

DESIRE FOR SOCIAL RECONNECTION AFTER EXCLUSION
AS SHOWN BY APPROACH AVOIDANCE BEHAVIORS

by

MITCH TERRACE

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Sponsor: Paul Siegel, Ph.D.

Second Reader: Krystal Perkins, Ph.D.

Abstract

This study investigates the immediate desire for social reconnection after exclusion. The reconnection response is recorded in milliseconds to test if this response is automatic and immediately followed by exclusion. The hypothesis is that excluded participants will approach happy faces faster than neutral faces compared to included individuals. 34 participants played Cyberball and experienced either social inclusion or exclusion. Following Cyberball, participants engaged in an Approach-Avoidance Task to measure the motive to reconnect. The results were non-significant but were trending in the direction of supporting the hypothesis. In addition, across both groups, there was a main effect of response in which all participants approached faces faster than they avoided them. The limitation of this study is the small sample size, that appeared to have prevented finding sufficient testing of the hypothesis. A power analysis suggested that the hypothesis would have been confirmed with a larger sample size.

A sense of belongingness is an experience that all humans desire. What happens to this desire when we experience social exclusion? Social exclusion was achieved by participants being left out of a game of virtual catch. Does experiencing, or fearing the possibility of future experience of social rejection, make one's desire for social reconnection stronger? Baumeister and Leary (1995), and Buss (1990) proposed a hypothesis about social reconnection. The social reconnection hypothesis states that those who were, or will be, rejected will try to make new connections with others. They believed that from an evolutionary standpoint, it is important to maintain emotional bonds with others. Having social connections can help those who are experiencing loneliness, guilt, jealousy, depression, and anxiety (Leary, 1990).

Cyberball is the most widely used program to induce social rejection in prior psychology studies. Cyberball is a computer program wherein participants play catch with other, computerized peers. The experiment can program the round so the participants are either included or excluded in the game of catch. Prior Cyberball studies found that rejection can cause individuals to feel negative emotions and lower self-esteem (Hartgerink et al., 2005).

The purpose of this study is to build on prior research of the need to reconnect after experiencing rejection by testing if the need is immediately fulfilled by a rejected individual. This is tested by the participant either approaching or avoiding a picture of a stranger's face, using the Approach-Avoidance Task, or AAT (Heuer, Rinck, and Becker 2007). The AAT measures approach and avoidance behavior through rapid motor responses, demonstrating the desire to reconnect in automatic responses. We expected to see that social rejection would make participants want to reconnect by approaching friendly, smiling faces faster than neutral faces, relative to participants who are socially included. Before presenting the study, I will first present

prior studies relevant to the effectiveness of the social rejection method, the AAT task, and testing the desire to reconnect after rejection.

Reviews of Meta-Analyses on Social Rejection

Hartgerink et al. (2015) conducted a meta-analysis of 120 studies of social rejection to understand the psychological effects of rejection and if it could be reversed, eliminated, or minimized. These studies tested the effects of social exclusion with the game of Cyberball. To influence exclusion, the participant would be put in a game of catch where the ball was never or rarely thrown to them. The results of this meta-analysis showed that the effects of rejection on someone's mood are strong - strong enough that it can be experienced even through a cartoon game. Furthermore, these effects last longer than previously expected – lasting days or weeks after the fact. Moreover, the effects on mood were found to be robust and shown across a wide variety of studies with variety in their samples and a variety of Cyberball experimental methods. Finally, the effects were moderated or influenced by a variety of variables, one being fear of negative evaluation. In other words, social rejection is powerful, universal, and long lasting.

In Gerber and Wheeler's (2009) meta-analysis, 88 studies were reviewed to understand the effects of rejection on people's psychological needs and if it causes physical and emotional numbness. They found that social rejection can lower mood and self-esteem; however, it does not lower, reduce, nor flatten arousal levels, which, one would expect if people were becoming numb. Thus, these results suggested that the participants did not become numb to the effects of social rejection, no matter how often it happened. Some studies showed that rejected participants had aggressive responses where people attempted to regain control of the situation, specifically control over the feelings attached to rejection and those who rejected. Overall, the studies

showed that rejection can influence individuals' moods, can make people aggressive in their attempt to regain control, and does not flatten nor lower arousal.

