

EXAMINING ASSOCIATIONS BETWEEN MALADAPTIVE PERSONALITY TRAITS,
COMPETITION, AND FAIRNESS IN ECONOMIC DECISION-MAKING GAMES

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ABSTRACT

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Context: What do people do when they find themselves the victim or benefactor of an unfair competition? Furthermore, do individual differences in personality, specifically those that have been discussed in the context of greedy and manipulative behavior (i.e., maladaptive personality traits) moderate these associations? To this point, few studies can answer these questions. **Objective:** The goal of this dissertation was to better understand how competition and fairness affect people's behavior in situations in which resource allocation is the primary concern and to also understand whether individual differences in maladaptive personality traits account for variation in responses to these situations. **Design, Setting, and Participants:** 893 college undergraduates completed these studies for course credit or extra credit. Participants first completed a series of demographic and personality questionnaires then engaged in a computerized version of an economic decision-making game where they bargained over points (prize entries) with a group of ostensible opponents. The games were either competitive (participants answered math questions quickly for a chance to make a proposal of points) or non-competitive (the computer decided the proposer randomly) and either allowed participants the choice of accepting/rejecting proposals (i.e., "the Ultimatum game") or to forced them to accept proposals (i.e., "the Dictator game"). Furthermore, within the competitive games, competition was manipulated to be either fair (opponents had questions of equal difficulty) or unfair (one opponent had an advantage). **Main Outcome Measures:** The outcomes of interest were participants' proposals of points made to their ostensible opponents (in both Ultimatum and

Dictator variants of the game) and their acceptance rates of offers made to them by their ostensible opponent (in Ultimatum variants only). **Results:** Competition increased participants' acceptance of unfair (1 or 2 point) offers ($M_{\text{Non}} = .27$, $M_{\text{Comp}} = .35$; $d = .24$) and decreased proposals of points ($M_{\text{Comp}} = 2.89$, $M_{\text{Non}} = 3.45$; $d = .47$). Manipulating the fairness of the competition resulted in increased acceptance rates of unfair offers such that they were significantly higher when participants lost at an advantage ($M = .38$) than when the competition was fair ($M = .35$; $d = .07$) or they lost at a disadvantage ($M = .33$; $d = .13$). Manipulating fairness also had an effect on participants' proposals such that they offered more points to their opponents when they won at an advantage ($M = 3.05$) and less when they won at a disadvantage ($M = 2.72$). Finally, there was little evidence of associations between individual differences in maladaptive personality traits and acceptance rates or proposals. Likewise, there was little evidence to suggest that these associations were moderated by game type (i.e., Ultimatum vs. Dictator). **Conclusions:** The presence of competition appears to change the norm of what constitutes a fair distribution of resources from one of equality (everyone gets an equal share) to one of equity (some parties deserve more) as demonstrated by higher acceptance rates of unfair proposals and lower proposals made in competitive versus non-competitive games. Furthermore, people are somewhat sensitive to the procedural injustice (i.e., fairness) of competition and behave in a manner that suggests they are attempting to redress an unfair advantage by offering more of the resource when it was won unfairly and rejecting small proposals of the resource from individuals who may be exploiting the unfairness of the situation. Last, there was little evidence to suggest that individual differences in personality are predictive of behavior in these games or that the presence/absence of rejection moderates associations between personality attributes and game behavior.

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CHAPTER 1: INTRODUCTION

Individuals sometimes hold advantages over others in competitive contexts. However, not all advantages are earned or received fairly. For instance, a worker might be promoted to manager, not because of merit, but because a family member is on the board of directors. This individual is then in a position to make decisions that affect others in the organization. What do people do when they are given a competitive advantage that they don't deserve? Some people would choose to use any advantage they could get, fair or unfair, whereas others may try to compensate for the unfairness of such a situation. Empirically, economic decision-making games such as the Ultimatum game (Guth, Schmittberger, & Schwarze, 1982) and the Dictator game (e.g., Forsythe, Horowitz, Savin, & Martin, 1994) are often used to study perceptions of fairness and competitive behavior. These games mimic situations where people can either act in a self-interested or an egalitarian manner while also manipulating the presence or absence of retribution for self-interested behavior. Moreover, these games provide researchers with a tool for understanding the individual differences that predict observed exploitative and punitive behavior in a controlled setting. Accordingly, the goal of this dissertation is to use modified versions of these economic decision-making games to better understand how people react in situations of unfair competition and to evaluate whether individual differences in personality predict differential reactions to these situations.

Economic decision-making games are well-suited for examining how people respond to fair and unfair competition because they are tightly controlled and their conditions are easily manipulated. Furthermore, a wealth of research has been conducted on these games and cumulative results provide an important context for personality-related predictions. In this dissertation I begin by reviewing theory on perceptions of fairness. I then introduce the

Ultimatum and Dictator games by outlining their procedures, reviewing relevant research, and describing the modifications to these games carried out in the current research. Next, I introduce a maladaptive set of personality traits often referred to as the “Dark Triad.” These traits are often discussed in the context of exploitative and manipulative behavior, and therefore should be particularly relevant in situations of unfair competition. Finally, I provide a set of hypotheses that guide this dissertation.

Perceptions of Fairness: Distributive and Procedural Justice

Fairness is thought to be so integral to human existence that evolutionary theorists have proposed humans have an evolved cognitive mechanism for “cheater detection” (e.g., Cosmides & Tooby, 1992). This system is thought to alert people to unfair or selfish behavior that could be detrimental to personal survival. The explanation is that humans are a social species who often live in communal groups with a division of labor. Humans must therefore rely on others to survive. Unfortunately, this reliance allows for exploitation and exploitation could have detrimental effects on human reproductive fitness. Indeed, fairness concerns are not limited to humans as the food sharing behavior of chimpanzees also reflects these concerns (de Waal, 1989). In situations in which primates compete for limited and finite resources, it appears that fairness concerns are extremely important. The combination of a system for detecting fairness and the fact that perceptions of fairness are seemingly integral for harmonious social interactions underscores the importance of fairness as a topic of psychological inquiry. Nonetheless, there are a number of concerns surrounding the definition of fairness.

There are several ways that fairness concerns can play into situations involving competition over resources. Two such ways involve the fairness of the division of resources and the fairness of the competition for resources. Psychologists refer to these as concerns over

distributive and *procedural* justice, respectively (Deutsch, 2006). According to Deutsch (2006), distributive justice refers to whether the allocation of a resource is seen as fair or just. For example, a tribe of hunters may be faced with the task of dividing the day's kill among their members. There are at least three methods of distribution that can be considered "fair": *equity*, *equality*, and *need*. Keeping with the previous example, the tribe could choose to divide the food proportionally to those who invested the most time or effort into procuring it (equity), providing even portions to all members (equality), or giving more food to the larger members and less food to the smaller members regardless of the effort invested in hunt (need). The kind of division and the degree to which it is considered fair by the individuals involved depends, in part, on contextual features. In instances of competition, equity is likely to be the normative means of division. That is, the competitor who performs the best should receive the most benefits – to quote an old cliché "To the victor go the spoils." In other instances, especially those in which no party has a clear right or need for more of the resource, the fairest distribution is likely to be equality. Although distributive justice is clearly an important aspect of daily life it is only one consideration when evaluating the fairness of a particular situation. Fairness concerns also arise when considering the features of the competition itself as the fairness of the procedures likely affects *how much* of the resource should be given to the deserving party.

Procedural justice concerns the degree to which the processes that lead to the division of resources are seen as fair. For example, companies evaluating job candidates usually have many criteria on which to judge the applicants but often only use a handful of these criteria when making the decision to hire a particular individual. If the candidates are aware of the criteria being used for selection and believe them to be reasonable then the process is considered fair. Deutsch (2006) suggests that "one wants procedures that generate relevant, unbiased, accurate,

consistent, reliable, competent, and valid information and decisions” (p. 45) and that in situations “where it is not clear what ‘fair outcomes’ should be, fair procedures are the best guarantee that the decision about outcomes is made fairly” (p. 44). In short, people like fair procedures because they believe that such procedures precede fair outcomes.

What happens when people’s notions of distributive and procedural justice are violated? Obviously, what is considered fair varies from context to context and can also vary depending on whether one is the benefactor or victim of an injustice. For example, an individual who gets a job because the hiring process is based on a subset of all potential criteria may be more likely to believe the use of those specific criteria was fair than the individual who did not receive the job. Self-serving biases may of course shape perceptions of fairness. Nonetheless, despite any potential for an imbalance in perceptions of fairness, research suggests that when a perceived injustice has occurred people feel compelled to restore justice or seek retribution, regardless of whether they were the benefactor or the victim of the injustice (Deutsch, 1985).

Although both victims and benefactors seek to redress unfairness, the motivations for these behaviors may differ. Victims of injustice may seek retribution for personal or social reasons. For example, a person who was passed over for a promotion may attempt to sabotage company morale for self-serving reasons (i.e., an attempt to make themselves feel better by hurting others), accuse their boss of bias (i.e., an attempt to reform the perpetrator of injustice), or write a letter to corporate leaders about promotion practices (i.e., an attempt to reform the unjust system). By contrast, the benefactor of the injustice may seek to alleviate guilt or anxiety over having benefited for no good reason due to forces outside their control. Keeping with the previous example, the individual who gets a promotion via unfair procedures may choose to turn it down or to work exceptionally hard in an attempt to justify their being selected for the

position.

Economic Decision-Making Games and Distributive Justice

Although psychological researchers have many experimental paradigms for understanding retaliation in response to provocation (e.g., aggression studies like the “Hot Sauce” paradigm; Lieberman, Solomon, Greenberg, & McGregor, 1999), paradigms in which individuals benefit from an injustice and have the opportunity to engage in some sort of either conciliatory/compensatory or exploitative behavior are far less common. How then are psychological researchers to study individuals’ reactions to this interesting situation? One possibility is to co-opt paradigms used in the economics literature – in which individuals are required to divide a shared resource – to create such a situation.

Economic decision-making games are simple paradigms that can be useful for understanding human fairness concerns in the context of resource division. One such game, commonly referred to as “the Ultimatum game” (Guth et al., 1982) involves two individuals engaging in a bargaining interaction. In a standard game, pairs of individuals are given the task of dividing a sum of money (usually \$10) between themselves. One individual in the pair is randomly assigned to the role of the “Proposer” and the other is then designated as the “Responder.” The proposer chooses a division of money or points (e.g., \$3 to the responder and \$7 to the proposer) to present to the responder and the responder chooses to accept or reject the proposer’s offer. If the responder accepts the offer, both players get the proposed amounts. However, if the responder rejects the offer, then both individuals receive nothing.

Although the Ultimatum game may appear to be of limited ecological validity, this game has real world analogs. For example, the proposals of settlements in legal trials have a similar structure to this experimental game. Before a case goes to trial the defense will often make a

(usually monetary) proposal to the prosecution in order to avoid prolonging the legal process.

The prosecution must then evaluate the terms of the proposal and decide whether or not to accept it. If the proposal is accepted each side gets whatever is agreed upon in the proposal. If the offer is rejected the case goes to trial, often resulting in a time and cost for both sides. In these situations, the prosecution's decision over whether to accept the offer of settlement depends on whether or not they believe the settlement is reasonably fair given that particular case, much in the same way that individuals in the Ultimatum game must decide on the fairness of the division, given the circumstances of the experiment. It is for this reason that both the defense and the participants in the Ultimatum game must be aware of the features of the particular situation if their proposals are to be accepted.

In its most basic form, research with the Ultimatum game suggests that the default mode of distributive justice is equality when there is little reason to favor any of the parties involved in the bargain. As mentioned previously, the proposers in these games are randomly assigned the task of splitting the money. Nothing about the situation favors the proposer aside from luck. The proposer did nothing special to earn the role and presumably does not have any particular reason to expect that he or she would be assigned to it. Because of this, the implicit "fair" split of money in this situation seems to be an equal division (i.e., a modal offer in these games tends to be 50% of the total amount, Thaler, 1988; Camerer, 2003). Further evidence supporting this notion comes from the fact that the more the proposal favors the proposer the more likely it is to be rejected (Camerer, 2003), implying that responders generally anticipate a fair allocation and will tend to punish deviations from equality even at a cost to themselves.

These findings regarding actual behavior in the Ultimatum game clash with classical economic theory which suggests a rational agent would accept any proposal provided it results in

a monetary gain (e.g., Camerer, 2003). However, evidence suggests that responders find unequal proposals insulting (i.e., their notion of distributive justice has been violated) and research suggests that the rejection of small offers is driven, in part, by the desire of responders to punish proposers who have treated them unfairly (e.g., Bolton & Rami, 1995). If people were only concerned with their own monetary gain it stands to reason that they would make and accept low offers. However, in this situation an acceptance of a small sum carries with it the knowledge that the other party is going to receive disproportionately *more* of the resource despite the fact that neither party has any reason to feel entitled to more than half of the pie. Thus, the responder is often willing to punish their partner, at some personal cost, provided that the results are costlier for the individual who has violated the distributive justice norm of equality. Again, as with the basic structure of the Ultimatum game, there are real world analogs of this self-injurious behavior. For example, people going through divorce disputes sometimes make decisions that are costly to themselves provided they are costlier to their former spouses, though in these instances it is not always the case that the decisions are the direct result of a violation of distributive justice.

The norm of equality for resource distribution in a typical Ultimatum game is strong, especially given that unequal proposals can be rejected. Accordingly, this game represents a situation that heavily constrains individuals' behavior. Absent the constraints of the game, individuals vary in their desires or preferences for different resource allocation from pure self-interest to egalitarianism to perhaps even self-sacrifice. That is to say, the modal response of equality in Ultimatum game proposals is likely due to the possibility that responders could reject self-interested proposals. Accordingly, the high rate of compliance to this norm suggests that some proposers might be only be "playing the part" of the fair partner because making the

proposal they *actually* desire could result in a zero gain. An experimental variant of the Ultimatum game called the “Dictator game” (e.g., Forsythe et al., 1994) addresses this possibility by removing the responder’s power to accept or reject the proposer’s offer. As Roth (1995) notes “in the Dictator game player 1’s proposal can be interpreted as a pure expression of his [sic] preferences” (p. 270). In other words, with the threat of rejection removed people should be more likely to propose a split that is aligned with their ideal distribution and this should shift the average distribution of game outcomes in the favor of pure self-interest.

