

Dirty Money: Altruistic Behaviors in the Ultimatum Game

A Thesis

Presented to the Faculty of the Graduate School
of Cornell University

in Partial Fulfillment of the Requirements for the Degree of
Master of Arts

by

Nadia Chernyak

February 2010

© 2010 Nadia Chernyak

ABSTRACT

Reactions towards and perceptions of unfair offers in the ultimatum game have been studied extensively. However, little research to date has focused on people's understandings of hyperfair (altruistic) offers – that is, offers that are unfair in one's own favor. Participants played a version of the ultimatum game in which they received a fair (50-50) or hyperfair (80-20) offer from a confederate proposer. The present research demonstrated that compared to fair offers, hyperfair offers led to increased positive mood and decreased negative mood, such that those initially reporting low positive mood were most positively impacted by a hyperfair offer. Secondly, people avoided interpersonal contact with those who were hyperfair and perceived them as being less conscientious and more open. Although hyperfair offers did not have any significant impact on people's donations to charity, an interesting trend emerged: participants who donated to charity thought of their hyperfair proposer as being more extraverted, more agreeable, and less neurotic. These results have important implications for our understandings of altruists and altruistic behaviors.

BIOGRAPHICAL SKETCH

Nadia Chernyak was born in Moscow, Russia, spent most of her life in River Edge, NJ, and currently resides in Ithaca, NY. She earned her B.A. in 2008, in English and Psychology from Cornell University. To pursue her interest in developmental psychology, she enrolled in Cornell University's Department of Human Development MA/PhD program, in which she is now a second-year student. Her current research looks at moral reasoning and altruistic behaviors, as well as children's reasoning about free will and morality.

To my family

ACKNOWLEDGMENTS

First, I would like to thank my committee members – Stephen Ceci and David Pizarro for their patience, helpful suggestions, comments, and advice on this work. Additionally, both have graciously provided their time and encouragement throughout this process.

Several other people have both directly and indirectly contributed and deserve recognition. Namely, I am indebted to Arthur Barnard for his wisdom and encouragement, Daphna Ram, and Wanda Casillas for comments on earlier drafts and much-needed support. Special thanks to Tamar Kushnir, who, although not involved in this work directly, has been crucial in my development as a beginning graduate student.

Finally, I would of course like to extend gratitude towards my family – my mother, father, brother, and grandparents, for their continued encouragement and caring, without which none of this would be at all sensical or even possible.

TABLE OF CONTENTS

Biographical Sketch.....	iii
Dedication.....	iv
Acknowledgements.....	v
Table of Contents.....	vi
List of Figures.....	viii
List of Tables.....	ix
Chapter One: Introduction.....	1
Past Research.....	2
Ultimatum Game.....	2
Hyperfairness.....	3
Current Research.....	3
Chapter Two: Method.....	6
Participants.....	6
Procedure.....	6
Manipulation.....	7
Dependent Measures.....	8
Post-Manipulation Mood.....	8
Perceptions of the Proposer.....	8
Interpersonal Contact.....	8
Charity Donations.....	9
Debriefing.....	9
Additional Questionnaires.....	10
Chapter Three: Results.....	11
Mood.....	11
Manipulation Check.....	11

Positive Mood.....	12
Negative Mood.....	14
Perceptions of the Proposer.....	15
Interpersonal Contact.....	16
Charity Donations.....	18
Chapter Four: Discussion.....	20
General Discussion.....	20
Future Directions.....	23
Appendices.....	27
References.....	43

LIST OF FIGURES

Figure 1.1. Positive Post-Manipulation Mood as a Function of Positive Baseline Mood and Condition.....	13
Figure 1.2. Negative Post-Manipulation Mood as a Function of Negative Baseline Mood and Condition.....	15
Figure 2. Ratings for the Big Five Factors in the Fair and Hyperfair Conditions ...	17

LIST OF TABLES

Table 1. Means (SDs in parentheses) of Big-Five Factor Ratings for Those Who Donated and Those Who Did Not	18
---	----

CHAPTER ONE

INTRODUCTION

“I don’t know if there are any moral saints. But if there are, I am glad that neither I nor those whom I care most about are among them.” – Susan Wolf

Much of day-to-day interaction revolves around occasional altruistic acts: imagine a friend helping you move, or a neighbor allowing you to borrow a cup of sugar when you have run out. However, such interactions typically revolve around the understanding of reciprocity. In other words, a friend that helps you move will most likely expect that you will do the same for them at a later point in time. Similarly, a neighbor that lends you his/her kitchen ingredients is likely to have the understanding that you would behave likewise. Alternatively, imagine that your friend, who has recently helped you move, refuses to either ask for or accept your help when they themselves move. Or a neighbor who refuses to accept any money for having given you their last three bags of sugar. Such actions of “moral saintliness” are overly altruistic, unfair, and are rarely studied in the realm of psychology. At the same time, however, they represent an interesting philosophical dilemma: is there such a thing as “too much” altruism?

The concept of fairness, or the idea that every person should receive an equal share of a commodity of interest, has long been studied in moral psychology (e.g., Alvi, 1998; Gorman, 1973; Kashima, Siegal, Tanaka, & Isaka, 1987; Kohlberg, 1963; Steibe & McCarrey, 1982; Siegal, 1982). Even young children have some intuitive sense of “fairness” – when asked to split a food reward, children have an implicit understanding that it must be done in such a way that both parties receive equal amounts (Fehr, Bernhart, & Rockenbach, 2008; Tomasello & Warneken, 2008). In

fact, the concept seems so widely innate that there has been recent debate as to whether non-human primates can also understand the concept of “fair exchanges” (Brosnan & de Waal, 2003; Jensen, Call, & Tomasello, 2007; Jensen, Hare, Call, & Tomasello, 2006).

As such, people’s perceptions of and reactions to “unfairness” have been a topic of interest as well. However, psychology to date has almost exclusively studied unfairness as it pertains to one’s reactions to *being the victim of an unfair offer* (that is, receiving less than one’s fair share). Relatively little research has focused on one’s reactions to *being the beneficiary of an unfair offer* (receiving more than one’s fair share; referred to in this paper as *hyperfairness*). In this sense, our ideas of fairness have been narrowly studied. This work thus aimed to close this gap in the current literature by studying both how we react towards hyperfair offers and how we perceive those who behave in a hyperfair manner.

Past Research

Ultimatum Game

Commonly, reactions to unfair and hyperfair resource exchanges have been studied in a procedure dubbed the “ultimatum game” (Guth, Schmittberger, & Schwarze, 1982), in which two people must split a sum of money (usually \$10) between themselves and another person.

One person plays the role of the “proposer”, who must decide the “best way” to split, and another plays the role of the “responder”, whose role is to accept or reject the split. If the responder accepts the split, each party receives the money as was agreed upon. If the responder rejects the split, neither party receives any money. Responders typically do not behave in a way that rationally maximizes their earnings (see Guth & Tietz, 1990 and Thaler, 1988 for reviews). Instead, responders react in accordance with a fairness model, in which they reject offers that are unequal, despite the understanding that neither party will receive any money as a result. In other words,

if a responder is offered \$2, out of a total of \$10, they typically opt to receive no money as opposed to receive their (unequal) earnings. This pattern has been widely studied and replicated.

Hyperfairness

Some recent cross-cultural research has now looked at participants' reactions to hyperfair offers. Already, there is some evidence from such studies that people may be led to reject hyperfair offers. In Bahry & Wilson's (2006) study, participants were dwellers of the Russian countryside regions. When offered a hyperfair offer, a large number (56.5%) rejected despite the fact that their personal earnings would be maximized. Importantly, this appeared in participants holding particularly egalitarian beliefs. The same pattern appeared to emerge in China (Hennig-Schmidt, Li, & Yang, 2008), as well as various small scale societies (Henrich et al., 2005), but not in the United States.

The hyperfairness manipulation using the ultimatum game provides a convenient way to measure people's perceptions of altruism. This study therefore used an ultimatum game hyperfairness manipulation to study how hyperfairness is perceived and reacted to. Specifically, the underlying hypothesis in this research is that our understandings of altruism may be largely qualified. Although in general, altruistic acts are held in high regard, perhaps with hyperfairness, this may not be the case.

