

2013

You Get What You Deserve : The Relationship Between Injustice and the Consequences of Social Exclusion

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YOU GET WHAT YOU DESERVE: THE RELATIONSHIP BETWEEN INJUSTICE AND
THE CONSEQUENCES OF SOCIAL EXCLUSION

By

Heather A. Pease

A thesis submitted to the
Department of Psychology
in partial fulfillment of the requirements for the degree of
Master of Arts in Psychology

UNIVERSITY OF NORTH FLORIDA
COLLEGE OF ARTS AND SCIENCES

January, 2013

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Certificate of Approval

The thesis “You get what you deserve: The relationship between injustice and the consequences of social exclusion” submitted by Heather A. Pease in partial fulfillment of the requirements for the degree of Master of General Psychology has been

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Dedication

I dedicate this work to my parents, Tom and Phyllis. Their unwavering support and encouragement was instrumental to the completion of this project.

Acknowledgements

I would like to thank Dr. James H. Wirth for his persistence and commitment to advising me on this project. Dr. Wirth's knowledge, attention to detail, and high standards are a reflection of his expectation that both he, and his students produce the highest quality of scholarship. I thank him for believing in me, and I know I will treasure this experience and look back on it for guidance when I have an advisee of my own.

I would also like to thank my second reader, Dr. F. Dan Richard. Dr. Richard is such an intelligent, kind, and patient man who has always been willing to help me navigate the challenges associated with this project. His mentorship has been invaluable in multiple aspects and I can truly say I could not have completed this project without him.

Lastly, I would like to thank Dr. Emily Zitek, Dr. Don Sacco, and the researchers within the Social Connections Lab, specifically, Angie LeRoy, Adam Zimmerman, Chris Williams, Paul Turchan, Nicole Ashley, and Tara Andrews. Each of these individuals played a crucial role in helping me bring my thesis to fruition.

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Abstract

In this current research I sought to answer two questions; 1) Do individuals have the capacity to recognize when they are being justly or unjustly socially excluded or conversely socially included? 2) Do the consequences of just and unjust social exclusion or social inclusion vary? In efforts to address these questions, I used perceptions of burden (i.e., participant's overall contribution to a group task) to manipulate the perceived fairness of one's inclusionary status to see how this affects the participants' emotional and behavioral reactions.

In Study 1, participants engaged in an imaginary group interaction in which they were burdensome (performing worse than the group) or non-burdensome (performing equal to the group) on a group-task while either being included or rejected. For Study 2, participants were randomly assigned to be burdensome versus non-burdensome, in a similar fashion as Study 1, and then ostracized or included by confederate players in a computerized group word game (i.e., *Atimia*). Participants in both studies reported their levels of perceived justice, needs satisfaction, social pain, negative affect, and aggressive behavior temptations. Participants in Study 2 also completed a behavioral aggression measure (i.e., candy allocation task).

In Study 1, perceptions of justice had no impact on the consequences of social exclusion; rejected participants felt bad regardless of the fairness of their rejection. For included participants, unjust, compared to just, inclusion induced thwarted needs, increased social pain, negative affect, and aggressive behavior temptations (consequences similar to that of social exclusion). In Study 2 almost no differences emerged within the affective state of included individuals. Based primarily on the results of Study 1, it appears that burden may play a critical role in the ostracism experience. Further research is recommended to better understand this relationship.

You get what you deserve:

The relationship between injustice and the consequences of social exclusion

Humans are social animals; therefore, it is essential to their survival to be part of a group. From an evolutionary perspective, group membership has multiple benefits including access to survival-related resources, protection against danger, assistance on difficult tasks, and increased reproductive success (Buss, 1990). Individuals excluded from a group face increased risk of having needs thwarted, difficulty in securing a mate, and difficulty in finding reciprocal alliances to contribute toward resource exchanges.

Groups are not motivated to include just anyone in their ranks; certain types of group members are more desirable. Incompetent, deviant, or unattractive individuals are typically unwelcomed in a group because their presence threatens one or more of the benefits derived from group membership (Buss, 1990). Burdensome group members, those who impede group locomotion, consume more resources than they provide, or make the group vulnerable in some other aspect are frequently viewed as undesirable group mates (Wesselmann, Wirth, Pryor, Reeder, & Williams, in press). Excluding these burdensome, incompetent, or deviant group members is beneficial to the group. With this in mind, humans implement multiple means of social exclusion which aid in regulating group composition. Common methods of social exclusion include exclusion (being kept apart from others), rejection (explicit declaration one is not wanted), and ostracism (being ignored and excluded), all of which lead to similar consequences such as the experience of social pain (Williams, 2007).

Consequences of Social Exclusion

Social exclusion induces social pain, the emotional reaction to the perception of being excluded from desired relationships or being devalued by desired relationship partners or groups (MacDonald & Leary, 2005). The experience of social pain leads to undesirable consequences such as increased activity in brain regions associated with physical pain (Eisenberg, Lieberman, & Williams, 2003). In 2003 Eisenberg et al. used functional magnetic resonance imaging (fMRI) and demonstrated increased activation in the dorsal anterior cingulate cortex (dACC) while an individual experienced social exclusion through the use of a computerized ostracism paradigm (i.e., Cyberball; Williams, Cheung, & Choi, 2000). Researchers view this neurological overlap as evidence of humans' natural ability to recognize and experience social pain in a method comparable to the recognition and experience of physical pain. Chen, Williams, Fitness, and Newton (2008) took this research a step further by discovering that social pain not only shares neural correlates with physical pain, but that it is also more easily recalled and re-experienced than physical pain and leads to consequences analogous to the original pain event. Other consequences of social pain include thwarting basic needs satisfaction, specifically, feelings of belonging, control, self-esteem, and meaningful existence (Williams, 1997), and increases in antisocial behavior (Buckley, Winkel, & Leary, 2003; Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007; Twenge, Baumeister, Tice, & Stucke, 2001; Warburton, Williams, & Cairns, 2004).

Antisocial behaviors are actions or intentions that damage interpersonal relationships or behaviors that are culturally undesirable (Baumeister & Bushman, 2008). Previous researchers found social exclusion prompted antisocial behavior, such as excluded participants donating less money to sources unaffiliated with the exclusionary act (Twenge et al., 2007). Additionally, Twenge et al. (2001) showed excluded participants not only provided more negative job

evaluations of those who insulted them but were also likely to administer a more aversive noise blasts compared to included participants. These types of aggressive reactions are not restricted to just the perpetrators of social exclusion, as Warburton, Williams, and Cairns (2004) found, ostracized, compared to included, participants gave an increased allocation of hot sauce to a stranger, despite knowing the stranger did not like hot foods yet, supposedly had to consume the entire amount of hot sauce. The culmination of these studies leads researcher to believe the experience of social exclusion is integral to the initiation of antisocial behavior and raises the questions of what other factors may affect the consequences of social exclusion.

Moderators of Social Exclusion

Recent efforts of social exclusion researchers focused on trying to identify moderators of social exclusion's consequences. Researcher investigated constructs such as social anxiety (Buckner, DeWall, Schmidt, & Maner, 2009) and group identity (Gonsalkorale & Williams, 2007), concluding that the consequences of social exclusion are fairly immune to moderation. Others found that personality type can buffer the negative consequences of social exclusion (Wirth, Lynam, & Williams, 2010), with few other factors showing similar effects.

However, to date, few researchers have explored how perceptions of injustice affect the consequences of social exclusion. I ask, would the consequences of being socially excluded for a justified reason (e.g., for being burdensome to the group) be less severe, than being socially excluded for an unjustified reason (e.g., due to one's gender, ethnicity, or sexual orientation). Conversely, what consequences, if any, would arise from an individual being unjustly included (e.g., being kept on an athletic team even though one lacks the requisite skills), and how would this differ from justified inclusion (e.g., earning a spot on an athletic team based on one's skills and abilities). In order to tease apart these issues, an understanding of injustice is necessary.

Injustice

Perceptions of injustice, the belief that one is being treated unfairly, may come from the violation of any one of several types of perceived justices including procedural, distributive, and interpersonal justice (Chory-Assad & Paulsel, 2004; Cropanzano & Greenberg, 1997; De Cremer, Wubben, & Brebles, 2008; Leventhal, Karuza, & Fry, 1980; Thibaut & Walker, 1975; Van den Bos, Wilke, Lind, & Vermunt, 1998). Procedural justice refers to the fairness of procedures used when making decisions and allocating outcomes (De Cremer, et al. 2008; Leventhal, et al., 1980; Thibaut & Walker, 1975). Distributive justice is whether an outcome is fair when considering the ratio of one's inputs and outputs in comparison to the input-output ratio of similar others (e.g., working for eight hours and being paid \$100 while an equally skilled co-worker, doing the same task, works eight hours and is paid \$175). Additional factors affecting perceptions of distributive justice include past experiences, expectations, social norms, and moral standards (Chory-Assad & Paulsel, 2004; Krehbiel & Cropanzano, 2000). The last type of justice, interactional justice, is the fairness of the interpersonal treatment one receives (e.g., an employer treating one employee differently than another; Beurgé, 2005a; Bies & Moag, 1986). The fusion of these three forms of justice leads up to an overall perception of organizational justice, which is typically, used as a comprehensive assessment of justice in group contexts such as team-orientated or workplace environments (Chory-Assad & Paulsel, 2004; Cropanzano & Greenberg, 1997).

Consequences of injustice.