As it stands, there is evidence to suggest that people, on average, behave more selfishly in the Dictator game than the Ultimatum game. For example, in one comparison study 36% of Dictator proposers offered 0 to their opponents while not a single Ultimatum proposer made an offer of 0 (Forsythe et al., 1994). Thus the distributions of proposals appear to differ significantly between games. Therefore, these games represent psychologically different situations and it is important to examine both within the same experimental context in order to gain a fuller understanding of the processes at in resource distribution and perceptions of procedural justice.

Introducing Competition and Manipulating Procedural Justice

Most previous research using these economic decision-making games has used a random process to assign players to the two roles. As of yet, no study has systematically manipulated the method through which individuals gain the role of proposer. This dissertation is concerned with behavior in competitive situations, so in the current work I introduce a competition between individuals as a way to determine who is given the role of proposer. By doing so, the implicit norm of what constitutes a fair distribution should shift from equality (i.e., an equal or close to equal division of points) to equity (i.e., the winner gets to take more of the pie).

One previous study has examined competition in the context of the Ultimatum game.

Hoffman, McCabe, and Smith (1996) had individuals compete in a trivia challenge with the better performing players earning the role of proposer. The addition of competition shifted the distribution of proposals from near equality toward the self-interest of the proposer. The authors' interpretation of this result was that the winning individuals felt justified in taking more of the pot, given that they earned the right to divide it through the process of a presumably fair competition. In other words – the addition of competition changed the expected distribution method from pure equality (i.e., neither player “deserves” more so they should split it evenly) to equity (i.e., one player has earned the right to divide the money and should therefore take more for themselves). The current work replicates and extends Hoffman et al. (1996) by including competition for the role of proposer while also controlling participants' wins and losses. By controlling wins and losses, the current work ensures that all individuals have an equal number of wins and losses for comparison.

Importantly, the present study also manipulates the perceived fairness (i.e., the procedural justice) of the competition by creating situations where individuals win or lose unfairly. Specifically, the study will create situations of matched or unmatched (advantaged or disadvantaged) competition between partners. For example, on some rounds participants will be answering questions of equal difficulty, while on other rounds the level of difficulty will vary between players. Manipulating the playing field in this way should activate concerns about procedural justice as individuals will be made aware that they are competing at an unfair advantage (or disadvantage) and it should also affect individuals' perception of what constitutes an equitable outcome. For example, the normative split of the pot when competition is fair (i.e., the level of difficulty is the same for both players) should differ markedly from conditions of unfair competition. In general, individuals should recognize the unfairness of the situation

(regardless of whether they are the beneficiaries) and take steps to redress the procedural unfairness, which should be reflected in their behavior (i.e., distributions offers and acceptance rates). For example, when a participant wins a round with an advantage that he or she did not deserve his or her proposal should be larger, on average, than in situations where neither player had a competitive edge. Similarly, when a participant loses a round at a disadvantage that he or she did not deserve his or her acceptance rate for low offers (i.e., $\leq 20\%$) should be lower, on average, than when he or she lost in an equal competition.

Personality and Behavior in Fair and Unfair Competition

The work summarized above describes the expected average behavior of people in the original and modified economic games. Despite the fact that Ultimatum and Dictator studies often focus only on average behavior they also demonstrate a fair degree of variability in behavior both between and within studies. As previous psychological research demonstrates, people do not always behave similarly, given the same psychological situation, even in very extreme circumstances (see Milgram, 1963). This variation in behavior given the same circumstances could partially be accounted for by individual differences in thoughts, feelings, or actions (i.e., personality attributes; Allport, 1931). Recent research has provided some evidence that responder behavior in the Ultimatum game is at least partially heritable (Wallace, Cesarini, Lichtenstein, & Johannesson, 2007). Such a result suggests that individual differences might play an important role in understanding differential behavior in situations of unfair competition within these economic decision-making games.

One set of individual difference constructs that seems particularly likely to be influential in these situations is drawn from the so-called “Dark Triad” of personality traits outlined by Paulhus and Williams (2002): Machiavellianism (manipulative personality), psychopathy (high

impulsivity and thrill seeking coupled with low empathy and anxiety), and Narcissism (grandiosity, entitlement, dominance, and superiority). These traits should be particularly relevant here because the games involve a blend of elements – competition, reward, retribution – that are associated with these constructs. What follows is a brief overview of research and theory on each of these constructs. Wherever possible, findings of research from the psychological and economic literature are drawn upon to make predictions about the behavior of individuals with high levels of these traits in situations of unfair competition.

Machiavellianism. Christie and Geis (1970) wanted to better understand the willingness of cult leaders and other influential individuals to manipulate others for personal gain. In order to accomplish this, they looked to the writings of Niccolo Machiavelli and drew inspiration for their eventual measure of manipulateness from Machiavelli's work *The Prince* (1513/1966). Thus, Machiavellianism has become the choice term to describe this kind of strategic manipulation of others for personal gain and power. Correlational work has demonstrated that people who score higher on a measure of Machiavellianism (often referred to as high Machs) are income maximizers (i.e., are likely to make the choice that results in the most monetary gain for themselves) and are untrusting of potential economic partners who they also believe to be income maximizers (Sakalaki, Richardson, & Thepaut, 2007). Thus, high Machs should be likely to capitalize on opportunities for personal gain and believe that others will do the same. Moreover, research suggests that high Machs have higher external economic loci of control than low Machs (Sakalaki, Kanellaki, & Richardson, 2009). In other words, Machiavellians believe economic success is more strongly influenced by chance than by factors such as effort or perseverance.

Only one study has examined the behavior of high Machs in the Ultimatum game. Meyer

(1992) found that high Machs accepted low offers in single shot games but refused them in repeated interaction games. Thus high Machs behave as income maximizers in single-shot interactions, but punish perceived unfairness in repeated interactions more so than low Machs. Because Meyer (1992) did not allow individuals to also play the role of proposer, there is no empirical evidence on which to make a prediction for the present studies. The behavior of high Machs in Ultimatum games (as a responder) suggests that they are opportunists. Because of this, high Machs should make the income-maximizing choice in every situation. When playing the proposer in the Ultimatum game, the income-maximizing choice may be a relatively fair offer (because low offers can be rejected) whereas in the Dictator game, the income-maximizing choice is to take as much money as possible. Therefore, with regard to proposals, Machiavellianism should be a negative predictor of proposals in the Dictator game but unrelated to proposals in the Ultimatum game. The income-maximizing choice when playing the role of responder in the Ultimatum game is to accept any positive offer regardless of the size. However, Meyer's (1992) work suggests that Machs only behave in this manner in single-shot interactions. Given that the current study is a multi-round game Machiavellianism should be negatively correlated with acceptance of low proposals.

Psychopathy. People often consider antisocial behavior and manipulateness to be two of the cardinal features of psychopathy. However, impulsivity, stress immunity, and social dominance have also been discussed as behaviors relevant to the construct. Recently, Patrick and Bernat (2009) have proposed a two factor model of psychopathy that accounts for this dual nature. According to the theory, psychopathy is the result of deficits in two underlying neurobiological systems: one that governs fear (Fearless Dominance) and another related to executive functioning (Impulsive Antisociality). Research using measures of Fearless

Dominance and Impulsive Antisociality often finds opposite associations between these traits and outcomes of interest. Specifically, Fearless Dominance is associated with positive outcomes like adjustment and social zest, whereas Impulsive Antisociality is most often associated with negative outcomes such as antisocial behavior and substance use (Witt, Donnellan, Blonigen, Krueger, & Conger, 2009). Work with measures of these traits suggests that Machiavellianism correlates strongly with Impulsive Antisociality and weakly or not at all with measures of Fearless Dominance (Witt et al., 2009). Thus, it appears that Machiavellianism and aspects of psychopathy overlap to some degree (with regard to Impulsive Antisociality). However, Fearless Dominance represents aspects of psychopathy not tapped by Machiavellianism.

The empirical basis for making predictions about these psychopathic traits with regard to economic decision-making outcomes is mixed to non-existent. For example, Osumi and Ohira (in press) found that people pre-selected for “high” scores on a self-report measure of psychopathy were more likely to accept low offers in the Ultimatum game than people who scored “low” on this measure whereas Koenigs, Kruepke, and Newman (2010) found that people categorized as primary psychopaths (who demonstrated extremely low levels of anxiety) had lower acceptance rates of low offers in group of inmates than those classified as secondary psychopaths (who demonstrated high levels of impulsivity), and non-psychopaths. With regard to proposals, Koenigs et al. (2010) found no differences between primary, secondary, and control participants on Ultimatum proposals, but found that primary psychopaths made significantly lower Dictator proposals than secondary psychopaths or non-psychopaths whereas Osumi and Ohira (in press) did not collect data on Ultimatum proposals. Furthermore, the small sample sizes and questionable analytic techniques (e.g., the use of median splits to categorize participants into high and low groups) used in these studies calls the validity of these findings into question.

On the other hand, there is a body of related evidence in the literature upon which to make predictions for Impulsive Antisociality and to a lesser extent, Fearless Dominance with regard to economic decision-making behavior. Impulsive Antisociality has been found to be associated with externalizing problems (Witt et al., 2009) as well as being associated with displaced aggression (Witt & Donnellan, 2008). Furthermore, with regard to the five factor model of personality, Impulsive Antisociality is equally strongly negatively associated with Agreeableness and Conscientiousness (Witt et al., 2009). This pattern of correlates suggests an individual who is emotionally reactive, lacks self-control, and lacks affiliative tendencies. Curiously, Impulsive Antisociality is positively associated with Machiavellianism but negatively related to reward responsiveness (Witt et al., 2009). Thus high scorers on Impulsive Antisociality express a willingness to manipulate others but might not be particularly susceptible to the rewards within the Ultimatum game.

This line of reasoning also suggests that Impulsive Antisociality should not predict proposals in the Ultimatum game and may be a slight negative predictor of them in the Dictator game. The rejection of low offers is often thought to be motivated by an emotional reaction to a perceived slight. This suggests that people higher on Impulsive Antisociality should be particularly sensitive to the insult of a low offer and thus more likely to reject (i.e., have lower acceptance rates) than people lower on this dimension of personality. The predictions for Fearless Dominance are less clear. Fearless Dominance is negatively associated with Internalizing problems but is positively associated with a BAS (i.e., reward sensitive) orientation – including reward responsiveness (Witt et al., 2009). Thus people who score higher on Fearless Dominance should be less emotionally affected by low offers, but should be just as likely (if not more likely), to reject low offers as low scorers because they desire the prizes associated with the

game. This also suggests Fearless Dominance should be a negative predictor of proposals in the Dictator game but not in the Ultimatum game because people higher on this trait want to maximize their chances to win a prize.

Narcissism. Narcissism is often characterized as an exaggerated sense of self-importance and entitlement coupled with the need for admiration from others. Over the past twenty years the construct of Narcissism has received considerable attention in the social, personality, and clinical psychology literature (Cain, Pincus, & Ansell, 2008). In contrast, it does not appear to have garnered as much interest in the economic games literature as to date there are no published studies examining the impact of Narcissism in these games. Further complicating the picture is the fact that the most commonly used measure of Narcissism in social/personality psychology—the Narcissistic Personality Inventory (NPI; Raskin & Hall, 1979) – is not unidimensional. In fact, there is reason to believe that it conflates an array of adaptive and maladaptive content (Cain et al., 2008). Among the traits suggested to be captured by the NPI are Entitlement, Exploitativeness, Authority, Self-Sufficiency, Superiority, Vanity, and Exhibitionism (Raskin & Terry, 1988). Of these traits, the two that should be most relevant to competitive situations are Entitlement and Exploitativeness. Entitlement has been found to be associated with reactivity to ego threat (e.g., Witt et al., 2009) and more entitled individuals tend to believe they are more deserving than others. Therefore, entitled individuals should be more likely to reject low offers while also being more likely to make low offers (regardless of the type of game) because it fits with their exaggerated sense of what constitutes a fair division. Exploitative individuals should behave in much the same way as Machiavellian individuals. Specifically, Exploitativeness should be unrelated to Ultimatum offers, slightly positively or unrelated to Ultimatum acceptance rates, and should be negatively associated with Dictator proposals.

Predictions

H₁: Consistent with the results of Hoffman et al. (1996) the addition of competition should shift the distribution of proposals to be more in favor of the proposer (relative to well-established results from non-competitive games) and it should increase overall acceptance rates such that responders are more willing to accept smaller offers than in non-competitive games.

H₂: The addition of unfair competition should activate perceptions of procedural justice such that individuals will be more generous in their offers when they are the beneficiary of the unfair procedure and more punitive (with regard to the rejection of low offers) when they are the victim of such procedures.

H₃: Game behavior (i.e., offers made and rejection behavior) should be predicted by individual differences in maladaptive personality traits (i.e., Aspects of the Dark Triad). Machiavellianism and Exploitativeness should be unrelated to Ultimatum proposals, positively or unrelated with acceptance rates, and negatively related to Dictator proposals. Impulsive Antisociality should be unrelated to Ultimatum proposals, negatively related to acceptance rates, and negatively or unrelated to Dictator proposals. Fearless Dominance should be unrelated to Ultimatum proposals, negatively or unrelated to acceptance rates, and negatively related to Dictator proposals. Finally, Entitlement should be negatively related to Ultimatum proposals, acceptance rates, and Dictator proposals. A secondary hypothesis, suggested by Hilbig and Zettler (2009) is that personality coefficients should be larger in the Dictator game than in the Ultimatum game because the threat of rejection has been removed. Accordingly, game type will be

examined as a moderator of the association between personality traits and game outcomes.

CHAPTER 2: METHODS

Participant Sign-Up and Study Description - All Games

For all games collected in the present work participants logged onto the Human Participation in Research System (HPR) and signed up for a study called “Multi-Site Economic Game Study.”¹ The study description suggested that they would come into the lab to play an online game against a random selection of participants from other universities (in reality they played against a computer that controlled wins and losses) for a chance to win prizes. The description of the study did not vary across game type or level of competition.

Participants

The total sample for this study consisted of 893 college undergraduates (Non-Competitive Ultimatum Game: $n = 162$, Non-Competitive Dictator Game: $n = 101$; Competitive Ultimatum Game: $n = 311$, Competitive Dictator Game: $n = 319$). Participants were primarily Caucasian (81.5%) women (62.8%) who were between the ages of 18-20 (75.2%) and in their first or second year of college (60.7%). A breakdown of demographics by game type is provided in Table 1.