Current Research

One important question is whether unfairly positive (hyperfair) offers impact mood. Past research has found that money positively impacts mood (e.g., Johnson & Krueger, 2006). However, does the source of this money matter? In other words, do people feel better or worse after receiving an *unfairly* altruistic act from another person? Researchers that have looked at hyperfairness in the ultimatum game (i.e., Bahry & Wilson, 2006; Hennig-Schmidt et al., 2008; Henrich et al., 2005) did not

include mood measures in their observations of participants' understandings of hyperfairness. However, as stated previously, rejections of hyperfair offers were prevalent in other societies. Therefore, while hyperfairness is an observable phenomenon, relatively little is known about how it impacts the responder. Therefore, this study assessed participant mood as a function of the type of offer one receives from another person.

A second motivation for this study was to determine how one perceives the hyperfair proposer. Do we hold these above-and-beyond altruists in high regard? Or, alternatively, are they perceived more poorly than others? Evidence from past research has been mixed in this regard. A recent study by Takezawa, Gummerum, & Keller (2006) using eleven-year-olds showed that children who were altruistic proposers were often unable to convince others to make the same choices they did. That is, children who chose to act in an altruistic manner couldn't convince their classmates to do the same. Surprisingly, this pattern occurred even when these "altruists" were in the majority. Intuitively, this appears justified: giving away *more* than what is required in an ultimatum game may be perceived as an irrational gaming strategy. Therefore, it is possible that hyperfair proposers will be judged more negatively than fair proposers. On the other hand, altruistic acts can build up one's reputation (e.g., Wedekind & Braithwaite, 2002) and social status (Hardy & Van Vugt, 2006), specifically by being viewed as agreeable and emotionally stable (Ashton, Paunonen, Helmes, & Jackson, 1998). According to this account, a hyperfair proposer may be viewed as an altruist and therefore judged *more* positively than a fair proposer. This study thus investigated these two competing possibilities.

Along the same lines, the hyperfairness manipulation allows us to test whether people are uncomfortable in engaging in contact with those who are hyperfair. Specifically, when given the option, do people seek out or avoid contact with hyperfair others? This question is motivated in part by Fehr et al.'s (2002) theory of strong

reciprocity, in which people are bound to reward those who behave altruistically. However, the theory is largely descriptive and their empirical work leaves open the question of whether people *actively seek* to reciprocate altruistic acts, or passively feel as though they must act in accordance with societal expectations to reciprocate such acts. Participants in this study were therefore given the choice of whether or not to interact with their hyperfair proposers. Because face-to-face interaction was the only chance participants had to “thank” (i.e., reward) their hyperfair proposer, they should engage in such interaction if the former account (that is, that people actively seek to reward altruism) is true. However, if the latter account holds and people in fact, do not feel a strong internal pull to reward altruism, then people should instead avoid face-to-face contact with their proposer.

Finally, it is conceivable that hyperfairness can impact one’s own giving behaviors. Does altruism (and hyperfairness) spread onto others? The theory of indirect reciprocity (Alexander, 1987; Nowak & Sigmund, 2005) predicts that this is indeed the case: humans may behave altruistically for the sake of being rewarded by society as a whole or a non-specific other, rather than by the direct recipient of their altruistic act. Participants in this study were therefore asked if they would like to donate a portion of their recently made proceeds to a charity of their choice. The idea here was that although there was no chance for reciprocal altruism (Trivers, 1971) in that participants could not give money back to their proposers, people may instead be motivated by indirect reciprocation. I expected that participants who had received a hyperfair offer would be more motivated to donate their proceeds to charity. This study manipulation therefore aimed to provide a straightforward test of the theory of indirect reciprocity.

CHAPTER TWO

METHOD

Participants

Participants were 94 Cornell University affiliates and 1 Ithaca area resident (44 male, 51 female; ages 18-46 with *Mean age* = 21.78 and *SD* = 4.88) recruited through an online website and/or flyers on campus. All participants received \$8 as part of the experimental procedure.

Procedure

Participants were run in groups of 1 to 4 (with each participant in a separate room) in a building on the Cornell University campus. All participants were first led into a quiet room and told that they would be playing an economic game in which they would be asked to split a pot of money (\$10) between themselves and “another participant” waiting in a separate room. In reality, no such “other participant” existed. After filling out a brief demographics form (Appendix A), the experimenter then handed each participant instructions regarding the ultimatum game (Appendix B), as well as a four-question comprehension check (Appendix B) to assure that they had fully understood the rules of the game and received answers to any questions they may have had. Ninety out of 95 participants answered all four questions correctly and no participant missed more than one question. The five participants who initially missed a question were provided corrective feedback and then re-prompted for the answer. Every participant answered the question correctly after the re-prompt.

After a brief pause intended to simulate the experimenter waiting for the confederate to finish reading directions (during which the experimenter left the room), all participants were given a form (Appendix C) explaining that they had been randomly chosen to play the role of the responder. In order to assess mood before the manipulation (at baseline), participants were then asked to fill out a 10-item subset of

the PANAS (Watson, Clark, & Tellegen, 1988; 4 positive items and 6 negative items), while waiting for the “other person” to decide how to split the money. Items from the PANAS were selected a priori to reflect those most appropriate to the task. All questions were rated on a 5-point Likert scale (1= “not at all” to 5= “extremely”).

Manipulation

After completing the PANAS, participants were randomly selected into one of two conditions: In the hyperfair condition, participants were told that the proposer has decided to split the money in the following manner: \$8 will go to the participant, and \$2 will be kept for the responder (a hyperfair offer). In the control condition, participants were told that the proposer had decided on a fair (\$5/\$5) split but that due to extra funds that the experimenter has for this project, they would be receiving an additional \$3 for participation, totaling \$8. For exact wording, see Appendices D and E for the experimental and control conditions, respectively.

It is important to note that participants in each condition received the equivalent amount of money so as to control for the possibility that any effects found were due to receiving more money, and not due to receiving a hyperfair offer. Additionally, in each condition, participants received more money than they had originally anticipated. That is, presumably, no participant expected to receive more than \$5 as part of the ultimatum game. As such, it can be said that the experimental condition *exceeded* participants’ expectations. To control for this possibility, the control condition had been carefully selected to *also* exceed participants’ expectations (no participant was told about the \$3 for participation prior). Thus, the only difference between conditions was whether the total sum comes from a fair or hyperfair offer from the proposer.

Dependent Measures

Following the manipulation, all participants were asked to accept or reject the offer, and then given a series of questionnaires to fill out¹:

Post-Manipulation Mood

To begin, participants once again filled out the 10-item subset of the PANAS.

Perceptions of the Proposer

To assess views of the hyperfair proposer, participants filled out a 44-item version of the Big Five Inventory (BFI; John & Srivastava, 1999) which asked participants to rate the “other player” (the proposer) on five main personality factors: extraversion, agreeableness, openness to experience, conscientiousness, and emotional stability (see Appendix F). Specifically, participants read the following instructions: “Please answer some additional questions about your partner. Here are a number of characteristics that may or may not apply to them. Please give your best guess for the type of person your partner may have been.” All items were rated on a 5-point Likert scale (1= “not at all” to 5= “extremely”). In the past, the BFI has been shown to have high internal validity (Soto & John, 2009), and has been used to assess people’s accuracies in understanding another person’s personality based on impersonal cues (e.g., Gosling, Ko, Mannarelli, & Morris, 2002).

Interpersonal Contact

Participants were then informed that they would be playing two more games in which they will need to cooperate with another person (Appendix G). The first game, participants read, would involve playing with a partner waiting in a separate room. The second game, however, would involve interacting with a partner face-to-face. In order to control for order effects, the presentation of these two games was

¹ The ordering of the post-manipulation questionnaires was as follows: (1) post-manipulation mood measures, (2) additional questionnaires, (3) charity donation, (4) interpersonal/impersonal contact, and (5) the Big Five Inventory.

counterbalanced. Participants were then given one of two options for each game: they could either choose to play with the person they had just played with (i.e., the proposer) or opt to have the experimenter choose another player at random for them. In reality, participants were not actually. However, participants' choices for partner preference for each of the games was recorded.