Effects of Ostracism on Adolescents

Ruggieri, Bendixen, Gabriel, and Alsaker (2013) conducted a study on the effects of ostracism, or exclusion, in early adolescents. Their study consisted of 91 non-English students, ranging from 10-14 years of age. These participants, like the ones before, engaged in a game of Cyberball with, presumably, two other same-sex students. Students were randomly assigned to the exclusion or inclusion groups. Both before and after Cyberball was played, the participants filled out a mood self-report based on a Likert scale that asked the participants about different types of moods. The results of this study showed that the participants who were ostracized reported lower levels of positive moods, lower sense of belongingness, lower levels of self-esteem, lower feeling of meaningful existence, and lower feelings of control. These results show that the Cyberball ostracism effect generalized to non-English speaking, early adolescent individuals, which further supports the finding of Hartgerink et al.'s (2015) review that the effects are universal.

Can these effects of ostracism be reduced? Mohr, Kirsch, and Fotopoulou (2017) conducted a study that analyzed the effectiveness of slow and affectionate touch in soothing the negative effects of ostracism. The participants consisted of 84 female undergraduates. Participants were asked to play an initial round of Cyberball where all participants were included during catch. After the game, participants gave a self-report on how they were feeling and then took a 10-minute distraction break. After the break, the same participants played another round of Cyberball where all participants were instead excluded during catch. After the game concluded, participants were blindfolded to enhance their sensation of touch. An experimenter

then stroked a soft brush for 70 seconds on the back of the participants hand in one of two fashions: fast strokes or slow strokes. Afterwards, participants filled out another self-report scale on how they were feeling. The results showed that slow-affective touch led to a decrease in the negative feelings experienced from social exclusion. These results implied that being physically comforted by touch after exclusion can help lower its negative emotional effects. This specific study was also a more effective method of assessing exclusion effects because these effects were measured relative to a baseline, when participants started the study off by feeling included.

The Social Reconnection Hypothesis: A Series of Tests by Maner et al (2007)

Maner, DeWall, Baumeister, and Schaller (2007) conducted a series of studies to test the social reconnection hypothesis. In their first study, 56 undergraduates were tested to see if recalling memories of past social exclusion influenced their desire for social reconnection. Participants were randomly assigned into one of three essay groups: those who wrote about a past social exclusion memory, those who wrote about a past social acceptance memory, and those in a neutral control group where participants wrote about a random past event. After writing about their past social rejection experience, participants were then asked to complete a questionnaire that measured how interested each group was in the possibility of using an on-campus student service to help make friends. The results of this study showed that those who wrote about social exclusion in the past were more willing to use the student service. These results showed support for the reconnection hypothesis in that those who experienced rejection, will attempt to make new connections.

In their second study, Maner et al. (2007) studied 34 undergraduates to see if fear of future social exclusion influenced present social reconnection. Participants were asked to complete the Eysenck Personality Questionnaire to obtain an extroversion score. Participants

were then given accurate feedback about their extroversion score, and bogus feedback about the implications that score could hold for future relationships. The participants were randomly assigned into three groups for future relationships: those told they will have a future alone (social exclusion), those who will have a future of connections to others and a sense of belongingness, and those who will have misfortune happen to them. After participants received the descriptions of their futures, they were asked to complete another experiment in which they could either choose to work alone or with someone else. The results of this study showed that even possible threats of future social exclusion will increase someone's preference for working with others. This preference to work with others shows support for the reconnection hypothesis because working with others can still satisfy the need for social connections.

In the third study, Maner et al. (2007) 18 undergraduates were tested to see if current social exclusion – in the present - influenced desire for social reconnection with other peers. Participants arrived at the study in same-sex groups of three or four people. They were asked to interact with each other by asking questions from a questionnaire about their lives, without the experimenter in the room. After 15 minutes, the experimenter returned to the room and led everyone into their own individual room. After arriving at their room, the experimenter asked the participants to give two names of people they would wish to work with. After receiving all the names from all participants, the experimenter randomly assigned the participant into two groups: those who were told everyone wanted to work with them, and those who were told no one wants to work with them. After receiving this feedback, participants were then asked to complete a mood scale and person perspective scale to rate levels of hostility and attractiveness of others. The person perspective scale was used to measure how much people would be interested in reconnecting. The results of this study showed that current exclusion increased interest in

meeting and initiating contact with others. The study also showed that exclusion led people to view others who did not exclude them as nicer, friendlier, and more desirable.