Game Procedures

When participants were brought to the laboratory they were asked to read and sign a consent form and then were given instructions on how the game would be played (See Appendix B for specific instructions). Experimenters were instructed to log each participant into the game program and to ask them to create a unique username for the task (this name would be displayed

¹ The exact wording from the HPR web site is provided in Appendix A

on the screen during the game as a means for the participant to know whether or not they won the round). Each game involved a series of rounds (24 in non-competitive games, 36 in competitive games) the rounds differed from competitive to non-competitive games to keep the numbers of rounds similar for comparison while also preventing fatigue in participants who were completing the non-competitive games. In each round participants were assigned a different “partner” from another university, however this partner was non-existent and they were playing the computer on all rounds.

Role Assignment. In the non-competitive games participants were told that each round the role of proposer would be randomly assigned by the computer. Each round they would see a screen with a button labeled “decide winner” that they clicked for the assignment. After clicking the button they would see a screen that said “deciding winner” with a loading-type bar at the bottom of the screen (the length of time this screen was displayed varied randomly from trial to trial from 1 to 3 seconds). After this screen, participants would either see a screen saying “you lost the round” or “you won the round.”

In the competitive games participants were told that each round the role of proposer would be determined by the outcome of a competition between the participant and his or her partner. Specifically, participants were instructed to answer a series of multiple-choice math problems as quickly and accurately as possible with the promise that the player with the higher score would earn the role of proposer. If participants tied, the winner would be the participant with the faster reaction time. In reality wins and losses were controlled by the computer. To create the perception of unfairness in competition, participants (and their virtual “partner”) were

randomly given a set of pre-determined “easy” or “hard” questions² on each trial and at the end of the trial they were presented with a results screen indicating the difficulty of the questions they just answered, the difficulty of the questions their partner ostensibly answered, each player’s scores and reaction time, and the outcome of the trial (win or loss). This manipulation allowed for situations in which the participant won/lost when the competition was fair (matched difficulty) or unfair (they were at an advantage or at a disadvantage). The order of these trials was randomized and all participants received an equal number of trials for each level of fairness (12 advantaged, 12 matched, 12 disadvantaged, 50% wins).

For all games the order of wins and losses was randomized but the win/loss ratio was held constant at 1:1. The specifics of winning and losing trials are outlined below:

Losing Rounds. If participants lost the round they saw a screen that said “you lost the round” (in competitive games, this screen also contained all relevant information related to the competition) and had to click “continue” to proceed. They then saw a screen that said “waiting for offer” (the length of which varied randomly round to round from 1 to 3 seconds) after which they would see a screen that said “username offers you: X pts” (where username was the randomly determined username of the “partner” for that round, and X was a value from 1-5). In the Ultimatum version of the game participants were given the opportunity to accept or reject the offer whereas in the Dictator game they were given no such option. An acceptance of the offer in the Ultimatum game meant that the participant was agreeing to that division of points and that

² A paired samples t-test revealed that participants found the “hard” questions ($M = 3.49$, $SD = .83$) to be significantly more difficult than the “easy” questions ($M = 1.45$, $SD = .65$) $t(630) = -53.03$, $p < .001$, $d = 2.11$. There was no evidence to suggest that game type (Ultimatum vs. Dictator) moderated this association. There was also no suggestion of gender differences in perceptions of the difficulty of the “hard” questions. However, there was a gender difference such that women rated the “easy” questions as harder ($M = 1.49$, $SD = .66$) than men ($M = 1.36$, $SD = .56$) $t(514.293) = -2.697$, $p = .007$, $d = .20$.

each person in the pair would get the points stated in the offer (e.g., 6 pts partner, 4 pts participant) whereas a rejection meant that both partners received zero points for that round. Computer generated offers were either “fair” (i.e., 4 or 5 pts) or “unfair” (i.e., 1 or 2 pts). The order of offers was randomized and participants received equal numbers of fair and unfair offers. Moreover, the chances of receiving one “fair” offer versus the other (i.e., 4 or 5 pts) was 50%, as were the chances of receiving one “unfair” offer versus the other (i.e., 1 or 2 pts).

Winning Rounds. If participants won the round they saw a screen that said “you won the round, how much would you like to offer?” (in competitive games, this screen also contained all relevant information related to the competition). To make an offer, participants slid a slider bar either toward their username or toward their partners. The closer the bar was to the participant’s username the more points they offered themselves and the fewer they offered their partner (by default the bar was set at the center with each partner getting 5 pts). Participants then clicked “submit” and saw a screen that said “waiting for partner” (the length of which varied randomly trial to trial). The proposal procedure was identical for both the Ultimatum and the Dictator game. However, the response procedure differed between games (i.e., reject vs. no reject) as detailed in the previous section.

Participant Incentive. To motivate participants to take all trials seriously, they were told that the point division from one randomly selected round would determine the number of raffle tickets they would receive to win one of five iPod nanos (in reality all participants were given equal consideration for the prizes). Points, as opposed to money, were chosen to allow for larger samples as using money would have made larger sample sizes prohibitively expensive. However, using points rather than money should not affect the results of the game, as previous research has found that proposal and rejection rates are not affected by changes in stakes (List & Cherry,

2000; Hoffman et al., 1996) even when no money is used (Forsythe et al., 1994).

Measures

All participants in this study completed the same set of individual difference measures. For a full list of measures, including items, please see Appendix C. Table 2 reports inter-correlations between these measures across all games whereas Table 3 reports means, standard deviations, and alphas for these measures separated by game. To ensure adequate content coverage, multiple measures of each maladaptive trait, with the exceptions of Fearless Dominance and Exploitativeness, were used. What follows is a series of brief descriptions of these measures.

Machiavellianism

Mach-IV (Christie & Geis, 1970). The Mach-IV is a 26 item measure designed to capture the interpersonal manipulateness of the construct of Machiavellianism. Though other measures exist, the Mach-IV by far the most popular, as it has been used in over 2,000 published studies (Jones & Paulhus, 2009).

Machiavellian Personality Scale (MPS; Dahling, Whitaker, & Levy, 2009). The MPS is a recently developed 16 item measure of Machiavellianism. According to Dahling et al. (2009) the MPS captures a tendency to mistrust, manipulate, and control others as well as proclivity to status seeking behavior. In the current work the MPS and MACH-IV were strongly correlated ($r = .54$).

Narcissism

Narcissistic Personality Inventory 40 item version (NPI; Raskin & Terry, 1988). The NPI 40 is a very common measure of Narcissism used in non-clinical Narcissism research. It captures a broad range of constructs that are more or less related to the construct of Narcissism. For the

purposes of this study, the Raskin and Terry (1988) factors of Exploitativeness and Entitlement were scored and examined rather than the overall scale as the available research suggests that the overall score conflates many different constructs (e.g. Ackerman, Witt, Donnellan, Trzesniewski, Robins, & Kashy, 2011).

Psychological Entitlement. (Campbell, Bonacci, Shelton, Exline, & Bushman, 2004) This 9-item instrument captures exaggerated perceptions of deservingness. Campbell et al. (2004) designed the scale as a standalone measure of Psychological Entitlement to avoid problems associated with the Psychological Entitlement subscale of the NPI (i.e., poor face validity, poor reliability, and forced-choice format). The resultant scale does have a higher internal consistency than the NPI entitlement scale ($\alpha = .82-.86$ versus $.30-.48$) and correlates moderately with the NPI entitlement scale ($r = .40$).

Psychopathy

Self-Report Psychopathy Scale III (SRP–III–R12; Paulhus, Hemphill, & Hare, 2007). This is a 64-item inventory designed to measure subclinical psychopathy. The overall scale can be divided into four 16-item subscales: Interpersonal Manipulation, Callous Affect, Erratic life style, and Criminal Tendencies. However, evidence suggests little discriminant validity for these content scales (e.g., Witt, Donnellan, Blonigen, Krueger, & Conger, 2009). Thus for the current research only the total score was used.

Fearless Dominance and Impulsive Antisociality (Witt, Donnellan, & Blonigen, 2009). Fearless Dominance and Impulsive Antisociality represent the two factors of psychopathy in the Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996). Witt et al. (2009) created proxy measures of these traits from the 120 item IPIP. Existing psychopathy measures appear to adequately tap Impulsive Antisociality but the PPI and its proxy measures are the only existing

self-report measures of psychopathic traits that tap Fearless Dominance. Therefore, these measures were included in this study in the interest of comprehensiveness and expanding the nomological network of this potentially important construct.

Measures of Psychological Perceptions of Economic Decision-Making Games. To evaluate psychological perceptions of the gameplay experience and participant preferences, I included two questions at the end of the lab gaming session. The first question asked participants to indicate how much they enjoyed playing their respective game on a five point scale from “did not enjoy at all” to “enjoyed very much.” The second question asked them to assess the minimal amount of points they would be willing to accept from their partner (this is sometimes referred to in the economic literature as the participant’s “minimal acceptable offer”) and was only administered to Ultimatum game participants. Participants indicated their preference by selecting a whole number from 1-9.

CHAPTER 3: RESULTS

For the following sets of analyses I begin by assessing the results of the basic (non-competitive) games and comparing these results with those found previously in the literature. After establishing these effects, I then evaluate my three research hypotheses:

1. Does the addition of competition affect proposals and acceptance rates such that participants offer less and accept less when competition is present?
2. Do people react to unfair competition by altering their proposals and acceptance rates in a manner that suggests reconciliatory/punitive behavior?
3. Do maladaptive personality traits predict variability in proposals and acceptance rates and do these effects (if present) vary in size dependent on game type?

Because gender has been discussed previously with regard to both game outcomes (e.g., Eckel &

Grossman, 2001) and procedural justice (Hack & Lammers, 2009) I also examine gender alongside all analyses conducted.

Preliminary Analyses: Non-Competitive Ultimatum and Dictator Results

Acceptance Rates (Ultimatum). In total, participants lost 12 out of 24 rounds. In 6 of these loss trials, they were randomly offered a fair offer (i.e., 4 or 5 points) or an unfair offer (i.e., 1 or 2 points) by the computer. Separate averages of participants' responses to the computer's fair and unfair offers were computed (where 1 = accepted and 0 = rejected). Thus, this variable reflects the proportion of fair and unfair offers that were accepted. A paired samples t-test revealed that participants were significantly more likely to accept fair offers ($M = .98$, $SD = .07$) than unfair offers ($M = .27$, $SD = .31$) $t(161) = 29.16$, $p < .001$, $d = 3.74$. The mean in this instance can be interpreted as the average percent accepted. In other words, this result indicates that when the offer was 4 or 5 points (a fair split) participants accepted it on average, 98% of the time, whereas when the offer was 1 or 2 points (an unfair split) participants accepted it on average, 27% of the time. This finding is consistent with previous findings in the economics literature suggesting that offers of less than 20% of the pot are often rejected (e.g., Camerer & Thaler, 1995).³

Proposals (Ultimatum and Dictator). In total, participants won 12 of the 24 rounds. Separate averages of participants' offers to their opponent were computed for both the non-competitive Ultimatum and non-competitive Dictator games. An independent samples t-test revealed that participants offered significantly less to their opponents on average in the Dictator game ($M = 3.23$, $SD = 1.33$) than in the Ultimatum game ($M = 3.68$, $SD = .86$) $t(152.94) = 3.002$,

³ Acceptance rates of fair and unfair offers did not differ significantly by gender

$p = .003, d = .41$ ⁴.

Taken together, the results of the acceptance rate and proposal analyses suggest that these non-competitive games align nicely with the outcomes observed previously in the literature and support the use of these games as a basis of comparison for the competitive variants of the games carried out in the current work. Thus the typical participant in these non-competitive games offers larger amounts (closer to equal) in the Ultimatum game and smaller amounts in the Dictator game. Participants reject fair proposals 2% of the time and reject low proposals about 73% of the time.

Assessing the Effect of Competition on Game Outcomes

Acceptance Rates (Competitive vs. Non-competitive Ultimatum). Hypothesis one states that the introduction of competition should affect acceptance rates such that the acceptance rate of unfair offers will be higher in the competitive Ultimatum game than in the non-competitive game.

First, overall acceptance rates were calculated across advantaged, matched, and disadvantaged conditions (6 rounds each; 18 total) for both fair and unfair offers in the competitive Ultimatum game. A paired samples *t*-test indicated that participants were significantly less likely to accept unfair ($M = .35, SD = .36$) than fair offers ($M = .97, SD = .11$) $t(310) = -30.18, p < .001, d = 2.45$.⁵ This finding replicates the high level of acceptance for fair offers observed in the non-competitive Ultimatum game ($M_{\text{Non}} = .98, M_{\text{Comp.}} = .97$). However,

⁴ There was no main effect of gender on Ultimatum and Dictator proposals and no interaction between gender and game type.

⁵ Gender differences were found for Unfair offers such that women were more likely to accept unfair offers than men (Women: $M = .39, SD = .38$; Men: $M = .25, SD = .31$) $t(160.431) = -3.246, p = .001, d = .40$ an effect that has been demonstrated previously in the literature in non-competitive games (Eckel & Grossman, 2001) but was not found in the non-competitive Ultimatum conducted in the present work.

the acceptance of unfair offers in the competitive Ultimatum game was significantly higher than in the non-competitive Ultimatum game ($M_{\text{Non}} = .27$ $M_{\text{Comp}} = .35$) $t(370.869) = -2.577$, $p = .010$, $d = .24$. These results suggest that the overall effect of competition was such that participants were more likely to accept an unfair offer when competition was present.

These results are consistent with the first hypothesis offered in this dissertation such that the acceptance rates of low offers in the competitive game were significantly higher than those in the non-competitive game. These findings suggest that proposers and responders are aware that the distributive justice norm has shifted from equality to equity in that their acceptance behavior (higher acceptance of low offers) reflects a seeming acceptance in this shift.

Proposals (Competitive vs. Non-Competitive Ultimatum and Dictator). Hypothesis one also states that proposals in competitive games should be lower than in non-competitive games. Additionally, previous research suggests that proposals in the Dictator games should be lower than in Ultimatum games (e.g., Kahneman, Knetsch, & Thaler, 1986). To test the overall effect of competition (present vs. absent) and game type (Dictator vs. Ultimatum) had on proposals, I conducted a 2 X 2 between-subjects ANOVA with game type and competition as separate factors. The results of this analysis revealed a significant main effect for game type $F(1, 889) = 91.151$, $MSE = 107.614$, $p < .001$, $d = .80$ such that, across competitive and non-competitive games, participants made smaller proposals of points in the Dictator game ($M = 2.78$, $SD = 1.25$) than in the Ultimatum game ($M = 3.56$, $SD = .93$). This analysis also revealed a significant main effect for the presence of competition $F(1, 889) = 47.83$, $MSE = 56.47$, $p < .001$, $d = .47$ such that participants playing a competitive game were less generous in their proposals ($M = 2.89$, $SD = 1.23$) than participants playing a non-competitive game ($M = 3.45$, $SD = 1.09$).

