EXCLUSION TO IMPRESSION: A QUEST FOR REAFFILIATION

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# ABSTRACT

**THESIS:** Exclusion to Impression: A Quest for Reaffiliation

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In situations following social rejection, individuals experience changes in their behaviors, cognitions, and emotions. Documented consequences of social threat have included the need for social connection, a hypersensitive ability to detect social cues, and a preference toward positive information. The present work investigated this unique perspective, specifically exploring how the consequences of rejection influence social judgments (i.e. first impressions). In an experimental design, participants (excluded, included, and control conditions) reviewed facial stimuli (happy, neutral, and angry expressions), ultimately forming trait-based judgments on personality. Group differences in personality ratings, rating accuracy, degree of confidence, desire to affiliate, perceived similarity, and degree of likability were investigated. Results revealed excluded individuals are more confident in their personality predictions than participants in the other two conditions. There were no significant differences between the three groups in accuracy of those judgments, need for affiliation, or bias toward positivity.

**Dedication**

This thesis is dedicated to my loving husband who has been a great source of support throughout my educational journey and academic career. He is an unbelievable motivator and an amazing partner in life. Without his strength and support, this work would not have been possible.

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I would like to express my appreciation to my thesis committee chair Dr. Sharon Bowman for her guidance and patience throughout this process. In my first year at Ball State University, I found it difficult to form a thesis committee. Dr. Bowman, despite her incredibly busy schedule, especially with her commitments as President of the Society of Counseling Psychology, made the time to commit to this project. Her dedication to her students is astounding and without her my graduate experience would not have been the same. She is the reason I feel my graduate education was a success. Her ability to ensure that each student reaches their potential is a commendable gift to which I am so thankful.

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## Introduction

In much the same way the body processes pain in cases of severe physical distress, recent research suggests cases of social rejection may influence behaviors, cognitions, and emotions (Williams, 2001). However, the link between the psychological experience of social exclusion and any physiological pain-management response remains largely uninvestigated in the social exclusion research. The present work seeks to elucidate this relationship.  In other words, how does the physiological pain-management system (i.e. consequences to social exclusion) influence our interpretation of the social world? This work will present three theories derived from documented social exclusion research. These theories indicate that the pain-management response produces a need for social connection, a hypersensitive ability to detect social cues, and a preference toward positive information. The general hypothesis is that these three consequences to social exclusion greatly influence the way we make social judgments or form first impressions of others.

## Human Interaction

Rejection can happen anywhere, anytime, and can stem from unknown sources. Reports of exclusion have been revealed in the workplace, in families, and from strangers (Williams, 2001). Diary studies show that this negative experience can occur as frequently as daily and it has been reported to have occurred under many contexts and across cultures (Williams, 2009). Ostracism, rejection, or being devalued by a group can be distressing for the targeted person. This distress can be present regardless of length of the experience or whether the rejection is coming from a meaningless source (Williams, 2000). The emotional sting of rejection is a pervasive phenomenon that has a wide variety of important consequences to be explored.

Humans are known to have a fundamental need to belong or affiliate with others socially (Baumeister & Leary, 1995). Groups of two or more provide additional resources and potential benefits than being alone, making groups ideal for survival. When this group inclusion is not being met, perhaps from being excluded by others, there can often be severe negative consequences such as increased psychological pain and negative affect (Williams, 2009). Many scientists believe that exclusion has a high emotional impact on individuals based on survivalist mechanisms that become activated due to the negative experience. Because humans have a highly evolved threat detection system, it can be used to accurately detect situations of exclusion or ostracism, and can allow humans to cue into situations of threat and avoid negative consequences (Wesselman, Naire, & Williams, 2012).

Indeed, this threat system works much in the same way as does physical pain detection. In fact, both social and physical pain systems overlap neurologically throughout the body (Eisenberger, Lieberman, & Williams 2003). Both pain systems use a detection device to refocus attention to the source of threat during a negative experience. Because humans are such social animals and rely heavily on groups, the detection system has become sensitive to both physical and socially threatening cues (MacDonald & Leary, 2005). fMRI scans reveal that both social pain and physical pain activate the dorsal anterior cingulate cortex (dACC) and the right ventral pre-frontal cortex in individuals, providing further evidence of the overlap and significance of the human pain detection system (Eisenberger & Leiberman, 2005). The overlap between physical pain systems and social pain systems provide an opportunity to understand the consequences and emotional sting of social pain. Through mapping similar neurological patterns in both pain mechanisms, hurt feelings can be perceived much in the same way as a broken bone (Eisenberger, 2012).

While similarities in the overall perception of physical and social pain exist, there are situations where the consequences from a socially driven threat differ from tissue damage (i.e., physical pain).  In a study of ostracism, researchers used multiple paradigms including Cyberball (an interactive game that induces exclusion) and exclusion-relived (e.g., recalling a previous exclusion experience) to show that both physical and social threats thwart feelings of need deprivation. However, participants in the social pain conditions reported even lower need satisfaction than those in the physical pain conditions (Riva, Wirth, & Williams, 2011). One explanation for this is that social pain experiences can easily be experienced again through episodic memory. In a study using the exclusion-relived paradigm, participants were asked to either relive a situation in which they felt excluded or a physically painful experience. They were also asked how painful the experience was at the time. After the manipulation, participants were asked how much pain they were currently in. While both conditions indicated high levels of pain at the time the incident occurred only the social pain condition experienced pain upon recalling the experience (Chen, Williams, Fitness, & Newton, 2008).  This evidence suggests that the emotional sting from a threatened social need may easily be detected and can elicit severe negative consequences.

When the threat of social exclusion occurs, a basic human motivation activates behaviors, cognitions, and emotions needed to facilitate a close connection and ultimately reaffiliate (Wesselman et al., 2012). Several empirical studies support the idea that individuals who have experienced exclusion may respond in such a way that promotes reaffiliation into a group. In fact, the threat-need model posits that an excluded individual's main goal is to recover from the threatened need satisfaction and that one way to do that is to focus on re-inclusion (Williams, 2009). New research is also finding that the motivation to reconnect is so vital to survival that

humans may experience a hypersensitive emotional and cognitive state that assists in reconnecting with another human being. In sum, social exclusion from an individual or group may elicit a heightened sensation which can be used in detecting social cues (Pickett & Gardner, 2005).

A number of studies provide evidence that rejected individuals experience a heightened social awareness after experiencing social threat (Bernstein & Claypool, 2012; Gerber & Wheeler, 2005). Three current trends in the consequences following exclusion have been documented. The first major consequence from social exclusion is that individuals often show a preference for affiliating with others or a preferences for understanding social information. The second is that excluded individuals experience higher rates of accuracy in detecting social cues compared to those who were included. Third, social exclusion research suggests individuals who have had an exclusion experience often elicit a preference for positive information compared with their included counterparts. In the next section, these three major trends are described in more detail.

**Preference for People**

Empirical evidence exists to support the notion that socially rejected individuals use reaffiliation tactics to cope with the negative repercussions of the experience (Williams, 2009). In fact, Molden, Lucas, Gardner, Dean, and Knowles (2009) suggest that those who have been excluded tend to refocus their attention on many different strategies that promote an inclusive environment with others. Maner and colleagues (2007) more explicitly tested this idea that rejected individuals show a preference for people. They found that rejected targets have a greater desire to make friends than those who have been included. After having participants recall a previous rejection or inclusion experience, excluded individuals expressed more interest than

included individuals, in meeting new people by indicating on a survey that they were interested

in joining a factitious social service organization where meeting others would be very likely. In

the second study in this series, participants experienced either an inclusion or exclusion

manipulation. They were then asked to complete a task in which they could choose whether to

complete the task alone or with the help of someone else. The exclusion group participants were

far more likely than the inclusion group participants to indicate that they wanted to complete the

task with someone rather than alone. These studies provide evidence that excluded individuals

have a preference for people and a desire to affiliate with others.

While socially rejected individuals seem to favor situations where inclusion is likely, they

also show favor for social information when no other options are presented. Gardner, Pickett,

and Brewer (2010) developed a study which, ultimately, related belongingness needs to the

selective retention of social information. This study used a chat room situation to elicit social

inclusion or exclusion outcomes from participations. Then, participants were asked to read a

diary which included both social or group information as well as individual events. The socially

accepted individuals recalled fewer social events than the rejection group. The authors posit that

this phenomenon could be a result of social hunger, or the need to resort to socially relevant

information when belongingness needs are not currently being met. Specifically, this study

asserts that participants have better memory recall of social information following a socially

depriving experience. This parallels other studies which reference the need for others following

an exclusion event.

**Detection Accuracy**

Research suggests recently rejected individuals experience an increase in detection

accuracy for many facets of social information. Rejected individuals are often good at trait-based

memory tasks (Cacioppo & Cacioppo, 2012); a meta-analysis on ostracism showed a clear

increase in perceptual performance when comparing rejected individuals to socially included

participants (Williams, 2007). In another study, participants were assigned to recall and write

about a past experience in which they felt socially rejected or included. Following the

manipulation, results indicated that threatened participants (i.e., the socially rejected condition)

were better at distinguishing real versus fake smiles (Bernstein, Young, Brown, Sacco, &

Claypool, 2008) when compared to those in an inclusion condition.  These studies provide

support for the assertion that socially excluded individuals experience heightened perceptual

awareness and overall accuracy.

Parallel indicators reiterate that socially threatened individuals have a heightened

accuracy for social cues in that targets are often more accurate and elicit greater incidences of

behavioral mimicry than their included counterparts (Lakin, Chartand, & Arkin, 2008). In this

laboratory experiment, rejected individuals mimicked a confederate's behavior (e.g., foot

movements) more often than non-rejected individuals. Further, socially rejected individuals

mimicked in-group confederates more often than those perceived as in an out-group. A

heightened accuracy for social cues, particularly for those in socially driven situations who are

perceived as an in-group, provides further evidence that excluded individuals may have an

adaptive means to promote affiliation after a socially threatening experience (Lakin, Chartand, &

Arkin, 2008).

**Positivity Preference**

As stated earlier, socially rejected individuals may have a preference for positive

information.  Dewall and colleagues (2011) reported that excluded individuals are better at

recalling past positive events rather than past negative events. In this series of four studies the

researchers posit that an exclusion or rejection experience unconsciously increases the need for

positive affect. In the first study, excluded participants recalled more positive memories from

their childhood than accepted individuals. Using a judgment and decision making task,

respectively, the second and third studies showed that excluded individuals had a preference for

positive emotion in their judgments of word similarity. Finally, the fourth study revealed that

excluded individuals completed more ambiguous word stems with happy or positive words than

those individuals who had been accepted. These researchers also explain that, when excluded

individuals recall past positive information, it happens automatically and without much cost in

resources. Not only does this parallel the increased accuracy hypothesis, it further supports the

idea that socially excluded individuals prefer positivity.

