Caucasian (non-Hispanic)	66	82.5
Hispanic	3	3.8
Latino/Latina	1	1.3
Other	2	2.5

Note. These data includes that of the five participants whose DANVA2 score report was unavailable due to computer error.

Table 2
Social Anxiety Scale for Adolescents Descriptives

Scale	Mean *(Standard Deviation)*

SASGeneral	8.68 *(2.52)*
SASNew	17.08 *(3.63)*
FNE	21.01 *(4.71)*

Note. These data includes that of the five participants whose DANVA2 score report was unavailable due to computer error.

Table 3
Social Anxiety Levels

Scale	Frequency	Percent

SASGeneral		
High Anxiety	31	38.8
Low Anxiety	49	61.3
SASNew		
High Anxiety	36	45.0
Low Anxiety	44	55.5
FNE		
High Anxiety	38	47.5
Low Anxiety	42	52.5

Note. These data includes that of the five participants whose DANVA2 score report was unavailable due to computer error.

Table 4
N of Experimental Condition and Social Anxiety Levels

Scale	High Anxiety	Low Anxiety

SASGeneral		
Exclusion	10	29
Inclusion	21	20
SASNew		
Exclusion	16	23
Inclusion	20	21
FNE		
Exclusion	16	23
Inclusion	20	21

Note. These data includes that of the five participants whose DANVA2 score report was unavailable due to computer error.

Table 5
Positive and Negative Affect Scale Descriptives

Scale	Mean *(Standard Deviation)*

Positive Affect	
Exclusion	27.41 (*9.05*)
Inclusion	26.39 (*7.07*)
Negative Affect	
Exclusion	14.54 (*6.46*)
Inclusion	13.56 (*3.92*)

Note. These data includes that of the five participants whose DANVA2 score report was unavailable due to computer error.

Table 2
Williams' Need Satisfaction Descriptives

Scale	Mean (*Standard Deviation*)

CurBelong	
Exclusion	8.13 (*1.89*)
Inclusion	8.56 (*1.38*)
CurMeanExist	
Exclusion	8.03 (*1.78*)
Inclusion	8.56 (*1.27*)
CurNeedforControl	
Exclusion	3.33 (*1.11*)
Inclusion	3.63 (*.89*)
RetroBelong	
Exclusion	5.10 (*2.93*)
Inclusion	12.29 (*2.42*)
RetroSelfEsteem	
Exclusion	8.85 (*4.38*)
Inclusion	19.54 (*3.29*)
RetroMeanExist	
Exclusion	8.95 (*4.12*)
Inclusion	20.51 (*3.28*)
RetroNeedforControl	
Exclusion	8.62 (*3.24*)
Inclusion	15.71 (*3.70*)

Note. These data includes that of the five participants whose DANVA2 score report was unavailable due to computer error.

Table 7
DANVA2 Error Type Descriptives by Experimental Condition and Social Anxiety

Error Type	Mean (*Standard Deviation*)

HappyHigh	
Exclusion	
High General Social Anxiety	.13 (*.35*)
Low General Social Anxiety	.00 (*.00*)
Inclusion	
High General Social Anxiety	.00 (*.00*)
Low General Social Anxiety	.00 (*.00*)
HappyFearful	
Exclusion	
High General Social Anxiety	1.50 (*1.06)*
Low General Social Anxiety	.66 (*.67*)
Inclusion	
High General Social Anxiety	.57 (*.68*)
Low General Social Anxiety	.88 (*1.11*)
SadFearful	
Exclusion	
High General Social Anxiety	.25 (*.46*)
Low General Social Anxiety	.45 (*.57*)
Inclusion	
High General Social Anxiety	.43 (*.60*)
Low General Social Anxiety	.12 (*.33*)
Angry Fearful	
Exclusion	
High General Social Anxiety	.00 (*.00*)
Low General Social Anxiety	.55 (*.69*)
Inclusion	
High General Social Anxiety	.52 (*.81*)
Low General Social Anxiety	.35 (*.49*)
HappyFearful	
Exclusion	
High New Situation Anxiety	1.14 (*.95*)
Low New Situation Anxiety	.65 (*.71*)
Inclusion	
High New Situation Anxiety	.60 (*.75*)
Low New Situation Anxiety	.83 (*1.04*)
SadHappy	
Exclusion	
High New Situation Anxiety	.64 (*.63*)
Low New Situation Anxiety	.17 (*.49*)
Inclusion	
High New Situation Anxiety	.20 (*.52*)
Low New Situation Anxiety	.39 (*.70*)
AngryFearful	
Exclusion	
High New Situation Anxiety	.07 (*.27*)
Low New Situation Anxiety	.65 (*.71*)
Inclusion	

High New Situation Anxiety	.50 (*.83*)
Low New Situation Anxiety	.39 (*.50*)
FearfulHappy	
Exclusion	
High Fear of Negative Evaluation	.00 (*.00*)
Low Fear of Negative Evaluation	.22 (*.52*)
Inclusion	
High Fear of Negative Evaluation	.28 (*.46*)
Low Fear of Negative Evaluation	.10 (*.31*)

Note. These data includes that of the five participants whose DANVA2 score report was unavailable due to computer error.