Importantly, there was also a significant game type by competition interaction $F(1, 889)$

= 16.50, $MSE = 19.48$, $p < .001$. To break down this interaction I followed it up with separate independent samples t-tests for the Dictator game $t(156.989) = 5.99$, $p < .001$, $d = .67$ ($M_{Comp} = 2.34$, $SD = 1.22$; $M_{Non} = 3.23$, $SD = 1.33$) and the Ultimatum game $t(354.56) = 2.68$, $p = .010$, $d = .25$ ⁶ ($M_{Comp} = 3.44$, $SD = .95$, $M_{Non} = 3.68$, $SD = .86$). This interaction is represented graphically in Figure 1. As can be seen in the Figure, competition and the absence of the possibility of proposal rejection both contribute to lower proposals but the combination of these two situational aspects results in especially low proposals⁷.

Hypothesis one states that competition should have an effect on game proposals such that they will be uniformly lower across both Ultimatum and Dictator games. The preceding analyses were consistent with this prediction. Moreover, there were main effects for both competition and game type as well as significant interaction between the two. This result was not hypothesized but does suggest that the unique combination of the presence of competition and the absence of the ability to reject proposals has an especially strong effect on participants' proposals. Individuals are the least egalitarian when competition is present and rejection is absent.

Assessing the Effect of Unfair Competition on Game outcomes

Acceptance (Ultimatum). Hypothesis two states that manipulating the fairness of the competition will make players aware of a procedural injustice in the game. This should cause them to adjust their acceptance rates of unfair proposals up or down depending upon whether they were the benefactor or the victim of the injustice. When they lose the game and they had the advantage, participants should be more likely to accept an unfair proposal than when the

⁶ Effect sizes for this analysis are based on the larger standard deviation because a pooled standard deviation was not available.

⁷ This analysis was also run controlling for gender and it did not appreciably affect the results.

competition is equal or they are at a disadvantage because they feel they are more deserving of the outcome. In contrast, when players lose at a disadvantage they should be significantly less likely to accept a low proposal than when competition is equal or they are at an advantage because they have been doubly insulted (i.e., the procedure did not favor them and neither did the distribution of the pie). A repeated measures ANOVA with a Greenhouse-Geisser correction was conducted to examine the effects that the manipulation of the fairness of the competition (advantaged, matched, disadvantaged) had on the acceptance rates of unfair proposals⁸. The overall F-test was significant $F(1.917, 620) = 6.309$, $MSE = .262$, $p = .002$, indicating that manipulating the fairness of the competition had an overall effect on the acceptance rates of unfair proposals. Post hoc tests revealed that acceptance rates for the advantaged trials ($M = .38$, $SD = .41$) were significantly higher than the acceptance rates for both the matched trials ($M = .35$, $SD = .40$; $p = .025$, $d = .07$) and the disadvantaged trials ($M = .33$, $SD = .39$; $p = .001$, $d = .13$). Acceptance rates for the matched trials were higher but not significantly different from those of the disadvantaged trials ($p = .202$). This pattern of results, as well as the average acceptance rate for the non-competitive Ultimatum is represented in Figure 2. Overall, the pattern of results is consistent with the prediction that manipulating the fairness of competition affects acceptance rates such that individuals adjust their behavior when they lose at an advantage or disadvantage. Specifically, when losing at an advantage, participants are more likely to accept lower offers than when they were on an equal playing field or when they were at a disadvantage whereas when losing at a disadvantage their acceptance rates are lower than when they lose at an advantage. However, the associated effect sizes accompanying these results

⁸ Fair proposals were also tested to determine if manipulating the fairness of the competition had an effect on acceptance rates, the overall F-test was not significant $F(1.954, 620) = .266$, $MSE = .001$, $p = .766$ suggesting no effect.

suggest that this is a small effect. What remains to be seen is whether a 3% upward or downward shift in acceptance rates is of practical significance. A test of gender differences suggested an interaction between Fairness of Competition and Gender $F(1.914, 610) = 3.051$, $MSE = 1.28$, $p = .05$. As can be seen in Figure 3, men's acceptance rates differed from women's in all conditions and differed especially in the disadvantaged condition. Specifically, women's acceptance rates in the disadvantaged condition ($M = .38$) did not differ from the matched condition ($M = .38$) whereas men's acceptance rates in the disadvantaged condition ($M = .18$) differed significantly from acceptance rates in the matched condition ($M = .26$). Previous research suggests that women are particularly attuned to the procedural fairness of Ultimatum games but that it does not affect the behavior of men in these games (Hack & Lammers, 2009). However, the current pattern of results suggests that men's acceptance rates in situations of unfair procedures are more nuanced than women's. Men were more likely to react to unfair offers when they lost at a disadvantage than women were.

Proposals (Ultimatum and Dictator). Hypothesis two also states that manipulating the fairness of the competition should affect game proposals such that participants will offer larger amounts to an opponent when the role of proposer was won with an unfair advantage relative to wins on an equal playing field whereas the proposals should be smaller when participants won the role of proposer at a disadvantage. It is also possible (though not predicted) that these conditions could interact with game type, so it is important to assess both factors concurrently. In order to accomplish this a 2 X 3 repeated measures ANOVA using a Greenhouse-Geisser correction with game type (Ultimatum vs. Dictator) as a between-subjects variable and Fairness (advantaged, matched, disadvantaged) as a within subjects variable was conducted. Cell means and standard deviations are presented in Figure 4.

The test of the between-subjects effect of Game type (Dictator vs. Ultimatum) was significant $F(1, 628) = 161.019$, $MSE = 579.128$, $p < .001$. Suggesting that, across all levels of fairness, Ultimatum proposals were significantly higher ($M = 3.44$, $SD = .95$) than Dictator proposals ($M = 2.34$, $SD = 1.22$) $d = .90$. The results also suggested an overall effect of Fairness $F(1.879, 1256) = 74.960$, $MSE = 18.696$, $p < .001$ such that proposals differed as a result of whether the competition was fair or unfair. Moreover, there was a significant linear trend in means $F(1, 628) = 120.068$, $MSE = 34.926$, $p < .001$. As can be seen in Figure 4, there was a clear decrease in proposals from the advantaged ($M = 3.05$, $SD = 1.31$) to matched ($M = 2.91$, $SD = 1.28$) to disadvantaged ($M = 2.72$, $SD = 1.28$) rounds but no fairness by game type interaction $F(1.879, 1256) = 2.248$, $MSE = .561$, $p = .110$. Post hoc tests revealed that all three levels of Fairness differed significantly from one another ($ds = .11 - .26$). In short, individuals did offer more to their opponents when they won at an advantage and less to their opponents when they won at a disadvantage relative to when they were competing on equal grounds. A test of gender differences revealed no difference between men and women in proposals across competition and game type.

Taken together these results support the predictions made in hypothesis two that participants are sensitive to the procedural fairness of competition and that acceptance and proposals reflect this sensitivity such that when they are the benefactor of an injustice they are more generous to the victim whereas when they are the victim of the injustice they are more likely to punish a partner who attempts to exploit the situation.

The Association Between Maladaptive Personality Traits and Game outcomes

The inter-correlations between the measures of maladaptive personality traits used in these studies are contained in Table 2. As can be seen in the table, convergent correlations

ranged from small to large for Psychological Entitlement (NPI-Ent & PE; $r = .40$), Machiavellianism (MACH-IV & MPS; $r = .54$), and the Impulsive and Antisocial aspects of psychopathy (IA & SRP; $r = .70$). Consistent with previous research, Machiavellianism (measured by both the MACH-IV and MPS) was strongly correlated with the Impulsive and Antisocial aspects of psychopathy ($r_s = .51 - .57$) whereas it was negatively to unrelated to Fearless Dominance depending on the measure of Machiavellianism examined ($r_s = -.15$ and $.02$ for MACH-IV and MPS, respectively). Altogether, Fearless Dominance exhibited the smallest correlations with the other measures while all other measures yielded small to large positive correlations with all other measures suggesting relatedness among these aspects of the so-called “dark triad” and the relative independence of Fearless Dominance from these constructs.

Hypothesis 3 made specific predictions about the relations between maladaptive personality traits and game outcomes. Correlations between personality traits and acceptance rates are reported in Table 3. As can be seen in the table, Machiavellianism as measured by the MACH-IV was the lone significant (negative) predictor of acceptance rates and was only predictive of acceptance rates in the non-competitive Ultimatum game. This finding suggests that individuals scoring higher on Machiavellianism were more likely to punish a partner for behaving unfairly than individuals scoring lower on Machiavellianism and are consistent with the results reported by Meyer (1992) who found that High Machs were less likely to accept unfair offers than Low Machs in multiple trial games. However, given the number of comparisons, interpretive caution is warranted until this result has been replicated. Table 4 reports associations between personality traits and proposals. As can be seen in the table, there were no significant predictors of non-competitive game proposals. The largest coefficients were in the non-competitive Dictator game for Psychological Entitlement (as measured by the

Campbell et al. scale; $r = -.15$, *ns*), Machiavellianism (as measured by the Machiavellian Personality Scale; $r = -.14$, *ns*), and Impulsive Antisociality (as measured by the IPIP scale: $r = .14$, *ns*). These results are likely due to a combination of the lack of power from these studies (i.e., small sample sizes) and the seemingly small size of the coefficients for these personality traits in relation to these outcomes.

Table 4 also contains associations between personality traits and competitive proposals. Machiavellianism (as measured by both the MACH-IV and the Machiavellian Personality Scale) and Psychological Entitlement (as measured by the NPI) were significant negative predictors of proposals in the competitive Dictator game. Thus when competition was present and rejection was absent people scoring higher on Machiavellianism and Psychological Entitlement were more likely to take advantage of the situation by keeping more of the points for themselves than people scoring low on these measures. Psychological Entitlement (as measured by the Campbell et al. scale) was the only significant negative predictor of competitive Ultimatum proposals. This suggests, if anything, that entitled individuals are less sensitive to the fairness norms associated with these situations and still ask for more points than non-entitled individuals. The fact that Machiavellianism was only predictive of proposals in the Dictator game and not in the Ultimatum game suggests that high scorers on this measure are attuned to the features of the game and only make self-interested offers when it is “safe” to do so is consistent with the assertion that high Machs are income maximizers whereas the finding that high scorers on measures of Psychological Entitlement show a rigidity in their proposals such that they expect more of the pot regardless of whether rejection is a possibility is also consistent with theorizing on the construct. Again, although these associations are more or less consistent with predictions, their size and inconsistency cautions against drawing strong conclusions. The generally small

estimates of these effects for personality variables suggest that these games represent a situation with strong “press” and thus personality may not have much of an effect above and beyond the features of these situations.

One final aspect of Hypothesis three is a formal test of the Hilbig and Zettler’s (2009) assertion that the association between personality traits and proposals is dependent on the presence or absence of rejection such that coefficients representing the association between personality traits and game outcomes will be larger in Dictator games than in Ultimatum games. To test this assertion I conducted a series of multiple regressions examining the interaction between each personality trait and game type (Ultimatum vs. Dictator) for predicting proposals while controlling for the presence/absence of competition. Utilizing this analytic technique resulted in no statistically significant interactions, suggesting no overall effect of game type on the associations between individual differences and game proposals. Thus, although the assertion that the Dictator game affords for more opportunity for the expression of individual differences than the Ultimatum game, I found no formal empirical evidence to support this hypothesis using a two-tailed significance test with an alpha level of .05.

Ancillary Analyses: Psychological Perceptions of Economic Decision-Making Games

Participants indicated how much they enjoyed playing their respective game on a five point scale from “did not enjoy at all” to “enjoyed very much.” To evaluate the effects that competition and game type have on the general enjoyment of the game I conducted a 2 by 2 between subjects ANOVA with game type and competition entered as separate factors. Results indicated significant main effects for both game type $F(1, 887) = 10.400$, $MSE = 11.886$, $p = .001$ and competition $F(1, 887) = 62.927$, $MSE = 71.798$, $p < .001$ that was qualified by an interaction between game type and competition $F(1, 887) = 4.029$, $MSE = 4.597$, $p = .045$. An

examination of the means (represented graphically in Figure 4) revealed that on average, non-competitive games were seen as less enjoyable than competitive games and Dictator games were rated as less enjoyable than Ultimatum games with the non-competitive Dictator game being rated as particularly less enjoyable than the other variants.

I also investigated individual difference predictors of game enjoyment, results indicated that high scorers on the Campbell Psychological Entitlement scale enjoyed the game slightly more ($r = .11, p < .05$) than low scorers whereas people who scored higher on the self-report psychopathy scale ($r = -.08, p < .05$) and the Impulsive Antisociality scale ($r = -.09, p < .05$) enjoyed the games less than lower scorers. The correlations between these variables and enjoyment separated by level of competition and game type are presented in Table 5. However, these coefficients are small and if anything, speak to the general modesty of individual difference effects evaluated in the current work.

In the Ultimatum games participants were asked to indicate the minimal amount of money that they would be willing to accept (minimal acceptable offer) at the completion of the study. An independent samples t-test revealed that competition lowered participants' minimal acceptable offer significantly (Non-Competitive: $M = 2.87, SD = 1.01$; Competitive: $M = 2.55, SD = 1.18$) $t(367.420) = 3.018, p = .003, d = .28$. This suggests, along with the observed behavioral measures, that a participant's mental expectations of what is considered a fair offer do in fact shift when competition is added to the equation. It is also worth noting that the average actual offer in these games was reliably 4/5 pt higher than the average minimal acceptable offer ($M_{diff} = .81 - .89$) which is made even more remarkable with the realization that participants never received any form of feedback concerning their offers and thus were left to their own devices to determine what constituted a fair offer. Individual differences in personality were

largely unrelated to participants' minimal acceptable offer when considered across levels of competition or together. One notable exception is that Machiavellianism (as measured by the MACH-IV) was significantly positively associated with the minimal acceptable offer in the non-competitive game ($r = .18, p < .05$) whereas it was unrelated to the minimal acceptable offer in the competitive Ultimatum game ($r = .02, ns$). However, Machiavellianism was unrelated to actual game behaviors so this finding raises some interesting questions about the construct of Machiavellianism and its relation to observable behavior in these kinds of tasks.

