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Inequality Aversion And Altruism In Bargaining Experiments: The Effect Of Gender

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by

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ABSTRACT

This paper examines gender-related inequality aversion, altruism and the effect of gender on decision-making using ultimatum and dictator experiments. A triple-anonymous design was incorporated into the experiments by excluding monetary payments in order to eliminate any aspect of social pressure that the experimenter may exert by exchanging money with the subjects. The absence of social pressure allows for observation of gender differences in economic behavior. Results show that there is a sharp difference between genders. Women are more likely to give larger amounts than men indicating that altruism does vary depending on gender. Also, inequality aversion appears to be more prominent in women's behavior than in man's behavior. However, the difference between men and women in this respect is slight.

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CHAPTER 1: INTRODUCTION

Traditional economic theory is based, in part, on the assumptions that individuals make rational choices and are driven to maximize their individual self-interest. However, self-interest can sometimes be expressed through cooperation rather than selfishness. Research in sociology, psychology, and behavioral economics suggests that many people make choices based on notions of fairness or a desire to cooperate with others to maximize their common good. The purpose of this research is to examine gender-related inequality aversion, altruism and the effect of gender on decision-making using ultimatum and dictator experiments. My hypothesis is that generosity is expressed in human behavior, although it is conditioned by social pressure, and is more evident in the behavior of women than of men. In addition, both men and women are averse to arrangements they perceive as unequal.

Behavioral economics as a field of study is concerned with cognitive and emotional factors and it is primarily concerned with the implications of rationality. Sub-fields of behavioral economics look at how emotions and thoughts can affect the ways people make decisions regarding their money. To understand altruistic behavior and inequality aversion, it is necessary to relax the assumption that individuals are homogeneous and they are driven to maximize personal gain.

Altruism is motivated by social preference. Models of social preference assume individuals behave rationally and their decisions take into account how many material resources are assigned to others. Moreover, in the traditional economic view individuals may have interdependent utility functions. Altruism may serve as the basis for decision-making for some

people and under certain conditions. Altruism is driven by the personal satisfaction from giving and is the utility one obtains from the act of giving (Andreoni, Harbaugh, & Vesterlund, 2007). A person is altruistic if their utility increases with the well-being of other people.

Inequality aversion can be defined as the preference for fairness. It refers to the reaction people have when faced with a perceived injustice. Individuals who are averse to inequality tend to put self-interest aside to ensure everyone gets a fair share of the pie even if that means sacrificing personal wealth or well-being. Such people may value fairness more than profit.

Furthermore, some research suggests that people are more generous if they think that someone else is monitoring their donations. Visual cues can be used to simulate the experience of being monitored (Rigdon, Ishii, Watabe, & Kitayama, 2009). For experiments that test hypotheses related to generosity, there is evidence indicating that the sensation of being monitored can be simulated by including a picture of "watching eyes" within sight of those participating in the experiment. This often causes subjects to adjust their giving behavior to meet perceived social expectations.

On the other hand, it is important to know how subjects respond when they are not compelled by any sense of social pressure. Eckel and Grossman (1998) conducted a double-anonymous dictator experiment. The goal was to eliminate any social pressure in their experimental design but some social pressure still remains. This is because the subject must ask the experimenter for payment after the subject has allocated his or her money. Because the subject knows that someone will know how they allocated the money, they may not be entirely honest in making the allocation, i.e. some social pressure may remain. This research eliminates

any monetary payment making the experiment “triple anonymous”. Not only would the participants not know the identity of the respondent but they will remain anonymous to the experimenter. This way the last bit of social pressure is eliminated so that the role of altruism can be accurately assessed. By making the choices hypothetical there is a possibility that hypothetical results will be obtained. However, it should be possible to authenticate the results presented here by comparing them with those obtained under diverse experimental designs in previous studies.