As with social exclusion, injustice has myriad of negative consequences including resentment, negative affect, aggression, retaliatory behaviors, and even sabotage (Ambrose, Seabright, & Schminke, 2002; Bies, 1987; Jawahar, 2002). Persons who experience injustice

exhibit poorer work attitudes, lower job performance, increased counterproductive work behaviors (Cohen-Charash & Spector, 2001), and heightened stress (Cropanzano & Wright, 2011). Consequences of injustice not only affect the individual experiencing the injustice, but often feelings of injustice can turn into aggression, as demonstrated by expressions of hostility towards others (primarily verbal and symbolic- such as hand gestures), obstructionism behaviors (interfering with a persons' performance) and overt aggression (e.g., physical assaults, destruction of property; Beuré. 2005b). The association between injustice and aggression is so strong that Jawahar (2002) suggests studying injustice may be the most effective way to understand aggression.

Burden Bridging Social Exclusion and Injustice

Social exclusion is not likely to occur on a random basis, rather research supports that being burdensome to a group (e.g., interfering with movement towards a specific goal or path towards a goal), results in necessary rejection (Schachter, 1951; Schachter et al., 1954). This conclusion is supported with research from Wessermann, et al. (2012), who determined that groups ostracize individuals when the individual was being a burden. Additionally, Wirth, Wessermann, Pryor, Reeder, and Williams (under review) established that being burdensome can induce groups to socially exclude one of its members. Based on this line of research one may concluded that groups know getting rid of the “weakest link” will favor the group, but does the “weakest link” recognize their social exclusion as being just?

Some of the only literature looking at social exclusion and injustice together comes from Smart-Richman and Leary (2009). They developed the Multimotive Model (Figure 1) in which six construals (i.e., fairness of rejection, expectations of relationship repair, pervasiveness of rejection, value of the damaged relationship, perceived cost of the rejection, and possibility of

relational alternatives) are believed to play a key role in determining the consequences of an exclusionary act. These consequences include either seeking acceptance, harming others (by behaving in an antisocial manner), or withdrawing. Smart-Richman and Leary (2009) identified three possible reasons an individual would harm others after experiencing social exclusion, these reasons include having low expectations of relational repair, low value of the relationship, or experiencing perceived unfairness or injustice. The relationship between perceived unfairness or injustice and antisocial behavior is a specific interest in the current study.

Additionally, Smart-Richman and Leary (2009) state that perceptions of fairness are related to aggressive behaviors, specifically, that unjust, compared to just, social exclusion leads to antisocial responses. The question here is what would make an act of social exclusion unjust and why would an unjustly excluded individual have antisocial responses? One potential explanation has to do with perceptions of burden. Individuals who perceive themselves as non-burdensome (i.e., someone who is not thwarting group locomotion) are likely to view their social exclusion as unjust. This is because feelings of justice deal with proper interpersonal treatment as defined by expectations, past experiences, and social norms (Beurgé, 2005a; Bies & Moag, 1986). Someone who is excluded for no apparent reason not only faces the consequences of social exclusion (i.e., thwarted basic needs, social pain, aggression) but they also face the consequences associated with injustice (i.e., aggression, resentment, negative affect; Ambrose, Seabright, & Schminke, 2002; Bies, 1987; Jawahar, 2002) this explains why unjustly excluded individuals would respond in an antisocial manner. Conversely, someone who believes themselves to be burdensome to the group (i.e., by keeping the group from accomplishing a goal), is likely to view their social exclusion as just because the individual acknowledges the group would benefit from their absences. It is already known that groups will ostracize

burdensome individuals (Wesselmann et al., 2012) and that the group members are happier and function better when everyone is being treated fairly (Li & Cropanzano, 2009). Because the burdensome individual is also a group member, this individual may view their exclusion as just because they are cognizant of the fact that removing them from the group may either maintain or reestablish group harmony. These justly excluded individuals may experience no consequences of injustice. Additionally, the consequences of social exclusion are likely to be minimal as the justly excluded individual knows it is their own actions that brought about their exclusion. Unfortunately, this train of thought is nothing more than speculation as there is no published research investigating this. One of the aims of this current study is to determine the validity of this concept.

Overview

Social exclusion and injustice have similarities within their reliance on group dynamics, consequences that correspond with each construct, and connection to burden. The parallel between these constructs highlight two questions regarding the relationship between social exclusion and perceptions of injustice, specifically, 1) Do individuals have the capacity to recognize just versus unjust social exclusion or inclusion? 2) Do the consequences of just and unjust social exclusion (or social inclusion) vary? In an effort to address these questions, I used two different experimental approaches.

In Study 1, participants mentally put themselves into a potentially personal and meaningful group interaction. Individuals imagined being part of a group interaction in which they were either burdensome, or non-burdensome, and were then included or excluded from the group. This was done in hopes of extracting emotional responses that are representative of real life. Upon completing the imagining task, participants answered a series of questionnaires

assessing their affective responses, perceptions of justice, and aggressive behavior temptations. In Study 2, participants were part of a laboratory experiment where they engaged in a game of Atimia, a group oriented word game. During the game participants were either burdensome (i.e., answering fewer word puzzles correctly compared to the rest of their group) or non-burdensome (i.e., answering the same number of word puzzles correctly as the rest of their group) and were then included or ostracized from the group. This study intended to replicate the results of Study 1, while engaging participants in an actual group interaction as opposed to just imaging. Moreover, it also contains both behavioral and self-report aggression measures.

Examining justice, I hypothesized that socially excluded, versus included, participants will experience lower amounts of justice. Additionally, burdensome, compared to non-burdensome individuals will experience lower amounts justice. Additionally, I hypothesize a crossover interaction; specifically, for socially excluded participants, burdensome individuals will report greater amounts of justice, compared to non-burdensome individuals. Conversely, for included participants, burdensome individuals will report lower amounts of justice, compared to non-burdensome individuals.

The consequences of social exclusion are expected to follow a similar pattern of results as the justice measures, such that socially excluded, versus included, participants will experience lower basic needs satisfaction, and experience greater amounts of social pain, aggressive behavior temptations, and more negative overall mood. Burdensome, compared to non-burdensome participants will experience lower amounts of basic needs satisfaction and report greater amounts of social pain, aggressive behavior temptations, and more negative overall mood. Again, I expect a crossover interaction, such that, for socially excluded participants, burdensome individuals will report greater amounts of basic needs satisfaction, less social pain,

and less negative overall mood compared to non-burdensome individuals. Alternatively, for included participants, burdensome individuals will report lower amounts of basic needs satisfaction, greater social pain, and more negative overall mood compared to non-burdensome individuals.

Study One

Method

Participants and Design

Two hundred and twenty-one participants (52.9% female; $M_{\text{age}} = 27.85$; $SD_{\text{age}} = 10.99$; 76.5% Caucasian) self-selected to participate in this on-line study. The study was programmed with Qualtrics and made available via Mechanical Turk (MTurk) which is an on-line research recruitment tool operated through Amazon.com; participants earned \$0.25. Participants were omitted from analysis for completing the study too quickly (five minutes or less; $N = 6$) or for failure to complete the writing prompt ($N = 4$). The final sample consisted of 211 participants, randomly assigned to a 2 (Inclusionary status: included vs. rejected) \times 2 (Imagined performance: equal to group vs. worse than group) between-participants design with one control group. Participants in the control group received no information about imagined performance, but were asked to imagine being rejected.

Experimental Procedure

Upon logging into MTurk, reading the study description, and providing consent, participants engaged in an exercise prompting them to think about and describe (step-by-step) a group interaction. Manipulating performance, participants imagined they were contributing an equal amount of work as the rest of the group (equal to group condition) or significantly less work than the rest of the group (worse than group condition). Manipulating inclusionary status,

participants imagined their group either continued including them throughout the entire interaction (included condition) or began to reject them as the interaction progressed (rejected condition). As part of imagining the scenario, participants described the situation step-by-step and how it made them feel via the following writing prompts.

Take a moment and imagine you are part of a group interaction. Your group is trying to reach a specific goal and you are contributing the *same amount/significantly lower amount* of work as everyone else in the group. As the interaction progresses the group continues to include/begins to reject you. In the space below, type what your interaction was like (step-by-step, in order as it happened). Take your time when explaining what your interaction was like.

In the space provided describe how this interaction would have made you FEEL. Please be as specific as possible. Take as much time as you need.

Dependent Measures

Participants then responded to three sets of questionnaires assessing how they felt at the end of the described interaction. All questionnaires were randomly displayed within each set. Within each questionnaire, all items were randomized, except the pain items, which were presented in sequential order.

Basic Needs, Affect, Behavior Temptations, and Manipulation Checks

Basic needs. Assessing basic needs satisfaction, participants completed a 20-item questionnaire (Williams et al., 2000) comprised of four needs: belonging (e.g., “I felt I belonged to the group,” $\alpha = .90$), control (e.g., “I felt powerful,” $\alpha = .82$), self-esteem (e.g., “I felt

insecure,” $\alpha = .91$), and meaningful existence (e.g., “I felt meaningless,” $\alpha = .87$). All items were evaluated on a scale of 1 (*Not at all*) to 5 (*A great deal*) and compiled for an overall rating ($\alpha = .96$) with higher scores indicating greater needs satisfaction.

Affect. Participants completed a 47-item assessment of affect and overall mood adapted from Buckley et al. (2003) on a scale of 1 (*Not at all*) to 5 (*A great deal*). All items were prefaced by “I felt,” followed by items measuring: anger (irritated, annoyed, angry, mad, rage, frustrated, resentful; $\alpha = .93$), guilt (guilty, shameful, at fault, responsible, blameworthy, accountable; $\alpha = .88$), rejection (accepted, valued, rejected; $\alpha = .86$) hurt (hurt, pained, injured, wounded; $\alpha = .90$), anxiety (anxious, nervous, tense, uneasy; $\alpha = .90$), sadness (depressed, dejected, sad, down; $\alpha = .87$), happiness (happy, delighted, cheerful, pleased, glad; $\alpha = .95$), relief (relief, comfort, cheer, solace; $\alpha = .80$), and gratitude (gratitude, appreciation, thankful, grateful, pleased; $\alpha = .88$). An overall mood scale typically used following social exclusion was also included (good, bad, friendly, unfriendly, pleasant; $\alpha = .85$; Wirth & Williams, 2009).