The preference for positivity has also been documented using social interaction research.

Bernstein and colleagues (2008) found distressed participants displayed a preference for real

smiling faces as opposed to those with fake or forced smiling faces. The investigators explain

that relationship was influenced by both relational needs and self-esteem suggesting that

individuals may have a skewed perception of others based on their own need state just after a

rejection experience. This evidence further suggests that excluded individuals have a preference

for positivity which may facilitate affiliation with others who are likely to reciprocate and

alleviate the need for companionship.

In another study investigating social interaction, Maner and colleagues (2007) had

participants watch a three minute video of someone discussing their personal and professional

goals. Participants were then asked to develop an idea of whether others perceived the target

stimulus (the person in the video) as sociable or hostile. Rejected individuals were more likely to

assume that others would think the stimulus or person in the video was more sociable. The

authors point out that because excluded individuals may feel devalued or alone, they may

perceive others as more equipped to fulfill their sense of belonging than they really are. This

evidence suggests that those who have been excluded may perceive others in a more positive

manner, which furthers the argument that rejected individuals show a preference for positivity.

These studies provide compelling evidence to support the claim that social exclusion creates a

preference for positively charged experiences.

**Person Perception**

Evidence suggests that there are three mechanisms that come into play after an exclusion

experience has occurred. They include: need to affiliate with others, heightened accuracy in

detecting social cues, and preference for positive information elicited by those who have

experienced social rejection could have a profound impact on the way they interpret their social

world. The connection between the repercussions of social pain and the goal of alleviating the

resulting discomfort provides an opportunity that could lead to an interest in meeting new people

and seeking out social connections. Specifically, this research could have implications for person

perception research and the way we form impressions of others.

The goal of re-inclusion could lead to forming new impressions which could easily be

subject to priming by the consequences discussed above, namely, preference for people,

heightened accuracy, and preference for positivity. Asch's (1946) work on information

processing explains that impression formation is subject to many forms of priming and recency

effects. This may include the experience of exclusion affecting the way we form impressions of

others. This next section reviews literature on person perception research and spontaneous

inference based on facial stimuli. It provides information for understanding how forming new

impressions of others may be influenced by previous experiences.

**Evolutionary Advantage**

The idea that faces can reveal vital information about a person is a cross-cultural belief (Liggett, 1974). In fact, philosophers, historians, and literary scholars have been documenting this phenomenon for centuries (Enlow, Moyers, Merow, & Poston, 1982). Research has only more recently shed light on this subject, ultimately agreeing that faces are meaningful and may provide a source for others to categorize a person as part of a social group (Allport, 1954). Further research investigating facial stimuli found that people have a tendency to make spontaneous inferences about character and personality based on what the individual is seeing (Gilbert, Pelham, & Krull, 1988). These investigators suggest that people often make immediate assumptions about a person based on very little information, such as a face. They also posit that these spontaneous inferences happen without trying and are a low tax response from cognitive resources. Said and colleagues (2009) also found that people often make assumptions about personality, inner thoughts, and core beliefs based on facial appearance alone. In general, it seems that faces provide perceptual information and others make quick decisions or form impressions based on that information.

Forming impressions quickly and with little information (i.e., just on a face) has evolutionarily adaptive qualities which could parallel those following a socially threatening experience. Gibson (1979) explains that human faces can provide a wide variety of adaptive information about a person and they reveal the potential quality of a social interaction. In a study investigating responses to a variety of facial expressions, participants elicited behavior in accordance with evolutionary predictions. After being exposed to angry expressive faces, participants in the study reacted in a defensive manner and began to engage in avoidant behavior (Balaban, 1995). The author suggested the participants' reaction was due to a threat alarm

activation which resulted in perceiving the angry face as a potential threat. Interpreting facial cues is a beneficial and adaptive trait for understanding our social world.

Understanding when the possibility of threat, or alternatively affiliation, are high from a quick decision based on facial cues may be beneficial to ensuring our own self-interests and preserving existing social bonds (Wesselman et al., 2012). Berry and McArthur (1986) examined adults in a lab based computer study.  Participants were observed while viewing pictures of 'cute' baby faces. They concluded that the 'cute' factor in the pictures elicited physiological and behavioral approach response in adult subjects. This coincides with the previously cited evolutionary research. It concludes that, from a survivalist perspective, social cues such as facial expressions are telling and may provide vital information resulting in automatic behavioral responses.

**Merging Concepts**

The need to affiliate with others and be part of a group is a pervasive and dominant characteristic of the human race. The experience of being ignored, rejected, or devalued by group members has clear detrimental emotional consequences. In order to relieve the sting of the resulting social loss, rejected individuals often seek reaffiliation from another. However, little is known about how a person perceives others after an exclusion experience. Specifically, there is very little research on how the consequences of exclusion change the way a rejected individual forms impressions of others.

Knowing that social pain and physical pain neurologically overlap within the body provides a strong foundation for identifying factors that may be influencing the behavioral effects of rejection. As reviewed above, research on social-physical pain overlap explains that rejected individuals may elicit a hypersensitive response to social cues. Three fundamental

consequences of experiencing social exclusion have been identified in the current literature.

Rejected individuals may experience 1) a need for social connection with others, 2) increased

accuracy in detecting social cues, and 3) a preference for positive information. Based on these

assumptions, it stands to reason a rejected individual could be subject to bias in the quest to

resolve the social loss.

The study presented here tested whether these three assumptions about the consequences

of experiencing social rejection influenced the way in which excluded individuals formed

impressions based on three expressive types of facial stimuli: happy, neutral, and angry.

Because rejected individuals have a high motivation to resolve the social loss and have an

intense need to connect with others hypothesis one stated that individuals in the rejection group

will be more likely than individuals in the inclusion or control groups to want to meet the

targeted stimuli in the photos.

The second set of hypotheses was based on the second principle, stating that rejected

individuals experience an increased accuracy in detecting social cues. Based on that information,

the second hypothesis stated that individuals in the rejection group will be more accurate than

individuals in the inclusion or control conditions in forming a first impression of the targeted

stimuli. It stands to reason that with higher rates of accuracy, hypothesis three would state that

excluded individuals will be more confident than would individuals in the inclusion or control

group in their overall personality predictions when meeting individuals for the first time.

Finally, the last hypothesis was derived from the concept that socially excluded

individuals possess a preference for positive information which may bias resulting actions and

decision making. Being aware of an excluded individual's need for social reconnection and their

preference for positive interpretation drives hypothesis four which states that individuals in the

rejection condition would rate faces more positively than would individuals in the inclusion or control conditions.

## Method

### Participants

Participants were recruited via flyers from a small Midwestern university and the surrounding area. The inclusion criteria required participants to be adults over the age of 18. An a priori power calculation performed based on Maner and colleagues' (2007) documented research suggested a minimum of 45 participants be investigated to capture significant results. A total of 63 participants completed the research protocol. Six individuals were dropped from the final data set; three participants recognized a 'person' picture presented as experimental material, while three others had taken pain medication within six hours prior to the study (a known confound to the effects of exclusion). The final pool included 57 individuals (25 males, 32 female, $M_{age} = 26.32$ years, age range: 18-54). In order to gain a better understanding of the sample collected other demographic information was collected: ethnicity (2% identified as Hispanic/Latino/a, 91% as White/Caucasian, 5% as Black/African American, and 2% identifying in another category) student status (77% attending school full-time, 11% attending school part-time, and 13% not identifying as a student), year in school (of the students attending school 42% were in their first or second year of college, 46% were in their third or fourth year of college, and the remaining 14% were attending school in their fifth, sixth, or seventh year of college), employment status (19% employed full-time, 61% employed part-time, and 3% unemployed), and having 20/20 vision (61% responding yes and 39% responding no). The latter included a follow-up question probing about the specific type of corrective equipment used (35% requiring glasses, 30% wear contacts, with remaining 35% not requiring eyewear).

**Materials**

       **Stimulus Profiles.** Before beginning with the experimental procedure stimulus packages

containing information to be presented to the target audience needed to be prepared. This

procedure was adapted from an empirical study that used Facebook profiles as the stimulus for

researching the relationship between person perception and decision making (Waggoner, Smith,

& Collins, 2009). Each profile contained three pictures of a facial expression, one neutral, one

happy and one angry. The profile package also included each stimulus target's responses to the

Ten Item Personality Indicator questionnaire (TIPI; Gosling, Rentfrow, & Swann, 2003).  Target

profiles were developed using nine students from another small Midwestern university.  The goal

was to form the stimulus materials using individuals from an outside university and over two

hours away from where the participants were collected. This was to avoid the possibility of the

participants recognizing a person depicted in the photo, although three participants still

recognized someone.

       Target candidates included only Caucasian males in order to control for possible gender

and racial biases. All target participants were void of facial obstructions to provide the best

visibility of each facial expression (i.e., no glasses or facial hair). Pictures were taken using a 13

megapixel camera. The area captured spans from shoulder to shoulder and from the top of the

head to the top of the chest against a white background. Only direct overhead lighting was used

to control for possible shadowing in the picture, a known variable that can create meaningful

differences in others perspective of a given photo (Braje, Kersten, Tarr, & Troje, 1998).

       Target profile participants were asked to pose for a total of three pictures: one depicting a

'really happy face,' one depicting a 'really angry face,' and one depicting a 'neutral' face. Before

the picture was taken, the neutral face definition, a 'plain, alert face, like a passport photo,

neither positive or negative', was provided (adapted from NimSim database methodology,

Tottenham et al., 2009). After finishing all three pictures participants took the Ten Item

Personality Inventory (TIPI; see Appendix A; Gosling, Rentfrow, & Swann, 2003). This

completed the profile package used as stimuli for the study. Two independent raters reviewed the

photos, labeling each picture as either "angry", "surprised", "afraid", "sad", "happy",

"disgusted", "neutral", or "none of the above" when appropriate. The raters were in agreement

98% of the time when reviewing the series of photos.

Pictures were collected and edited to a black/white color scale and input into

SurveyMonkey to be used in the experimental study (see Figure 1). Each stimulus target's TIPI

questionnaire results were put into a database to be used for a comparison report.

**TIPI.** The Ten-Item Personality Inventory was presented after each photo, but with

modified instructions (Gosling, Rentfrow, & Swann, 2003). Originally, the survey asked the

participant to rate "the degree to which each trait applies to you" (i.e., participant taking the

survey). However, for the purposes of this study participants were asked to assess the degree to

which each trait applied to the person in the photo.