Charity Donation

Afterwards, each participant read a series of brief (two-paragraph) excerpts about four charities (Appendix H): UNICEF, Doctors without Borders, Tompkins County ASPCA, and the Cornell Annual Fund. The presentation of these charities was randomly ordered. The selection of these charities was meant to reflect a broad range of causes, such that any participant would be likely find at least one cause worth donating to. However, in order to check for this, each participant was asked to answer two questions after reading about each charity: "How worthy is this cause?" and "How much do you believe in this cause's mission statement?" All responses were on a 7-point Likert (1= "not at all worthy" to 7= "extremely worthy") scale. All 95 participants rated at least one charity a "6" or above on both questions.

After reading the excerpts, participants were asked if they would like to donate any of their earnings to the charity of their choice (Appendix I). All participants then selected a charity, checked off whether or not they would like to give to that charity, and deposited the checked form as well as whatever money they wished to donate to the charity of their choice into a white envelope provided by the experimenter. The white envelope was then deposited into a large manila envelope titled "Charity Donations". In order to increase believability, each manila envelope already contained 3 confederate white envelopes from "other participants".

Debriefing

Following the participant indicating their choices, they were prompted for suspicion about the nature of the study, and then debriefed.

Additional Questionnaires

Each participant filled out two additional questionnaires (Appendix J) not described or analyzed in this research.

CHAPTER THREE

RESULTS

Three people were excluded from the final analyses for rejecting the proposer's offer. All three participants were in the "hyperfair" condition. Therefore, the final sample consisted of 92 participants (40 male, 52 female), ages 18-46 ($M = 21.85$, $SD = 4.94$).²

Mood

These analyses aimed to determine whether being the recipient of a hyperfair offer had an impact on one's mood. Following procedures used in past research (Watson et al., 1988), items from the two PANAS questionnaires were summed and averaged to create two scores – a "positive" and "negative" mood index (Cronbach's alphas = .80 and .82, respectively). Moreover, these scores were further split into "baseline mood" (completed before the manipulation) and "post-manipulation mood" (completed after the manipulation), to create a total of four mood scores: positive baseline, positive post-manipulation, negative baseline, and negative post-manipulation.

Manipulation Check

A paired-samples *t*-tests revealed that positive mood was significantly higher after the manipulation ($M = 3.70$, $SD = .75$), than at baseline ($M = 3.32$, $SD = .71$), $t(87) = -5.16$, $p < .001$. Similarly, participants reported significantly lower negative mood after the manipulation ($M = 1.28$, $SD = .40$), than at baseline ($M = 1.78$, $SD = .70$), $t(87) = 7.62$, $p < .001$. These analyses provided a manipulation check and thus

² Each separate analysis also removed any outliers (if present) in the data set. Outliers were defined as data points exceeding a distance of three standard deviations from the mean.

ensured that receiving money as part of the experimental procedure, regardless of condition, both raised positive mood and lowered negative mood.

Positive Mood

In order to test the effect of hyperfairness on mood, two separate multiple linear regression analyses (one assessing positive mood and one assessing negative mood) were run. The first regression used positive post-manipulation mood as the response and positive baseline mood and condition type (condition was dummy coded “1” for experimental (“hyperfairness”) group and “0” for the control) as the predictors. There was a significant positive linear relationship between positive baseline mood and positive post-manipulation mood, $B = .89$, $SE = .14$, $t(86) = 6.50$, $p < .001$. Condition type also significantly predicted positive post-manipulation mood, $B = 1.78$, $SE = .62$, $t(1) = 1.96$, $p < .01$, such that those in the experimental condition reported greater positive mood than those in the control condition. These main effects were qualified by a baseline positive mood x condition type interaction, $B = -.52$, $SE = .18$, $t(86) = -2.88$, $p < .01$, suggesting that the “hyperfairness” condition dampened the linear relationship between positive baseline and positive post-manipulation mood (see Figure 1.1).

To further examine this interaction, I sought to determine the effect of condition on the “most positive” and “least positive” participants. Therefore, two additional regressions were run, one using the top 25% of baseline positive mood scores and the second using the bottom 25%. Once again, each regression used positive post-manipulation mood as a predictor and condition type and positive baseline mood as a response. The regression using the “most positive” participants (top 25%) once again revealed a significant positive linear association between positive baseline mood and positive post-manipulation mood, $B = .82$, $SE = .31$, $t(43) = 2.61$, $p < .05$. However, condition type did not significantly impact post-manipulation mood and the condition type x positive baseline mood interaction was

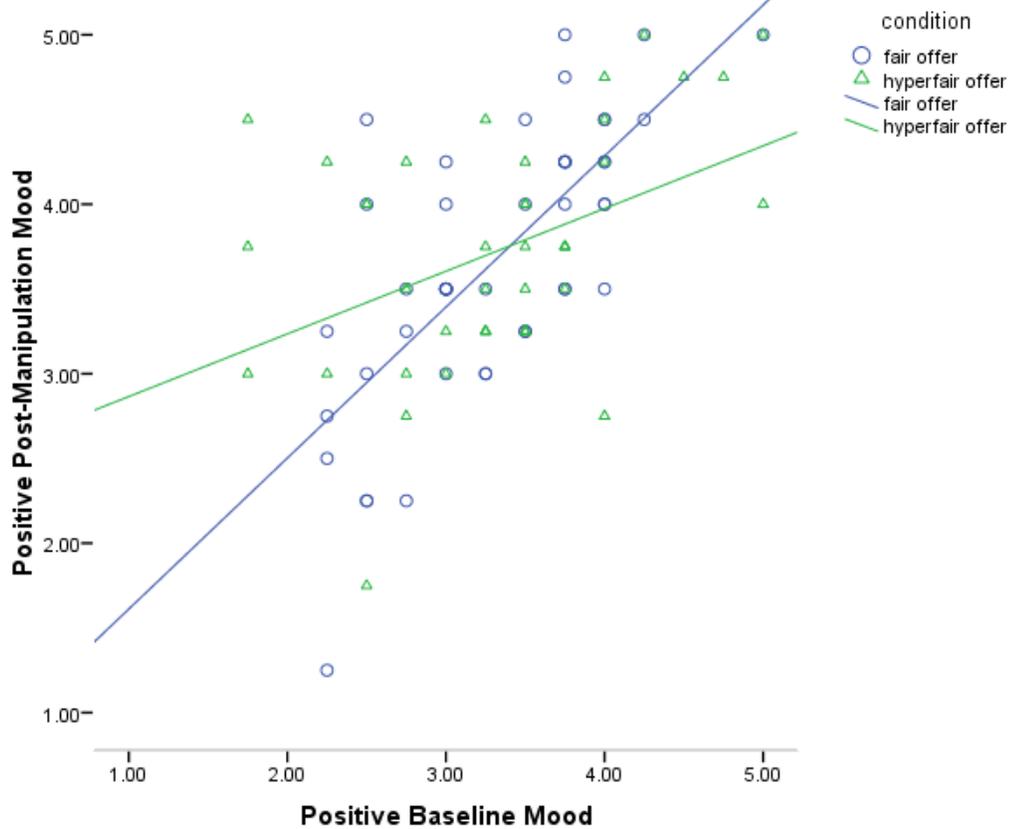


Figure 1.1. Positive Post-Manipulation Mood as a Function of Positive Baseline Mood and Condition

non-significant, both $ps > .90$. Therefore, the hyperfair offer failed to have an effect on the initially “most positive” participants. Note that because the top 25th percentile included all participants who reported an average positive mood of 3.44 on a 5 point scale, this effect was unlikely to be due to a “ceiling effect”.

The second linear regression (using the “least positive” participants) showed that positive baseline mood significantly predicted positive post-manipulation mood, $B = .89$, $SE = .43$, $t(41) = 2.06$, $p < .05$. Condition type was also significantly associated with post-manipulation mood, $B = 3.09$, $SE = 1.46$, $t(1) = 2.12$, $p < .05$, such that those in the experimental condition reported feeling more positive post-manipulation mood than those in the control condition. The condition type x positive baseline mood

interaction was non-significant, $p > .05$. The hyperfair offer thus raised the mood of the initially “least positive” participants, suggesting that hyperfair offers have an effect on those who initially report low positive mood, but not those who are already in a positive mood.