In their fourth study, Maner et al. (2007) tested 34 undergraduates to see if current, in vivo, social exclusion influenced the desire for social reconnection. Participants arrived at the study and were asked to communicate by sending a videotape to someone they assumed was another participant. Participants were also told that after sending and receiving a videotape, the two participants would meet up face to face. After sending off the tape, participants completed a Fear of Negative Evaluation scale while waiting for the other person's response. The experimenter then returned to the room with a videocassette for the participant to view. The video would consist of the second "participant" discussing their own personal and career goals. The first participant was asked to film a response, video talking about their own personal and career goals. 5 minutes later the experimenter came back and informed the participant that the participant they were communicating with couldn't meet up with them, for one of two reasons. Thus, participants were randomly assigned to different rejection groups: either a nonpersonal-departure or a personal-departure. After being told by the experimenter that their partner won't be meeting up with them, participants were asked to rate how willing they'd be to either reschedule a meeting or meet up with someone new, another peer. The results of this study showed that people who rated high on the fear of negative evaluation do not have the desire to meet up with anyone, either a new peer or the old participant. The results also showed that people who rated low on fear of negative evaluation desired to meet up with someone new but had no desire to meet up with the person who rejected them. There wasn't a significant difference in the desire to reconnect with peers between those who were rejected for personal reasons and those who were rejected for non-personal reasons. Thus, these results showed that

those who rate high in fear of negative evaluation will not want to risk rejection again and goes against the reconnection hypothesis.

In their last study, Maner et al. (2007) tested 53 undergraduates to see how in vivo rejection would affect reactions to future social connections and how the rejected would treat those new connections. The study was quite similar to the previous study in that participants would send videotapes back and forth and then experience either personal or non-personal rejection. However, after being rejected, participants were asked to engage in a game of pretend with a new “participant.” The actual participant was told that they would be playing the role of a manager, while the other “participant” was the worker. The manager’s job was to evaluate the work of the worker with a rating of a scale of 0-20. Some participants were told that they would meet the new partner, and others were told that they wouldn’t meet them. The participants who were told that they would meet their partner would not meet them until after the evaluation period ended. The results showed that those rejected for either reason, were more generous with their ratings when they were told that they would meet the new partner. Those who were told they wouldn’t meet their partner were less generous. The results showed that after rejection, if given the opportunity to meet and connect with someone new, people will treat them more generously pre-meeting.

Unconscious Reconnection Responses

Lakin, Chartrand, and Arkin (2008) conducted two studies that specifically tested for a nonconscious social reconnection by observing automatic mimicry in rejected individuals. These studies are especially relevant to our current study because both assess the automatic motive to reconnect. The first study consisted of 36 students who participated in a game of Cyberball. Like the other Cyberball studies, exclusion was tested the same way where some participants often

receive the ball and others rarely received it. After the participants finished their round of Cyberball, they were told that they were going to meet with another participant who did not play the game, and that they would describe photographs to this new partner. The experimenter wanted the participant to know that the new partner had not participate in Cyberball; so that the participant did not assume they were a part of the game of catch. While the experimenter was gone retrieving the new partner, how often the participant moved their feet was recorded as a baseline. The experiment returned with the new partner, who was another experimenter. The partner's job was to consistently tap their foot during the photograph description task. The participant's foot movements were recorded to see if the participants unconsciously mimicked the foot tapping. At the end of the photograph description task, participants were asked if they noticed their partner tapping their foot. Those who noticed were excluded from the data analysis to make sure the mimicry was nonconscious. The results showed that those who experienced exclusion mimicked their partner more than those who were included, as shown by the individuals increased foot movements. In other words, individuals who are socially excluded will unconsciously attempt to reconnect with others.

Lakin et al.'s (2008) second study was a similar experiment to their first one. The study consisted of 160 female participants, who engaged in a game of Cyberball for the exclusion manipulation. This time however, the other participants had names displayed that were either female-presenting or male-presenting. Participants were either put in a group of all females or all males, with them being the outcast. After the game, participants were asked to complete the same photo description task. The new partner was either male or female and had the same role as in the previous study. The participants were randomly assigned their new partner, so some who played Cyberball with other females were given a female partner while others were given a male

partner. The results of this study showed that those who were excluded by females mimicked the behavior of the partner if they were also female. Those who were excluded by males mimicked the behavior of the partner if they were male. These results showed that those who were rejected tried to reconnect with those who were similar in gender to whom they were rejected by. In addition, these results showed how people naturally try to reconnect socially and how the desire to reconnect following social rejection is selective in terms of gender, whereas the other studies were explicitly asking the participant about their desire to reconnect.