To analyze the effect of gender on generosity, ultimatum and dictator experiments will be conducted with students from the College of Business Administration at The University of Texas at El Paso. The ABA experimental design, whereby subjects were observed before treatment (A), during treatment (B) and after treatment (A), allowed observations of the possible change in prosocial behavior due to the treatment variable, “watching eyes”, and due to experience gained throughout the experiment.

The ultimatum experiment is an economic experiment first introduced to the literature by Guth, Schmittberger and Schwarze (1982), in which two players interact to determine how a sum of money will be divided between two players. The first player (proposer) will propose the amount of money that should be allocated to each player, the second player (respondent) will then have the option to accept or reject the proposal. If the proposal is rejected, neither player will receive any of the money. On the other hand, if the second player accepts the proposal, the money will be split according to the agreed proposition.

The dictator game is a popular tool in experimental research introduced by Forsythe, Horowitz, Savin and Sefton (1994), in which one person (the proposer) is asked to share the

money with another person but, in contrast to the ultimatum game, the respondent simply gets the money without the opportunity to accept or reject the division made by the proposer. Complete selfishness implies that the dictator will keep the full pie for themselves. A selfless dictator will divide the pie more evenly among their counterparts (Eckel & Grossman, 1998).

If gender plays a role in inequality aversion and altruistic behavior, this could produce significant economic consequences. For example fundraisers for charity have come to realize the substantial giving potential of female donors and are designing gender specific solicitation strategies. Policy makers have noted gender differences in philanthropy. Women tend to be more responsive to the need of charitable giving. Such differences could affect economic models, data analyses and research methodologies if altruism is a factor in decision making (Andreoni & Vesterlund, 2001).

CHAPTER 2: LITERATURE REVIEW

Extensive research has been done on the role of gender in determining altruistic behavior and inequality aversion between genders. The results from these studies significantly vary. Some studies have concluded that females have a greater tendency to avoid inequality, while other studies believe males are more likely to pursue equality. Still, other studies have not found any significant difference between males and females in terms of inequality aversion and altruistic behavior. The purpose of this study is to shed additional light on the issues of inequality aversion using ultimatum and dictator experiments.

Charnes and Gneezy (2008) studied behavior in the dictator and ultimatum games. Anonymity and social distance between participants was used as a control treatment in order to compare the behavioral differences under two distinct scenarios. In the first scenario the respondent was anonymous, and in the second scenario the respondent's last name was given to the proposer. The main focus of their study was to investigate if social distance affects behavior or if it is irrelevant as traditional game theory would suggest. It was concluded that this control treatment has no significant effect in the ultimatum experiment. However, dictators allocated significantly more when the names were revealed.

Eckel and Grossman (2008) used public goods, ultimatum, and dictator experiments to distinguish individual contribution choices and to determine if contributions differ by gender. The study found no significant evidence of behavioral differences between genders. However, it is noted that the choices made by women are less individually-oriented and more socially-oriented. Furthermore, the research concludes that this behavior can be influenced by the level of risk involved.

Eckel and Grossman (2001) used the ultimatum game to test for differences in behavior between men and women. The purpose of their study was to answer two fundamental issues. The first was to determine if the gender of the opponent influenced a player's strategic choice. The second was to investigate if gender played a major role in determining the player's willingness to accept or reject the offer. The authors placed subjects in pairs of males, females, and a mixture of these two. The subjects were instructed to allocate funds between themselves and a partner. The proposed allocation was then given to the other member, who would decide to accept or reject the offer. The results showed that women are significantly more generous than men. The probability that a woman will accept an offer is higher than the probability than a man will do so. In addition, offers from female opponents are significantly more likely to be accepted, therefore, the gender of the respondent's partner has a strong effect on the subject's decision (referred to as chivalry). Women paired with women almost always reach an agreement (solidarity). In addition, factors that significantly affect proposals and rates of rejection such as age, earnings and race have been considered by the authors.