Negative Mood

The second set of multiple linear regression analyses used negative post-manipulation mood as a response and negative baseline mood and condition type as the predictors. Again, there was a significant positive linear relationship between negative baseline mood and negative post-manipulation mood, $B = .17$, $SE = .07$, $t(86) = 2.43$, $p < .05$. Condition type also significantly impacted negative post-manipulation mood, $B = -.47$, $SE = .21$, $t(1) = -2.28$, $p < .05$, such that those in the experimental condition reported less negative mood than those in the control condition. Once again, these effects were qualified by a significant negative baseline mood x condition type interaction, $B = .29$, $SE = .11$, $t(86) = 2.63$, $p < .05$, suggesting that the control condition dampened the linear relationship between pre- and post-manipulation negative mood (see Figure 1.2).

Once again, to further examine this interaction, participants were split into “most negative” and “least negative” (top 25% and bottom 25% baseline negative mood scores, respectively) and two regressions were run using each group. For the “most negative” participants, neither negative baseline mood nor condition type significantly predicted negative post-manipulation scores, both $ps > .10$. The interaction term was also non-significant, $p > .05$. The same results were obtained for the regression using “least negative” participants, all $ps > .20$. Therefore, the effect of condition type on the relationship between pre and post-manipulation negative mood less conclusive.

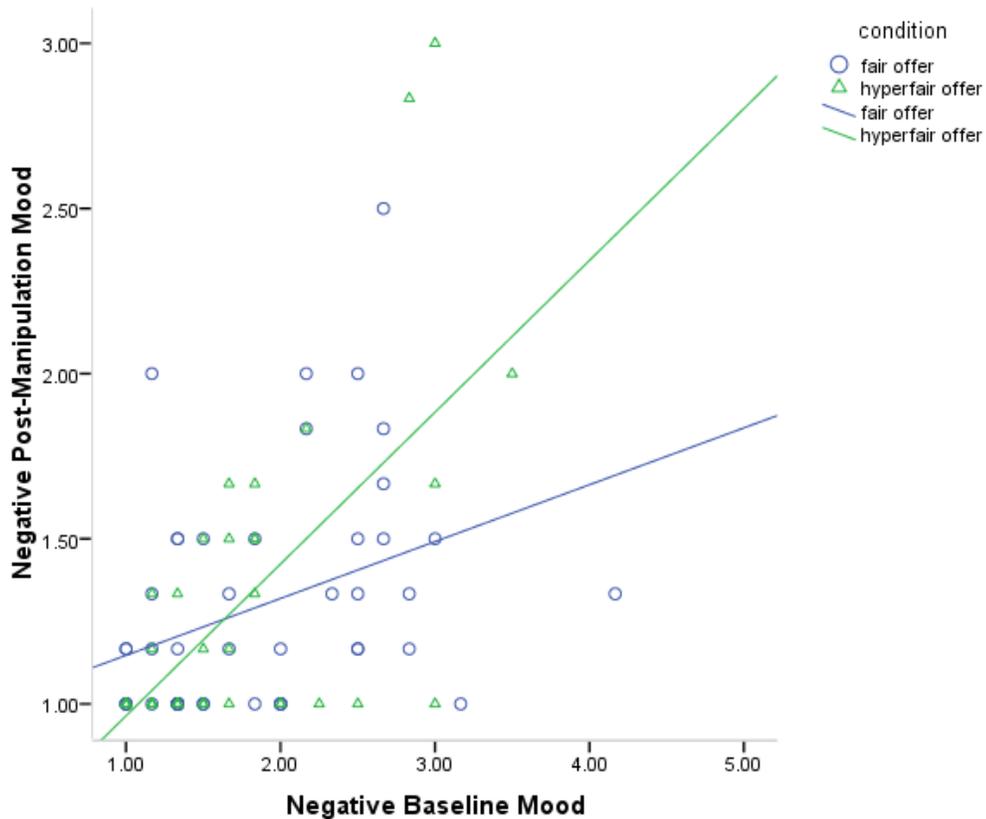


Figure 1.2. Negative Post-Manipulation Mood as a Function of Negative Baseline Mood and Condition

Overall these results showed that participants reported better mood (more positive and less negative) after receiving a hyperfair (vs. fair) offer. However, the experimental condition also dampened the linear relationship between pre- and post-manipulation mood, such that those who already had reported feeling positive did not feel more positive as a result of a hyperfair offer. However, those who were least positive initially were more positively affected by receiving a generous (hyperfair) proposal from another person.

Perceptions of the Proposer

The second set of analyses tested how hyperfair offers impact participants’ perceptions of the proposer. Following procedures used in past research, a “score” was

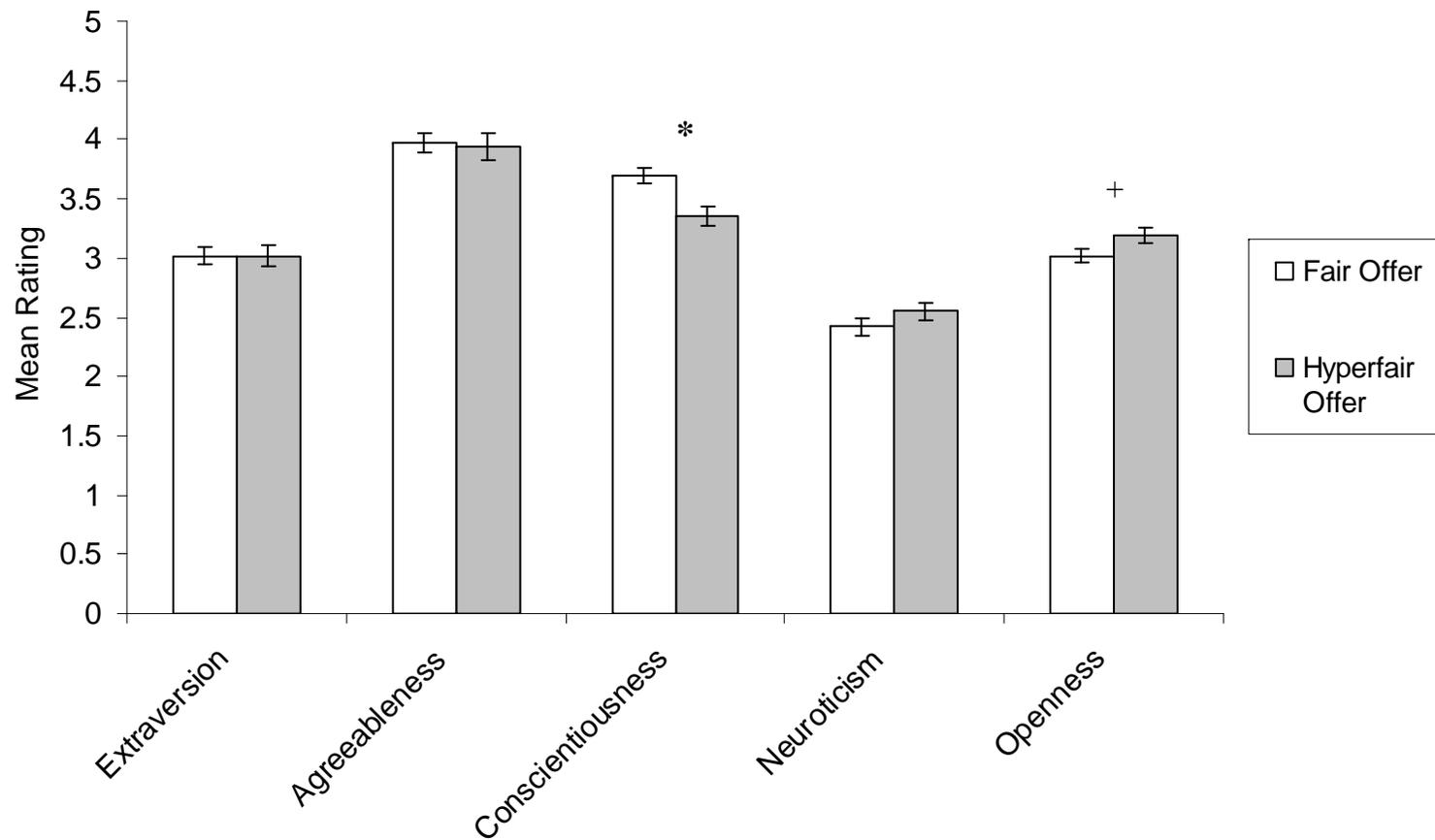
calculated for each of the five personality factors by summing and averaging relevant items pertaining to that score (John & Srivastava, 2009; Cronbach's alphas ranging from .61 - .85). Negatively worded items were reverse scored.