This was a ten-item questionnaire presented on a six point scale with 1 indicating

"*strongly disagree*" and 6 indicating "*strongly agree*," (see Appendix A). The scale was scored

by dividing the 10 questions into five subscales which included extraversion, agreeableness,

conscientiousness, neuroticism, and openness to experiences. Each subscale included two

questions, one directly describing the trait and the other discriminant with the trait which was

later reversed scored.

The personality trait of extraversion can be identified by the amount one enjoys engaging

with the external or social world. Specifically, the TIPI asks individuals to rate how much they

agree with the traits of "extraverted/enthusiastic" and the discriminant traits of "reserved/quiet."

Total extraversion was calculated based on each expression provided to the audience including

the happy faced stimuli, neutral faced stimuli and angry faced stimuli (see Table A for

psychometric properties of all subscales/traits).

The personality trait of agreeableness relates to how well an individual strives or values

getting along with others. People high in agreeableness tend to be optimistic and have a concern

for social balance. The TIPI uses the ratings of "sympathetic/warm" and the discriminant traits of

"critical/quarrelsome" to determine levels of agreeableness. A total agreeableness rating was

calculated for each of the three facial expressions presented as stimuli within the study.

Openness to experience is by far the most diverse trait measured as part of the personality

traits measured by the TIPI. It is often documented as capturing intellectual curiosity, awareness

of diversity, and an appreciation for atypical creativity. TIPI measures this personality trait using

two separate questions with ratings on "openness to new experiences/complex" as well as

"conventional/uncreative" being the oppositional validation. Openness was also calculated for all

three stimuli (i.e. happy, neutral, and angry) as part of this study (Gosling, et. al., 2003).

Neuroticism is the tendency to experience emotions with a negative connotation.

Individuals high in neuroticism may be more venerable to stress and have less tolerance to

adverse events. Indicators of neuroticism measured on the TIPI are "anxious/easily upset" and

"calm/emotionally stable" as the counterpart. Happy expressions, neutral expressions, and angry

expressions were all used to calculate separate totals for neuroticism.

Individuals high in conscientiousness tend to have a heightened sense of self-regulation,

prefer planned behavior, and may be more mindful in their decision making processes. TIPI

records ratings of "dependable/self-discipline" and conversely, disorganized/careless" in order to

capture the overall trait of conscientiousness. The average ratings across both constructs were

averaged to obtain totals for happy expressions, angry expressions, and neutral expressions.

Gosling and colleagues (2003) reported test-retest reliability at a mean of .72. This is just

.08 shy of the Big-Five Inventory, a common scale in capturing indicators of personality (John &

Srivastava, 1999). The Big-Five has a well-documented record of strong reliability and validity.

However, this comes at a price of length, often producing participant boredom and frustration

(Gosling et al., 2003). The TIPI provides a scale which captures those same traits but in a shorter

format. Gosling and colleagues (2003) reported the following internal consistency for each trait:

extraversion (.77), agreeableness (.71), conscientiousness (.76), neuroticism (.70), and open to

experience (.62). The authors also published convergent correlations to the Big-Five including:

extraversion (.87) agreeableness (.70), conscientiousness (.75), neuroticism (.81), and open to

experience (.65). Because participants were required to fill out the TIPI for each of the nine

photographs that they view, the short form was chosen to avoid boredom and to keep the

participants focused during the entire experiment.

**Positivity/Emotional Stability.** In order to access how positive the observer perceived

the stimulus to be, traits from the TIPI scale were used to assess emotional stability, a common

positive personality indicator. Based on the work of DeYoung, Quilty, and Peterson (2007),

emotional stability was calculated by averaging scores from the agreeableness,

conscientiousness, and neuroticism subscales. This calculation was performed for all three

expression types (i.e. happy, angry, and neutral) to produce three separate scores. High emotional

stability, under this definition, was produced from high agreeableness, high conscientiousness,

and low neuroticism subscale scores. Specifically, agreeableness, conscientiousness, and the

reversed scores of neuroticism would be averaged to form the emotional stability scale (see

Table A for psychometric properties for this subscale).

**Negativity/Negative Emotionality.** To assess the overall level of negativity rated by

each observer, traits from the TIPI were also combined to produce a negative emotionality score.

Negative emotionality is characterized by a strong propensity to view the internal and external

environment in a negative way, often reacting unpleasantly and with great sensitivity. In

accordance with DeYoung's (2006) work negative emotionality was calculated using

neuroticism and extraversion subscale scores. In this case high levels of the subscale neuroticism

and low levels of the subscale extraversion would produce a high level of negative emotionality.

Specifically, neuroticism and the reversed scores of extraversion would be averaged to form the

negative emotionality scale. As previously documented, three heterogeneous scores were

produced categorized by happy expressions, angry expressions, and neutral expressions (see

Table A for psychometric properties).

**Confidence.** Participants were asked to rate the confidence of their estimations of the

traits displayed on the TIPI for every picture viewed. This was presented as a single item

question on a six point scale, with 1 representing "*very uncertain*" and 6 representing "*very

confident*." This was used to potentially investigate relationships between confidence and

accuracy as well as inter/intra-group differences between expression interpretations (see Table A

for psychometric properties; see Appendix B).

**Affiliation.** In order to assess whether the participant would like to affiliate (i.e. meet)

with the stimulus face presented, a single item question was asked after being presented after

each photo. This measure was used to assess the potential for connection between the participant

and presented facial stimuli. The question asked "how interested would you be in meeting this

person?" The participant was presented with a six-point Likert-type scale (1= "*very disinterested*" and 6= "*very interested*") (see Table A for psychometric properties; see Appendix B).

**Similarity.** Another single item question was asked to assess how similar the participant felt the person in each photograph was to him or her. This was investigated to understand whether feelings of extraversion could elicit specific adaptive reactions (i.e., interpreting another person to share similar characteristics), which may aid reaffiliative behavior. The question read "how similar did you feel that this person was to you?" It was presented with a six point scale where 1 indicated "*very dissimilar*" and 6 indicated "very similar" (see Table A for psychometric properties; see Appendix B).

**Feeling Thermometer.** A feeling thermometer was presented after each facial stimulus to assess the participants' overall likeability of the person in the photo, and was used to gain a better understanding of their first impression of each individual. The feeling thermometer was adapted from the American National Election Studies (ANES) which is used to assess the public's likeability of potential political candidates in national elections (Curran, 2005). This was a single item, nine point scale presented in the structure of a thermometer. Zero degrees indicated that the participant felt "*very cold or unfavorable*" toward the person while 100 degrees indicated that the participant felt "*very warm or favorable*" toward the person in the photograph (see Table A for psychometric properties; see Appendix B).

**Demographics.** An author-generated demographic survey was also distributed. It included questions about age, gender, ethnicity, year in school, and student status. Manipulation check questions regarding participants' vision (i.e., able to see with or without corrective lenses), recent use of pain medications (use of pain inhibitors in the previous 6 hours), or personal

knowledge regarding the persons portraying the target stimuli (i.e., did they have prior

knowledge of the persons portraying the target stimuli) were also asked.

**Accuracy.** In order to access the accuracy of the participants' judgments an actor-

observer discrepancy rating was calculated for each of the stimuli categories. First, the original

TIPI ratings provided by the persons portraying the target stimuli in the picture were subtracted

from each of the participants' best estimates. Then, each score was put into the absolute value

form. Finally, all scores were averaged across expression for each of the TIPI traits, resulting in

accuracy ratings for all seven TIPI related traits (i.e. extraversion, agreeableness,

conscientiousness, neuroticism, openness, emotional stability, and negative emotionality) for

each of the three expressions (i.e. happy, neutral, and angry). Scores nearing zero were

considered more accurate (or less discrepant) than higher scores, meaning the higher the number

the more discrepancy between the actual ratings of the stimuli and the observer's best guess (see

Table A for psychometric properties; see Appendix B; Robins, Spranca, & Mendelsohn, 1996).

**Procedure**

Participants were randomly assigned to one of three conditions (exclusion, inclusion, and

neutral) using a random number generator. When each person arrived in the research lab for

his/her scheduled appointment, the researcher explained the study, and then presented the

informed consent for the participant's signature. The participant was then given his/her randomly

pulled number, which was then used to elicit the appropriate prompt for the research condition.

The computer would project a short explanation of the directions, followed by the survey itself.

Once in front of the screen the computer asked for their subject identification number.

The participants began the manipulation by taking part in the Exclusion-Relived paradigm

(Pickett, Gardner, & Knowles, 2004). Participants in the exclusion condition received this prompt on the computer screen:

Please take five minutes to reflect on a time when you felt excluded or rejected. Please free write detailed information about the event.

Participants in the Inclusion-Relived condition were prompted with:

Please take five minutes to reflect on a time when you felt included or accepted. Please free write detailed information about the event.

Finally, subjects in the neutral condition were prompted with:

Please take the next five minutes to reflect about the last time you went to the grocery store. Please write detailed instructions on how to travel from the university to the grocery store.

Participants were provided with a five minute timer and told to take as much time as they liked to finish the free writing section, but at least five minutes must pass.

Following the manipulation, participants were presented with a series of facial stimuli and questions about each picture (see Figure 1). Participants were instructed to take as much time as they needed to complete the questionnaire. As each picture from the stimuli package appeared on the screen, the TIPI also appeared onscreen. The questions rating the participants' confidence about the TIPI ratings, and perceptions of affiliation, similarity, and degree of likeability for the target stimulus, also appeared at the bottom of the screen. Participants repeated this procedure for a total of 9 pictures (3 positive, 3 neutral, & 3 negative), randomly selected from the original designed target profiles. Finally, after responding to 9 target stimuli, the participants completed the demographic questions. Total participation time ranged between 18 and 27 minutes.

**Analysis**

Hypothesis one stated that individuals in the rejection group will be more likely than individuals in the inclusion or control groups to want to meet the targeted stimuli in the photos. A 3 (condition) x 3 (expression) multivariate factorial repeated measures ANOVA was calculated using the dependent variable of affiliation in which higher scores meant that the participant has a stronger desire to meet the stimuli on the screen. Between-subjects analysis resulted in no significant effects, $F$ (2, 54) =.90, $ns$, $\eta_p^2$=.02; however, again, significant main effects for the within-subjects factor of expression were found, $F$ (2, 108) =38.31, $p$ <.01, $\eta_p^2$=.42. Results indicate that there were no differences between groups and their desire to affiliate, but that overall subjects had a greater desire to affiliate with the photos depicting a happy expression.