Andreoni and Vesterlund (2001) used the dictator game to study gender differences in altruism. Volunteers from intermediate and upper level economics courses were tested to compare allocation decisions using variable "budget" payoffs between themselves and another partner. An individual demand curve was the target to be analyzed; different budgets of payoffs were utilized. The authors conclude that depending upon the price; either sex can be seen as fair. Women are more generous than men when it is relatively expensive to give. However, as the price of giving decreases, men start to give more than women. Consequently, men are more

responsive to price changes. Additionally, men are more likely to be either perfectly selfish or perfectly selfless, while women prefer to share evenly.

Rigdon, Ishii, Watabe and Kitayama (2009) state that contribution decisions appear to vary across genders; females give more than males in laboratory experiments. The authors conducted a dictator experiment under an environment of "watching eyes" in order to prove the hypothesis that people give more when they feel that somebody is watching. A drawing was used to represent the "watching eyes" idea in a laboratory experiment. The authors used this to represent the subtle feeling of being watched. The drawing was meant to stimulate the cognitive representation of others watching them; therefore, this stimulus could be seen as a minimal social cue. The study affirms that even if the "watching eye" stimulus is subtle, it indeed increases the generosity showed by the test subject. Using the dictator game under these conditions, the authors tested the subjects' allocation of funds between them and anonymous partners. The authors found that women gave twice as much as men do throughout the experiment. However, the presence of schematic watching eyes doubled the amount that male dictators give.

Croson and Buchan (1999) examined gender differences in trust and reciprocating behavior. Data were collected from four countries by using a variation of the dictator game; the "trust game." The authors proposed an allocation of money between the participants and an anonymous partner with a monetary payoff at the end of the experiment. The subjects were instructed to distribute funds willingly knowing that their partners would receive three times the amount they allocated. In return, they would receive money back from their partner's allocation of funds. They concluded that there is no significant impact of gender on the amount sent by

proposers (trust behavior), but on the other hand, women return (reciprocate) considerably more than do men.

Cox and Deck (2006) conducted experiments in order to analyze gender differences in generosity using the Trust and Dictator Games. Utilizing data from 290 subjects, the research concluded that women are more responsive to the total economic and social cost of generosity than men. Therefore, the differences depend on the context of the decision.

Eckel and Grossman (1996) conducted a "punishment game" to measure differences in willingness to pay for the cost of fairness. Subjects were paired with either a "good" partner or a "bad" partner, and then directed to share a pie with them. A "good" partner was defined as someone willing to share the pie in an even manner, while a "bad" partner was someone who was unwilling to do so. The subjects were given the opportunity to share a large pie with a "bad" partner and a small pie with a "good" partner. The authors inferred that men are more likely than women to make decisions on principle and women are more responsive to changes in the decision making environment. It was concluded that a higher price for fairness reduces its influence on the outcome of the transaction for women, but not for men.

Dufwenberg and Muren (2006) determined whether an individual's generosity is dependent on a certain degree of anonymity or the individual's gender. The degree of anonymity was manipulated by creating two distinct scenarios: private payments and on-stage payments. In the "private" scenario, the subjects did not identify themselves to others when they pick up their payments, while in the "on-stage" scenario the dictator received the payment in a lecture hall with a few students present. The results indicate that less is given "on-stage", rather than in "private". Men received less than women; fewer men than women gave non-zero amounts.

Dufwenberg and Muren (2002) used the dictator game to test if the generosity of a person depends on the person's gender, on the gender of the person who is receiving the generous act, and/or the degree of the anonymity of the participants. Using microeconomics students, the authors conducted dictator experiments. The dictators were given the gender of their recipients, and the dictators had the choice of picking up their payment either anonymously or in front of the group ten days later. The study found that it is not simple to categorize experimental results in terms of social distance due to all of the cognitive elements that would have to be taken into account within the experiment process of the dictator game. The results indicated that fewer men than women gave non-zero amounts, and men received less than women. Less was given when subjects received money publicly than when payments were given in private. In addition, Dufwenberg and Muren (2002) suggested that experimental and theoretical work should go hand in hand.