A series of independent *t*-tests revealed that those who received a hyperfair offer perceived their "proposer" as being less conscientious ($M = 3.36$, $SD = .53$), than those in the control condition ($M = 3.70$, $SD = .47$), $t(85) = 3.09$, $p < .01$, suggesting that those who had a hyperfair proposer saw him as a poor gaming strategist. Additionally, there was a marginally significant trend suggesting that those who received a hyperfair offer also perceived their proposer as being more open ($M = 3.19$, $SD = .40$) than those in the control condition ($M = 3.02$, $SD = .42$), $t(85) = -1.93$, $p = .06$. The differences between conditions for the other three factors (extraversion, neuroticism, and agreeableness) were non-significant, all $ps > .20$. See Figure 2.

Interpersonal Contact

The third question was whether people would desire or avoid engaging in interpersonal contact with their proposer following a hyperfair (versus fair) offer. To test for this, participants' partner choices for the "interpersonal contact game" and the "impersonal contact game" were recorded. Specifically, participants were told that they would be playing two more games and could choose the partner they have just played with (the proposer in the ultimatum game) or a different partner, to be selected at random by the experimenter.

For the interpersonal contact game, 13 of the 45 participants in the experimental condition said they would prefer to play with a different partner. In contrast, only 4 out of 46 participants in the control condition said they would prefer a different partner. This difference was statistically significant, $\chi^2(N = 91) = 6.11$, $p < .05$, suggesting that people avoid interpersonal contact with the proposer following a hyperfair offer.



Note. Error bars represent +/- 1 standard error of the mean

+ $p = .06$

* $p < .05$

Figure 2. Ratings for the Big Five Factors in the Fair and Hyperfair Conditions

However, there was no significant difference in partner preference between the experimental and control conditions in the impersonal contact game, $p > .10$. Therefore, people avoided face-to-face contact with their hyperfair proposers, but it appears that they did not necessarily avoid impersonal contact.

Table 1. Means (SDs in parentheses) of Big-Five Factor Ratings for Those Who Donated and Those Who Did Not

	Donation	No Donation
Extraversion *	3.15 (.54)	2.90 (.49)
Agreeableness **	4.16 (.62)	3.76 (.57)
Conscientiousness +	3.63 (.52)	3.43 (.52)
Neuroticism **	2.31 (.49)	2.65 (.53)
Openness	3.19 (.46)	3.04 (.46)

+ $p = .08$ * $p < .05$ ** $p < .01$

Charity Donations

I predicted that hyperfair offers would lead to a greater number of donations to charities. That is, being the subject of generosity should impact one's own generosity. A χ^2 analysis using condition type (experimental vs. control) as the predictor and presence of charity donation (yes or no) as a response revealed no significant effects of condition on one's donations to charity, $p > .20$. To test what *did* impact donation

preferences, condition type, the five BFI scores and positive and negative post-manipulation scores were entered into a binary logistic model, with presence of charity donation (yes or no) as a response. None of the predictors were significant, all $ps > .10$.

However, an interesting finding emerged: those who donated perceived their partner as more extraverted, $t(85) = -2.23, p < .05$, more agreeable, $t(85) = -3.21, p < .01$, and less neurotic, $t(85) = 3.15, p < .01$. The differences for the other two BFI scores (conscientiousness and openness) were non-significant, both $ps > .05$. For means and standard deviations, see Table 1. The interpretation of this finding is later discussed (see Discussion).

CHAPTER FOUR

DISCUSSION

General Discussion

As stated previously, one can imagine many real-world scenarios involving unreciprocated, hyperfair altruism. However, relatively little is known about the psychological processes underlying these behaviors. This study was the first to investigate people's thoughts and behaviors following the receipt of a hyperfair offer.

To begin, nearly every person (except for three) in this sample accepted the hyperfair offer, thus contrasting past research (Bahry & Wilson, 2006; Hennig-Schmidt et al., 2008) using participants of other cultures. However, both of the referenced experiments were done in communist societies, suggesting that the participants in this sample held differing beliefs. It is not clear, however, whether the difference found in this study reflects differing inward beliefs and value systems or culturally acceptable norms of behavior, drive people to reject hyperfair offers.

Secondly, this experiment found that hyperfair offers significantly improve mood (raise positive and lower negative mood) compared with fair offers. This effect is especially compelling when considering the fact that those in the control condition received the same amount of money (\$8) and more money than they had initially expected (\$5). In the past, money has been shown to have a significant impact on mood (e.g., Johnson & Krueger, 2006). Results from this study however, show that the source of that money actually matters – specifically, others' generosity causes better mood. Moreover, this effect was most pronounced for people who reported being unhappy initially. As stated earlier, this effect was unlikely to be due to a ceiling effect. This finding is in line with past work showing that those who were put in

situations eliciting low mood were faster to focus on positive interactions from others (DeWall, Maner, & Rouby, 2009). Similarly, initially low positive mood participants in this study may have been particularly excited by another person's generosity.

Furthermore, this experiment tested how people actually perceive those who act in a hyperfair manner. Participants in this study reported their hyperfair proposer as being unconscientious. This may suggest that people perceived the proposer as having made some sort of gaming mistake. Indeed, several participants had questioned the experimenter during the procedure if the \$8 offer was a mistake. This may seem in contrast to previous work which has found that altruists are generally perceived in a positive light (Wedekind & Brathwaite, 2002; Hardy & Van Vugt, 2006), but such work has primarily focused on altruism *with* a cause, not hyperfairness. That is, people may perceive altruists well when they can explain the reasons for their altruism. Alternatively, it is possible that altruism during gaming scenarios is perceived differently than altruism in the real world.

There was also a marginally significant trend for people to perceive their altruists as being more open. Although there is little theoretical basis for this observation, it is important to note that openness and conscientiousness were the two most prominent effects observed in Gosling et al.'s (2002) study, in which participants were asked to guess others' personalities based on impersonal cues such as rooms and offices. This finding, combined with Gosling et al.'s (2002) work, then suggests that these two factors (conscientiousness and openness) may be easiest to form lay theories about.

This study also found that people seek to avoid face-to-face contact with their hyperfair proposers. Because people did not avoid impersonal contact, this aversion goes beyond simple belief that the hyperfair proposer was a poor gaming strategist. Participants may have felt guilty for accepting a generous offer from another (e.g., Benkel, Wijk, & Molander, 2009) and "duping" the proposer in some way. Another

reason may be that participants felt suspicious about the proposer's behavior. The current design did not distinguish between these two possibilities.

Finally, on a behavioral level, this experiment looked at people's charity donations following a hyperfair offer. It was predicted that if people felt somehow uncomfortable with the hyperfair proposal, they should be motivated to give away a portion of their money to charity. However, people were not any more likely to donate to charity following a hyperfair vs. fair offer. There are several interpretations for this effect. First, it is possible that donating money was in a sense, too much to ask of the participants. Very few people may have felt the pressure to do so during an anonymous gaming experiment.

Another possibility is that the present design employed an inadequate control. Because the control condition stated that people will "receive \$3 from the experimenter", those in the control condition may have perceived the "extra \$3" as an altruistic behavior from the experimenter. Evidence for this fact comes from two sources: First, many participants mentioned a thank you in their debriefing form for the "extra funds". Secondly, 44 out of 92 participants (48%) in both conditions donated to charity – this is a larger number than what might be expected if participants were not pressured to donate in either condition. This then implies that generosity *did* have an effect on donation, but that the control condition used was inappropriate for the current study. Simple rephrasing of the wording in the control condition may aid in discovering an effect, if present.