CHAPTER 4: DISCUSSION

The goal of this dissertation was to better understand how competition and fairness concerns affect people's behavior in situations in which resources are allocated. Specifically, I addressed how fair and unfair competition affects individuals' decision-making when the division of resources is their primary concern. The current work also addressed whether individual differences in maladaptive personality traits have a moderating effect on these decision processes. To address these issues in a systematic setting, I modified economic decision-making games to create situations of fair and unfair competition. These games were ideal for my purposes because they are well-established, tightly controlled, and their features are easily manipulated. Furthermore, these games involve the division of a finite resource between two individuals and thus provide a direct, albeit simplified, analog to important real world situations. Humans often compete for resources and sometimes the competition is unfair (i.e., one competitor has an edge that he or she does not deserve). In the current work I manipulated the competition in these games such that on some trials participants would be evenly matched (fair competition) and on other trials they would be at an advantage or disadvantage that they did not deserve (unfair competition). Finally, I collected information about participants' personalities

using self-reports to better understand the role that individual differences play in human decision-making.

To achieve my overarching goal, I addressed three research questions. First, I evaluated the effect that adding competition to these games had on proposals and acceptance rates. Next, I built upon this work by manipulating the procedural fairness of the competition – creating fair and unfair competitive rounds -- and examined the effects that this had on game outcomes. Finally, I examined associations between individual differences in personality and proposals and acceptance rates across all game types and levels of competition. Results revealed that the addition of competition decreased proposals from an average of 3.45 points out of 10 to 2.89 points out of 10 and increased acceptance rates of unfair offers (i.e., offers of 2 pts or less out of 10) from 27% to 35%. These effects were small to moderate in size. Unfair competition affected proposals and acceptance rates in a pattern that suggested participants were aware of the unfairness and attempted to rectify it. For example, when participants won at an advantage they offered their opponents an average of 3.04 points whereas when they won at a disadvantage they only offered 2.71 points, representing a small effect size. Similarly, when participants lost at an advantage they accepted unfair offers 38% of the time versus 33% when they lost at a disadvantage. Finally, there was little evidence that individual differences in maladaptive personality traits were consistent predictors of behavior in these games regardless of the level of competition, fairness, or game type. At best, the effect sizes were small and the vast majority of coefficients were not statistically significant.

All in all, this work represents a contribution to the behavioral economics literature as well as to the social and personality psychology literature because it extends work on the economic decision-making paradigms and gives insight into individuals' reactions to procedural

injustice. To my knowledge, it represents the first study using economic decision-making games that has not only manipulated the level of competition but also manipulated the fairness of the competition. Moreover, it provides interesting insights into the behavior of people in competitive circumstances by suggesting that people generally recognize injustice and make an effort to address it. Finally, it adds to a growing literature that examines how strongly individual difference measures are related to behaviors in these long-standing economic paradigms.

Consistent with previous research (e.g., Hoffman et al., 1996), I predicted that the addition of competition for the role of proposer would affect game outcomes such that proposers would offer less to responders and responders would be willing to accept less from proposers when competition was present. The reasoning for this prediction is that the nature of competition creates a situation in which the person who wins the role of proposer believes that she or he has earned the right to more of the resource. Consistent with this prediction, competition resulted in lower proposals than in the non-competitive games (for both Dictator and Ultimatum games). Likewise, competition resulted in higher acceptance rates than in the non-competitive games, an effect that suggests losing players are aware of and conform to the norm of awarding the winner more of the resource. The effect of competition was stronger on proposals ($d = .47$) – when participants were actively making a decision – than on acceptance rates ($d = .24$) where participants had to make an all or none decision about an offer from the computer. This difference might be partially explained by the greater reliability of proposals (a continuous variable) than the acceptance rates (a series of dichotomous decisions) but nonetheless these effects are not trivial. Interestingly, there was also significant interaction between competition and game type such that proposals were especially low in competitive Dictator games. It appears that the combination of competition for resources and the absence of punishment for self-

interested behavior results in the strongest “winner takes all” mindset.

It appears that the addition of competition alters the implicit norm of what constitutes a fair distribution from one of equality to one of equity. In other words, participants seem to accept, on some level, that the winning player has earned the right to more of the pot. Although this is not necessarily a novel finding (see Hoffman et al., 1996), it does add to the literature as an extension of previous work in that the competition here took place over multiple rounds and in that wins and losses were controlled for even comparison.

The second prediction was that manipulating the procedural justice of the situation (i.e., the fairness of the competition) would result in behavior suggestive of an attempt to rectify the injustice on the part of the participants who benefitted unfairly from this advantage. This situation was experimentally created by manipulating the difficulty of questions participants (and their virtual partners) had to complete. On some rounds the partners had to answer questions of the same difficulty (i.e., both easy or both hard) whereas on other rounds the participant was at a competitive advantage (i.e., completed easier questions than their partner) or at a competitive disadvantage (i.e., completed harder questions than their partner). To my knowledge, the procedural fairness manipulation used in this research has never been used before in conjunction with Dictator and Ultimatum games. Thus, this experimental paradigm extends of previous work. Results suggested that participants took steps to address the unfairness by adjusting their acceptance rates and proposals accordingly.

Acceptance rates in the competitive Ultimatum were higher (38%) when participants lost than when they had a competitive advantage (i.e., they were beaten by a player who had to answer harder questions than they did) and lower (33%) when participants lost when they were at a competitive disadvantage (i.e., they were beaten by a player who had to answer easier

questions than they did) than when they were competing with another player on equal grounds (35%). However, these effect sizes were small. These results are surprising, especially when considered in the context of non-competitive acceptance rates. In the non-competitive Ultimatum game the average acceptance rate for unfair proposals was 27%. Thus, despite the fact that responders in these situations could reject these lopsided offers and improve their own chances of winning a prize with relatively little cost to themselves they did not do so. In fact, the acceptance rates for all conditions in the competitive game (fair or unfair) were higher than for the non-competitive game. However, a more interesting comparison is whether fairness concerns can moderate the “winner take all” mindset of proposals in these competitive games (especially the Dictator game).

Results did indeed indicate that manipulating the fairness of competition had small to moderate effects ($ds = .11-.26$) on participants’ average proposals. Proposals (in both the Ultimatum and Dictator games) were higher in situations where participants won at an advantage (3.05) and lower in situations when they won at a disadvantage (2.72) than in situations where they won on equal grounds (2.91). However, in comparison to the average proposal for non-competitive games (3.45) these effects look much larger. Thus participants were more generous in their proposals when they were the benefactors of an injustice (even when the opportunity for rejection was absent) and less likely to accept an unfair offer when they were the victims of the injustice. The fact that these results were not moderated by game type suggests that fairness concerns affected participants’ decisions even in a game where they could take as much as they wanted after winning without any threat of retribution.

The present results offer a somewhat positive perspective on human psychology. The results suggest that individuals are sensitive to procedural injustice in the bargaining situations

created by economic decision-making games (and likely others where fair procedures are desired) and that, all else being equal, they will take steps to rectify the injustice to some extent when compared to those trials in which competition was fair. The fact that this kind of compensatory behavior was also evident in the Dictator game suggests that a norm of fairness is strong and often overrides personal concerns because participants in these game were under no obligation to give points to their partners and could take the points for themselves without any fear of retribution. However, this represents only one study with a relatively circumscribed sample and thus cautions about over-generalization of findings at this point are warranted.

The third hypothesis was that individual differences in personality would predict proposals and acceptance rates. However, personality effects were inconsistent at best and the few significant associations that did arise were small in size. This was unexpected as previous work has identified individual difference predictors of these behaviors (e.g., Hilbig & Zettler, 2009). Although it makes intuitive sense that individual tendencies toward greed and manipulateness should predict exploitative behavior in competitive situations, I found no evidence to substantiate this claim in the current work.

As always, the absence of evidence of an effect does not necessarily mean that the effect does not exist. It is quite possible that these effects are real but small and thus hard to detect. It is possible that the sample size in this report was not sufficient to detect these effects (i.e., the sample was underpowered). However, the total sample size in this study was relatively large ($n = 893$) in comparison to the sample sizes in previous studies that were successful in finding reliable individual difference prediction of game outcomes. For example, the sample size reported in Hilbig and Zettler (2009) was 134 participants, roughly 15% the size of the sample collected in this dissertation. Thus it is not likely that the paucity of individual difference effects

in the current work can be attributed to power issues. On a related note, it is difficult to comment on the size of these effects given that there is little consensus on what the benchmark effect size for a personality trait prediction of a behavior in a laboratory setting should be. For example, Hilbig and Zettler (2009) reported a regression coefficient of $-.20$ between Honesty-Humility and Dictator proposals whereas Witt et al. (2009) reported a range of effect sizes ($r_s = .00 - .33$) for personality trait prediction of hot sauce allocation in a laboratory task. Thus, judgment on the relative size of these effects should be withheld until a more of a consensus on this issue is reached.

A more reasonable explanation for these findings (or lack thereof) is that the situation created by these games has a strong “press” and that even though the variance differs between game types it does not differ enough to suggest a heavy influence of individual differences. That is, the implicit norms of distributive and procedural justice in these games are strong enough to wash out individual difference effects especially in light of the strength of the situational manipulations used here. Based on these results it seems that bargaining situations – especially those that involve competition – have a reasonably strong set of implicit norms associated with them analogous to real world situations where behavior is heavily constrained (e.g., a funeral) and thus individual differences may not be responsible for the lion’s share of the variance in any given individual’s behavior in these situations.

However, given that the assessment method used herein was self-report and the traits assessed are socially undesirable (e.g., greed) it is also possible that the lack of association could be the result of the chosen assessment method. That is, individuals may be unable, or at least unwilling, to report on these characteristics of their own personality and thus a well-acquainted observer would be better suited to the task. So perhaps observer reports would provide higher

validity coefficients than self-reports in this circumstance. However, an opposing case could be made suggesting that the “letter of reference effect” (i.e., the tendency of individuals to nominate informants who will give them positive ratings) would negate the potential advantage of observer reports. The best solution would be to obtain both self and informant reports in future studies. Collecting both sources of information would allow the evaluation of both sources predictive validity in this experimental context.

A second part of the individual difference hypothesis – suggested previously in the literature (Hilbig & Zettler, 2009) – was that the coefficients between individual differences and game outcomes would be larger in the Dictator game than in the Ultimatum game. The rationale for this moderation hypothesis is that the opportunity to reject proposals places constraints on the preferences of individuals who would otherwise propose smaller amounts. For example, a selfish person, by definition, should desire more of the resource than a non-selfish person. In the Dictator game, this person may be as selfish as they wish because his or her partner has no choice but to accept whatever is offered whereas in the Ultimatum game a selfish proposal has the very real possibility of being rejected and the consequence of the greedy proposer being left with no points at all. For this reason, even selfish people may look egalitarian in the Ultimatum game while showing their true colors in the Dictator game.

Formal tests of the Hilbig and Zettler (2009) moderation hypothesis did not provide any statistical evidence that the individual differences found in my work had stronger effects in the Dictator game than in the Ultimatum game. However, in some cases the correlations appeared slightly larger in the Dictator game than in the Ultimatum game and the variance of proposals was larger in the Dictator games (both competitive and not) than in the Ultimatum games. Thus, there may be some veracity to this claim, but the evidence in this report is not substantial.

Limitations

Although this research provides several novel and informative findings about conditions associated with economic decision-making, and more broadly, about the way that individuals react to injustice, it is not without its limitations. One limitation is the current work's reliance on college samples. This is often cited as a limitation of psychological and behavioral economics research (e.g., Sears, 1986). Although in many cases the use of such convenience samples is not a concern, it is possible that college students' decision-making tendencies differ from that of the general population and therefore their responses are not generalizable. In fact, there is now ample evidence to suggest that there are cross-cultural differences in Ultimatum and Dictator proposals (e.g., Henrich, Heine, & Norenzaya, 2010). For example, when comparing across cultures, U.S. (non-student) participants are at the upper end of proposals in both the Ultimatum and Dictator game (i.e., ~47% of the total pot, range: ~25% to ~51%). Therefore, although the results presented here with regard to the non-competitive games are more or less consistent with previous research using both college and reasonably educated North American samples, caution should be taken when generalizing these results to other populations and it is important to replicate these procedures with other samples to better understand potential boundary conditions.

Another limitation of this research may have been the use of the word "game" in the title and description of the study on the HPR web site (though this was constant for all variants, even non-competitive). It has been demonstrated that subtle changes in the wording of experimental advertisements can have unseen selection effects in subsequent studies (e.g., Carnahan & McFarland, 2007). Admittedly, the word game was partially an intentional attempt to increase lab attendance (attrition has become a serious problem in hybrid online/lab studies within the department during the past year), but I cannot rule out the possibility that this could have

affected the results. It is possible that many of the participants in this study came into it with a “gaming” mindset and that this could have augmented the effects of the competition manipulation. It is also possible that a subset of the population that enjoy games and are extra competitive sought this study out specifically. Because of this, it might be useful to collect a study with more generic advertising to see if the effects demonstrated here are replicated. However, given that most economic decision-making studies involved the division of money or points, it is unclear how one would go about advertising such a study without mentioning something about monetary or material reward and/or competition or gaming.

Another limitation is the sample size of the non-competitive studies. The sample sizes of these studies were smaller than that of the competitive studies. This was partially by design (the proposed sample size for the non-competitive studies was 150 whereas the proposed sample size for the competitive studies was 300) but was also an issue with the time frame and supply of participants for data collection. Specifically, the semester in which these data were collected suffered from an excess of experiments and a limited supply of experimental participants and thus the sample size fell just short of the target number. Ideally the samples would all have been of similar size. Thus the precision of estimates for the competitive games is greater than that of the non-competitive games. This likely was not an issue for the estimates of game outcomes as the sample sizes used in the non-competitive games dwarf that of the sample sizes typically employed in the behavior economics literature. However, given the size of the correlations for individual differences and game outcomes (or lack thereof), the effects of personality are seemingly quite small and thus require very large sample sizes to be reliably detected. Therefore, this work may not represent the best test of individual difference prediction of economic decision-making.