Behavior temptations. To measure antisocial behavior temptations, participants completed a modified version of a 16-item behavior temptation scale (Buckley, Winkel, & Leary, 2003). Participants indicated how tempted they would be to do a variety of behaviors (not that they actually would) to their group members if they were standing with them face-to-face. The scale consisted of eight prosocial (e.g., making the other group members laugh; $\alpha = .95$) and eight antisocial items (e.g., insult or swear at the other group members; $\alpha = .93$) scored on a 1 (*Not at all*) to 9 (*Very tempted*) scale. I reverse scored prosocial items to create an overall measure of antisocial behavior ($\alpha = .95$).

Manipulation checks. To evaluate feelings of social exclusion, participants indicated how excluded and ignored they felt on a scale of 1 (*Not at all*) to 5 (*A great deal*).

Social Pain

Participants responded to the Numerical Rating Scale 11 (NRS-11; Hartrick, Kovan, & Shapiro, 2003; $\alpha = .87$) to indicate the degree of pain they experienced using 0 (*No pain*) to 10 (*Worst pain imaginable*) scale and measured how unpleasant the pain was using 0 (*Neutral*) to 10 (*Extremely unpleasant*) scale. Participants also completed the Faces Pain Rating Scale (Bieri, Reeve, Champion, Addicoat, & Ziegler, 1990; appendix A) by selecting one of six faces that best represented how they felt.

Measures of Justice

Organizational justice. Participants answered a 20-item organizational justice measure (Colquitt, 2001) assessing four types of justice: procedural (e.g., “To what degree were the procedures the other group members used free of bias?”; $\alpha = .79$), distributive (e.g., “To what degree was your level of inclusion appropriate for the amount of work you completed?”; $\alpha = .86$), interpersonal, (e.g., “To what degree did the other group members treat you with respect?”; $\alpha = .92$), and informational (e.g., “To what degree did the other group members communicate details in a timely manner?”; $\alpha = .81$). Items were scored from 1 (*Not at all*) to 5 (*Very much*) and compiled for an overall score of organizational justice ($\alpha = .92$).

Justification questions. The items in this measure are intended to be more explicit than the Organizational justice measure and are focused on group dynamics unique to the present study. Participants answered a series of eight questions indicating how justly they felt they were treated (e.g., “How justified were the actions of your group members?”) using a scale of 1 (*Not at all*) to 5 (*Very much*; $\alpha = .89$).

Demographics and Debriefing

Lastly, participants provided their basic demographic information (e.g., age, sex, ethnicity). Upon completing the study, participants were debriefed, thanked for their participation, and issued a random number to use as a confirmation code to receive payment via MTurk. The confirmation code also provided additional evidence of completing the study.

Results

I analyzed the data using 2 (Inclusionary status: included vs. rejected) \times 2 (Imagined performance: equal to group vs. worse than group) Analyses of Variance (ANOVA) along with independent samples *t*-tests breaking down the effects of performance (equal to group vs. worse than group) for each level of inclusionary status (included vs. rejected). Additional analyses were reported when relevant.

Justice

Organizational justice. Rejected, versus included participants, felt less organizational justice ($F(1, 166) = 142.93, p < .001; \eta_p^2 = .46$; see Table 1). There was no significant effect of imagined performance ($F(1, 166) = 1.31, p = .253; \eta_p^2 = .01$); however there was a crossover Inclusionary status \times Performance interaction ($F(1, 166) = 50.35, p < .001; \eta_p^2 = .23$). For included participants, equal performance led to greater amounts of organizational justice compared to a worse performance ($t(78) = 6.24, p < .001; d = 1.39$). For rejected participants, equal performance led to lower amounts of organizational justice versus worse performance ($t(88) = -4.03, p < .001; d = 0.85$). This pattern of results is the same for all four factors (i.e., procedural, distributive, interpersonal, and informational justice; weakest interaction effect for informational justice, $F(1, 166) = 17.67, p < .001; \eta_p^2 = .09$).

Justification questions. How justified participants perceived their group treatment followed the same pattern as organizational justice. Rejected, versus included, participants

perceived less justice ($F(1, 166) = 118.13, p < .001; \eta_p^2 = .42$). There was no significant effect of imagined performance ($F(1, 166) = 2.01, p = .159; \eta_p^2 = .01$). A significant crossover Inclusionary status \times Imagined performance interaction ($F(1, 166) = 50.34, p < .001; \eta_p^2 = .23$) showed that for included participants, equal performance led to greater perceived justice than worse performance ($t(78) = 4.27, p < .001; d = 0.95$). However, for rejected participants, equal performance, led to lower amounts of perceived justice compared to worse performance ($t(88) = -5.80, p < .001; d = 1.23$).

Feelings of Social Exclusion

Feelings of being ignored and excluded both produced the same pattern of results. Rejected individuals, compared to included, felt more social exclusion (weakest effect for feeling ignored, $F(1, 166) = 117.88, p < .001; \eta_p^2 = .42$; see Table 2 for descriptives). Worse, versus equal performers, also felt more socially excluded (weakest effect for feeling ignored, $F(1, 166) = 9.10, p = .003; \eta_p^2 = .05$). The interaction of Inclusionary status \times Performance was significant, (weakest effect for feeling ignored, $F(1, 166) = 18.44, p < .001; \eta_p^2 = .10$), such that for included participants, worse performers felt more socially excluded than equal performers ($t(78) = -5.93, p < .001; d = 1.33$). There was no significant difference among rejected individuals ($t(88) = 0.83, p = .407; d = 0.17$).

Basic Needs Satisfaction

Rejected, compared to included, participants reported lower basic needs satisfaction ($F(1, 166) = 156.17, p < .001; \eta_p^2 = .49$). Worse, versus equal, performers had lower needs satisfaction as well ($F(1, 166) = 24.17, p < .001; \eta_p^2 = .18$). A significant Inclusionary status \times Performance interaction ($F(1, 166) = 33.47, p < .001; \eta_p^2 = .17$) showed that for included participants, worse, versus equal, performance lead to lower needs satisfaction; Levene's Test for Equality of

Variance was used to control for unequal variances, ($F = 5.14, p = .026; t_{adjusted}(69.70) = 7.98, p < .001; d = 1.78$). There was no difference among rejected participants ($t(88) = -0.59, p = .554; d = 0.13$). All the basic needs (i.e., belonging, control, self-esteem, meaningful existence) had the same pattern of results (weakest interaction for feelings of belonging, $F(1, 166) = 22.99, p < .001; \eta_p^2 = .12$).

Affect

Negative affect. Feelings of anxiety, anger, hurt, sadness and rejection all had the same pattern; guilt was the only non-significant negative affect item (feelings of guilt, $F(1, 166) = 0.14, p = .706; \eta_p^2 = .00$). The data pattern revealed rejected, versus included individuals, felt greater negative affect (smallest effect for anxiety, $F(1, 166) = 38.63, p < .001; \eta_p^2 = .19$; see Table 2). Worse performers felt more negative affect than equal performers (smallest effect for anxiety, $F(1, 166) = 9.45, p = .002; \eta_p^2 = .05$). The Inclusionary status \times Imagined performance interaction, (weakest effect for anxiety, $F(1, 166) = 12.20, p = .001; \eta_p^2 = .07$) revealed that for included participants, worse performance, compared to equal, led to more negative affect ($t(78) = 4.64, p < .001; d = 1.04$). There was no difference in negative affect for rejected individuals ($t(88) = 0.30, p = .766; d = 0.06$) based on performance.

Positive affect. Happiness, relief, and gratitude all had the same pattern of results, such that for inclusionary status, rejected, versus included, participants had lower levels of positive affect (weakest effect for relief, $F(1, 166) = 68.30, p < .001; \eta_p^2 = .29$). Worse performers, compared to equal, reported lower levels of positive affect (weakest effect for relief, $F(1, 166) = 6.72, p = .010; \eta_p^2 = .04$). The Inclusionary status \times Imagined performance interaction (weakest effect for relief, $F(1, 166) = 5.31, p = .022; \eta_p^2 = .03$) indicated for included participants, worse

performers, versus equal, felt less positive affect ($t(78) = 3.24, p = .002; d = 0.72$). There was no difference in positive affect among rejected participants ($t(88) = 0.22, p = .828, d = 0.05$).

Overall mood. Rejected, compared to included participants, had a more negative mood ($F(1, 166) = 122.90, p < .001; \eta_p^2 = .43$) and the same was found for worse, versus equal performers ($F(1, 166) = 21.99, p < .001; \eta_p^2 = .12$). A significant Inclusionary status \times Imagined performance interaction ($F(1, 166) = 26.58, p < .001; \eta_p^2 = .14$), revealed that for included participants, worse performance, versus equal, led to a lower mood, ($F = 9.43, p = .003; t_{adjusted}(65.72) = 7.08, p < .001; d = 1.58$), whereas, there was no significant difference among rejected individuals ($t(88) = -0.33, p = .744; d = 0.07$).

Social Pain

NRS-11 and pain faces. Participants responded in a similar pattern for both the NRS-11 and Pain Faces scales. Rejected, versus included participants, reported greater amounts of social pain (weakest effect for NRS-11, $F(1, 166) = 70.96, p < .001; \eta_p^2 = .30$). Worse performers felt more social pain than equal performers (weakest effect for NRS-11, $F(1, 166) = 7.25, p = .008; \eta_p^2 = .04$). The Inclusionary status \times Imagined performance interaction, (weakest effect for NRS-11, $F(1, 166) = 6.48, p = .012; \eta_p^2 = .04$) showed that for included participants, performing worse than, compared to equal to the group, resulted in more social pain, ($F = 10.89, p = .001; t_{adjusted}(65.29) = -3.87, p < .001; d = 0.86$). No differences emerged in social pain between performances for rejected participants ($t(88) = -0.10, p = .920; d = 0.02$).