Finally, it is possible that hyperfair offers do not inspire generosity in others. Past research has assessed this only via indirect means: money positively impacts mood (e.g., Johnson & Krueger, 2006), and positive mood impacts one's own generosity (e.g., Cunningham, 1979; Harris & Smith, 1975; Isen & Levin, 1972; Isen & Simmonds, 1978). However, research to date has not investigated whether these two discrete events can form a causal chain. This study provides some evidence for the fact

that the causal chain may in fact be broken: people in the hyperfair condition did in fact experience a change in positive mood as a result of someone's generosity, but did not, in turn, feel more inclined to be generous themselves. However, the foregoing issues with the control condition should be addressed prior to making strong conclusions in this regard.

Although no effects between conditions were observed, people who donated perceived their partner as being more extraverted, agreeable, and less neurotic. This is in line with Ashton et al.'s (1998) study, which found that those who had traits commonly associated with reciprocal altruism were also more agreeable and less neurotic. Overall, this suggests that those who donated had a more positive view of others over those who did not. However, because neither presence of charity donation nor perception of the proposer were manipulated, it is not clear if those who perceived their partner more positively decided to donate to charity, donating caused people to see their partner more positively, or a third variable, such as mood, affected both donations to charity and perceptions of the proposer. However, this effect is promising and paves the way for further research.

Future Directions

Using the results found in this study, several experiments may be outlined for future work. First, it is important to replicate this work in more ecologically valid scenarios prior to forming strong conclusions regarding the role of hyperfairness in people's everyday cognition. One follow-up study could attempt to replicate these effects using increased believability – rather than informing participants that there is another participant waiting in a separate room, future work should use actual confederates to play the role of the proposer. Indeed, several participants indicated some doubt with regards to whether the proposer was real. Therefore, it is particularly important to replicate these findings using more embellished believability. Another way to increase ecological validity is to study could look at how hyperfairness is

perceived outside of the ultimatum game. One potential idea may be to have a confederate wait in a waiting room with a real participant. During the wait, the confederate and the participant (together) would spontaneously find \$10 on the floor and offer the participant to split the money in either a fair way, or a hyperfair (\$8/\$2) way.

Another interesting subsequent question might be: following the receipt of an altruistic offer, will people seek out or avoid contact with *all* people or simply the hyperfair proposer? In the past, negative interactions with specific others have led to increased aggression (Catanese & Tice, 2003; Warburton, Williams, & Cairns, 2005) and decreased prosocial behaviors (Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007) towards *people as a whole*. In addition, the theory of indirect reciprocity (discussed earlier) also suggests that behaviors may be directed towards non-specific others. Thus, there is reason to believe that the effect found in this study may be extended apply to *all* people, as opposed to the altruistic proposer only. Additionally, it may be interesting to investigate the types of interaction that people *do* engage in following a hyperfair offer. Perhaps individuals will engage in positive forms of interpersonal contact (i.e., thanking the person, talking, unconscious mimicry, etc.) once they are forced into a situation in which contact is unavoidable. This idea, however, is currently derived largely from intuition and deserves further empirical investigation.

Importantly, although this experiment did not find any effects of charity donations, future work could further examine this possibility. A follow-up study could use more implicit measures such as attitudes about donating, or helpful behaviors not involving money such as signing up for volunteer activities.

Because there was a difference between those who donated and those who did not in their perceptions of the proposer, a future study could manipulate one's perceptions of the proposer by supplying a brief "self-description" (actually written by

the experimenter) of the proposer. Information about the other player's gender impacts behavior in the ultimatum game (Scharlmann, Eckel, & Wilson, 2001). Therefore, future studies might find that other attributes such as personality characteristics could affect behavior as well. Alternatively, donations to charity could be manipulated by asking participants to donate a set amount to the charity of their choice.

Future work may also extend these results by studying the development of children's understanding of hyperfairness. Specifically, does our conception of hyperfairness develop from a young age, or is it societally embedded? (Of course, it is also conceivable that both possibilities are true.) Are children wary of "moral saintliness" (hyperfairness) and is there an age at which this wariness emerges? Such work would largely contribute to the already existing literature on children's understandings of fairness and morality: Starting from 7-8 years, children begin to act "fairly" (Fehr et al., 2008). Even earlier (5 years), children have relatively complex models of fairness and can apply those models in hypothetical dilemmas (e.g., Rochat et al., 2009) and even ultimatum game scenarios (Murnighan & Saxon, 1998). Finally, even younger than that, children have intuitions about others' beliefs, desires, (for review, see Wellman & Liu, 2004). and intentions (Chandler, Sokol, & Hallett, 2001). It follows then, that children will have some conceptions of hyperfairness, may infer belief and intention states from those who are hyperfair, and would be affected behaviorally by a hyperfair offer. The age during which a conception of hyperfairness occurs and the manner in which the process unfolds deserves empirical investigation.

Overall, results from this study have important implications for both past research and the real world. In reality, there may be countless encounters with "moral saints" who choose to act prosocially without any direct benefit – imagine a complete stranger donating a large sum of money to a charitable cause, or the myriad of people who donate their organs to those in need through an anonymous exchange. Just as society opts not to allow people to meet their organ donor, participants in this study

chose not to meet their hyperfair proposer. However, just as the recipients of an anonymous organ donation presumably feel positive about such, so did the participants in this study. The results of this work therefore provide mixed conclusions regarding the role of altruism: while people are generally happy to receive an altruistic offer, they avoid contact with altruists, believe them to be unconscientious, and are not led to be more altruistic themselves. Although further empirical work is needed to situate these conclusions within a broader context, this experiment suggests that perhaps it is the selfishly driven altruists, not the “moral saints” that are held in such high regard.

APPENDICES

APPENDIX A: DEMOGRAPHICS

Please answer the following questions:

Sex:

- male
- female
- other

Age:

_____ years

College major: _____

Race/Ethnicity:

- Caucasian
- East or South Asian
- Hispanic
- Pacific Islander
- Native American
- African American
- Biracial/Interracial
- Other
- Do not wish to provide

Nationality: _____

School Year (if this is summer, indicate school year you will be entering):

- Freshman
- Sophomore
- Junior
- Senior
- Graduate Student
- Faculty Member
- Staff Member
- Other (please specify): _____

APPENDIX B: INSTRUCTIONS AND COMPREHENSION CHECK

You will be playing a game against another participant (waiting in the other room). You are ensured *complete anonymity* – neither of you will interact in person or find out any identifying information about one another.

During the game, one of you will play the role of the proposer, and one will play the role of the responder. You will both be given \$10 to split between the two of you.

The **proposer's** role will be to choose how they wish to split the money. The **responder** may then *agree to the split* (in which case, you each get the amount you agreed on), or *reject the split* (in which case, neither of you gets any money).

In order to make sure you understand the game before we start playing, we ask that you answer the following questions:

1. Who will be deciding how to split the money? (circle one)

proposer	responder
----------	-----------

3. Once a split is proposed, what two choices does the responder have?
4. If the proposer offers a \$6 (for the proposer)/\$4 (for the responder) split, how much does each person receive if the responder *accepts the offer*:
 1. Proposer:
 2. Responder:

4. How much does each person receive if the responder *rejects the offer*:
 1. Proposer:
 2. Responder

When you are ready to play, please let the experimenter know.

APPENDIX C: BASELINE MOOD QUESTIONNAIRE

You have been randomly selected to play the role of the **responder**. While the proposer is deciding how to split the money, please fill out these questionnaires:

At the moment, I feel:

	Not at All				Very Much	
1. tense	1	2	3	4	5	
2. dissatisfied	1	2	3	4	5	
3. cheerful	1	2	3	4	5	
4. hostile	1	2	3	4	5	
5. sad	1	2	3	4	5	
6. interested	1	2	3	4	5	
7. happy	1	2	3	4	5	
8. irritated	1	2	3	4	5	
9. upset	1	2	3	4	5	
10. relaxed	1	2	3	4	5	

APPENDIX D: EXPERIMENTAL GROUP MANIPULATION

The proposer has offered to split the money in the following way:

___\$8___ will go to you.

___\$2___ will go to the proposer.

Please check off one of these options to indicate what you would like to do:

_____ I would like to accept the offer.

_____ I would like to reject the offer.

**** Note: To increase believability, dollar values were written in by the experimenter in the actual questionnaire handed to participants****

APPENDIX E: CONTROL GROUP MANIPULATION

The proposer has offered to split the money in the following way:

___\$5___ will go to you.

___\$5___ will go to the proposer.

Due to extra funds for this project, the experimenter will also be providing \$3 for participation. Therefore, the total you will receive is ___\$5___ from the proposer + \$3 from the experimenter = ___\$8_____

Please check off one of these options to indicate what you would like to do:

_____ I would like to accept the offer.

_____ I would like to reject the offer.

**** Note: To increase believability, dollar values were written in by the experimenter in the actual questionnaire handed to participants****

APPENDIX F: BIG FIVE INVENTORY

Please answer some additional questions about your partner. Here are a number of characteristics that may or may not apply to them. Give your best guess for the type of person that your partner might have been.