The second hypothesis stated that individuals in the rejection group will be more accurate than individuals in the inclusion or control conditions in forming a first impression of the targeted stimuli. To test this hypothesis, two separate 3 (condition) x 3 (expression) multivariate factorial repeated measures ANOVAs were calculated. The first was analyzed using the accuracy of emotional stability and the second ANOVA was calculated using the dependent variable of the accuracy of negative emotionality. Results for the accuracy of emotional stability yielded no significant differences between conditions $F$ (2, 54) =2.30, $ns$, $\eta_p^2$=.08, with a statistically significant effect for expression $F$ (2, 108) =33.58, $p$ <.01, $\eta_p^2$=.38. The accuracy of negative emotionality also revealed no statistically significant effects $F$ (2, 54) =1.03, $ns$, $\eta_p^2$=.04, but showed a main effect for expression $F$ (2, 108) =2.54, $ns$, $\eta_p^2$=.05. Participants in the rejection condition were no more accurate than the inclusion or neutral groups in predicting both emotional stability and negative emotionality.

Hypothesis three stated that excluded individuals will be more confident than would individuals in the inclusion or control group in their overall personality predictions when meeting individuals for the first time. Analysis included a 3 (condition) x 3 (expression) multivariate factorial repeated measures ANOVA with confidence as the investigated outcome. Between-subjects analysis did reveal a main effect for this test $F$ (2, 54) =16.13, $p$ <.01, $\eta_p^2$=.19, as did the with-in subjects factor $F$ (2, 108) =4.36, $p$ <.05, $\eta_p^2$=.08. While rejected individuals were no more accurate in their trait assumptions, differences were detected the overall confidence of those predictions. The rejected condition did were more confident in their personality predictions than those in the neutral or inclusion conditions.

Finally, the fourth hypothesis stated that individuals in the rejection condition would rate faces more positively than would individuals in the inclusion or control conditions. A 3 (condition) x 3 (expression) multivariate factorial repeated measures ANOVA was calculated with the positive construct of emotional stability as the dependent variable. Results indicated that there were no significant effects in the between-subject analysis $F$ (2, 54) =.93, $ns$, $\eta_p^2$=.03; however, there was a significant main effect for the within subjects factor $F$ (2, 108) =19.34, $p$ <.01, $\eta_p^2$=.26. Rejected individuals rated the photos similarly to those in the inclusion or neutral condition. No significant differences in positivity were found between these three groups.

## Discussion

What are the consequences of social exclusion and how does the body's reaction to social pain impact the way we interpret our social world? Three theories were developed from previously documented research and hypotheses were formed based on the fundamental understanding that excluded individuals have a need for social connection, possess a hypersensitive ability to detect social cues, and have a preference for positivity.

Hypothesis one stated that individuals in the rejection group will be more likely than individuals in the inclusion or control groups to want to meet the targeted stimuli in the photos. Despite previous research, rejected individuals were no more likely to want to meet the person depicted in the photos. To ensure that there was no indication that excluded individuals may be more interested in meeting with the individuals in the photos, feelings of similarity was also tested. To clarify, similarity was investigated to identify whether the need for social connection influenced excluded individuals judgments of others. The idea was that excluded individuals' need to reconnect would be so great that they may interpret others as more similar to themselves in order to resolve the disconnection. A 3 (condition) x 3 (expression) multivariate factorial repeated measures ANOVA was calculated investigating similarity as the outcome. The between-subjects analysis revealed no significant differences between the conditions $F$ (2, 54) =.37, *ns,* $\eta_p^2$=.01, while the within-subjects factor did reveal a statistically significant effect $F$ (2, 108) =27.68, $p$ <.01, $\eta_p^2$=.34. Similarity did not provide any further information as the included and neutral groups were just as likely to view the person in the photos as similar to themselves. This confirmed that there were no differences in the need for reconnection between the excluded, included and neutral groups.

Hypothesis two stated that individuals in the rejection group will be more accurate than individuals in the inclusion or control conditions in forming a first impression of the targeted stimuli. The analysis sought to reveal differences between exclusion, inclusion, and neutral conditions based on an actor-observer rating of emotional stability and negative emotionality. Neither the accuracy of emotional stability nor the accuracy of negative emotionality produced noticeable differences between the exclusion, inclusion, or neutral conditions. In short, the accuracy of excluded individuals' social judgments displayed no differences than that of their

inclusion and neutral condition counterparts, despite their documented hypersensitivity to social

cues.

Even though excluded individuals demonstrated no significant differences in their social

judgments, the analysis of hypothesis three revealed that they were significantly more confident

in the overall decisions of their social judgments compared to those in the inclusion or neutral

conditions. Specifically, hypothesis three stated that excluded individuals will be more confident

than would individuals in the inclusion or control group in their overall personality predictions,

when meeting individuals for the first time. These findings were significant. More importantly,

this demonstrates that excluded individuals felt that their predictions were more accurate than

those of the inclusion and neutral groups.

The fourth hypothesis stated that individuals in the rejection condition would rate faces

more positively than would individuals in the inclusion or control conditions. Results elicited no

significant results, meaning excluded individuals rated photos no more positively than did the

individuals in the inclusion or neutral groups.

Results revealed no significant differences between excluded, included, and neutral

conditions in terms of the need to affiliate with the target stimuli, accuracy of predicted traits,

and ratings for positivity. One likely issue was that of sample size. While a priori power analysis

suggested a minimum of 45 participants, post-hoc power analysis suggests that this was not

sufficient to capture an effect. To begin a minimum of 30 participants per condition is standard

to elicit 80% power per cell (Cohen, 1988). However, this study lacks the 30 participants

required per cell. Clearly, a larger sample size could have elicited more confirmatory results.

The second and parallel issue is that of power. Every analysis performed to test the main

hypotheses lacked the necessary observed power to draw any conclusions. In the case of

differences in the need for affiliation, post hoc power analysis for the between-subjects analysis

was far below the recommended power at .10, leaving the possibility for a Type I error. Cohen

(1992) set a president requiring power above .80; thus, all observed power under this

requirement is insufficient making the conclusions vulnerable to Type I error. Further evidence is

provided in the second analysis, comparing group in terms of accuracy in their personality

predictions, which revealed a post hoc power analysis of .47 for the accuracy of emotional

stability and .22 for the accuracy of negative emotionality. Finally, post hoc power analysis for

ratings of positivity yielded .20 in observed power. Each of the insignificant analyses lacked the

necessary power to make these clear conclusions. Again, it becomes clear that a larger sample

size was needed.

Another issue that may have contributed to the insignificant results was the lack of rich

surveys. Need for affiliation, confidence, and similarity were all single-item questions which

may lack reliability and validity. The TIPI is also questionable source of information. While the

short form had advantages, it may have cost considerable reliability and validity needed to truly

capture clear results. Indeed, the TIPI contains only two questions per construct, overall

decreasing possible reliability based on longer form version like the Big-Five Inventory (Gosling

et al., 2003). It is possible that this provided a breeding ground for statistical error and noise

within the data making it difficult to capture any effects.

One last possibility for the outcome of this study was the manipulation dissipating over

time. It is possible that those in the exclusion condition were less affected by expressions near

the end of the study. For example, pictures seven through nine may have had less of an effect on

the participants than pictures one through six. One way to remedy this would be to make the

pictures more exaggerated in order to ensure a continuous reaction from each of the pictures. In

fact, when reviewing the pictures with the independent raters each of the original discrepancies

were with neutral photos, often confusing them with angry expressions. Specifically, one rater

would report the photo as neutral while the other would report it as angry, until they looked at it

a second time. If the neutral photos were removed this would eliminate possible confusion,

shorten the length of the study, and provide an opportunity for the angry faces to seem more

exaggerated as they would only be compared to happy faced expressions.

**Threat Makes the Heart Grow Fonder**

While three of the four hypotheses failed to show significant results, the investigation did

illustrate a few important trends. First, visual differences can be seen in the ratings of the need

for affiliation, perceived similarity, and degree of likability when reviewing angry expressions. It

was hypothesized that, based on their need for social connection and preference for positivity,

excluded individuals would possess a greater desire to reconnect (or meet new faces). A follow-

up analysis included similarity and likability. These analyses were performed under the

assumption that excluded individuals may see themselves as more similar to the portrayed

stimuli to increase possibility of reconnection and that rate each picture with a higher degree of

likability than would the inclusion or neutral groups. Again, while these results remain

statistically insignificant, visual differences (when viewing in graphical form) can be seen in the

results which may reveal important trends overlooked in the analysis.  Interestingly, excluded

individuals also rated each (angry faced) photo with a greater need for affiliation, perceived

similarity, and degree of likability than the inclusion group (see Figure 3). While these results in

no way confirm the hypothesis, based on the statistical insignificance, the repeatedly high

rankings do raise questions and encourage further exploration.

**Accuracy with a Twist**

Another important result of this investigation was based on the concept that excluded individuals possess a heightened awareness for social cues. It was hypothesized that these socially threatened individuals would be more accurate in their trait-assumptions or personality predictions than would those in the neutral or inclusion conditions. While the results, again, remain insignificant, excluded individuals displayed a tendency to rank angry expressions less accurately than the inclusion or neutral groups on four of the Big Five personality indicators as well as both emotional stability and negative emotionality (see Figures 4 & 5). However, in reviewing the results for happy expressions, the reverse is true. Here, excluded individuals appear to rank happy faces more accurately on three of the personality indicators as well as both emotional stability and negative emotionality (see Figures 6 & 7).

It seems that when excluded individuals made social judgments of angry faces, their predictions were far less accurate than the other conditions. However, when excluded individuals made social judgments of happy faces their accuracy improved and surpassed those in the inclusion and neutral conditions. These relationships seem to indicate an inverse relationship between making trait-based predictions about happy faces verses prediction about angry faces.

One explanation for the inaccuracy in judgments of angry faces is that excluded individuals have already become sensitive to socially threatening cues and therefore should be more sensitive to the angry faces. Bernstein and Claypool (2012) wrote that hypersensitivity to social cues only occurs during slightly threatening experiences. They went on to conclude that intense social rejection can lead to a numbing or flattened affective state, ultimately changing what is happening neurologically. It may be that because excluded individuals have already experienced social pain, the sight of another threatening cue may promote a neurologically

analgesia (i.e., pain inhibitor) than inhibits the hypersensitive effects predicted in the hypothesis.
In short, seeing another angry face raises the intensity of the socially threatening situation
inhibiting the hypersensitive response.