Antisocial Behavior Temptations

Rejected, versus included participants, had greater antisocial behavior temptations ($F(1, 166) = 54.61, p < .001; \eta_p^2 = .25$). Imagined performance had no significant impact ($F(1, 166) = 0.47, p = .494; \eta_p^2 = .00$). The Inclusionary status \times Imagined performance interaction was

marginally significant ($F(1, 166) = 3.32, p = .070; \eta_p^2 = .02$), such that for included individuals, worse versus equal performance led to greater antisocial behavior temptations ($F = 5.13, p = .026; t_{adjusted}(78) = -2.45, p = .017; d = 0.55$). There was no significant difference among rejected participants ($t(88) = 0.69, p = .493; d = 0.15$).

Control Group Comparisons

Using one-way ANOVAs, I compared the four experimental groups to the control group (those who were rejected while receiving no information regarding performance). Upon finding overall significance within the one-way ANOVA and Tukey's HSD test was used to identify the specific differences between conditions. Means and standard deviations are reported in Tables 1, 2 and 3.

Organizational and perceived justice. Significant differences emerged between conditions for both justice measures, (organizational justice, $F(4, 206) = 48.40, p < .001; \eta_p^2 = .48$; perceived justice, $F(4, 206) = 54.34, p < .001; \eta_p^2 = .51$). For organizational justice, both included equal and included worse performers reported greater amounts of organizational justice compared to the control group (p 's $< .001$). No differences were found between the control group and either of the rejection conditions (p 's $\geq .188$). A similar pattern was seen for perceived justice. Specifically, both equal and worse included performers, along with worse performing rejected performers, reported greater perceived justice than the control group (p 's $< .001$). Rejected equal performers did not differ from the control group on feelings of perceived justice ($p = .905$).

Basic needs. There was an overall significant difference between conditions on basic needs satisfaction ($F(4, 206) = 59.68, p < .001; \eta_p^2 = .537$). Both included equal and included worse performers felt more needs satisfaction than the control group (p 's $< .001$). There were no

significant difference between the control group and the rejected equal or worse performers (p 's $\geq .989$).

Negative affect. The same pattern of significant differences were found for feelings of anger, hurt, and rejection (weakest effect for anger, $F(4, 206) = 32.42, p < .001; \eta_p^2 = .39$). Specifically, included participants, both equal and worse performers, felt less negative affect than the control group (p 's $< .001$). There were no differences in negative affect among the control group and rejected equal or worse performers (p 's $\geq .401$). Differences within feeling of sadness and anxiety had a similar pattern (weakest effect for anxiety, $F(4, 206) = 15.50, p < .001; \eta_p^2 = .23$). Only included equal performers reported less anxiety and sadness than the control group ($p < .001$). There were no significant difference amongst the control group, included worse performers, and either of the rejection conditions (p 's $\geq .604$). Significant differences were also found for feelings of guilt ($F(4, 206) = 14.21, p < .001; \eta_p^2 = .22$). Worse performing included and rejected participants experienced greater amounts of guilt compared to the control group (p 's $< .049$). The control group did not differ from either of the equal performing conditions on feeling of guilt (p 's $\geq .202$).

Positive affect. Significant results were found among ratings of positive affect. Specifically, feelings of happiness, relief, gratitude and overall mood all followed the same pattern (weakest effect for relief, $F(4, 206) = 25.26, p < .001; \eta_p^2 = .33$). Included equal performers and included worse performers reported greater amounts of positive affect when compared to the control group (p 's $< .001$). There were no differences between the control group and either of the rejection conditions (p 's $\geq .990$).

Social pain. The significant differences within data for the NRS-11 and the pain faces were the same (weakest effect for NRS-11, Levene's $F = 3.915, p = .004; F(4, 206) = 20.91, p$

<.001; $\eta_p^2 = .29$). Included equal performers felt the least amount of social pain when compared to the control group (p 's < .001). The control group did not differ from any of the other experimental conditions (p 's $\geq .076$).

Antisocial behavior temptations. Significant differences were found within participants' antisocial behavior temptations ($F(4, 206) = 18.70, p < .001; \eta_p^2 = .27$). Included equal, and worse performing participants, reported lower levels of antisocial behavior temptation compared to the control group (p 's < .001). No differences were found between the control group and either of the rejection conditions (p 's $\geq .620$).

Discussion

Results of Study 1 supported the hypotheses. The effect of inclusionary status showed rejected, compared to included, individuals felt more socially excluded, greater negative affect, social pain, and antisocial behavioral temptations while also experiencing less justice, basic needs satisfaction, positive affect, and overall mood. The effect of performance followed the expected pattern as well. Burdensome, compared to non-burdensome participants felt more socially excluded, social pain, and negative affect while also experiencing less basic needs satisfaction, positive affect, and overall mood.

The expected crossover interaction was seen for all the justice measures; perceptions of injustice affected included participants; however, injustice had almost no effect on rejected individuals. Included participants felt inclusion was more just when they were non-burdensome, but less so when they were burdensome. Whereas injustice only affected socially included individuals needs and feelings, rejected participants felt bad regardless of the fairness of their rejection. Specifically, included burdensome, compared to non-burdensome, participants reported lower levels of perceived justice, basic needs satisfaction, positive affect, and greater

social pain, negative affect and aggressive behavior temptations. Rejected participants only reported significant differences for perceived justice, all others were non-significant. This supports that belief that individuals have the capacity to acknowledge when inclusion or exclusion is justified or not. Additionally, this provides evidence that the consequences of injustice are different for rejected and included individuals.

Study Two

Study 1 established that for included participants, unjustly included (burdensome) individuals, versus justly included (non-burdensome), had lower levels of basic needs satisfaction, positive affect, and felt greater amounts of social pain, negative affect, and aggressive behavior temptations. Study 2 was intended to replicate and extend Study 1. To do this, social exclusion was manipulated by having individuals participate in a computerized word game in which they were randomly assigned to be burdensome versus non-burdensome, ostracized versus included, or, alternatively, assigned to the control group. Upon completing the word game, participants responded to the same dependent variables as in Study 1 along with an additional behavioral aggression measures and some exploratory individual differences questionnaires.

Method

Participants and Design

One-hundred and one undergraduate students at the University of North Florida participated in order to satisfy a course assignment or to receive extra credit. Due to technical complications (e.g., losing power, computer failing to launch the experimental manipulation; $N = 20$) participants exited the study prior to completion and were excluded from analysis. Of the remaining participants ($N = 81$), 13 were excluded due to previous exposure to an ostracism

manipulation (i.e., Cyberball or Atimia). The final sample consists of 68 participants, (72.1% female; $M_{\text{age}} = 24.28$; $SD_{\text{age}} = 7.49$; 63.2% Caucasian) who were randomly assigned to a 2 (Inclusionary status: included vs. ostracized) \times 2 (Performance: equal to group vs. worse than group) between-participants design with one hanging control group. Participants in the hanging control group were ostracized while receiving no information regarding their performance.

Experimental Procedure

Following entering the lab, sitting at a computer station, and providing written consent, participants began the experiment by indicating how much they liked certain flavors (i.e., sweet, spicy, salty, sour, and bitter) on a scale of 1 (*Not at all*) to 5 (*Very much*). This was part of a cover story for a subsequent aggression measure (i.e., a candy allocation task), which participants completed later in the experiment.

Next, participants received instructions for Atimia (Appendix B), a computerized, online group task game ostensibly played with two other individuals (who are pre-programmed, computer confederates). The players, including the participant, took turns solving Remote Associates Test (RAT; Bowden & Jung-Beeman, 2003) items. For example, Atimia presented three words; “right,” “cat,” and “carbon” participants needed to come up with the unifying solution word. In this case, the solution word was “copy,” which was added before or after the original three words making; “copyright,” “copycat,” and “carbon-copy.” After attempting to answer a RAT item, players then select a group member to answer the next item, continuing until the group solved 20 RAT items causing the game to terminate. Participants attempted three practice items before officially starting the game.

As part of acclimating participants to Atimia, participants received an explanation of the game statistics, which automatically updated after every round. The game statistics displayed

four pieces of information, the item number, participant accuracy, group accuracy, and the number of correctly answered items. All experimental groups were told the number of correctly answered RAT items needed in order to finish the game and were able to see the game statistics and each players' accuracy in percentages with the exception of the control group, which was only able to see the player avatars, screen names, and the word list. This control group did not receive game statistics, player accuracy scores, or the number of correctly answered items required to complete the game.

Participants were randomly assigned to one of five experimental conditions. All conditions were programmed with identical word lists containing moderately difficult three-word sets which participants were expected to solve correctly approximately 50% of the time (Bowden & Jung-Beeman, 2003). The confederates began each condition by answering the first two or three sets of RAT items; this provided additional education for participants on how the game worked. On a between-participants basis, the participant was then either included in the game, picked to answer the RAT item approximately 33% of time, or ostracized from the game, each confederate only selecting the participant once at the beginning and then never again for the duration of the game.

Manipulating performance, participants were also randomly assigned to play with confederates who answered the RAT items correctly 50% of time or 90% of the time. When confederates were accurate 50% of the time, confederate performance equaled the participants expected performance, creating the equal to the group condition. When confederates were accurate 90% of time, confederate performance was significantly better than the participants' expected performance, producing the worse than the group condition.

Participants in the control group were ostracized and grouped with confederate players who solved only 50% of the RAT items correctly. However, neither player accuracy nor game statistics were displayed for participants in the control group. The control group allowed for the comparison of participants who received explicit information about their performance, allowing them to make attributions about their performance, to individuals who did not have that ability (i.e., those in the control group).