I see my partner as someone who.....

	Not at all				Extremely
1. is talkative	1	2	3	4	5
2. tends to find fault with others					
3. does a thorough job					
4. is depressed, blue					
5. is original, comes up with new ideas					
6. is reserved					
7. is helpful and unselfish with others					
8. can be somewhat careless					
9. is relaxed, handles stress well					
10. is curious about many different things					
11. is full of energy					

12. starts quarrels with others
13. is a reliable worker
14. can be tense
15. is ingenious, a deep thinker
16. generates a lot of enthusiasm
17. has a forgiving nature
18. tends to be disorganized
19. worries a lot
20. has an active imagination
21. tends to be quiet
22. is generally trusting
23. tends to be lazy
24. is emotionally stable, not easily upset
25. is inventive
26. has an assertive personality
27. can be cold and aloof
28. perseveres until the task is finished

29. can be moody
30. values artistic, aesthetic experiences
31. is sometimes shy, inhibited
32. is considerate and kind to almost everyone
33. does things efficiently
34. remains calm in tense situations
35. prefers work that is routine
36. is outgoing, sociable
37. is sometimes rude to others
38. makes plans and follows through with them
39. gets nervous easily
40. likes to reflect, play with ideas
41. has a few artistic interests
42. likes to cooperate with others
43. is easily distracted
44. is sophisticated in art, music, or literature

APPEDIX G: ADDITIONAL GAMES

You will now be playing two more games. This time, the game will involve being paired with another person. Together, the two of you will need to come up with a cooperative strategy to get the most amount of points.

The first game will involve filling out questionnaires with both you and your partner waiting in separate rooms.

For the first game, please choose one of the following options:

_____ I would like to play with the same partner I have already been paired up with in the first (money allocating) game.

_____ I would like to play with a different partner. Please select one at random for me.

In the second game, you will play a cooperative game which will involve interacting with your partner face-to-face.

For the second game, please choose one of the following options:

_____ I would like to play with the same partner I have already been paired up with in the first (money allocating) game.

_____ I would like to play with a different partner. Please select one at random for me.

APPENDIX H: CHARITY QUESTIONNAIRE

We would also like to take this time to inform you about several charity organizations. Please read the next few pages carefully.

UNICEF



An estimated 300 million children worldwide are subjected to violence, exploitation and abuse including the worst forms of child labor in communities, schools and institutions; during armed conflict; and to harmful practices such as female genital mutilation/cutting and child marriage. Millions more, not yet victims, also remain without adequate protection.

UNICEF advocates and supports the creation of a protective environment for children in partnership with governments, national and international partners including the private sector, and civil society. National child protection systems, protective social practices and children's own empowerment coupled with good oversight and monitoring are among the elements of a protective environment and enable countries, communities and families to prevent and respond to violence, exploitation and abuse.

How worthy is this cause?

Not at all **Extremely**
1 2 3 4 5 6 7

How much do you believe in this cause's mission statement?

Not at all **Extremely**
1 2 3 4 5 6 7

Doctors Without Borders (MSF)



Doctors Without Borders/Médecins Sans Frontières (MSF) is an international medical humanitarian organization created by doctors and journalists in France in 1971.

Today, MSF provides aid in nearly 60 countries to people whose survival is threatened by violence, neglect, or catastrophe, primarily due to armed conflict, epidemics, malnutrition, exclusion from health care, or natural disasters. MSF provides independent, impartial assistance to those most in need. MSF reserves the right to speak out to bring attention to neglected crises, to challenge inadequacies or abuse of the aid system, and to advocate for improved medical treatments and protocols.

In 1999, MSF received the Nobel Peace Prize.

How worthy is this cause?

Not at all

Extremely

1 2 3 4 5 6 7

How much do you believe in this cause's mission statement?

Not at all

Extremely

1 2 3 4 5 6 7



Tompkins County ASPCA

The Tompkins County SPCA was incorporated in February 1902 in an effort to prosecute individual cases of cruelty. In 1904, the organization acquired sheltering facilities and took over as pound master for some of the municipalities within the county. For much of its history, the SPCA has employed humane officers to investigate individual cases of cruelty, as well as providing impound, sheltering and adoption of unwanted dogs, cats, and other animals.

The mission of the SPCA of Tompkins County is to protect companion animals. This is a no-kill shelter dedicated to preventing animal cruelty and overpopulation. The ASPCA promotes responsible pet stewardship by providing education, counseling and training to nurture and enhance the human-animal bond. Currently, the SPCA has contracts for animal control with all townships, the City of Ithaca, the local Health Department, and the County for stray dog control, stray cat control, suspected rabid animal quarantine, cruelty enforcement, and the enforcement of local and state statutes regarding dogs.

How worthy is this cause?

Not at all **Extremely**
1 **2** **3** **4** **5** **6** **7**

How much do you believe in this cause's mission statement?

Not at all **Extremely**
1 **2** **3** **4** **5** **6** **7**

Cornell Annual Fund



Ezra Cornell's vision established a scope of learning and opportunity at Cornell that is unmatched by any other university. Whether it is of ethics, the life sciences, history,

language, humanities or technology, Cornell remains at the forefront of society's greatest questions and challenges for the future.

Our Investment supports Cornell's incredible diversity of students, subjects of study, and faculty. Your gifts to the Cornell Annual Fund are a vital part of what creates the atmosphere of innovation and excellence that is the hallmark of Cornell. Cornell Annual Fund giving programs offer a range of gift and volunteer opportunities to support our founders' vision. We hope you will choose to get involved, and support Cornell, and become part of the university's continued excellence in teaching, research and public service.

How worthy is this cause?

Not at all

Extremely

1 2 3 4 5 6 7

How much do you believe in this cause's mission statement?

Not at all

Extremely

1 2 3 4 5 6 7

APPENDIX I: CHARITY DONATION PROMPT

Would you like to donate to one of the charities you have just read about?

_____ Yes I would like to donate at this time. The amount I will be giving is \$_____.

Which charity would you like to donate your money to? (Please select one):

_____ UNICEF

_____ Doctors Without Borders

_____ Tompkins County ASPCA

_____ Cornell Annual Fund

_____ No I would not like to donate at this time.

Note: Your money is guaranteed to go directly to your charity of choice. No portion of your funds will be used for any other purpose.

All participants should now follow these set of instructions

1. please tear off this piece of paper
2. enclose this piece of paper and any money you would like to donate in the white envelope provided.
3. Seal the envelope and drop it into one of the manila envelope located on the table.

APPENDIX J: ADDITIONAL QUESTIONNAIRES

Finally, since we are interested in how accurate people are at discerning what others may be like based on impersonal situations, please give your best guess for the following:

I think the other player is (check one):

- male
- female

I believe the other player's race is:

- Caucasian
- East or South Asian
- Hispanic
- Pacific Islander
- Native American
- African American
- Biracial/Interracial

I believe the other player's year in school is:

- Freshman
- Sophomore
- Junior
- Senior
- Graduate Student
- Faculty member
- Staff

I believe the other player's household income is:

- below \$30,000
- \$30,000-\$50,000
- \$50,000-\$70,000
- \$70,000-\$100,000
- \$100,000-\$150,000
- over \$150,000

Although we are unable to do this for purposes of anonymity, this game is normally played with two people interacting face-to-face. We therefore would like you to do your best to *visualize the other player*.

As part of this exercise, please rate the other player on the following attributes.