Another congruent explanation takes into account the accuracy of predicted trait-based
judgments elicited in the happy expression photos. In this case, excluded individuals were far
more accurate in their personality assumptions of others. First, this may be because the intensity
of the social exclusion manipulation remained low allowing for the heightened state of
awareness. Second, excluded individuals may be demonstrating a conservation of resources. In
the cases of angry faces, the potential for a positive social interaction is low. Therefore, tapping
into this heightened awareness, which occurs to promote reconnection, would be an inefficient
use of resources (Wesselmann et al., 2012). However, when viewing a happy expression, the
potential for positive interaction is higher and may promote the use of this unique social
facilitating skill (i.e. hypersensitivity to social cues). Indeed, both speculations provide evidence
for this phenomenon and support further research.

**Limitations**

The main limitation to this investigation was a lack of power for the between-subjects
analysis, providing an opportunity for a type one error. Despite pre-investigation power analysis,
it becomes difficult to make conclusions based on the lack of significance for many of the
hypotheses without a sufficient observed power. Future studies should take this into
consideration and increase the sample size to meet at least the minimum requirements of 30
participants per cell.

Another limitation was the study's length. While participants were well informed that the
study would take between 20 and 30 minutes (with many requiring less time) participants often

became restless during the last half of the experiment. A few (3 total, 2 in the neutral condition, 1 in the exclusion condition) even inquired as to how many more pictures they would have to look at until the end. It may be that the first stimuli are more reliable based on attention than the last (although with random assignment it is impossible to differentiate time order).

One other limitation to the study is that only one form of exclusion was tested using the Exclusion-Relived paradigm. Differences in exclusion intensity and type of exclusion have been reported to elicit different effects based on social pain experiences (Bernstein & Claypool, 2012). While the Exclusion-Relived is reported to elicit a hypersensitive state, comparing this form of manipulation to another one may provide a more detailed description of what is occurring. Specifically, by comparing one form of exclusion to another, the analysis could control for exclusion intensity and provide a better understanding of what the excluded individuals are experiencing as a consequence to social threat in comparison to the inclusion or neutral conditions.

**Future Directions**

Future research should, first, move to clarify the above hypotheses either validating the insufficient findings or providing new evidence for the unique consequences of exclusion. Second, researchers should begin to investigate the consequences of social threat and how rejected individuals form new impressions based on more social information. Specifically, researchers can begin analyzing rejected individuals' social judgments of full body pictures instead of facial stimuli alone. This will help to understand whether non-verbal body language cues are also easier to detect post-exclusion.

Further research can advance to social slices of information. Investigating behavioral information may also be a productive direction for this research in which short clips (e.g., 30 sec)

of humans actually moving could be assessed. Finally, researchers should consider investigating

real world situations in which recently rejected individuals are meeting new people and

interacting in a social environment. Singles only gatherings, AA meetings, and in-school

detention rooms may provide a vast array of knowledge about how ostracism actually effects

impression formation in the real world.

Possible other future directions for this study, outside of additional social information,

include alternative stimuli. Research using female faces instead of male faces is a possible

direction. Female faces can provide a vast amount of information and may further influence an

excluded individual's first impression of the given stimuli. Similarly, investigating gender

differences in social judgments may reveal interesting findings. Are females more accurate than

males at impressions, or vice versa? Third, a study which identifies whether females or males are

more accurate in their social judgments, when viewing female or male faces would be very

revealing. Understanding whether gender plays a significant role in the pain management system

and consequently influences the way we interpret facial stimuli is one possible future direction.

**Conclusion**

This investigation sought to elucidate the relationship between the psychological

consequences of social exclusion and the resulting quest for reconnection. Specifically, this

research strives to understand the physiological pain-management system and how the resulting

behaviors, cognitions, and emotions influence the interpretation of our social world. Despite the

knowledge that excluded individuals possess a desire for social connection, a hypersensitive

ability to detect social cues, and a preference toward positive information, results continue to

remain inconclusive. Results revealed that excluded individuals are more confident in their social

judgments but failed to show threatened individuals are more accurate in their personality

predictions. Future research, which seeks to further understand how social pain influences

impression formation, is encouraged.

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Table A

*Psychometric Properties of Ten-Item Personality Indicator (TIPI) Variables*

| Variable | *n* | *M* | *SD* | Actual Range |
|---|---|---|---|---|
| The Big Five | | | | |
| Extraversion (E) | | | | |
| E - Happy Expression | 57 | 4.61 | .69 | 3.00-6.00 |
| E - Neutral Expression | 57 | 2.89 | .51 | 1.67-4.17 |
| E - Angry Expression | 57 | 3.18 | .76 | 1.50-4.33 |
| Agreeableness (A) | | | | |
| A - Happy Expression | 57 | 4.18 | .70 | 2.50-5.83 |
| A - Neutral Expression | 57 | 3.45 | .45 | 2.00-4.17 |
| A - Angry Expression | 57 | 2.61 | .78 | 1.00-4.33 |
| Conscientiousness (C) | | | | |
| C - Happy Expression | 57 | 3.93 | .80 | 2.67-5.83 |
| C - Neutral Expression | 57 | 3.68 | .52 | 2.33-5.00 |
| C - Angry Expression | 57 | 3.24 | .78 | 1.33-4.83 |
| Neuroticism (N) | | | | |
| N - Happy Expression | 57 | 4.25 | .78 | 2.33-6.00 |
| N - Neutral Expression | 57 | 3.80 | .60 | 2.17-5.17 |
| N - Angry Expression | 57 | 2.84 | .77 | 1.17-4.33 |
| Openness (O) | | | | |
| O - Happy Expression | 57 | 4.23 | .74 | 2.50-6.00 |
| O - Neutral Expression | 57 | 3.52 | .67 | 1.50-4.83 |
| O - Angry Expression | 57 | 3.13 | .58 | 1.00-4.17 |
| Positivity/Negativity | | | | |
| Emotional Stability (ES) | | | | |
| ES - Happy Expression | 57 | 3.62 | .29 | 3.06-4.22 |
| ES - Neutral Expression | 57 | 3.44 | .36 | 2.89-4.00 |
| ES - Angry Expression | 57 | 3.34 | .23 | 2.17-4.06 |
| Negative Emotionality (NE) | | | | |
| NE - Happy Expression | 57 | 3.32 | .45 | 2.00-4.42 |
| NE - Neutral Expression | 57 | 3.96 | .46 | 2.75-5.08 |
| NE - Angry Expression | 57 | 3.32 | .43 | 2.42-4.42 |

Table B

*Psychometric Properties of Relational Interpretation Variables*

| Variable | *n* | *M* | *SD* | Actual Range |
| --- | --- | --- | --- | --- |
| Confidence (CF) | | | | |
| CF - Happy Expression | 57 | 3.78 | 1.11 | 1.00-5.33 |
| CF - Neutral Expression | 57 | 3.23 | 1.08 | 1.00-5.67 |
| CF - Angry Expression | 57 | 3.24 | 1.11 | 1.00-5.33 |
| Affiliation (AF) | | | | |
| AF - Happy Expression | 57 | 3.71 | 1.18 | 1.00-6.00 |
| AF - Neutral Expression | 57 | 3.10 | .99 | 1.00-6.00 |
| AF - Angry Expression | 57 | 2.59 | .98 | 1.00-4.67 |
| Similarity (S) | | | | |
| S - Happy Expression | 57 | 3.35 | .98 | 1.00-5.33 |
| S - Neutral Expression | 57 | 2.74 | .91 | 1.00-4.67 |
| S - Angry Expression | 57 | 2.25 | .93 | 1.00-4.67 |
| Likability (L) | | | | |
| L - Happy Expression | 57 | 6.34 | 1.09 | 3.67-8.67 |
| L - Neutral Expression | 57 | 5.21 | .91 | 2.67-7.33 |
| L - Angry Expression | 57 | 4.22 | 1.35 | 1.33-6.67 |

Table C

*Psychometric Properties of Actor-Observer Discrepancy Variables*

| Variable | *n* | *M* | *SD* | Actual Range |
|---|---|---|---|---|
| The Big Five | | | | |
| Extraversion (E) | | | | |
| E - Happy Expression | 57 | 1.71 | .40 | .83-2.63 |
| E - Neutral Expression | 57 | 1.79 | .41 | .83-2.50 |
| E - Angry Expression | 57 | 1.77 | .54 | .83-3.33 |
| Agreeableness (A) | | | | |
| A - Happy Expression | 57 | 1.12 | .41 | .25-2.33 |
| A - Neutral Expression | 57 | 1.31 | .48 | .22-2.33 |
| A - Angry Expression | 57 | 1.85 | .63 | .67-3.33 |
| Conscientiousness (C) | | | | |
| C - Happy Expression | 57 | 1.44 | .34 | .75-2.33 |
| C - Neutral Expression | 57 | 1.64 | .36 | .83-2.33 |
| C - Angry Expression | 57 | 1.54 | .44 | .67-2.67 |
| Neuroticism (N) | | | | |
| N - Happy Expression | 57 | 1.03 | .47 | .33-2.17 |
| N - Neutral Expression | 57 | 1.14 | .42 | .17-2.17 |
| N - Angry Expression | 57 | 1.40 | .63 | .17-3.17 |
| Openness (O) | | | | |
| O - Happy Expression | 57 | 1.53 | .44 | .67-2.67 |
| O - Neutral Expression | 57 | 1.72 | .44 | .83-2.67 |
| O - Angry Expression | 57 | 1.72 | .50 | .83-2.83 |
| Positivity/Negativity | | | | |
| Emotional Stability (ES) | | | | |
| ES - Happy Expression | 57 | 1.15 | .33 | .72-2.17 |
| ES - Neutral Expression | 57 | 1.36 | .29 | .83-2.11 |
| ES - Angry Expression | 57 | 1.60 | .48 | .78-3.06 |
| Negative Emotionality (NE) | | | | |
| NE - Happy Expression | 57 | 1.43 | .44 | .58-2.67 |
| NE - Neutral Expression | 57 | 1.47 | .34 | .83-2.25 |
| NE - Angry Expression | 57 | 1.59 | .50 | .67-2.92 |

Table D

*Factorial Design Repeated Measures ANOVA Between-Subjects Descriptive Statistics*

| Variable | Inclusion Condition | | Control Condition | | Exclusion Condition | | | |
|---|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *M* | *SD* | *F* | $\eta_p^2$ |
| Emotional Stability | 3.43 | .04 | 3.51 | .04 | 3.47 | .04 | .93 | .03 |
| Affiliation | 3.13 | .21 | 2.99 | .22 | 3.24 | .20 | .90 | .02 |
| Similarity | 2.73 | .16 | 2.72 | .16 | 2.89 | .16 | .37 | .01 |
| Accuracy of Emotional Stability | 1.36 | .07 | 1.27 | .07 | 1.47 | .06 | 2.30[+] | .08 |
| Accuracy of Negative Emotionality | 1.52 | .06 | 1.42 | .07 | 1.54 | .06 | 1.03 | .04 |
| Confidence | 3.37 | .22 | 2.73 | .22 | 3.79 | .21 | .93*** | .03 |