Dependent Variables

After playing Atimia, participants answered four sets of questionnaires. The questionnaires were presented randomly within each set and all of the questionnaire items were randomized with the exception of the NRS-11, which was presented in sequential order. At the end of these measures, participants completed a funnel interview and provided basic demographic information.

Basic Needs, Affect, Overall Mood, and Social Pain

Immediately after playing Atimia, participants answered the first set of questionnaires consisting of the same basic needs (overall, $\alpha = .93$; belonging, $\alpha = .87$; control, $\alpha = .67$; self-esteem, $\alpha = .78$; meaningful existence, $\alpha = .85$), affect (anger, $\alpha = .92$; guilt, $\alpha = .83$; rejection, $\alpha = .74$; hurt, $\alpha = .89$; anxiety, $\alpha = .82$; sadness, $\alpha = .83$; happiness, $\alpha = .92$; relief, $\alpha = .65$; gratitude, $\alpha = .83$; overall mood, $\alpha = .75$), and pain items (NRS-11, $\alpha = .89$) as Study 1. Similar to before, participants responded based on how they felt *during* the game of Atimia on a 1 (*Not at all*) to 5 (*A great deal*) scale.

Aggression Measures

Behavior temptations. Participants responded to the same behavioral temptation measure as Study 1 ($\alpha = .95$).

Candy allocation task. Whereas the behavior temptation scale only measured how *tempted* a participant would be to aggress, the candy allocation task was a behavioral measure of aggression. This task consisted of participants making a plastic baggie of candy to give to each of their fictitious group members. Participants went through a series of instructions, including photographs, which modeled the method for making the baggies of candy which participants were led to believe would be given to the group member they specified.

Each participant had a container in their computer station consisting of: a permanent marker, plastic baggies, twist-ties, and two additional containers, one labeled “Sweet and Fruity Candies” containing Mike & Ike’s candies, and a second labeled “Hot and Spicy Candies” containing Hot Tamales candies. Both candy containers had a two-ounce cup inside to use to distribute the candies. Pilot testing showed Mike & Ike’s, small, fruit flavored chewy candies, had high levels sweetness ($M = 4.22$, $SD = 0.84$) and low spiciness ($M = 1.35$, $SD = 0.96$), whereas, Hot Tamales, small, cinnamon flavored chewy candies, were rated higher in spiciness ($M = 4.13$, $SD = 1.01$) and moderate sweetness ($M = 2.57$, $SD = 1.38$). Both candies were rated on a scale of 1 (*Not at all*) to 5 (*Very much so*).

First, participants opened the container and removed two plastic baggies, two twist-ties, the permanent marker, and wrote the screen name and position of the player (i.e., right player, left player) on the plastic baggie. This allowed researchers to identify for whom the baggie was intended and added face validity to the cover story that the confederates were real people.

Participants were informed of their group members’ taste preferences, specifically, that the left/right player strongly disliked sweet/spicy flavors (counter-balanced and presented in a randomized order). Participants used the two-ounce cup to put as much of each type of candy as they “would like to give the left/right player.” Participants fastened the baggie with a twist-tie,

placed it in a container and given to the researcher at the end of the experiment, ostensibly to then give to the other players. This process was completed two times, once for each group member.

The type of candy and number of pieces were counted and recorded for each participant. Every piece of candy was coded as one unit of prosocial or antisocial behavior, depending on the confederate's taste preferences. For example, a baggie of candy given to a player who strongly dislikes spicy flavors containing 19 pieces of "Hot and spicy candy" and 11 pieces of "sweet and fruity candy" is worth 19 antisocial points and 11 prosocial points for a total antisocial score of eight ($19 - 11 = 8$). Final tallies were based on an antisocial response.

Manipulation Check, Justice Measures, and Funnel Interview

Manipulation check and justice items. Participants completed the same manipulation check and justification items ($\alpha = .93$) as in Study 1. The Organization Justice measure was modified for Study 2 such that participants only reported their perception of procedural ($\alpha = .84$), distributive ($\alpha = .83$), and interpersonal justice ($\alpha = .94$). The informational justice factor was omitted because participants did not have the ability to communicate with their group members while playing Atimia. The three Organizational Justice items were combined for an overall score ($\alpha = .94$).

Funnel Interview. An 11-item funnel interview determined if participants were suspicious of the experimental manipulation. Six opened ended questions asked: "How did you decide which player should answer the word association questions after you completed your turn?" "Why do you think the other players treated you the way they did?" "What did you think this study was about?" "What did you think of the other players?" "How would you describe the other players' answers?" and "How would you describe the word task game?" Participants also

reported if they felt like they were playing with real players, had previously completed an experiment in the same lab space, or if they had previously played Cyberball or Atimia. Open-ended items in the Funnel Interview were included in the experiment for investigative purposes.

Individual Differences Measures

Two individual differences measures were included for exploratory purposes. Specifically, I asked participants about their Justice Sensitivity (e.g., “I can hardly stand it if others are better off than me without deserving it”; Schmitt, Maes, & Schmal, 1997) and Belief in a Just World (“I feel that people earn the rewards and punishments they get”; Lipkus, 1991).

Upon completing all the dependent measures and basic demographic questions, participants exited the lab and handed the container of candy baggies to the researcher. The participant was then debriefed and indicated if he or she wanted their data included in the analyses. Finally, participants were thanked for their participation.

Results

Similar to Study 1, data were analyzed using 2 (Inclusionary status: included vs. ostracized) \times 2 (Performance: equal to group vs. worse than group) ANOVAs and independent samples *t*-tests to break down the effect of performance (equal vs. worse) for each level of inclusionary status (included vs. ostracized). Additional analyses were reported when relevant.

Justice

Organizational justice. Ostracized, compared to included individuals, reported less organizational justice, ($F(1, 50) = 15.41, p < .001; \eta_p^2 = .24$). Performance alone had no significant effect, ($F(1, 50) = 2.15, p = .146; \eta_p^2 = .04$), however the Inclusionary status \times Performance interaction was significant, ($F(1, 50) = 5.42, p = .024; \eta_p^2 = .10$). For included participants, those who performed worse, compared to equal, felt greater amounts of

organizational justice, ($t(29) = -2.07, p = .050; d = 0.86$). There was no difference within the ostracized participants ($t(28) = 0.83, p = .411; d = 0.30$). All three factors (i.e., procedural, distributive, interpersonal) followed a similar pattern with interpersonal justice having the least significant interaction, ($F(1, 50) = 0.61, p = .438; \eta_p^2 = .01$).

Justification questions. Assessing how justly participants felt the confederate players treated them during the game of Atimia, ostracized participants, compared to included, reported lower amounts of perceived justice, ($F(1, 50) = 28.43, p < .001; \eta_p^2 = .36$), as did equal performers, compared to worse performers, ($F(1, 50) = 4.09, p = .049; \eta_p^2 = .08$). There was no significant Inclusionary status \times Performance interaction ($F(1, 50) = 2.72, p = .105; \eta_p^2 = .05$).

Feelings of Social Exclusion

Ignored and excluded. Ostracized participants felt greater amounts of ostracism (i.e., ignored and excluded) than included participants, (smallest effect for feeling excluded, $F(1, 50) = 24.14, p < .001; \eta_p^2 = .33$; see Table 4). The effect of performance was non-significant (strongest effect for feeling excluded, $F(1, 50) = 2.40, p = .127; \eta_p^2 = .05$). The Inclusionary status \times Performance interaction for feeling ignored was non-significant ($F(1, 50) = 0.06, p = .814; \eta_p^2 = .00$), however the Inclusionary status \times Performance interaction for feeling excluded was marginally significant, ($F(1, 50) = 3.39, p = .072; \eta_p^2 = .06$). For included participants, worse performance, versus equal, led to greater feelings of exclusion, ($F = 13.86, p = .001; t_{adjusted}(22) = -2.63, p = .015; d = 1.17$). There was no difference amongst ostracized participants ($t(28) = 0.20, p = .844; d = 0.08$).

Basic Needs Satisfaction

Ostracized, compared to included participants, reported less basic needs satisfaction (smallest effect for meaningful existence; $F(1, 50) = 17.61, p < .001; \eta_p^2 = .26$; no significant

effect for self-esteem, $F(1, 50) = .00, p = .996, \eta_p^2 = .00$). The effect of performance was non-significant (largest effect for self-esteem, $F(1, 50) = 1.29, p = .262; \eta_p^2 = .02$). The Inclusionary status \times Performance interaction was only significant for feelings of belonging and meaningful existence (smallest effect for belonging, $F(1, 50) = 4.13, p = .047; \eta_p^2 = .08$).

Negative Affect

Guilt. Ostracized participants felt less guilt than included participants ($F(1, 50) = 10.75, p = .002; \eta_p^2 = .18$). Equal performers, versus worse performers, also felt less guilt ($F(1, 50) = 7.26, p = .010; \eta_p^2 = .13$). The Inclusionary status \times Performance interaction, ($F(1, 50) = 1.90, p = .031; \eta_p^2 = .09$), revealed included participants who performed worse than the group, compared to equal, felt more guilt ($t(22) = -2.64, p = .015; d = 1.10$). Again, no differences of performance among ostracized individuals emerged ($t(28) = -0.48, p = .636; d = 0.17$).

Sadness and anxiety. There was no significant effect of inclusionary status for feelings of sadness or anxiety, (largest effect for sadness, $F(1, 50) = 1.56, p = .218; \eta_p^2 = .03$). Worse performers, versus equal, felt greater amounts of sadness and anxiety (largest effect for anxiety $F(1, 50) = 7.52, p = .008; \eta_p^2 = .13$). The Inclusionary status \times Performance interaction was non-significant, (largest effect for sadness, $F(1, 50) = 3.79, p = .057; \eta_p^2 = .07$). Breaking down the marginal effect for sadness, for included participants, worse performance, as opposed to equal, resulted in greater feelings of sadness, ($F = 30.34, p < .001; t_{adjusted}(13.79) = -3.00, p = .010; d = 1.18$). Again, no differences appeared for ostracized participants ($t(28) = -0.22, p = .829; d = 0.08$).