Eckel and Grossman (1998) conducted a double-anonymous dictator experiment designed to examine basic gender differences when social pressures are removed. The authors implied that the inconsistent findings in the effect of gender on economic decisions were due to a failure to control for all the social factors involved in the experiments. The experimental design attempted to eliminate the risk of social repercussions, inter-gender interactions, and any possible social pressure exerted by the experimenter, leaving selflessness free to emerge. Subjects from various universities and majors participated in the experiment. Ten sessions were conducted where money was to be allocated between them and an anonymous partner. In half of the sessions, men played the role of dictator, and in the other half, women. The subjects were allowed to share with their partners any amount they saw fit, meaning they could either share it

or choose to keep it all for themselves. Using data from the experiments, the authors concluded that women are less selfish and show social-oriented traits. Men, on the other hand, are more individually-oriented. The results showed that women tend to donate twice as much to their anonymous partners as men.

Due to the large variability in the results, further research is needed. This research will attempt to determine if inequality aversion or altruistic behavior differs between genders using an ABA design for self-control. The experiment also includes aspects of two other studies. The principal basis of this paper is the work of Eckel and Grossman (1998) on double-anonymous experimental design. This paper extends their work by concealing the identity of subjects from the experimenter, thus making the experiment "triple-anonymous". The dictator and ultimatum games are combined in the manner described by Charness and Gneezy (2008) and the "watching eyes" experimental treatment is adapted from Rigdon, Ishii, Watabe and Kitayama (2009).

CHAPTER 3: DATA AND METHODOLOGY

Utility theory predicts that individuals will make rational choices to maximize their individual self-interest and, that among other things; gender will not influence decision-making (Brown-Kruse & Hummels, 1993). Research, drawing from several fields, has empirically tested this prediction. This thesis will address the question whether individuals are strictly self-interest maximizers or if other factors influence their choice behavior. It will also test the hypothesis that gender plays a role in choice behavior, specifically inequality aversion and altruism through two different experiments: a triple-anonymous ultimatum and dictator game following an ABA experimental design. The ultimatum and dictator game are not actually games but simple exchange, as described below.

The ultimatum game involved allocating $10 to various individuals and asking them to divide this amount between themselves and another person. If the assumptions of classical economic theory are valid, the individuals should retain the maximum allowable amount of $9.50 while giving the minimum allowable amount of $.50. Laboratory studies have not yielded this result. One reason for this may be that, the respondent gets to accept or reject the amount proposed. Thus, the proposer may be afraid that, if he/she only offers the minimum amount, the proposal will be rejected and the full $10 will be forfeited. Since people can reject amounts that they consider unfair, the ultimatum game allows observations of inequality aversion. In fact, subjects often give away a relatively equal division, such as $5-$5 or $6-$4, of the money that was allocated to them. These results have been replicated many times (Charness & Gneezy, 2008; Eckel & Grossman, 2001, 2008; Güth et al., 1982; Thaler, 1988). The dictator game is not designed to detect inequality aversion and outcomes of the game are interpreted as expressions of

either altruism or self- interest. In this the proposer is not susceptible to the risk that a small offer could be rejected. Therefore, proposers are usually less cooperative in dictator games than in the ultimatum game. The games are designed to test the proposition of utility theory that people will act to maximize their utility in all situations.

A total of 189 undergraduate and graduate students from the College of Business Administration at The University of Texas at El Paso participated in the experiments. Subjects were recruited through an announcement made by their business class instructors. Three groups were assigned to the ultimatum game and three to the dictator game. A PowerPoint presentation explained the nature of the economic experiments and outlined the procedure to complete the experiments (the presentation can be found in appendix A). The experiments conducted involved anonymous hypothetical monetary transactions. Anonymity in this context implies that the identity of proposer will not be disclosed to either other subjects or the experimenter. Since the identity of each proposer and each respondent was not revealed, social pressure was reduced as a factor in giving decisions.