A final limitation may be the choice of individual difference measures employed in this work. Many of these measures such as the Narcissistic Personality Inventory and the MACH-IV have known structural and validity issues (Ackerman et al., 2011; Hunter, Gerbing, & Boster, 1982). Thus, they may have been poor choices to include for the current research aims. However, to combat this concern I included multiple measures of each construct and was still unable to find consistent results. This suggests that even the new measures have significant flaws or that the true effect size is really quite small. It also could be an issue of social desirability in that there are stable individual differences in these non-desirable traits, but that these individuals might be hesitant to express this through self-reports. Therefore, future work examining questions involving undesirable personality traits – such those examined here – may benefit from the use of alternative modes of measurement (e.g., informant report) in addition to traditional self-reports. It is also possible that the measures chosen for this work just are not relevant in these contexts and that other individual differences that were not included are relevant. Hilbig and Zettler (2009) were able to find effects for the Honesty-Humility factor of the HEXACO PI-R, thus it is possible that other measures would be more successful towards this end. Toward this end, future research should consider a broadband measure of personality in an attempt to capture some more specific facets of personality not measured in the current work such as assertiveness or conformity.

Future Directions

One future direction in line with this research may be to create procedural unfairness in a non-competitive game. In the current games the procedural unfairness was obvious, but the participant still had some amount of control over the outcome. For example, let's say a participant received hard questions on a given round of the game. Given this information, the

player knows that the round will either be fair (i.e., his or her opponent also had hard questions) or it will be unfair (i.e., his or her opponent has easy questions). Even though the second scenario seems bleak, there is still a chance that the participant can prevail or at least believe that she or he can prevail. Now imagine a game where the participant knows that the decision rule for choosing the winner was unfair, but he or she has no affect on the outcome. For example, participants are told that the winner is determined by the computer but that the odds are affected by the prestige of their university. What would players do in this situation? I suspect that the same effects observed here would be also be seen in this variant of the game, but that the conciliatory or retaliatory behavior would be stronger (i.e., participants would give more points when winning at an advantage and would reject low offers more often when losing at a disadvantage) than found in the current work.

Another future direction concerns the use of repeated interaction “partners” for these games. Most Ultimatum and Dictator studies are conducted in a single-shot bargaining interaction (e.g., Thaler, 1988). The current research expanded this to a multi-shot format where participants ostensibly had multiple partners. Thus the games conducted here were essentially repeated single-shot games. These games were constructed in this manner to allow for more reliable estimate of individuals’ preferences than a typical single-shot game would afford while also avoiding participant learning or familiarity effects. Although this type of design is useful for experimental clarity and control because it avoids these issues, it does not mirror how bargaining is usually conducted in the real world. Although it is true that bargaining often involves more than one round, these rounds usually involve the same pair of partners. A future extension of this work may be to have pairs of individuals bargain with or without competition over a number of trials. This would extend the current work by making the competition and bargaining more

ecologically valid. Furthermore, the dyadic nature of this interaction would allow for a test of not only how a player's strategies change over time, but also of how these strategies interact with his or her partner's strategies.

Finally it may be useful to conduct a within-subjects study where participants compete in both the ultimatum and dictator games (counterbalanced) using either a single-shot or multi-shot format. This would allow participants to serve as their own controls and could provide interesting insights into the general relatedness of behavior in both games as well as pinpoint individuals whose behaviors are quite discrepant between games (e.g., individuals with generous ultimatum proposals and stingy dictator proposals).

Conclusion

The current work represents a novel contribution to the economic and psychological literatures. Not only does it expand upon and contribute to previous work using economic decision-making games but it also expands the psychological understandings of how people respond to the fairness of the context of a bargaining interaction between two individuals. Overall, these results suggest that the old cliché “to the victor go the spoils” has some truth to it, but could use some further qualifications.

The results of this study revealed that the introduction of competition shifts the normative concept of the division of resources from one of equality to one of equity. Though, interestingly, winners and losers were far less greedy and spiteful than they could have been. Thus, although participants both in the role of proposal and responder appear to recognize the norm that in competition the victor deserves more of the spoils the norm apparently dictates that he or she does not deserve all of the spoils. This effect might explain why presidential candidates who win their primaries often select their opponents as future running mates or appoint these individuals

to their cabinets. In a sense, this might be the candidate's way of giving some of the pot back to a good opponent.

The further introduction of unfair competition demonstrates that individuals do not like unfair procedures and when given the opportunity they will make concessions to rectify these procedures or to punish those who they perceive are exploiting the results of said procedures. Thus, the amount of spoils the victor gets depends heavily on the processes that lead to the victory. If he or she earned the victory via a competitive advantage he or she deserves fewer spoils and attempts to give back to the disadvantaged opponent. This is not unlike the co-worker who unfairly gains a promotion and promises to "put in a good word" for his or her disadvantaged co-worker was passed over. Conversely, when the victor attempts to take advantage of an unfair edge his or her opponent will take punitive action, if possible. Keeping with the previous example, the co-worker who loses a rigged competition for a promotion might engage in subversive acts toward his or her employer in an attempt to punish the system.

Although the current work found little evidence of a strong (or even medium-sized) association between personality and behavior in these games, for the moment, the question of whether individual differences matter in these situations remains open until more data have been collected. Thus, the question of what kinds of people are sensitive to features of these situations is still a matter of debate and deserves more empirical attention.

Finally, from a practical point of view, adapting these long-established paradigms for studying competition has provided a new platform for research and suggests many interesting extensions. It is my hope that by extending the literature in these ways I have pushed this area of research toward a more ecologically valid model of bargaining and have begun to explore the elements of bargaining and competition that until this point have been unstudied.

Table 1

Frequencies and Percentages for Demographic Variables by Game

	Non-Competitive Ultimatum (n = 162) n (%)	Non-Competitive Dictator (n = 101) n (%)	Competitive Ultimatum (n = 311) n (%)	Competitive Dictator (n = 319) n (%)
<i>Age</i>				
18	47 (29%)	14 (13.9%)	99 (31.8%)	88 (27.6%)
19	54 (33.3%)	32 (31.7%)	75 (24.1%)	83 (26.0%)
20	25 (15.4%)	26 (25.7%)	70 (22.5%)	58 (18.2%)
21	25 (15.4%)	13 (12.9%)	38 (12.2%)	63 (19.7%)
22	5 (3.1%)	8 (7.9%)	15 (4.8%)	13 (4.1%)
23	1 (.6%)	4 (4%)	7 (2.3%)	6 (1.9%)
24	1 (.6%)	2 (2%)	1 (.3%)	1 (.3%)
25	0 (0%)	0 (0%)	0 (0%)	0 (0%)
26 +	4 (2.5%)	0 (0%)	6 (1.9%)	6 (1.9%)
Missing	0 (0%)	2 (2%)	0 (0%)	1 (.3%)
<i>Year in School</i>				
1	84 (51.9%)	34 (33.7%)	101 (32.5%)	97 (30.4%)
2	27 (16.7%)	26 (25.7%)	88 (28.3%)	86 (27.0%)
3	33 (20.4%)	25 (24.8%)	69 (22.2%)	69 (21.6%)
4	17 (10.5%)	9 (8.9%)	37 (11.9%)	54 (16.9%)
5	1 (.6%)	7 (6.9%)	13 (4.2%)	12 (3.8%)
6 +	0 (0%)	0 (0%)	3 (1.0%)	0 (0%)
Missing	0 (0%)	0 (0%)	0 (0%)	1 (.3%)
<i>Gender</i>				
Women	97 (59.9%)	58 (57.4%)	230 (74.0%)	177 (55.5%)
Men	63 (38.9%)	43 (42.8%)	79 (25.4%)	139 (43.6%)
Did not Specify	2 (1.2%)	0 (0%)	2 (.6%)	3 (.9%)
<i>Racial/Ethnic Group</i>				
White/Caucasian	132 (81.5%)	74 (73.3%)	260 (83.6%)	264 (82.8%)
Black/African American	8 (4.9%)	12 (11.9%)	15 (4.8%)	24 (7.5%)
Latino/Latina	4 (2.5%)	4 (4%)	7 (2.3%)	4 (1.3%)
Asian American	9 (5.6%)	7 (6.9%)	20 (6.4%)	23 (7.2%)
Racial/Ethnic Group not listed	8 (4.9%)	4 (4%)	9 (2.9%)	4 (1.3%)
Missing	1 (.6%)	0 (0%)	0 (0%)	0 (0%)

Table 2

Inter-correlations Between Individual Difference Measures

Measure	1	2	3	4	5	6	7	8
1. MACH	-							
2. MPS	.54	-						
3. NPI-EXP	.24	.33	-					
4. NPI-ENT	.21	.42	.29	-				
5. PE	.23	.51	.23	.40	-			
6. SRP	.57	.57	.39	.33	.33	-		
7. FD	-.15	.02	.29	.23	.09	.11	-	
8. IA	.51	.55	.32	.26	.32	.70	-.04	-

Note: $n = 893$. Coefficients in **Bold** are significant at $p < .05$. MACH = MACH-IV, MPS = Machiavellian Personality Scale, NPI-Exp = Narcissistic Personality Inventory Exploitativeness Subscale, NPI-ENT = Narcissistic Personality Inventory Entitlement Subscale, PE = Psychological Entitlement scale, SRP = Self-Report Psychopathy Scale, FD = Fearless Dominance, IA = Impulsive Antisociality.

Table 3

Means, Standard Deviations, and Internal Consistency Estimates for Psychological Measures by Study

	Non-Competitive Ultimatum (n = 162)			Non-Competitive Dictator (n = 101)			Competitive Ultimatum (n = 311)			Competitive Dictator (n = 319)		
	<i>M</i>	<i>SD</i>	α	<i>M</i>	<i>SD</i>	α	<i>M</i>	<i>SD</i>	α	<i>M</i>	<i>SD</i>	α
MACH	2.84	.36	.72	2.78	.33	.66	2.74	.34	.68	2.74	.35	.72
MPS	2.72	.52	.83	2.65	.49	.85	2.71	.50	.84	2.74	.51	.86
NPI-EXP	.39	.29	.58	.38	.29	.58	.36	.27	.54	.38	.29	.59
NPI-ENT	.29	.22	.44	.26	.20	.30	.27	.23	.48	.30	.23	.43
PE	2.59	.60	.85	2.54	.53	.82	2.64	.58	.85	2.61	.61	.86
SRP	2.43	.42	.93	2.43	.38	.91	2.30	.38	.92	2.41	.39	.92
FD	3.45	.42	.82	3.49	.42	.84	3.40	.49	.86	3.44	.47	.87
IA	2.47	.50	.87	2.43	.51	.89	2.31	.46	.86	2.44	.46	.87

Note: MACH = MACH-IV, MPS = Machiavellian Personality Scale, NPI-Exp = Narcissistic Personality Inventory Exploitativeness Subscale, NPI-ENT = Narcissistic Personality Inventory Entitlement Subscale, PE = Psychological Entitlement scale, SRP = Self-Report Psychopathy Scale, FD = Fearless Dominance, IA = Impulsive Antisociality.

Table 4
Individual Differences and Acceptance Rates

	non- competitive Ultimatum overall (n = 162)		Competitive Ultimatum (n = 311)		
		overall	advantaged	matched	disadvantaged
MACH	-.17	.02	.08	.02	-.04
MPS	.00	.00	.03	.02	-.05
PE	.09	.09	.10	.09	.06
NPI-Exp	.08	-.03	-.07	.02	-.03
NPI-Ent	.12	-.01	-.03	.01	-.01
SRP	-.01	.03	.08	.04	-.05
FD	-.04	.04	.00	.08	.01
IA	-.01	.04	.05	.06	-.01

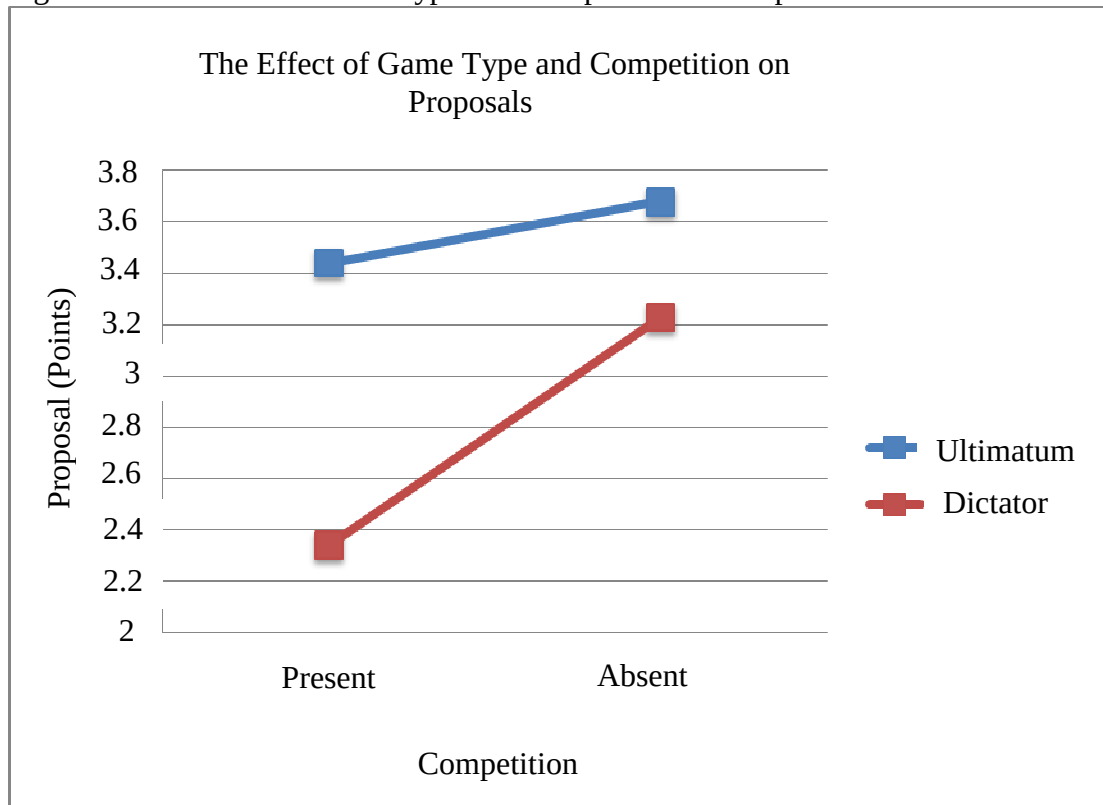
Note: Coefficients in **Bold** are significant at $p < .05$. MACH = MACH-IV, MPS = Machiavellian Personality Scale, NPI-Exp = Narcissistic Personality Inventory Exploitativeness Subscale, NPI-ENT = Narcissistic Personality Inventory Entitlement Subscale, PE = Psychological Entitlement scale, SRP = Self-Report Psychopathy Scale, FD = Fearless Dominance, IA = Impulsive Antisociality.