Rejection. Ostracized participants felt more rejected than included participants ($F(1, 50) = 22.68, p < .001; \eta_p^2 = .31$). There was no significant effect of performance ($F(1, 50) = 0.02, p$

= .902; $\eta_p^2 = .00$) and no significant Inclusionary status \times Performance interaction ($F(1, 50) = 0.10, p = .755; \eta_p^2 = .00$).

Anger and hurt. Feeling of anger and hurt followed the same pattern with all effects being non-significant: inclusionary status, (largest effect for anger, $F(1, 50) = 1.95, p = .169; \eta_p^2 = .04$), performance, (largest effect for hurt, $F(1, 50) = 2.17, p = .147; \eta_p^2 = .042$), Inclusionary status \times Performance interaction (largest effect for anger, $F(1, 50) = 3.32, p = .091; \eta_p^2 = .06$).

Positive Affect

Happiness, relief, gratitude and overall mood. There were no significant main effects or interactions for feelings of happiness, relief, gratitude or overall mood; inclusionary status (largest effect for gratitude, $F(1, 50) = 4.52, p = .224; \eta_p^2 = .03$), performance (largest effect for overall mood ($F(1, 50) = 0.19, p = .660; \eta_p^2 = .00$), Inclusionary status \times Performance interaction (largest effect for happiness, $F(1, 50) = 0.50, p = .485; \eta_p^2 = .01$).

Social Pain

NRS-11 and pain faces. There was no significant effect of inclusionary status for social pain (largest effect for pain faces, $F(1, 50) = 0.05, p = .820; \eta_p^2 = .00$). For the pain faces scale, worse performers reported more pain than equal performers ($F(1, 50) = 6.47, p = .014; \eta_p^2 = .12$); the effect of performance was non-significant for the NRS-11 ($F(1, 50) = 0.51, p = .480; \eta_p^2 = .01$). The Inclusionary status \times Performance interaction was not significant for either of the social pain measures (largest effect for NRS-11, $F(1, 50) = 1.63, p = .208; \eta_p^2 = .03$).

Aggression Measures

Antisocial behavior temptations and candy allocation. Ostracized, compared to included participants had greater antisocial behavior temptations and (marginally) greater antisocial behaviors (smallest effect for candy allocation, $F(1, 50) = 3.88, p = .055; \eta_p^2 = .07$).

There was no significant effect of performance, (largest effect for candy allocation, $F(1, 50) = 2.75, p = .103; \eta_p^2 = .05$) and no significant Inclusionary status \times Performance interaction (largest effect for candy allocation, $F(1, 50) = 1.02, p = .318; \eta_p^2 = .02$).

Control Group Comparisons

As with Study 1, one-way ANOVAs were used to identify any significant differences between the four experimental groups and the control group. Tukey's HSD was used to pinpoint which groups were significantly different. Mean and standard deviations are reported in Tables 4, 5, and 6.

Organizational justice. Participants did report significant differences in amounts of organizational justice ($F(4, 63) = 7.67, p < .001; \eta_p^2 = .39$). Included worse performers reported greater amounts of organizational justice compared to those in the control group ($p < .001$). No other differences were found (p 's $\geq .200$).

Perceived justice. Significant differences in perceived justice, ($F(4, 63) = 11.81, p < .001; \eta_p^2 = .43$), were found between the control group and both included conditions (p 's $\leq .034$). Neither of the ostracism conditions differed from the control group (p 's $\geq .955$).

Basic needs. Participants' basic needs satisfaction did significantly differ ($F(4, 63) = 6.92, p < .001; \eta_p^2 = .31$). For those who were included, both equal and worse performers, reported greater needs satisfaction when compared to the control group (p 's $\leq .030$). The control group did not significantly differ from either of the ostracism conditions (p 's $\geq .858$).

Anger and sadness. The same pattern of significant differences was seen for feelings of anger and sadness (smallest effect for anger, $F(4, 63) = 3.76, p < .008; \eta_p^2 = .19$). Specifically, included equal performers felt less negative affect compared to those in the control group ($p = .303$). The control group did not differ from any of the other experimental conditions ($p \geq .174$).

Hurt. There were no significant differences in feelings of hurt among any of the experimental conditions, including the control group ($F(4, 63) = 1.97, p = .109; \eta_p^2 = .11$).

Anxiety. Although the overall ANOVA was significant ($F(4, 63) = 2.74, p = .036; \eta_p^2 = .15$), the control group did not differ for any other condition (p 's $\leq .236$).

Guilt. Significant difference were found within feelings of guilt (Levene's $F = 5.48, p = .001; F(4, 63) = 7.33, p < .001; \eta_p^2 = .32$). Included worse performers reported greater amounts of guilt when compared to the control group ($p < .001$). There were no other significant differences between the control group and the other conditions (p 's $\geq .949$).

Rejection. Participants' feelings of rejection did significant differ ($F(4, 63) = 7.13, p < .001; \eta_p^2 = .31$). Both included equal, and included worse performers, reported lower levels of rejection versus those in the control group (p 's $\leq .003$). There were no differences between the control group and ostracized participants (p 's $\geq .909$).

Happiness, relief, gratitude, and overall mood. None of the ANOVA's for positive affect were significant (largest effect for feelings of gratitude, $F(4, 63) = 0.89, p = .474; \eta_p^2 = .05; p$'s $\geq .534$).

Pain faces and NRS-11. Both of the social pain ANOVA's were non-significant (largest effect for pain faces, $F(4, 63) = 1.85, p = .130; \eta_p^2 = .11; p$'s $\geq .501$).

Aggressive behavior temptations. Participants' aggressive behavior temptations did significantly differ ($F(4, 63) = 4.20, p = .004; \eta_p^2 = .21$). Both equal, and worse performing, included participants had less aggressive behavior temptations than those in the control group (p 's $\leq .027$). There were no differences between the control group and any of the ostracized participants (p 's $\geq .769$).

Candy allocation task. The ANOVA for the candy allocation task was non-significant ($F(4, 63) = 2.20, p = .080; \eta_p^2 = .12; p's \geq .638$).

Discussion

Study 2 failed to replicated Study 1 with the results differing for almost all measures. The hypotheses were supported for only a few of the expected main effects of social exclusion. Measures of feeling ignored and excluded (the ostracism manipulation check) followed the same pattern as in Study 1 although many of the other dependent variables did not. Specifically, ostracized, compared to included, individuals felt more socially excluded, rejected, and had greater antisocial behavior temptations while also experiencing less justice, basic needs satisfaction, and lower levels of guilt. Contrary to results typically seen in social exclusion research, inclusionary status had no effect on social pain, affect (except guilt), and overall mood. Burdensome, compared to non-burdensome individuals reported greater perceived justice, guilt, sadness, anxiety, and social pain. However, no other significant effects were found; the expected crossover interaction did not emerge for any of the measures.

General Discussion

The current research intended to answer two questions, 1) Do individuals have the capacity to recognize just versus unjust social exclusion or inclusion? 2) Do the consequences of just and unjust social exclusion or social inclusion vary? In the Multimotive Model Smart-Richman and Leary (2009) stated that unfair social exclusion induces aggressive behavior; however, little detail is provided as to what constitutes unfair social exclusion. I believe that the degree of burden an individual puts on group is critical in determining if an individual is fairly or unfairly excluded, or included, in a group. Two studies tested this theory. In Study 1, participants imagined taking part in a group task while being burdensome or non-burdensome to

the group and either included or rejected. In an effort to replicate and extend the results of Study 1, participants in Study 2, engaged in an online group task with factitious group members and were either burdensome or non-burdensome (based on performance) while also being ostracized or included. Study 2 contained all of the same dependent measures as Study 1 with the addition of a behavioral aggression measure (i.e., candy allocation task).

For Study 1, participants who were in the rejection conditions reported feeling more ignored and excluded than those in the included conditions. In response to the first question posed, all participants did judge their inclusionary status as just or unjust. Burdensome individuals acknowledged it was unjustified to keep them in the group and, therefore, justified to reject them. Non-burdensome individuals indicated it was justified to keep them in the group, and unjustified to reject them. This shows that individuals do have the capacity to identify just versus unjust social exclusion or inclusion.

Regarding the second question, for Study 1, the consequences of just versus unjust social exclusion did differ from the consequences of just versus unjust social inclusion (somewhat). Failing to support my hypothesis, for rejected individuals, burden had no effect on the severity of consequences of social exclusion. Rejection was equally unpleasant for both justly and unjustly rejected individuals. To be exact, for rejected participants, burdensome individuals experienced just as much social pain, negative affect, aggressive behavior temptations, and thwarted needs as those who were non-burdensome. Whereas for included participants, non-burdensome, compared to burdensome, individuals reported feeling greater needs satisfaction, and less aggressive behavior temptations, social pain, and negative affect; this supported my hypothesis. While included burdensome individuals felt better than all of those who were rejected, they did not feel as good as included non-burdensome participants revealing a step pattern as evident in the results

of the one-way ANOVA's. This step pattern was consistent across all of the dependent variables (i.e., social pain, needs satisfaction, antisocial behavior, and negative affect) within Study 1.

Results of Study 2 failed to replicate many of the same patterns seen with Study 1. As with Study 1, ostracized participants reported feeling more excluded and ignored compared to included participants, however it does not appear that participants were feeling burdensome. Participants did not report feeling as if they were experiencing just versus unjust ostracism or inclusion. Oddly, included burdensome individuals reported experiencing the most justice compared to all other experimental conditions. This unusual result is likely due the ineffective burden manipulation.