Table 8
Internal Consistency Reliabilities

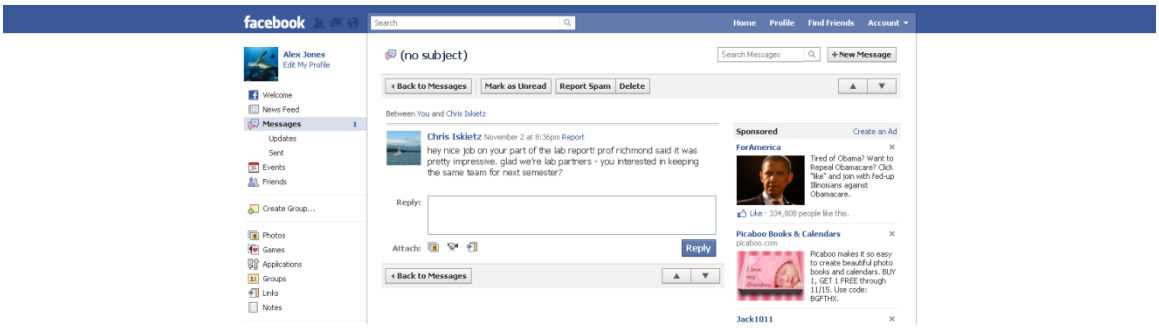
Measure	**Cronbach's Alpha**
SASGeneral	.72
SASNew	.86

FNE	.87
PANASPositiveAffect	.90
PANASNegativeAffect	.87
CurrentBelong	.57
CurrentMeanExist	.63
CurNeedforControl	0.00
RetroBelong	.92
RetroSelfEsteem	.96
RetroMeanExist	.94
RetroNeedforControl	.88

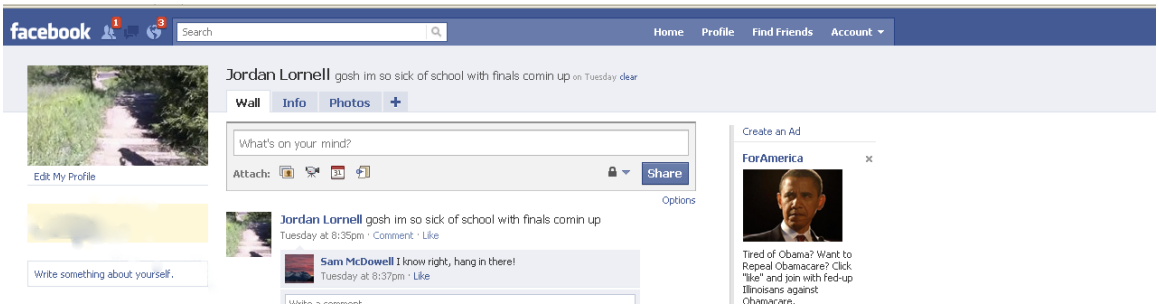
Appendix A.