Table 5
Individual Differences and Proposals

	Non-Competitive		Competitive	
	Dictator	Ultimatum	Dictator	Ultimatum
MACH	-.09	.07	-.13	-.03
MPS	-.14	.02	-.14	-.08
PE	-.15	.10	-.05	-.14
NPI-Exp	-.11	-.05	-.04	-.02
NPI-Ent	-.04	-.04	-.14	.02
SRP	.04	-.03	-.11	-.06
FD	.01	-.04	-.07	-.07
IA	.14	.02	-.07	.05

Note: Coefficients in **Bold** are significant at $p < .05$. MACH = MACH-IV, MPS = Machiavellian Personality Scale, NPI-Exp = Narcissistic Personality Inventory Exploitativeness Subscale, NPI-ENT = Narcissistic Personality Inventory Entitlement Subscale, PE = Psychological Entitlement scale, SRP = Self-Report Psychopathy Scale, FD = Fearless Dominance, IA = Impulsive Antisociality.

Figure 1: The Effect of Game Type and Competition on Proposals



For interpretation of the references to color in this and all other figures, the reader is referred to the electronic version of this dissertation.

Figure 2: The Effect of Manipulating Fairness of Competition on Ultimatum Acceptance Rates

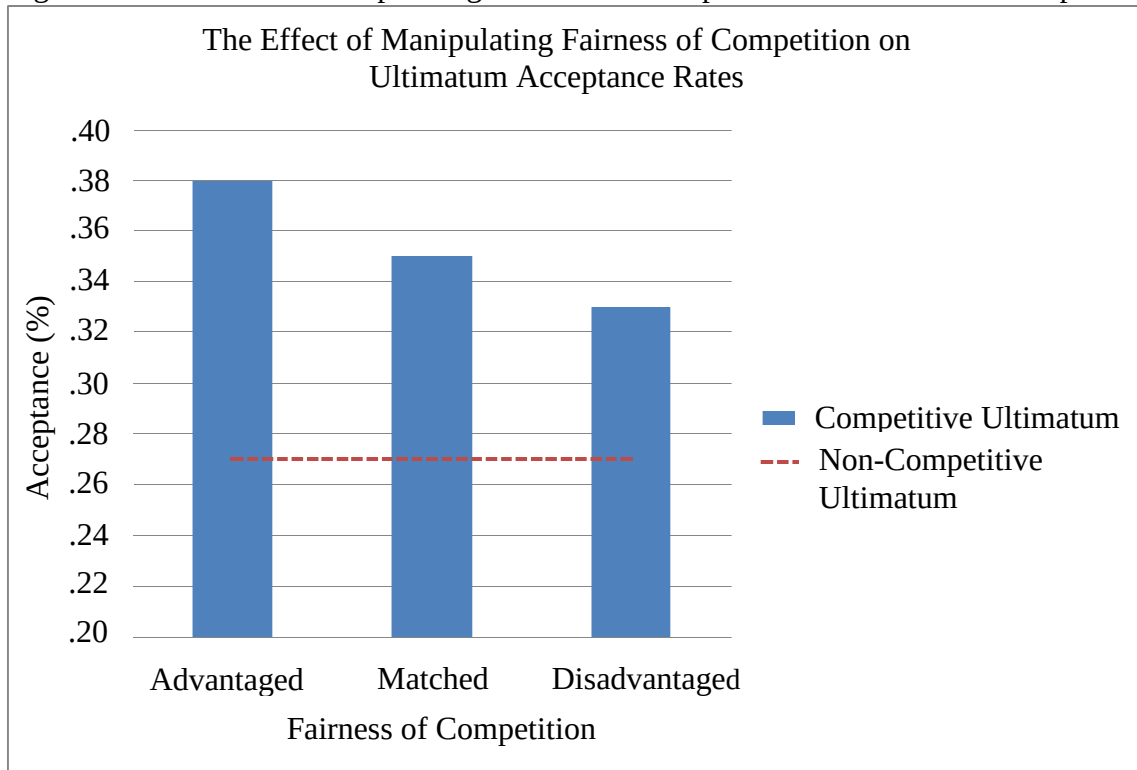


Figure 3: Gender Difference in Acceptance Rates by Fairness of Competition

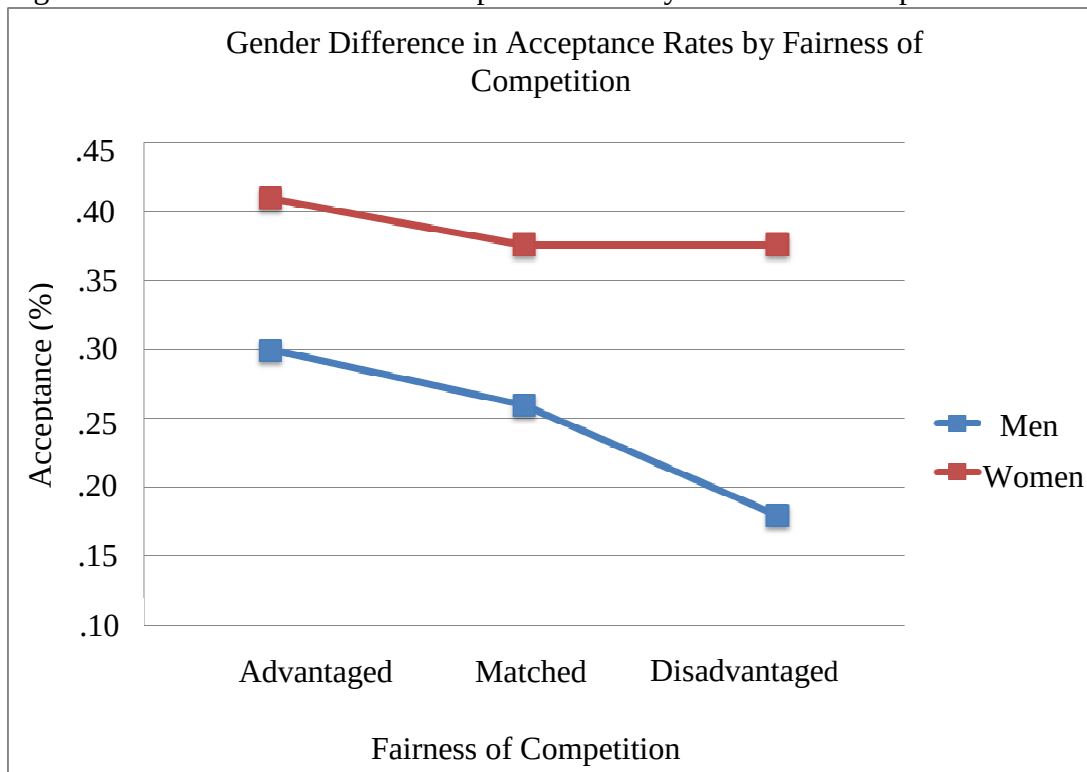


Figure 4: Proposals by Difficulty

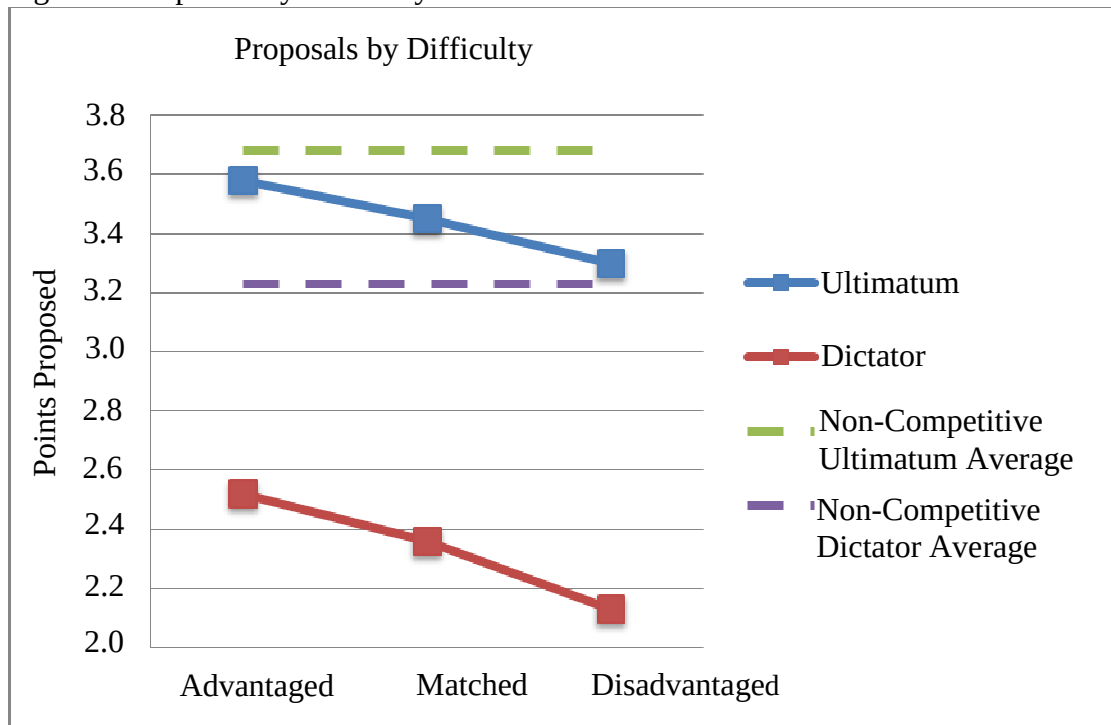
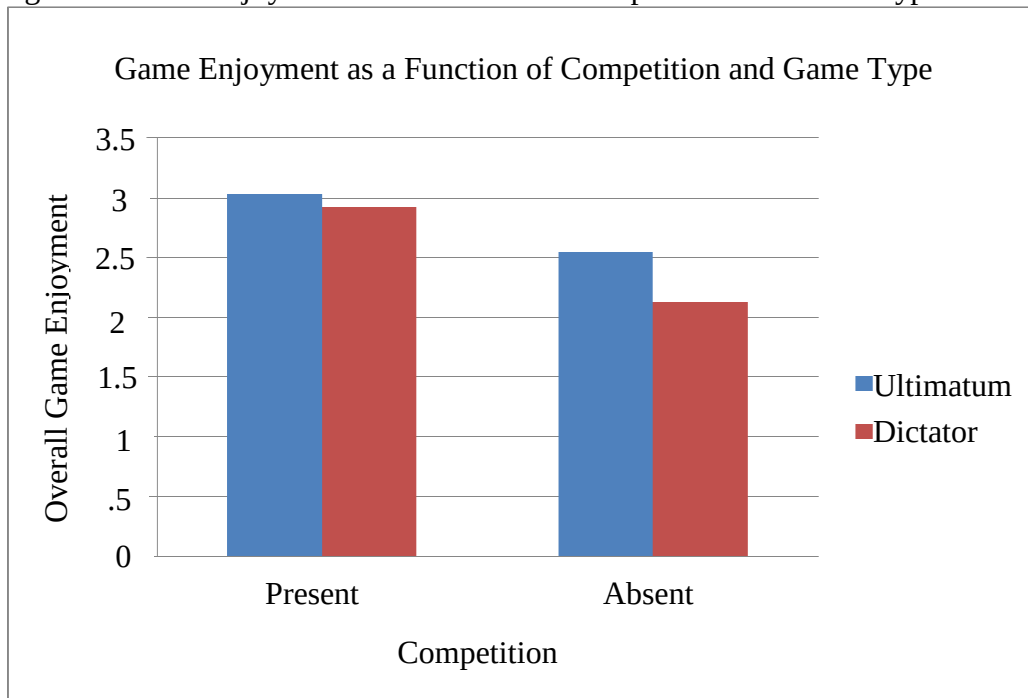


Figure 5: Game Enjoyment as a Function of Competition and Game Type



APPENDICIES

APPENDIX A: HUMAN PARTICIPATION IN RESEARCH STUDY DESCRIPTION

HPR Study Title:

Multi-Site Economic Game Study

HPR Study Description:

“Students will play an online game against students at other universities for a chance to win prizes.”

APPENDIX B: INSTRUCTIONS TO PARTICIPANTS

Non-Competitive Ultimatum Game:

After participants read and signed the consent forms they heard the following:

In today's experiment we are interested in understanding how people choose to divide resources in a competitive environment. There are two phases to this study. You have already completed one phase by filling out questionnaires online when you signed up. The second phase will take place today and should take about 45 minutes.

For this phase you will play an interactive game on-line against students from other universities across the U.S. On each round of the game the computer will assign you a different opponent from another school. At no time will you be competing with another MSU student including those present here. Once assigned a partner the computer will then randomly decide which one of you is the winner for that round.

On each round you are competing for ten points. The winning player gets to make a proposal of points between themselves and the losing player. For example, let's say that I won the first round. Now I have to decide how I want to divide the points between myself and my opponent. I could choose any division, so I might choose to make an offer of 7pts for me and 3pts for my opponent or 8pts for me and 2pts for opponent and so on. I won, so I get to choose. The amount proposed counts as the point total for that round. Does everyone understand?

The points won on each round will become important at the end of the game. When you finish, the results from one of your rounds will be chosen at random and the point division for that round will count as your number of entries to win one of five iPod shuffles. So, if on that round you proposed 7 points for yourself and 3 points for your opponent, that would count as 7 entries into the drawing for you and your opponent would get 3 entries. Does anyone have any questions? Is everyone clear on the gameplay and the rules?

Participants then completed the study on the computer, answered manipulation check and funnel debriefing questions, and were debriefed.

Non-Competitive Dictator Game

The above script was identical for the Dictator Game with the exception that language related to acceptance/rejection of offers was removed.

Competitive Ultimatum Game

After participants read and signed the consent forms they heard the following:

In today's experiment we are interested in understanding how people choose to divide resources in a competitive environment. There are two phases to this study. You have already completed one phase by filling out questionnaires online when you signed up. The second phase will take place today and should take about 45 minutes.