*Note.* [+] denotes *p*<.10, * *p*<.05, ***p*<.01*** *p*<.001.
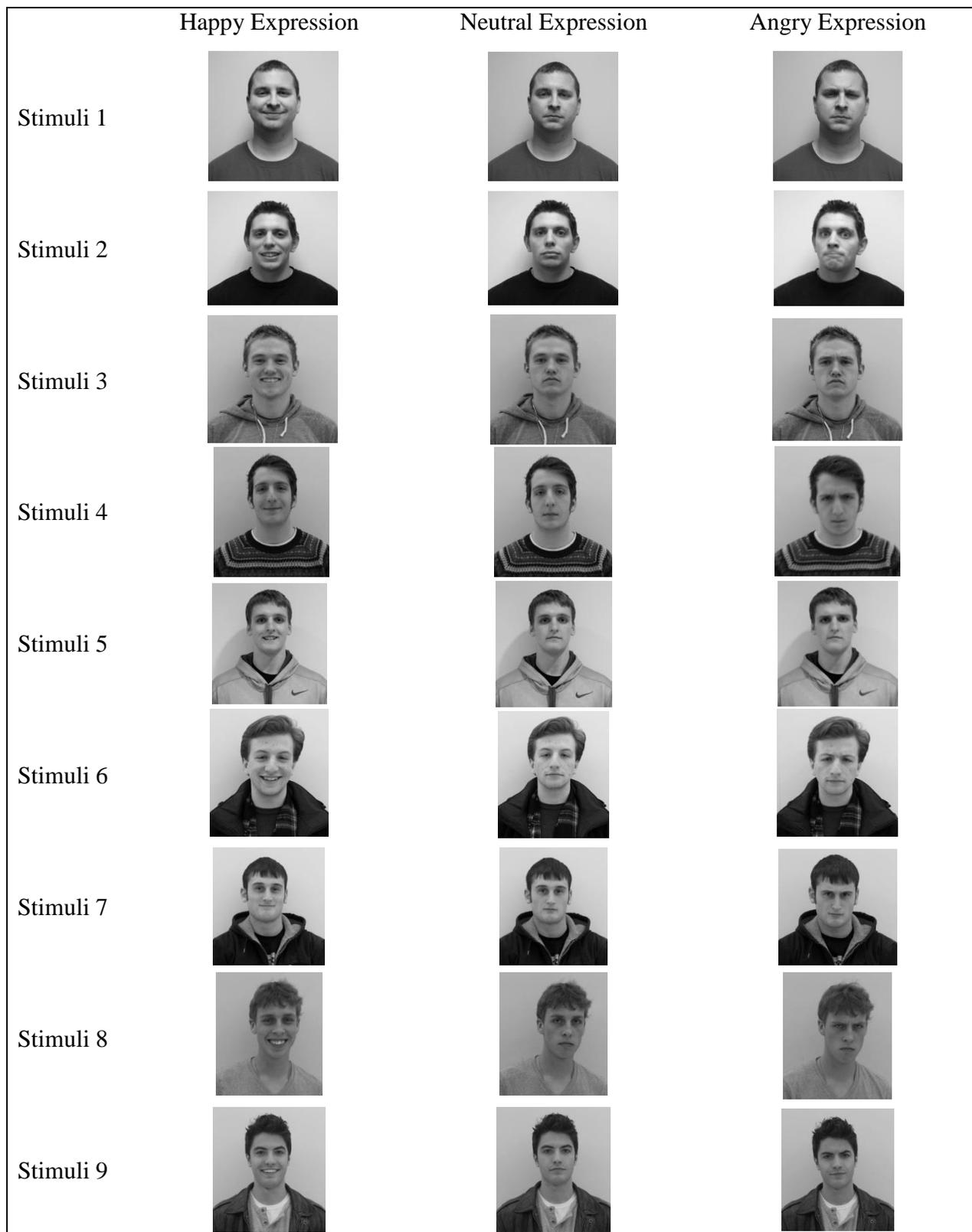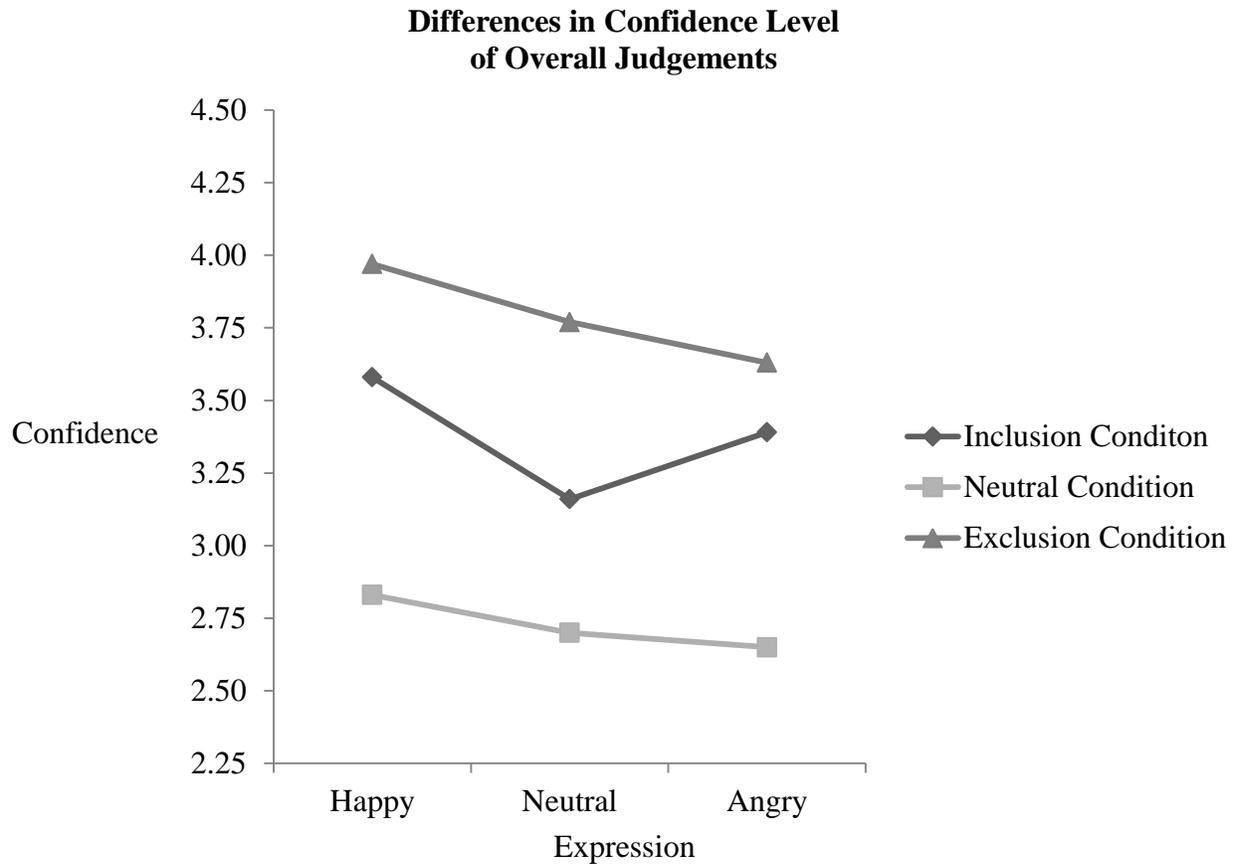
*Figure 1*. Stimuli Pictures of Happy, Neutral, and Angry Faces. Faces were taken from screen shoot of the displayed experiment and do not reflect the actual size or shape of the picture. During actual experiment size and shape were uniform throughout the picture format.

*Figure 2.* Differences in Confidence Ratings Based on Factorial 3 (condition) x 3 (expression) Repeated Measures ANOVA.
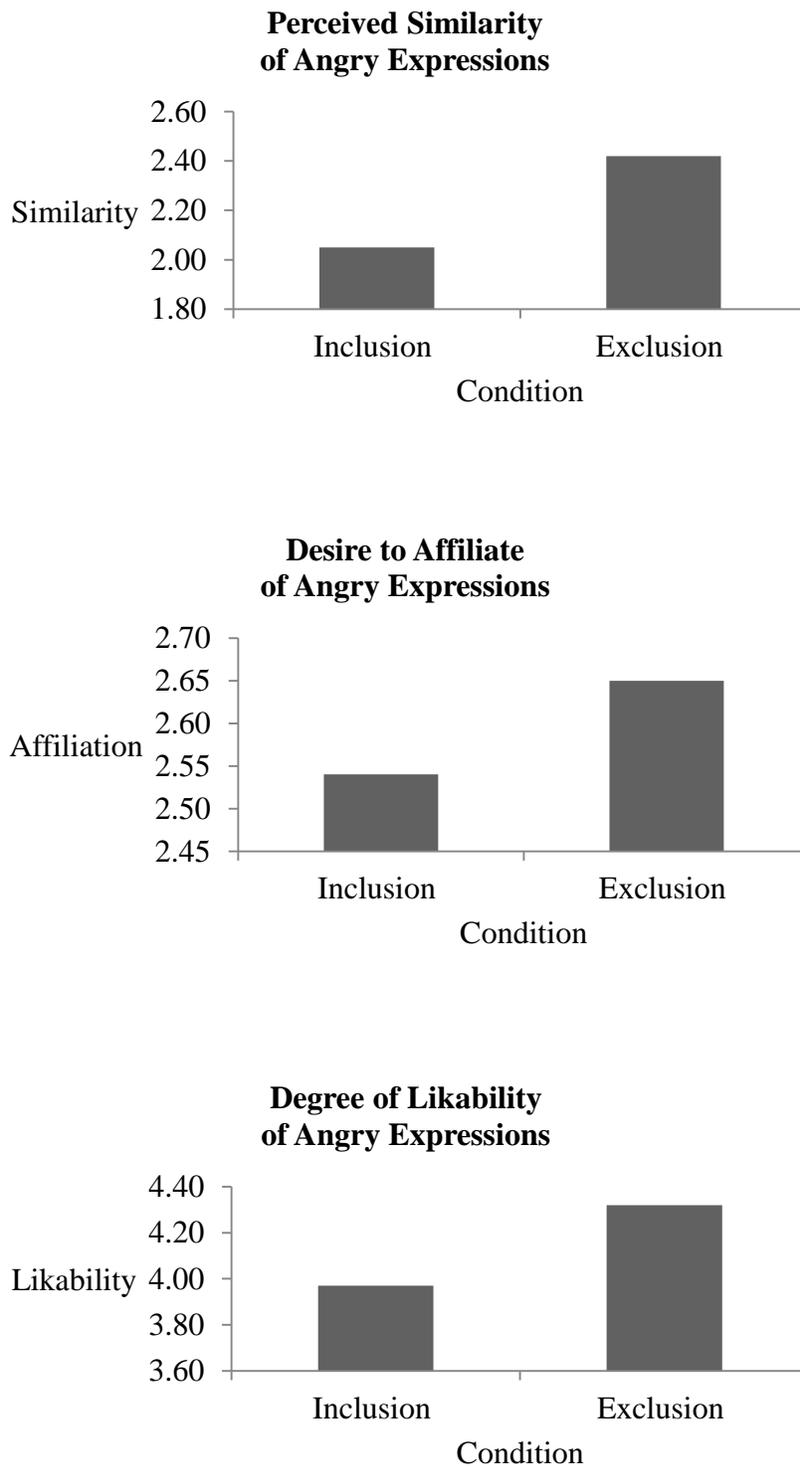
**Perceived Similarity
of Angry Expressions**



**Desire to Affiliate
of Angry Expressions**



**Degree of Likability
of Angry Expressions**



*Figure 3.* Average ratings of perceived similarity, desire to affiliate, and degree of likability for angry expressions for the inclusion and exclusion condition.