The Approach-Avoidance Task

We will be using an Approach-Avoidance Task to assess the effects of social exclusion on automatic connection reactions. Heuer, Rinck, and Becker (2007) introduced the AAT in a study that tested avoidance reactions to a threatening stimulus. There were 86 participants, 43 highly socially anxious individuals and 43 non-anxious individuals. Each participant was asked to react to photos of different emotional facial expressions: angry, neutral, or smiling. Participants reacted to these stimuli by moving a joystick, either pulling it towards or pushing it away from themselves. Pulling the joystick made the picture zoom in, creating the visual effect of the picture approaching the participant. Similarly, pushing the joystick away made the picture zoom out to create the visual effect of avoidance. Participants were then asked to rate the facial expressions on whether they found them to be positively or negatively valenced. The results of the study showed that the individuals who were highly socially anxious showed a stronger avoidance tendency than the non-anxious individuals for both smiling and angry faces. This avoidance showed how anxious individuals closely monitor emotion in the face and react to them instantly. In addition, non-anxious participants avoided angry faces more than happy faces and approached happy faces more than angry faces. The groups did not give different evaluations of

the facial expressions: both groups rated the angry faces as negative, and the happy faces as positive. However, the highly socially anxious participants still reacted with avoidance even when they rated a face as positive. These results validate the Approach-Avoidance Task by showing that socially anxious individuals will avoid others who show threatening and non-threatening faces, whereas non-anxious individuals will approach others who do not appear as a threat.

This study will build on prior research by using the AAT. The AAT was used to see if excluded individuals have a stronger desire to approach friendly appearing faces. Smiling faces are seen to be friendly and more approachable. Therefore, if social rejection causes people to want to reconnect with others, then that motive or desire should be shown in automatic tendencies to approach those who appear friendly, relative to neutral faces. Thus, the hypothesis is that those who were excluded during Cyberball will approach happy smiling faces faster than neutral faces, compared to included participants.

Methods

Participants

Participants were recruited from undergraduate psychology classes. There were 34 participants; mean age was 25.4 (standard deviation=10.5, range 17-55). Participants were made up of 13 males, 19 females, and 2 non-binary individuals. The participants were identified as not socially anxious by examining their responses to the Fear of Negative Evaluation Scale (Leary, 1983). To qualify for the study, participants could not score higher than the 30th percentile. All participants provided electronic informed consent to partake in this study. Participants were compensated with extra-credit for a class in exchange for participating in the study.

Experimental Design

During the game of Cyberball, participants were randomly assigned to one of two groups: included or excluded in the game of catch. Those who were included had the ball thrown to them an equal amount as the other participants. Those who were excluded had the ball thrown to them only two times throughout the entire game. After the game of Cyberball, participants engaged in two versions of the AAT. One version requested that participants move a stick figure towards happy faces (approach) and move the stick figure away from the neutral faces (avoid). The second version requested that participants move the stick figure towards neutral faces and move the stick figure away from the happy faces. These two AATs were counterbalanced across participants, and the faces were randomly presented in the same order to all participants. In total, participants did 144 trials, 72 per AAT, consisting of 36 happy faces and 36 neutral faces in each.

Thus, this experiment followed a 2 x 2 x 2, Group (included or excluded, between-subjects) x Face (happy and neutral, within-subjects) x Response (approach and avoid, within-subjects), mixed design. We specifically tested if excluded participants would try to reconnect directly after exclusion by measuring how fast they moved the stick figure towards the happy faces compared to the neutral faces.

Measures, Materials, and Equipment

The Fear of Negative Evaluation Scale (FNES) was used to exclude those who may be highly socially anxious individuals, and thus may have reacted to exclusion by avoiding all faces. The FNE consists of 12 questions related to the individual's personal feelings towards social interactions, e.g., "I rarely worry about what kind of impressions I am making on someone" and "I often worry that I will say or do the wrong things." Participants rated each comment on a 1-5 Likert scale, with 1 being least characteristic of them and 5 being most characteristic.

The AAT measures automatic motor responses to stimuli, which in this study demonstrated the desire to reconnect in approach responses. The participants were asked to look at a series of pictures of people with either a happy or neutral facial expression. They were asked to move the stick figure to either approach or avoid the face. The desire to reconnect after exclusion is measured by observing how quickly the excluded individual moves the stick figure to approach happy faces compared to the neutral faces.