With respect to the second question, as there was no significant effect of burden in Study 2, I am hesitant to say if the consequences of just versus unjust ostracism (or inclusion) vary. As with Study 1, included, compared to ostracized, participants reported greater basic needs satisfaction, along with less negative affect and aggressive behavior temptations. Other measures such as the candy allocation task and the social pain scales revealed no differences. As the results of Study 1 were not replicated in Study 2, I am not able to draw any strong conclusions.

Implications

Thus far, there has been minimal focus on how perceptions of burden affect an experience of social exclusion, the current work begins to address this gap in the research. Here we see that although justice appears to have minimal impact for excluded participants, it leads to differentiating consequences for included individuals. The included burdensome individuals experienced the same symptoms as the rejected individuals (only to a lesser extent) without being actually excluded indicating that burden may be an instrumental component to the

ostracism process. By focusing research on included individuals and perceptions of burden, researchers may be able to identify the tipping point and determine when exactly an individual begins to experience thwarted needs and other consequences of exclusion, leading to a slew of potential implications for social exclusion research.

In regards to justice, although the rejected individuals were able to identify just compared to unjust rejection, this had no impact on how the individual felt. This suggests that while justice was instrumental to included participants it was much less important to those who were already experiencing the full-blown negative consequences of social exclusion. This may be because the justness of an act is contingent upon social norms and implicit social contracts that vary from culture to culture. However, sensitivity to social exclusion is believed to be an evolutionary adaptation. It is possible that the reason perceptions of justice did not affect socially excluded participants is merely the case of an evolutionary construct trumping the effect of a social construct.

From a more conceptual perspective, the current results align nicely with multiple ostracism theories such as the social monitoring system theory (Leary, Tambor, Terdal, & Downs, 1995) and Williams' (1997, 2008) temporal model. Both of these theories state that individuals have the ability to pick-up on early cues of social exclusion potentially providing them with an opportunity to modify their behavior prior to actually being socially excluded. In the current study, the included burdensome individuals are experiencing moderate effects of rejection (i.e., thwarted basic needs, increased negative affect, increased social pain) without having been rejected. These individuals could theoretically be in the phase where they are detecting the cues of social exclusion and have the opportunity to modify their behavior before the group completely rejects them. This is an important finding as it may demonstrate the

limited window in which individuals have to correct their burdensome behavior in order to refortify their relationship with the other group members.

Limitations and Future Directions

Outside of common limitations within social psychology research (e.g., using a sample of convenience) an obvious limitation to work presented here is the fact participants in Study 2 may not have felt burdensome. Although the effect of ostracism was significant, there was no effect burden, meaning that the burden manipulation implemented in Study 2 may have been unsuccessful. As that study was specifically designed to replicate and extend the results of Study 1, these null results not only question the validity of Study 2, but Study 1 as well.

Possible explanations for the non-significant effect of burden may be due the experimental design; two specific factors may account for this. First, Atimia, the primary manipulation, is still a brand-new group dynamics paradigm. Although previous research examining ostracism was successfully conducted via this paradigm, this is first time that Atimia was used to manipulate how burdensome the participant felt. Further studies need to be conducted to validate the use of Atimia in this manner. One such study could be done using Atimia in a similar manner to the present study along with the addition of a “qualifying exam.” If participants believe they are grouped with individuals who have comparable skills (e.g., vocabulary level) as themselves they may be more sensitive to unjust rejection by experiencing negative consequences either sooner or to a greater degree. This is supported by research on distributive justice. When the input-out ratio is different for persons of the same skill set or ability, those who experience the injustice typically experience negative affect, resentment, and aggression (Chory-Assad & Paulsel, 2004; Krehbiel & Cropanzano, 2000). It is possible that the participants in Study 2 felt the confederate players were more intelligent or just better at the

game, in turn affecting the expected input-output ratio of the confederates compared to the participant. This potentially accounts for why the participant did not feel burdensome as maybe they felt they had contributed as much as they could and were therefore satisfied with their performance. Conducting the proposed study could possibly help explain why participants in Study 2 did not report feeling burdensome and also extend the work presented here.

The second major design concern is the candy allocation task, which as with Atimia, is also a new experimental approach. Unfortunately, the candy allocation task was time consuming and some participants expressed experiencing complications while trying to complete the task. The length and the concentration required for the candy task may have made it so the negative consequences of social exclusion were lessened over time resulting in the unusual data patterns. Support for this explanation comes from Williams' (1997, 2007) works which explain that measures designed to assess reflexive responses to ostracism, such as the basic needs, affective and the aggressive behavior temptation scales, need to be administered immediately after the ostracism episode. This is because the reflexive (i.e., immediate) responses to ostracism are believed to be short lived and frequently dealt with via attributions and other coping mechanisms designed to mitigate the consequences of social exclusion. It is also possible that the use of candy (which is typically viewed in as a desirable treat), acted as a coping mechanism and in turn only cheered-up the participants instead of acting as an outlet for their aggression and negative affect. Also, it is likely that some participants viewed the distribution of either type of candy as a prosocial act.

Another limitation may be the differences between the designs of Study 1 and Study 2. Participants in Study 1 may have imagined being in a group with which the participant had already established meaningful relationships as opposed to a temporarily constructed group that

had no past history or opportunity for a long-term future. This is a concern because, as identified in the Multimotive Model (Smart-Richman & Leary, 2009), the perceived value of a relationship is a predictor of the consequences of social exclusion. If the participants in Study 1 valued their group members more than those in Study 2 this may have affected the results. Specifically those in Study 1 may have felt burdensome because the participants valued the relationships more and did not want to disappoint their group. Whereas those in Study 2, participants had not invested anything into their group relationships and knew, regardless of how the group interaction proceeded, they would not have to interact with their group members in future. Analyzing the event descriptions and emotional reactions in Study 1 may help address this concern. Descriptions of the participants' imagined interaction and emotional reactions could contain information about the group members, details of the interaction, and degree of exclusionary treatment the participant received. Coding the data for details such as these may allow for additional analyses while controlling for perceived value of the relationships within the groups. By controlling for relationship value, I may be able to test Smart-Richman and Leary's (2009) theory that perceived relationship value is also a predictor of the consequences of social exclusion. Additionally, as Study 1 was an imagining task participants, may have engaged in desirable responding due to high demand characteristics.

An additional limitation to this study goes back to the Smart-Richman and Leary model (2009). Their model included six constructs that they believe to be critical in determining how individuals respond to social exclusion. The studies presented here only test one of the six (i.e., perceived unfairness). By not accounting for the other five factors, any results and conclusions drawn from this study are limited in their application. Future research should be conducted while taking into account any of the five untested factors as well as accounting for one of the

other two possible outcomes of social exclusion (i.e., withdraw/avoidance and prosocial responses).

Conclusion

I answered two important theoretical questions in the current work. First, based on results from Study 1, individuals do have the capacity to identify their inclusionary status as just or unjust. Second, while the consequences of just or unjust social exclusion do not differ, the consequences of just and unjust social inclusion do differ. Contrary to expectations, for rejected individuals, perceptions of injustice had no significant impact on the negative consequences of social exclusion. This is further evidence that by the time an individual is rejected it is too late to soften the blow of social exclusion by making attributions to the situation. For included individuals, the consequences associated with being a burden caused the individual to start feeling effects similar to those of being ostracized. It could be that being burdensome to the groups is only one-step away from full-blown social exclusion.

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Table 1

Study 1: Justice

Justice type	Included				Rejected				Control	
	Worse performance (<i>n</i> = 40)		Equal performance (<i>n</i> = 40)		Worse performance (<i>n</i> = 47)		Equal performance (<i>n</i> = 43)		(n = 41)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Organizational	3.40	0.64	4.25	0.59	2.89	0.77	2.27	0.67	2.55	0.87
Procedural	3.36	0.65	4.20	0.63	2.87	0.81	2.22	0.74	2.42	0.89
Distributive	3.19	0.93	4.36	0.65	3.28	1.03	2.33	1.14	2.76	1.54
Interpersonal	3.68	0.99	4.48	0.55	2.25	1.03	1.82	0.82	2.33	1.29
Informational	3.41	0.79	4.11	0.71	2.89	0.96	2.54	0.71	2.67	1.01
Justification	3.60	0.81	4.32	0.69	3.13	0.94	2.06	0.81	2.21	0.85

Table 2

Study 1: Feelings of social exclusion, basic needs satisfaction, social pain, and antisocial behavior temptations

Dependent variable	Included				Rejected				Control	
	Worse performance (<i>n</i> = 40)		Equal performance (<i>n</i> = 40)		Worse performance (<i>n</i> = 47)		Equal performance (<i>n</i> = 43)		(n = 41)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Feeling ignored	2.59	1.36	1.23	0.48	3.79	1.32	4.02	1.37	4.15	1.17
Feeling excluded	2.65	1.27	1.30	0.65	3.91	1.35	4.14	1.34	4.20	1.14
Basic needs	2.85	0.89	4.22	0.62	1.99	0.90	1.88	0.87	1.97	0.80
Belonging	3.00	1.01	4.38	0.68	1.79	0.97	1.83	0.93	1.86	0.94
Control	2.68	0.83	3.86	0.70	2.15	0.91	1.90	0.94	1.72	0.74
Self-Esteem	2.68	1.04	4.18	0.80	1.86	1.04	1.76	0.92	2.06	0.96
Meaningful Existence	3.05	1.02	4.49	0.62	2.16	0.98	2.03	1.03	2.22	0.97
NRS-11	3.31	2.86	1.25	1.78	5.63	2.79	5.57	2.61	4.82	2.82
Pain Faces	3.30	1.22	2.03	0.89	4.40	1.25	4.09	1.09	3.90	0.97
Antisocial behavior temptations	2.56	1.34	1.93	0.93	3.97	2.14	4.25	1.76	4.47	1.75