I imagine the other player to be:

	Not at all				Extremely
1. attractive	1	2	3	4	5
2. unintelligent	1	2	3	4	5
3. interesting	1	2	3	4	5
4. weak	1	2	3	4	5
5. humorous	1	2	3	4	5
6. manipulative	1	2	3	4	5
7. charming	1	2	3	4	5
8. smart	1	2	3	4	5
9. masculine	1	2	3	4	5
10. feminine	1	2	3	4	5

REFERENCES

- Alexander, R. D. (1987). *The Biology of Moral Systems*. Hawthorne, NY: Aldine de Gruyther.
- Alvi, E. (1998). Fairness and self-interest: an assessment. *The Journal of Socio-Economics*, 27, 245-261.
- Ashton, M. C., Paunonen, S. V., Helmes, E., & Jackson, D. N. (1998). Kin altruism, reciprocal altruism, and the big five personality factors. *Evolution and Human Behavior*, 19, 243-255.
- Bahry, D. L., & Wilson, R. K. (2006). Confusion or fairness in the field? Rejections on the ultimatum game under the strategy method. *Journal of Economic Behavior & Organization*, 60, 37-54.
- Benkel, I., Wijk, H., & Molander, U. (2009). Family and friends provide most social support for the bereaved. *Palliative Medicine*, 23, 141-149.
- Brosnan, S. & de Waal, F. B. M. (2003). Monkeys reject unequal pay. *Nature*, 425, 297-299.
- Catanese, K. R. & Tice, D. M. (2005). The effect of rejection on anti social behaviors: Social exclusion produces aggressive behaviors. In Williams, K. D., Forgas, J. P., & von Hippel, W. (Eds). *The social outcast: Ostracism, social exclusion, rejection, and bullying*, 297-306.
- Chandler, M. J., Sokol, B. W., & Hallett, D. (2001). Moral responsibility and interpretive turn: Children's changing conceptions of truth and rightness. In L. Moses, D. Baldwin, & A. Malle (Eds.), *Intentions and intentionality: Foundations of social cognition* (pp. 345-366). Cambridge, MA: MIT Press.
- Cunningham, M. R. (1979). Weather, mood, and helping behavior: The sunshine Samaritan. *Journal of Personality and Social Psychology*, 37, 1947-1956.

- DeWall, N. C., Maner, J. K., & Rouby, D. A. (2009). Social exclusion and early-stage interpersonal perception: Selective attention to signs of acceptance. *Journal of Personality and Social Psychology, 96*, 729-741.
- Fehr, E., Bernhard, H. & Rockenbach, B. (2008). Egalitarianism in young children. *Nature, 454*, 1079-1083.
- Fehr, E., Fischbacher, U., & Gächter, S. (2002). Strong reciprocity, human cooperation, and the enforcement of social norms. *Human Nature, 13*, 1-25.
- Gorman, W. (1973). On the sense of justice. *Journal of Psychiatry & Law, 1*, 79-100.
- Gosling, S. D., Ko, S. J., Mannarelli, T., & Morris, M. E. (2002). A room with a cue: Personality judgments based on offices and bedrooms. *Personality Processes and Individual Differences, 82*, 379-398.
- Guth, W., Schmittberger, R., & Schwarze, B. (2005). An experimental analysis of ultimatum game bargaining. In Bazerman, M. H. (Ed). *Negotiation, decision making and conflict management, 1-3*, 342-363.
- Guth, W., & Tietz, R. (1990). Ultimatum bargaining behavior: A survey and comparison of experimental results. *Journal of Economic Psychology, 11*, 417-449.
- Hardy, C. L., & Van Vugt, M. (2006). Nice guys finish first: The competitive altruism hypothesis. *Personality and Social Psychology Bulletin, 32*, 1402-1413.
- Harris, M. B., & Smith, R. J. (1975). Mood and helping. *The Journal of Social Psychology, 91*, 215-221.
- Hennig-Schmidt, H., Li, Z. & Yang, C. (2008). Why people reject advantageous offers – Non-monotonic strategies in ultimatum bargaining: Evaluating a video experiment run in PR China. *Journal of Economic Behavior & Organization, 65*, 373-384.

- Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H., McElreath, R., Alvard, M., Barr, A., Ensminger, J., Henrich, N. S., Hill, K., Gil-White, F., Gurven, M., Marlowe, F. W., Patton, J. Q., & Tracer, D. (2005). 'Economic man' in cross-cultural perspective: Behavioral experiments in 15 small-scale societies. *Behavioral and Brain Sciences*, 28, 795-855.
- Isen, A., & Levin, P. (1972). Effect of feeling good on helping. *Journal of Personality and Social Psychology*, 21, 384-388.
- Isen, A., & Simmonds, S. (1978). The effect of feeling good on a helping task that is incompatible with good mood. *Social Psychology Quarterly*, 41, 346-349.
- Jensen, K., Call, J., & Tomasello, M. (2007). Chimpanzees are rational maximizers in an ultimatum game. *Science*, 318, 107-109.
- Jensen, K., Hare, B., Call, J. & Tomasello, M. (2006). What's in it for me? Self-regard precludes altruism and spite in chimpanzees. *Proceedings Biological Sciences*, 273, 1013-1021.
- Johnson, W., & Krueger, R. F. (2006). How money buys happiness: Genetic and environmental processes linking finances and life satisfaction. *Journal of Personality and Social Psychology*, 90, 680-691.
- Kashima, Y., Siegal, M., Tanaka, K., & Isaka, I. Universalism in lay conceptions of distributive justice: A cross-cultural examination. *International Journal of Psychology*, 23, 51-64.
- Kohlberg, L. A. (1963). The development of children's orientations toward a moral order: Sequence in the development of moral thought. *Vita Humana*, 6, 11-33.
- Murnighan, J. K., & Saxon, M. S. (1998). Ultimatum bargaining by children and adults. *Journal of Economic Psychology*, 19, 415-445.
- Nowak, M. A., & Sigmund, K. (2005). Evolution of indirect reciprocity. *Nature*, 437, 1291-1298.

- Rochat, P., Dias, M. D. G., Liping, G., Broesch, T., Passos-Ferreira, C., Winning, A., Berg, B. (2009). Fairness in distributive justice by 3- and 5-year-olds across seven cultures. *Journal of Cross-Cultural Psychology, 40*, 416-442.
- Scharlermann, J. P., Eckel, C. C., & Wilson, R. K. (2001). The value of a smile: Game theory with a human face. *Journal of Economic Psychology, 22*, 617-640.
- Soto, C. J., & John, O. P. (2009). Ten facet scales for the Big Five Inventory: Convergence with NEO PI-R facets, self-peer agreement, and discriminant validity.
- Steibe, S. & McCarrey, M. (1982). Prediction of justice-related behavior by fairness-reasoning and human values. *Psychological Reports, 51*, 1275-1280.
- Siegal, M. (1982). *Fairness in Children: A Social Cognitive Approach to the Study of Moral Development*. London: Academic Press.
- Takezawa, M., Gummerum, M., Keller, M. (2006). A stage for the rational tail of the emotional dog: Roles of moral reasoning in group decision making. *Journal of Economic Psychology, 27*, 117-139.
- Thaler, R. H. (1988). The ultimatum game. *Journal of Economic Perspectives, 2*, 195–206.
- Tomasello, M. & Warneken, F. (2008). Share and share alike. *Nature, 454*, 1057 - 1058.
- Trivers, R. L. (1971). The evolution of reciprocal altruism. *The Quarterly Review of Biology, 46*, 35-37.
- Twenge, J. M., Baumeister, R. F., DeWall, C. N., Ciarocco, N. J., & Bartels, J. M. (2007). Social exclusion decreases prosocial behavior. *Journal of Personality and Social Psychology, 92*, 56-66.

- Warburton, W. A., Williams, K. D. & Cairns, D. R. (2005). When ostracism leads to aggression: The moderating effects of control deprivation. *Journal of Experimental Social Psychology*, 42, 213-220.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of Positive and Negative Affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063-1070.
- Wedekind, C., & Braithwaite, V. A. (2002). The long term-benefits of human generosity and indirect reciprocity. *Current Biology*, 12, 1012-1015.
- Wellman, H. M., & Liu, D. (2004). Scaling of theory-of-mind tasks. *Child Development*, 75, 523-541.
- Wolf, S. (1982). Moral saints. *The Journal of Philosophy*, 79, 419-439.