The 36 happy and 36 neutral facial expressions were taken from the Chicago Face Database (Ma, 2015). There were 72 high-resolution photographs of 36 male and 36 female individuals between the ages of 17-65. Half of the faces were Caucasian and half were Black; race was varied to test a separate set of hypotheses not relevant to the current study. Each photo was 500 x 600 pixels, 32-bit color. The happy and neutral faces were taken from the same person so that there were no differences in visual features that could confound the results. Each participant took the experiment on their own home computer or laptop.

Procedure

The study started with participants giving electronic informed consent, which was then followed by a demographics questionnaire that asked about their age, gender, sexuality, and ethnicity. Participants were then asked to complete the FNE as described above. After finishing the questionnaires, participants played Cyberball, a virtual game of catch that is programmed to randomly include or exclude a participant from the game of catch. Participants were put into a game of catch with three, unknowingly computerized, participants. During the game, participants were given the ball and then would toss it to another player. After a couple of throws, the participants either continued to receive the ball (included) or did not receive the ball (excluded). The game of catch lasted about 3 minutes for each participant. After Cyberball, participants

completed a 6-item mood check to confirm that the exclusion was effective, with excluded participants reporting more negative moods than the included participants. After this manipulation check, participants were directed to the two AATs. The set up for the task was a picture of a facial expression in the middle of the screen, either happy or neutral, with the stick figure either above or below the face. To move the stick figure, participants pressed a button to either approach or avoid the face based on its emotion expression. In addition, the faces that the participant saw were either only male or only female, based on the participant's sexual orientation. (E.g., if the participant identified as a homosexual male, then he would only react to female faces). This was done so that physical attractiveness could not confound the results of the AAT. The last thing that was asked of the participants was a brief awareness check. This is to assess whether the participants were aware of a difference in their responses to the happy and neutral faces. Participants who were aware of their personal difference when approaching or avoiding the happy and neutral faces may be excluded from the data to determine if excluded participants approach time to happy faces was without conscious awareness and that the desire to reconnect is truly non-consciously. Finally, participants read a debriefing form that described the purpose of the study and its hypothesis.

Results

Figure 1 shows the effects of Cyberball on approaching and avoiding happy versus neutral faces. A 2 x 2 x 2, Group (Excluded or Included between-subjects) x Face (Happy and Neutral, within-subjects) x Response (Approach and Avoid, within-subjects), mixed ANOVA was used to test the hypotheses. The main effect of Group was not significant, $F(1,33) < 1$, $p = .865$. The main effect of Face was not significant, $F(1,32) < 1$, $p = .440$. The main effect of Response was significant $F(1,32) = 6.45$, $p = .016$, indicating that across both groups, the

participants response to approach was faster than their response to avoid. The three-way interaction of Group, Face, and Response was not significant, $F(1,2)=2.05$, $p=.162$. However, with a small N , this interaction appeared to be trending in the expected direction, as shown by the effect size, $\eta\text{-squared}=.075$, and the next analyses below.

To interpret/make sense of this trending 3-way interaction, we tested our specific hypothesis in a 2 x 2, Group x Face, ANOVA of approach response times. The two-way interaction of Group and Face for Approach responses was not significant $F(1,32)=2.58$, $p=.118$, $\eta\text{-squared}=.085$. The same two-way interaction between Group and Face was not close to significant for avoidance response times, $F<1$. This result disconfirms the main hypothesis that excluded individuals will approach happy faces faster than included individuals. However, this pattern of results suggests that the two-way interaction between Group and Face effect may be trending towards significance if the sample size were larger.

Discussion

The purpose of this study was to test the social reconnection theory through approach-avoidance behaviors after Cyberball ostracism by using the AAT. Half of the participants were excluded while the other half were included as a control group. Both groups then approached and avoided happy and neutral facial expressions on the AAT. Their response times were recorded and compared to test if the excluded individuals approached the smiling faces faster than the neutral faces.

Across the groups, response times achieved a statistical significance with the participants approaching faces faster than they avoided faces. This implies that people, whether included or excluded from a group, are more likely to approach than avoid faces no matter what. Although the three-way interaction of Group, Face and Response was not significant, it was trending

towards significance. The results of this study did not confirm the hypothesis, with the two-way interaction between Group (included and excluded) and Face (happy and neutral) not achieving statistical significance either. However, this result also trended towards statistical significance with a moderate effect size. A G*Power analysis showed that if the observed trends are maintained with the same effect size, only 5 more participants would be needed to attain statistical significance at $p=.05$. If we are correct in the hypothesis then these potential results would show that excluded individuals do appear to have a desire to reconnect with happy and friendlier faces, relative to included individuals.