Table 3

Study 1: Affect and Overall Mood

Affect	Included				Rejected				Control	
	Worse performance (<i>n</i> = 40)		Equal performance (<i>n</i> = 40)		Worse performance (<i>n</i> = 47)		Equal performance (<i>n</i> = 43)		(n = 41)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Anger	2.31	1.10	1.41	0.60	3.16	1.14	3.69	1.00	3.30	1.17
Guilt	2.95	1.14	1.85	0.45	3.31	1.11	2.33	1.06	2.33	1.07
Rejection	2.98	1.16	1.59	0.72	4.41	0.93	4.40	0.93	4.48	0.79
Hurt	2.12	1.07	1.24	0.49	3.08	1.24	3.65	1.06	3.15	1.26
Anxiety	2.94	1.24	1.77	1.01	3.43	1.27	3.51	1.10	3.15	1.06
Sadness	2.59	1.36	1.29	0.56	3.60	1.21	3.73	1.04	3.21	1.26
Happiness	2.63	1.17	3.91	1.02	1.61	0.97	1.62	1.04	1.49	0.81
Relief	2.70	1.05	3.40	0.87	1.84	0.83	1.88	0.96	1.79	0.77
Gratitude	2.64	1.29	3.74	0.97	1.71	0.98	1.55	0.81	1.46	0.68
Overall mood	2.88	1.05	4.27	0.66	2.04	0.93	1.98	0.97	2.09	0.81

Table 4

Study 2: Justice

Justice Type	Included				Ostracized				Control	
	Worse performance (<i>n</i> = 13)		Equal performance (<i>n</i> = 11)		Worse performance (<i>n</i> = 16)		Equal performance (<i>n</i> = 14)		(n = 14)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Organizational	3.16	0.99	2.38	0.81	1.88	0.47	2.06	0.68	1.72	0.79
Procedural	2.90	0.98	2.15	0.76	1.75	0.37	2.00	0.64	1.62	0.88
Distributive	3.45	1.01	2.39	0.86	1.80	0.70	2.14	0.82	1.80	0.85
Interpersonal	3.38	1.16	2.82	1.03	2.17	1.03	2.07	1.16	1.76	1.05
Informational	0.70	0.93	2.85	1.05	2.09	0.78	2.00	0.62	1.88	0.72
Justification	3.16	0.99	2.38	0.81	1.88	0.47	2.06	0.68	1.72	0.79

Table 5

Study 2: Feelings of social exclusion, basic need satisfaction, social pain, and antisocial behavior temptations

Dependent variable	Included				Ostracized				Control	
	Worse performance (<i>n</i> = 13)		Equal performance (<i>n</i> = 11)		Worse performance (<i>n</i> = 16)		Equal performance (<i>n</i> = 14)		(n = 14)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Feeling Ignored	1.77	1.17	1.18	0.60	3.62	1.46	3.21	1.76	4.00	1.36
Feeling Excluded	2.62	1.45	1.36	0.67	3.75	1.57	3.86	1.35	4.07	1.21
Basic needs	2.98	0.80	3.43	0.45	2.39	0.83	2.23	0.65	2.12	0.84
Belonging	3.15	0.94	3.84	0.34	2.19	1.02	1.93	0.75	1.96	0.96
Control	2.82	0.89	2.85	0.57	1.83	0.70	1.66	0.58	1.67	0.58
Self-Esteem	2.71	0.95	3.09	0.80	2.83	0.93	2.97	0.67	2.51	1.02
Meaningful Existence	3.25	0.94	3.93	0.38	2.73	1.02	2.36	1.02	2.34	1.07
NRS-11 Pain	2.92	2.53	1.73	1.17	2.13	2.45	2.46	2.13	2.57	2.56
FACES	2.62	1.38	1.55	0.82	2.63	1.71	1.71	1.44	2.43	1.16
Antisocial behavior temptations	2.37	0.98	2.45	1.23	4.07	2.52	3.88	1.87	4.68	1.72

Table 6

Study 2: Affect and Overall Mood

Affect	Included				Ostracized				Control	
	Worse performance (<i>n</i> = 13)		Equal performance (<i>n</i> = 11)		Worse performance (<i>n</i> = 16)		Equal performance (<i>n</i> = 14)		(n = 14)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Anger	2.32	0.96	1.44	0.52	2.22	1.08	2.35	1.38	3.11	1.15
Guilt	2.77	1.14	1.69	0.79	1.56	0.54	1.46	0.67	1.47	0.49
Rejection	2.77	0.80	2.67	0.71	3.81	1.00	3.86	0.81	4.10	1.04
Hurt	1.77	0.70	1.16	0.36	1.66	1.04	1.63	0.78	2.16	1.22
Anxiety	2.92	1.25	1.68	0.71	2.31	1.15	1.93	1.05	2.57	0.96
Sadness	2.00	0.87	1.93	0.93	2.17	1.20	1.14	0.30	2.63	1.19
Happiness	2.14	1.01	2.44	1.16	2.19	1.04	2.09	0.94	1.94	0.97
Relief	2.11	0.64	2.04	0.88	2.01	0.78	2.10	0.66	1.83	0.74
Gratitude	2.12	0.88	2.11	1.05	1.89	0.85	1.73	0.85	1.57	0.96
Overall mood	3.12	0.96	3.36	0.68	3.03	0.61	2.97	0.79	2.84	1.03

Appendix A



Appendix B

The screenshot displays a game interface with three player profiles at the top. Each profile includes a name, a person icon, and a score: **PLAYER 2** (0% correct), **PLAYER 1@UNF** (50% correct), and **PLAYER 3** (0% correct). Below the profiles is a green box containing a **Word List** (sandwich, house, golf) and **Game Stats** (Question #: 4, Your Accuracy: [progress bar], Group Accuracy: [progress bar], Question / Total Question: 3 / 30). At the bottom is a yellow box with the text **Waiting on PLAYER 2**, an input field, a **Submit your answer** button, and buttons for **PLAYER 2** and **PLAYER 3**.

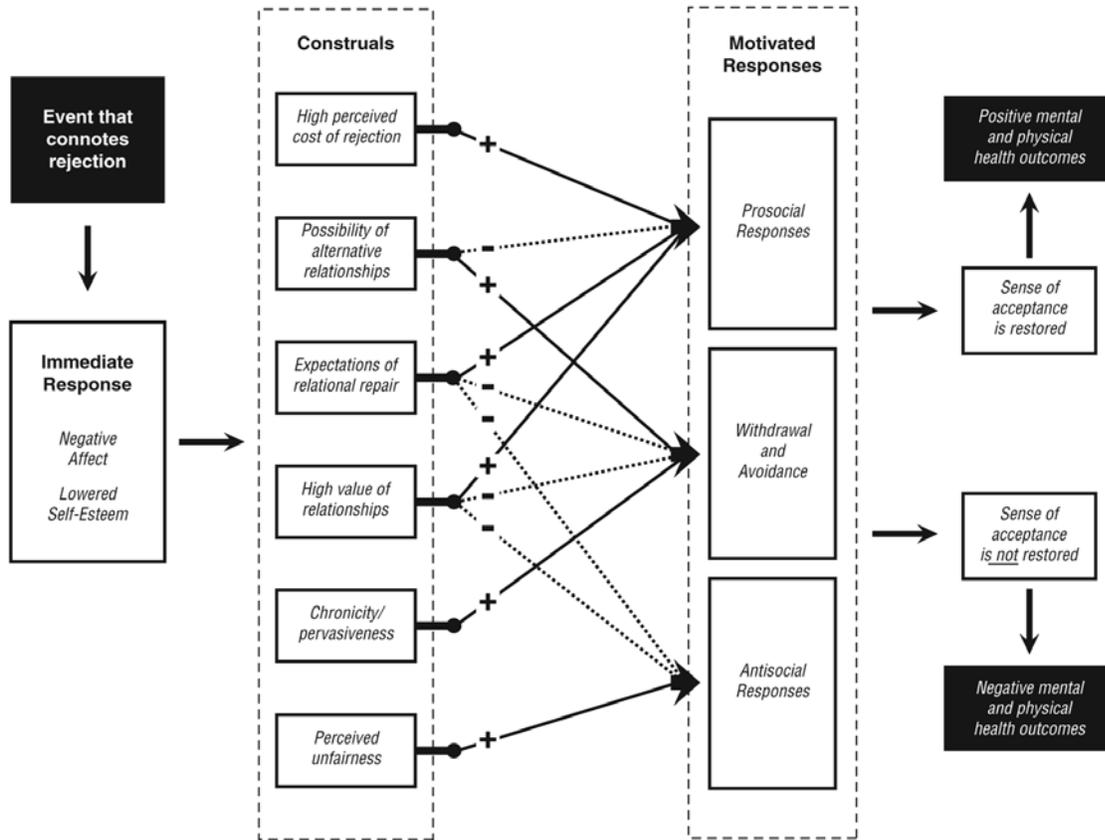


Figure 1. *Multimotive model of reactions to interpersonal rejection experiences* (Smart-Richman & Leary, 2009).

Vita

Heather Ann Pease

Heather was born . She completed her primary and secondary education in Duval County. Heather earned both her Bachelors and Master's degree in Psychology at the University of North Florida (UNF). While attending UNF she was a member of two research teams and presented scholarly work at local, regional, national, and international conferences. She is currently perusing her Ph.D. in Research Methodology at Loyola University Chicago with an anticipated graduation date in the Spring of 2015. Her current research interests focus on assessment, program evaluation, and data mining. Upon completing her Ph.D. Heather hopes to secure a position as a professor of research methodology and quantitative analysis at a research intensive university.