For this phase you will play an interactive game on-line against students from other universities across the U.S. On each round of the game the computer will assign you a different opponent from another school. At no time will you be competing with another MSU student including those present here.

Each round you and your opponent will be asked to answer three multiple-choice math problems. Whoever answers the most questions correctly will win the round. If you both of you get the same number of correct answers whoever answered the fastest will win the round.

On each round you are competing for ten points. The winning player will propose a division of these points to the loser. For example, let's say that I won the first round. Now I have to decide how I want to divide the points between myself and my opponent. I could choose any division, so I might choose to make an offer of 7pts for me and 3pts for my opponent or 8pts for me and 2pts for opponent and so on. I won, so I get to choose.

The losing player only has two options. They can choose to accept the offer of points from the winner, in which case the winner and loser get the proposed point totals OR they can choose to reject the offer, in which case neither player receives any points for that round. So let's say that on the second round I lost. The computer will show me the offer from my opponent. Let's say they offered me 2 pts. If I accept the offer, I will receive 2 pts and they will receive 8 pts. If I reject the offer, we will both get zero pts for that round. Does everyone understand?

Finally, a quick word about the math questions. The questions you and your opponent need to answer to win the round are drawn at random by the computer from pools of problems that have been pre-determined to be either easy or hard. So on any given trial, you may both have easy questions, both have hard questions, or one of you will have easy and the other will have hard questions.

At the end of the round you will be presented with a "results" page. This page will tell you your score, the difficulty of the questions you just answered, your opponent's score, the difficulty of the questions he or she had to answer and whether you won or lost the round .

The points won on each round will become important at the end of the game. When you finish the results from one of your rounds will be chosen at random and the point division for that round will count as your number of entries to win one of five iPod shuffles. So, if on that round you received 7 points and your opponent received 3 points, that would count as 7 entries into the drawing for you and your opponent would get 3 entries. If one of you rejected the offer, you both

would have 0 points and neither of you would receive an entry to win the prize. Does anyone have any questions? Is everyone clear on the gameplay and the rules?

Before you play the game for real, I am going to have you run through a short tutorial on the computer just so you can get a feel for the gameplay. Your wins and losses on this tutorial will not be counted. If no one has any questions, I will come around and get each of you started on the tutorial.

Competitive Dictator Game

The above script was identical for the Dictator Game with the exception that language related to acceptance/rejection of offers was removed.

APPENDIX C: MEASURES OF DEMOGRAPHICS AND MALADAPTIVE PERSONALITY TRAITS ADMINISTERED

Demographic information:

Gender
Year in School
Age
Ethnicity

Personality Measures:

Mach IV

Christie, R., & Geis, F.L. (1970). *Studies in Machiavellianism*. New York: Academic Press.

Scoring Key:

Disagree Strongly	(+3)	1
Disagree Somewhat	(+2)	2
Disagree Slightly	(+1)	3
Agree Slightly	(-1)	5
Agree Somewhat	(-2)	6
Agree Strongly	(-3)	7

Listed below are a number of statements. Each represents a commonly held opinion and there are no right or wrong answers. You will probably disagree with some items and agree with others. We are interested in the extent to which you agree or disagree with such matters of opinion.

First impressions are usually best in such matters. Read each statement, decide if you agree or disagree and the strength of your opinion, and then select the appropriate response. Please give your opinion on every statement.

If you find that the responses do not adequately indicate your own opinion, use the one which is closest to the way you feel.

1. Never tell anyone the reason you did something unless it is useful to do so.
2. The best way to handle someone is to tell them what they want to hear.
3. One should take action only when sure it is morally right.*
4. Most people are basically good and kind.*
5. It is safest to assume that all people have a vicious streak and it will come out when they are given a chance.
6. Honesty is the best policy in all cases.*
7. There is no excuse for lying to someone else.*

8. Generally speaking, men won't work hard unless they're forced to do so.
 9. All in all, it is better to be humble and honest than to be important and dishonest.*
 10. When you ask someone to do something for you, it is best to give the real reasons for wanting it rather than giving reasons which carry more weight.*
 11. Most people who get ahead in the world lead clean, moral lives. *
 12. Anyone who completely trusts anyone else is asking for trouble.
 13. The biggest difference between most criminals and other people is that the criminals are stupid enough to get caught.
 14. Most men are brave*
 15. It is wise to flatter important people
 16. It is possible to be good in all respects.*
 17. Barnum was wrong when he said that there's a sucker born every minute.*
 18. It is hard to get ahead without cutting corners here and there.
 19. People suffering from incurable diseases should have the choice of being put painlessly to death.
 20. Most men forget more easily the death of their father than the loss of their property.
- Note: * = reversed item

Machiavellian Personality Scale: (Dahling, Whitaker, & Levy, 2009)

1. I am willing to be unethical if I believe it will help me succeed.
2. I am willing to sabotage the efforts of other people if they threaten my own goals.
3. I would cheat if there was a low chance of getting caught.
4. I believe that lying is necessary to maintain a competitive advantage over others.
5. The only good reason to talk to others is to get information that I can use to my benefit.
6. I like to give the orders in interpersonal situations.
7. I enjoy being able to control the situation.
8. I enjoy having control over other people.
9. Status is a good sign of success in life.
10. Accumulating wealth is an important goal for me.
11. I want to be rich and powerful someday.
12. People are only motivated by personal gain.
13. I dislike committing to groups because I don't trust others.
14. Team members backstab each other all the time to get ahead.
15. If I show any weakness at work, other people will take advantage of it.
16. Other people are always planning ways to take advantage of the situation at my expense.

NPI-40

Read each pair of statements and then choose the one that is closer to your own feelings and beliefs. Indicate your answer by circling the letter "A" or "B" to the left of each item. Please do not skip any items.

1. A I have a natural talent for influencing people.
 B I am not good at influencing people.

2. A Modesty doesn't become me.
B I am essentially a modest person.
3. A I would do almost anything on a dare.
B I tend to be a fairly cautious person.
4. A When people compliment me I sometimes get embarrassed.
B I know that I am good because everybody keeps telling me so.
5. A The thought of ruling the world frightens the hell out of me.
B If I ruled the world it would be a much better place.
6. A I can usually talk my way out of anything.
B I try to accept the consequences of my behavior.
7. A I prefer to blend in with the crowd.
B I like to be the center of attention.
8. A I will be a success.
B I am not too concerned about success.
9. A I am no better or no worse than most people.
B I think I am a special person.
10. A I am not sure if I would make a good leader.
B I see myself as a good leader.
11. A I am assertive.
B I wish I were more assertive.
12. A I like having authority over people.
B I don't mind following orders.
13. A I find it easy to manipulate people.
B I don't like it when I find myself manipulating people.
14. A I insist upon getting the respect that is due me.
B I usually get the respect that I deserve.
15. A I don't particularly like to show off my body.
B I like to display my body.
16. A I can read people like a book.
B People are sometimes hard to understand.

17. A If I feel competent I am willing to take responsibility for making decisions.
B I like to take responsibility for making decisions.
18. A I just want to be reasonably happy.
B I want to amount to something in the eyes of the world.
19. A My body is nothing special.
B I like to look at my body.
20. A I try not to be a show off.
B I am apt to show off if I get the chance.
21. A I always know what I am doing.
B Sometimes I am not sure of what I am doing.
22. A I sometimes depend on people to get things done.
B I rarely depend on anyone else to get things done.
23. A Sometimes I tell good stories.
B Everybody likes to hear my stories.
24. A I expect a great deal from other people.
B I like to do things for other people.
25. A I will never be satisfied until I get all that I deserve.
B I take my satisfactions as they come.
26. A Compliments embarrass me.
B I like to be complimented.
27. A I have a strong will to power.
B Power for its own sake doesn't interest me.
28. A I don't very much care about new fads and fashions.
B I like to start new fads and fashions.
29. A I like to look at myself in the mirror.
B I am not particularly interested in looking at myself in the mirror.
30. A I really like to be the center of attention.
B It makes me uncomfortable to be the center of attention.
31. A I can live my life in any way I want to.
B People can't always live their lives in terms of what they want.
32. A Being an authority doesn't mean that much to me.

- B People always seem to recognize my authority.
33. A I would prefer to be a leader.
B It makes little difference to me whether I am a leader or not.
34. A I am going to be a great person.
B I hope I am going to be successful.
35. A People sometimes believe what I tell them.
B I can make anybody believe anything I want them to.
36. A I am a born leader.
B Leadership is a quality that takes a long time to develop.
37. A I wish somebody would someday write my biography.
B I don't like people to pry into my life for any reason.
38. A I get upset when people don't notice how I look when I go out in public.
B I don't mind blending into the crowd when I go out in public.
39. A I am more capable than other people.
B There is a lot that I can learn from other people.
40. A I am much like everybody else.
B I am an extraordinary person.

Subscales from Raskin

Authority = 33r, 10, 8r, 32, 1r, 11r, 12r, 36r

Self sufficiency = 22, 17, 39r, 31r, 21r, 34r

Superiority = 40, 4, 26, 9, 37r

Exhibitionism = 20, 2r, 38r, 7, 3r, 30r, 28

Exploitative = 16r, 35, 13r, 6r, 23

Vanity = 19, 15, 29r

Entitlement = 25r, 24r, 18, 27r, 14r, 5

Psychological Entitlement Scale (Campbell et al., 2004)

1. I honestly feel I'm just more deserving than others.
2. Great things should come to me.
3. If I were on the Titanic, I would deserve to be on the first lifeboat!
4. I demand the best because I'm worth it.
5. I do not necessarily deserve special treatment.
6. I deserve more things in my life.
7. People like me deserve an extra break now and then.
8. Things should go my way.
9. I feel entitled to more of everything.

SRP III – R12 (Paulhus, D.L., Hemphill, J.D., & Hare, R.D. (in press). Manual for the *Self-Report Psychopathy scale*. Toronto: Multi-Health Systems.)

Please rate the degree to which you agree with the following statements about you. You can be honest because your name will be detached from the answers as soon as they are submitted.

1	2	3	4	5
Disagree Strongly	Disagree	Neutral	Agree	Agree Strongly

1. I'm a rebellious person.
2. I'm more tough-minded than other people.
3. I think I could "beat" a lie detector.
4. I have taken illegal drugs (e.g., marijuana, ecstasy).
5. I have never been involved in delinquent gang activity.
6. I have never stolen a truck, car or motorcycle.
7. Most people are wimps.
8. I purposely flatter people to get them on my side.
9. I've often done something dangerous just for the thrill of it.
10. I have tricked someone into giving me money.
11. It tortures me to see an injured animal.
12. I have assaulted a law enforcement official or social worker.
13. I have pretended to be someone else in order to get something.
14. I always plan out my weekly activities.
15. I like to see fist-fights.
16. I'm not tricky or sly.
17. I'd be good at a dangerous job because I make fast decisions.
18. I have never tried to force someone to have sex.
19. My friends would say that I am a warm person.
20. I would get a kick out of 'scamming' someone.
21. I have never attacked someone with the idea of injuring them.
22. I never miss appointments.

23. I avoid horror movies.
24. I trust other people to be honest.
25. I hate high speed driving.
26. I feel so sorry when I see a homeless person.
27. It's fun to see how far you can push people before they get upset.
28. I enjoy doing wild things.
29. I have broken into a building or vehicle in order to steal something or vandalize.
30. I don't bother to keep in touch with my family any more.
31. I find it difficult to manipulate people.
32. I rarely follow the rules.
33. I never cry at movies.
34. I have never been arrested.
35. You should take advantage of other people before they do it to you.
36. I don't enjoy gambling for real money.
37. People sometimes say that I'm cold-hearted.
38. People can usually tell if I am lying.
39. I like to have sex with people I barely know.
40. I love violent sports and movies.
41. Sometimes you have to pretend you like people to get something out of them.
42. I am an impulsive person.
43. I have taken hard drugs (e.g., heroin, cocaine).
44. I'm a soft-hearted person.
45. I can talk people into anything.
46. I never shoplifted from a store.
47. I don't enjoy taking risks.
48. People are too sensitive when I tell them the truth about themselves.
49. I was convicted of a serious crime.
50. Most people tell lies everyday.
51. I keep getting in trouble for the same things over and over.
52. Every now and then I carry a weapon (knife or gun) for protection.
53. People cry way too much at funerals.

54. You can get what you want by telling people what they want to hear.
55. I easily get bored.
56. I never feel guilty over hurting others.
57. I have threatened people into giving me money, clothes, or makeup.
58. A lot of people are “suckers” and can easily be fooled.
59. I admit that I often “mouth off” without thinking.
60. I sometimes dump friends that I don’t need any more.
61. I would never step on others to get what I want.
62. I have close friends who served time in prison.
63. I purposely tried to hit someone with the vehicle I was driving.
64. I have violated my probation from prison.

International Personality Item Pool Items (IPIP; Goldberg, 1999; FD and IA scales by Witt et al., 2009)

Fearless Dominance

- 1 I worry about things.*
- 7 I love large parties.
- 12 I take charge.
- 16 I find it difficult to approach others.*
- 22 I love excitement.
- 32 I feel comfortable around people.
- 37 I talk to a lot of different people at parties.
- 42 I try to lead others.
- 46 I am afraid to draw attention to myself.*
- 52 I seek adventure.
- 54 I think highly of myself.
- 57 I have a lot of fun.
- 72 I take control of things.
- 76 I only feel comfortable with friends*
- 91 I get stressed out easily.*
- 97 I avoid crowds.*
- 102 I wait for others to lead the way.*
- 106 I am not bothered by difficult social situations.
- 116 I remain calm under pressure.
- 117 I look at the bright side of life.

Impulsive Antisociality

- 9 I use others for my own ends.
- 19 I love a good fight.
- 30 I jump into things without thinking.
- 39 I cheat to get ahead.
- 60 I make rash decisions.
- 69 I take advantage of others.
- 75 I break rules.
- 79 I insult people.
- 80 I do just enough work to get by.
- 82 I enjoy being reckless.
- 85 I waste my time.
- 89 I am not interested in other people's problems.
- 90 I rush into things.
- 99 I obstruct others' plans.
- 104 I take no time for others.
- 105 I break my promises.
- 109 I get back at others.
- 110 I put little time and effort into my work.
- 114 I boast about my virtues.
- 120 I act without thinking.

Items followed by an asterisk are reverse-keyed

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