**Accuracy of Emotional Stability
for Angry Expressions**



**Accuracy of Negative Emotionality
for Angry Expressions**
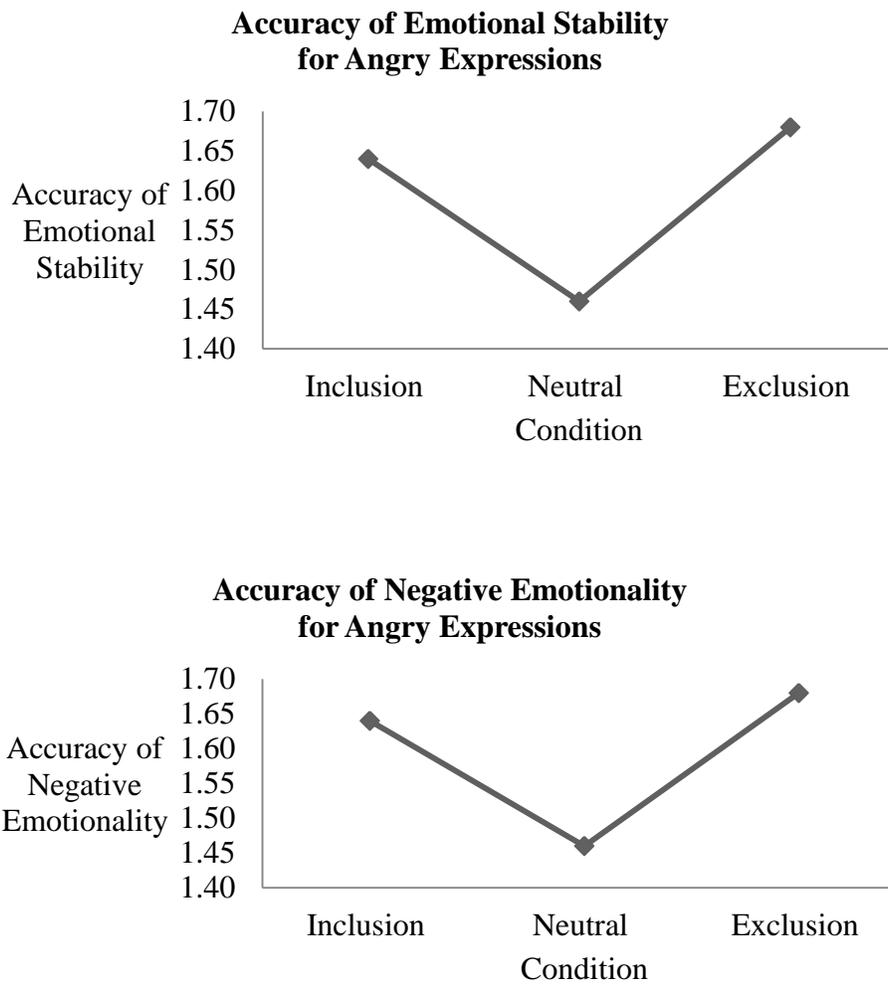


*Figure 4.* Average ratings of accuracy for emotional stability and negative emotionality across conditions for angry expressions. *Note.* Higher rankings indicate less accuracy and a higher actor-observer discrepancy.
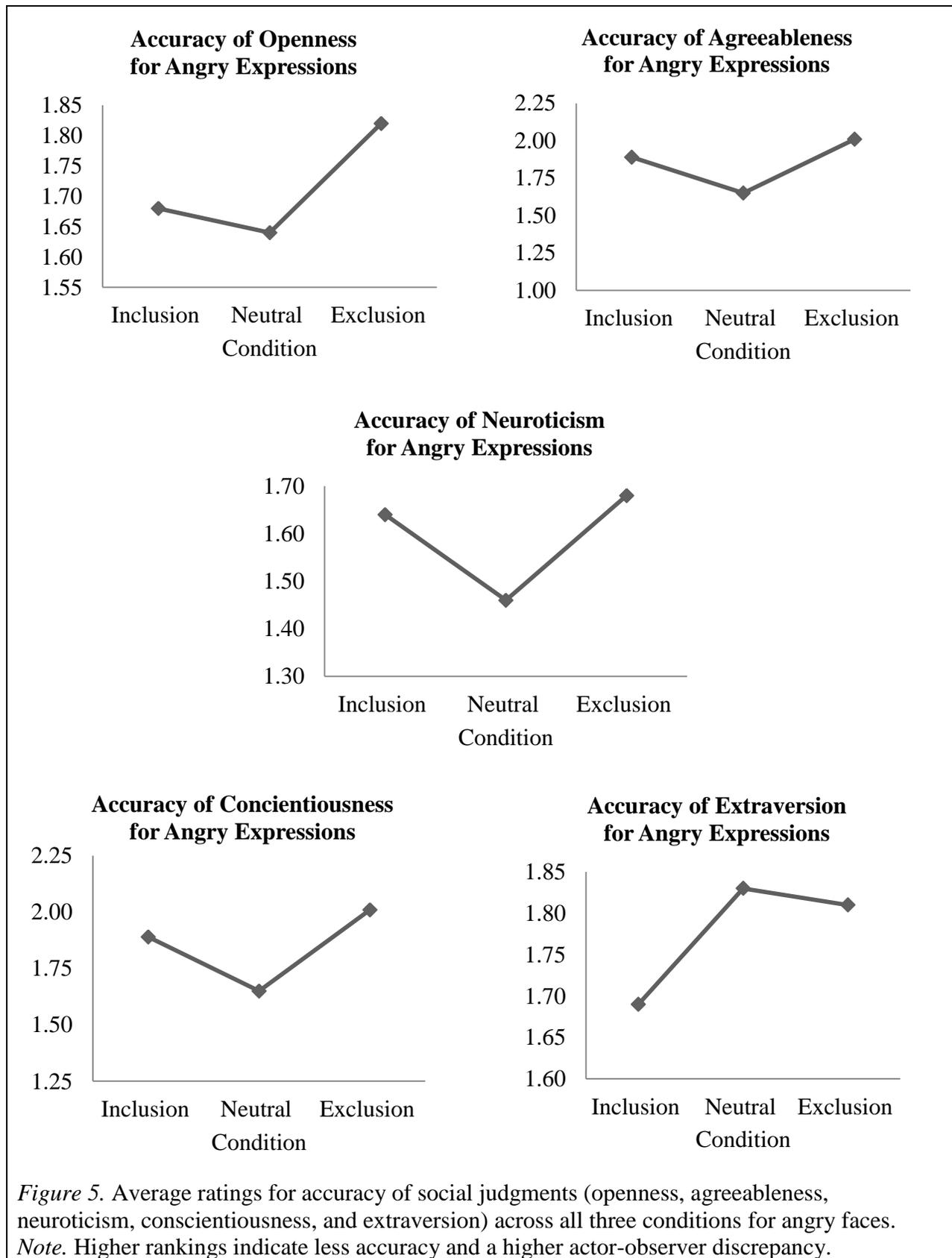
*Figure 5.* Average ratings for accuracy of social judgments (openness, agreeableness, neuroticism, conscientiousness, and extraversion) across all three conditions for angry faces. *Note.* Higher rankings indicate less accuracy and a higher actor-observer discrepancy.