The results were trending to be consistent with prior research about the desire for reconnection after exclusion. Lakin, Chartrand, and Arkin's (2008) study about unconscious mimicry had particularly consistent results, showing that those who were ostracized were trying to reconnect with new individuals that did not exclude them through unconscious foot-tapping behaviors. These results correspond with our results because the participants were likely unaware of how fast they were responding to the faces. Thus, the current study similarly show that the desire to reconnect is shown through automatic and unconscious actions.

The main limitation of the study was that we had a small participation turnout. Since the study was done in person, we could only run a few participants at a time with only a brief time-period being less than 2 weeks. If this experiment were to be able to be run online, the participation pool and sample size could be larger, leading to more valid results. Another limitation is that the AAT measure lacks ecological validity. When people try to reconnect with others, the method of approach would be very different in a real-life situation. Unlike prior research, the AAT does not assess the desire for actual connection; rather, it is measuring if people automatically approach human faces. On the contrary, the AAT allowed us to see how

fast the desire to reconnect is shown by recording reaction times in milliseconds. Thus, allowed us to see if the reaction to approach was automatic and unconscious. Cyberball also lacks ecological validity as a method of social exclusion since it is a virtual game of catch with cartoon characters rather than a real-life exclusion experience.

For future studies, having the Cyberball program be more human, with pictures of people's faces rather than some small cartoon character that looks the same for all participants, might create a stronger exclusion effect. In addition, using other facial expressions such as anger and disgust in the AAT might show a difference in approach behaviors. Using these different facial expressions would let us assess the effects of threatening social stimuli, like angry and disgusted faces. We would expect that excluded individuals would avoid angry faces faster than they approach happy and neutral faces compared to included individuals. This hypothesis would investigate if excluded individuals will reconnect in friendly situations faster after they are faced with a possible threatening social stimulus. If the experiment is done online, there is a greater chance for a larger sample size, hopefully creating the opportunity for more valid testing of the hypothesis. Future studies can also include an in-person interaction after Cyberball to test the desire to reconnect in real life rather than virtually. These in-person interactions would be testing the desire to reconnect in real time and with other physical people rather than still images of people they have not seen before. Finally, future studies could investigate how exclusion would affect individuals in other countries with different collectivistic ideology than those in the United States.

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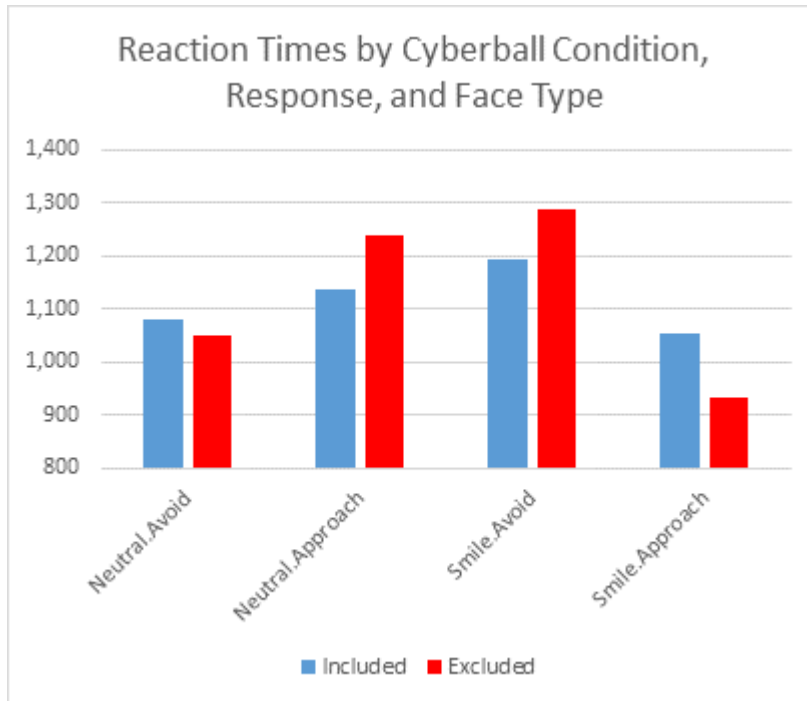


Figure 1. Mean reaction times for approaching and avoiding the happy and neutral faces in the excluded and included groups.

Fear of Negative Evaluation Survey

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

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

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