Facebook Scenarios: Inclusion

Scenario 1: Positive Private Message



Scenario 2: Positive Status Comment



Scenario 3: Wall Post Response

Scenario 4: New Relationship

Scenario 5: Successful Facebook Chat

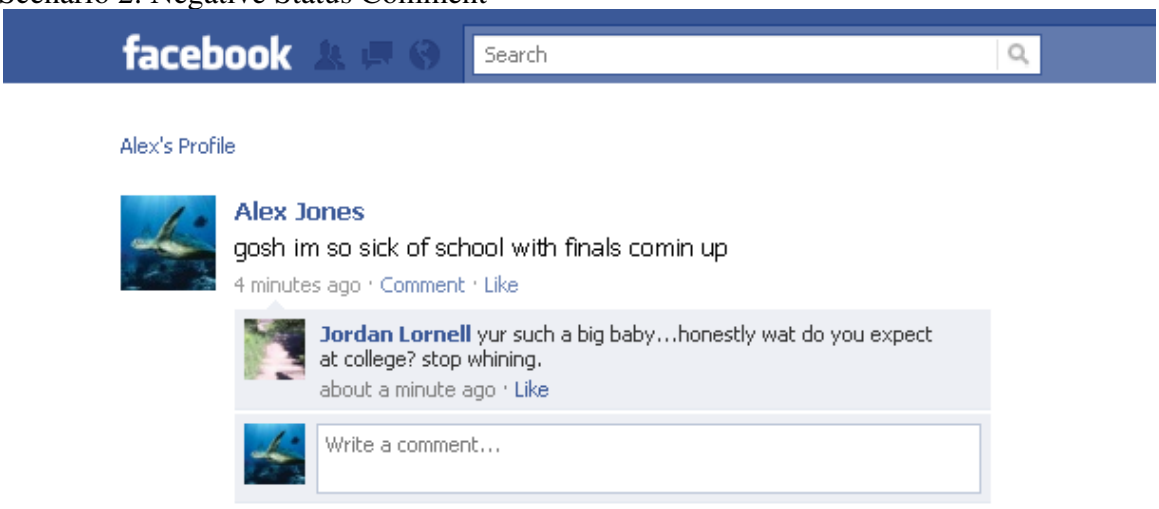
http://www.screencast.com/t/v5rZm4rySL

Appendix B.

Facebook Scenarios: Exclusion

Scenario 1: Negative Private Message

Scenario 2: Negative Status Comment



Scenario 3: Wall Post Ignore

Scenario 4: Relationship Break-Up

Scenario 5: Ignored Facebook Chat

http://www.screencast.com/t/jf4pgVuIwBw

Appendix C.

Facebook Manipulation Condition Instructions.

(Alex Jones in the exclusion situation, Jordan Lornell in the inclusion situation) is a freshman at a small, liberal arts college. The next five slides show situations that have occurred on (Alex's/Jordan's) Facebook profile.

When viewing the slides, please imagine that **YOU** are (Alex/Jordan) and that this is **YOUR** Facebook page. Put yourself in (Alex's/Jordan's) position – pretend that **everything that has occurred on (Alex's/Jordan's) Facebook profile has occurred on yours.**

Please read each slide and then answer the questions that correspond (i.e. Slide #1, question #1) **before moving onto the next slide.**

Appendix D.

Inclusion Condition Manipulation Check

#1

*What is the name of the person who sent the message?

_____

*How many notifications did your profile have?

_____

*What was the second advertisement on your page about?

_____

#2

*What is the name of the person who commented on your status?

_____

*Is the comment a negative one or a positive one?

_____

*How many friend requests did you have?

_____

#3

*On whose profile did you write a post?

_____

*How many people did this person respond to?

_____

*How long ago did this person respond to your post?

_____

#4

*What is the name of the person with whom you are now in a relationship?

_____

*Who liked your new relationship status?

_____

*What is your new relationship partner's picture of?

_____

#5

*With whom did you initiate a conversation?

_____

*How many times did you type this person a message?

_____

*How many times did this person answer you?

_____

Appendix E.

Exclusion Condition Manipulation Check

#1

*What is the name of the person who sent the message?

_____

*How many notifications did your profile have?

_____

*What was the second advertisement on your page about?

_____

#2

*What is the name of the person who commented on your status?

_____

*Is the comment a negative one or a positive one?

_____

*How many friend requests did you have?

_____

#3

*On whose profile did you write a post?

_____

*How many people did this person respond to?

_____

*How long ago did this person respond to your post?

_____

#4

*What is the name of the person with whom you were in a relationship?

_____

*How did you know your relationship with this person had ended?

_____

*What is your previous relationship partner's picture of?

_____

#5

*With whom did you initiate a conversation?

_____

*How many times did you type this person a message?

_____

*How many times did this person answer you?

_____

Appendix F.

Williams' Four Needs Scale Questionnaire

For the following items, refer to how you feel *at this moment*.

1. I feel I belong to a group.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

2. I feel rejected.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

3. I feel non-existent.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

4. I feel important.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

5. I feel powerful.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

For the following items, refer to how you felt while viewing the profile.

1. I felt "disconnected"

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

2. I felt rejected.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

3. I felt like an outsider.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

4. I felt good about myself.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

5. My self-esteem was high.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

6. I felt liked.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

7. I felt insecure.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

8. I felt satisfied.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

9. I felt I was invisible to the other person.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

10. I felt meaningless.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

11. I felt non-existent.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

12. I felt important.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

13. I felt useful.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

14. I felt powerful.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

15. I felt I had control over the situation.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

16. I felt I had the ability to significantly alter events.

1	2	3	4	5

Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

17. I felt I was unable to influence the actions of the other person.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly

18. I felt the other person decided everything.

1	2	3	4	5
Disagree Strongly	Disagree a Little	Neither agree nor disagree	Agree a Little	Agree Strongly