**Accuracy of Emotional Stability
for Happy Expressions**



**Accuracy of Negative Emotionality
for Happy Expression**



*Figure 6.* Average ratings of accuracy for emotional stability and negative emotionality across conditions for happy expressions. *Note.* Higher rankings indicate less accuracy and a higher actor-observer discrepancy.
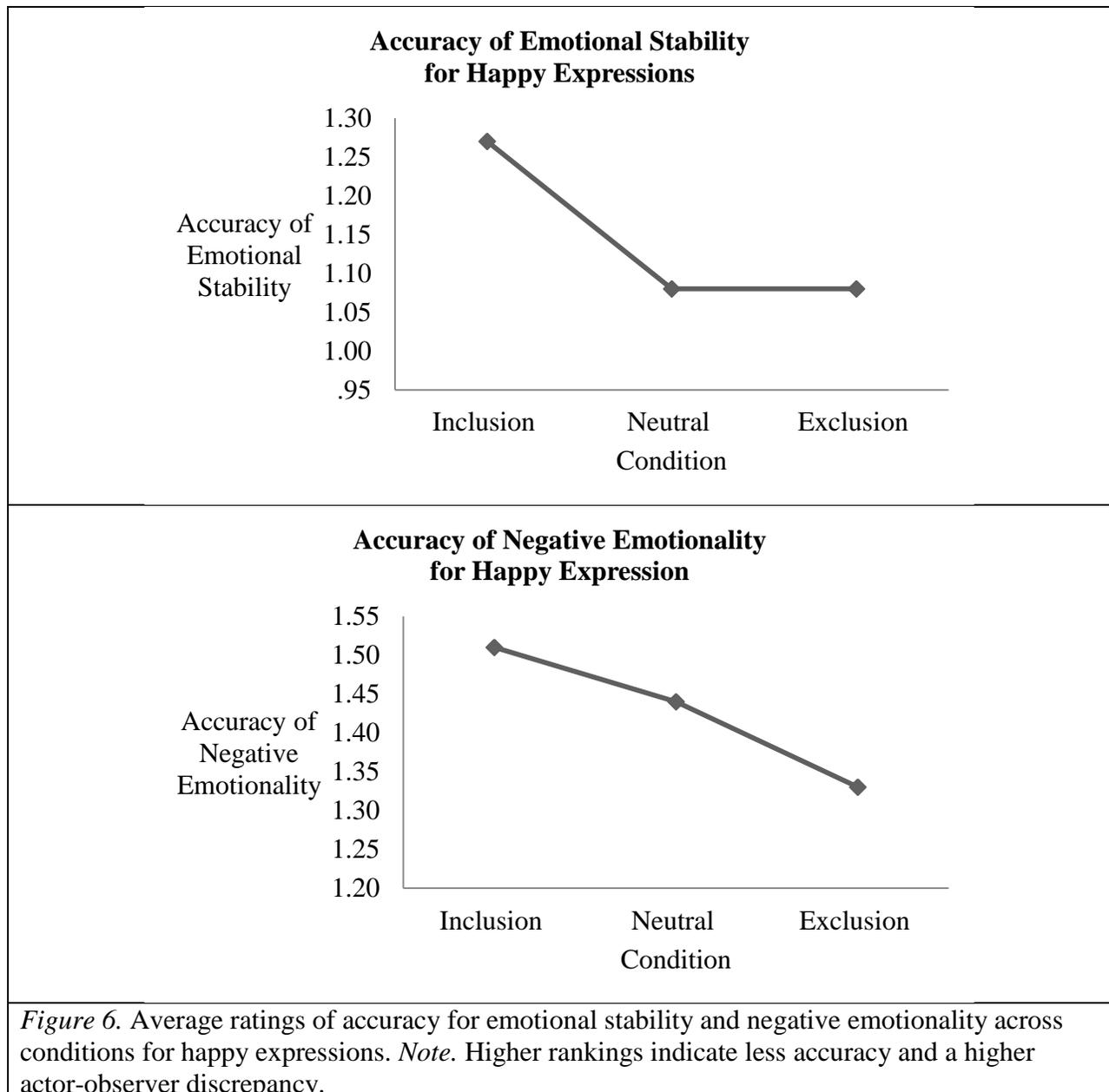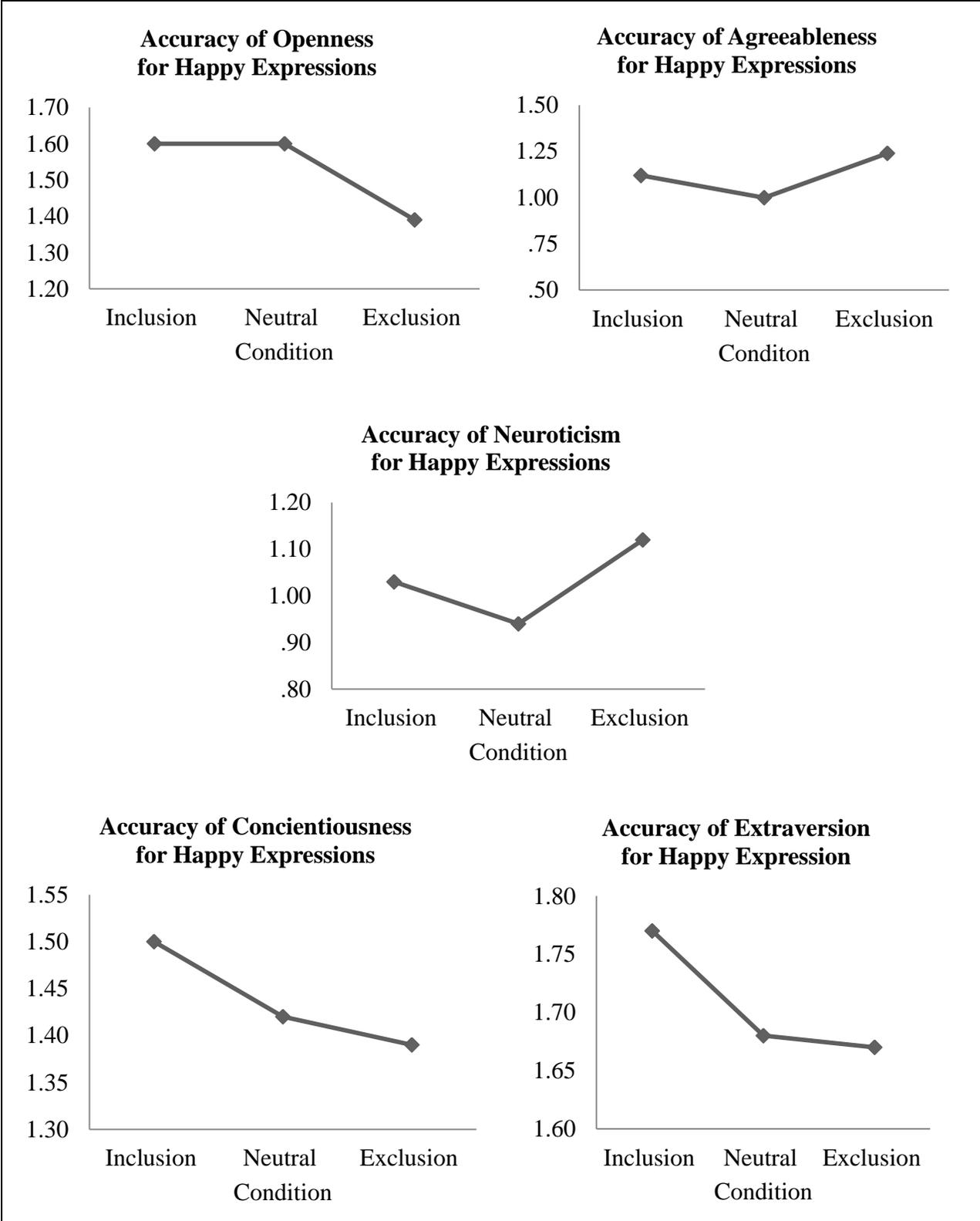
*Figure 5.* Average ratings for accuracy of social judgments (openness, agreeableness, neuroticism, conscientiousness, and extraversion) across all three conditions for happy faces. *Note.* Higher rankings indicate less accuracy and a higher actor-observer discrepancy.

Appendix A

Ten-Item Personality Inventory-(TIPI)

**DIRECTIONS:** PLEASE CIRCLE THE DEGREE TO WHICH YOU THINK EACH TRAIT *APPLIES TO THE PERSON IN THE PICTURE*. USE YOUR BEST JUDGMENT.

|  | 1<br>Strongly<br>Disagree | 2<br>Moderately<br>Disagree | 3<br>Mildly<br>Disagree | 4<br>Mildly<br>Agree | 5<br>Moderately<br>Agree | 6<br>Strongly<br>Agree |
|---|---|---|---|---|---|---|
| Extraverted, enthusiastic. | 1 | 2 | 3 | 4 | 5 | 6 |
| Critical, quarrelsome. | 1 | 2 | 3 | 4 | 5 | 6 |
| Dependable, self-disciplined. | 1 | 2 | 3 | 4 | 5 | 6 |
| Anxious, easily upset. | 1 | 2 | 3 | 4 | 5 | 6 |
| Open to new experiences, complex. | 1 | 2 | 3 | 4 | 5 | 6 |
| Reserved, quiet. | 1 | 2 | 3 | 4 | 5 | 6 |
| Sympathetic, warm. | 1 | 2 | 3 | 4 | 5 | 6 |
| Disorganized, careless. | 1 | 2 | 3 | 4 | 5 | 6 |
| Calm, emotionally stable. | 1 | 2 | 3 | 4 | 5 | 6 |
| Conventional, uncreative | 1 | 2 | 3 | 4 | 5 | 6 |

Appendix B

Post Stimulus Questionnaire

**DIRECTIONS:** PLEASE ANSWER THE FOLLOWING QUESTIONS REGARDING THE CURRENT FACE ON THE SCREEN BY CIRCLING YOUR ANSWER.

1) How confident are you in your personality assessment of this person?

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Very Uncertain | Moderately Uncertain | Mildly Uncertain | Mildly Confident | Moderately Confident | Very Confident |

2) If given the opportunity, how interested would you be in meeting this person?

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Very Uninterested | Moderately Uninterested | Mildly Uninterested | Mildly Interested | Moderately Interested | Very Interested |

3) How similar did you feel that this person was to you?

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Very Dissimilar | Moderately Dissimilar | Mildly Dissimilar | Mildly Similar | Moderately Similar | Very Similar |

4) I'd like to get your feelings toward this person. Please rate this person using something we call the feeling thermometer.

50 DEGREES 100 DEGREES means that you feel favorable and warm toward the person.
0 DEGREES 50 DEGREES means that you don't feel favorable toward the person and that you don't care too much for that person.
You would rate the person at the 50 DEGREE mark if you don't feel particularly warm or cold toward the person.

__ 100 Degrees Very warm or favorable feeling
__ 85 Degrees Quite warm or favorable feeling
__ 70 Degrees Fairly warm or favorable feeling
__ 60 Degrees A bit more warm or favorable than cold feeling
__ 50 Degrees No feeling at all
__ 40 Degrees A bit more cold or unfavorable feeling
__ 30 Degrees Fairly cold or unfavorable feeling
__ 15 Degrees Quite cold or unfavorable feeling
__ 0 Degrees Very cold or unfavorable feeling

Appendix C

Demographics

| | | | | |
|---|---|---|---|---|
| **DIRECTIONS:** PLEASE ANSWER THE FOLLOWING BY EITHER FILLING IN THE BLANK OR CIRCLING THE APPROPRIATE ANSWER. | | | | |
| **Age:** | | | | |
| | | | | |
| **Gender:** | Male | Female | | Other |
| | | | | |
| **Ethnicity:** | Hispanic/ Latino/a | White/ Caucasian | Black/African American | Asian |
| | Native Hawaiian/Pacific Islander | American Indianan/Alaskan Native | | Other: |
| | | | | |
| **Student Status:** | Full-Time | Part-Time | | Not a Student |
| | | | | |
| **Year in School:** | | | | |
| | | | | |
| **Employment Status:** | Full-Time | Part-Time | Unemployed | Retired |
| | | | | |
| **Highest Level of Education:** | | | | |
| | | | | |
| **Do you have 20/20 vision with or without corrective lenses?** | Yes | | No | |
| | | | | |
| **What type of corrective lenses do you have?** | Glasses | Contacts | | N/A |
| | | | | |
| **Have you taken any pain inhibitors (i.e. pain killers, Advil, Tylenol Motrin, etc.) in the last six hours?** | Yes | | No | |
| | | | | |
| **Did you recognize (know personally) anyone in the previously viewed photos?** | Yes | | No | |