Each experiment was repeated three times for each class following an ABA experimental design. The ABA design consists of a baseline period (round 1) where no treatment variable is given (A), followed by a period (round 2) in which the treatment variable is included (B), and then a period (round 3) in which the treatment variable is removed so the behavior can be observed a second time (A). Subjects were informed in advance that they would have different partners in each round. Through the ABA design, behavior can be examined before treatment, during treatment, and once treatment is removed. For the purpose of this study these periods are called “rounds.”

During the first round, students received instructions on the experiment through the PowerPoint presentation. In the second round, the "watching eyes" scenario, a set of eyes is projected onto a screen in front of the classroom. This has been used in other studies to create the sensation of being monitored. Several studies have found evidence that subjects are more generous when they feel they are being observed (Rigdon et al., 2009). This treatment is replicated in this study to determine whether giving decisions are sensitive to whether or not people feel they are being watched. In the third round, the process was repeated without the eyes on the screen. One purpose of round three is to measure the effect on giving due to experience gained playing the game.

The first of the two experiments is the ultimatum game. In this experiment two players interact to determine how a theoretical sum of money will be divided between them. The first player (the proposer) offers the amount of money that should be allocated to each player. The second player (the respondent) then has the option to accept or reject the proposal. If the proposal is rejected, neither player receives any amount of money. On the other hand, if the second player accepts the proposal, the money will be split according to the proposal.

Each experiment session was divided in two groups, the proposers and the respondents. The proposal was presented on an index card that was provided to the students. In order to differentiate between genders, orange and red index cards were given to males and white index cards to females (a sample of the index card provided can be seen in Appendix B). Students were to indicate how they wished to allocate the theoretical 10 dollars in increments of 50 cents. They specified how much money they wanted to keep for themselves and how much they were willing to share with the other player. No personal information was asked of participants, the experiment

was conducted under complete anonymity as proposers did not know the identity of the respondents.

The index cards were collected and deposited in a box, and were then distributed again to the second group (the respondents). The respondent decided if he/she accepted or rejected the offer. If the offer is accepted, the respondent was asked to write a “Y”, but if the offer was rejected, he/she was asked to write an “N” on the index card. Additionally, the respondents were asked to indicate their gender on the index card.

In the dictator game, the dictator subject is asked to determine the division between himself/herself and an anonymous respondent. Complete selfishness implies that the dictator will keep the full pie for himself/herself. A less selfish dictator will divide the pie more evenly (Eckel & Grossman, 1998).

Like the ultimatum game, the dictator game followed an ABA experimental design, but unlike the ultimatum game, the group was not split between proposers and respondents. Although students indicate how they wish to share the theoretical $10 as proposers would in ultimatum game, the proposer is not subject to being rejected by a respondent, as it was in the ultimatum game. Once subjects made the division of the money, the gender-coded index cards were collected and deposited in a box. The game was played three times following the ABA design in order to observe if there was any difference in the amount of money given as a result of the “watching eyes” treatment variable or as a result of experience.

In order to examine the effect of gender on decision-making, as well as the role of experience in changing behavior, and the relevance of being watched, a regression analysis will be used. In addition, a t-test will be conducted to determine whether there is a statistically

significant difference between rounds one and two, which would indicate that being watched affects giving decisions. Another t-test will be conducted to determine whether there is a statistically significant difference between round one and three, which would indicate that players giving decisions change as they gain more experience playing the game.

CHAPTER 4: EMPIRICAL RESULTS

Economic transactions are not always guided by the pursuit of self-interest or by the goal of maximizing utility in a selfish way. Ideas about altruism and fairness shape social goals that may play a role in economic decisions. In this context, fairness can be defined as an even distribution of resources. For the purposes of this study the "fair" contribution rate will be $5. Figure 1 shows the distribution of money transfers made by males and females during the initial round of the ultimatum experiment.

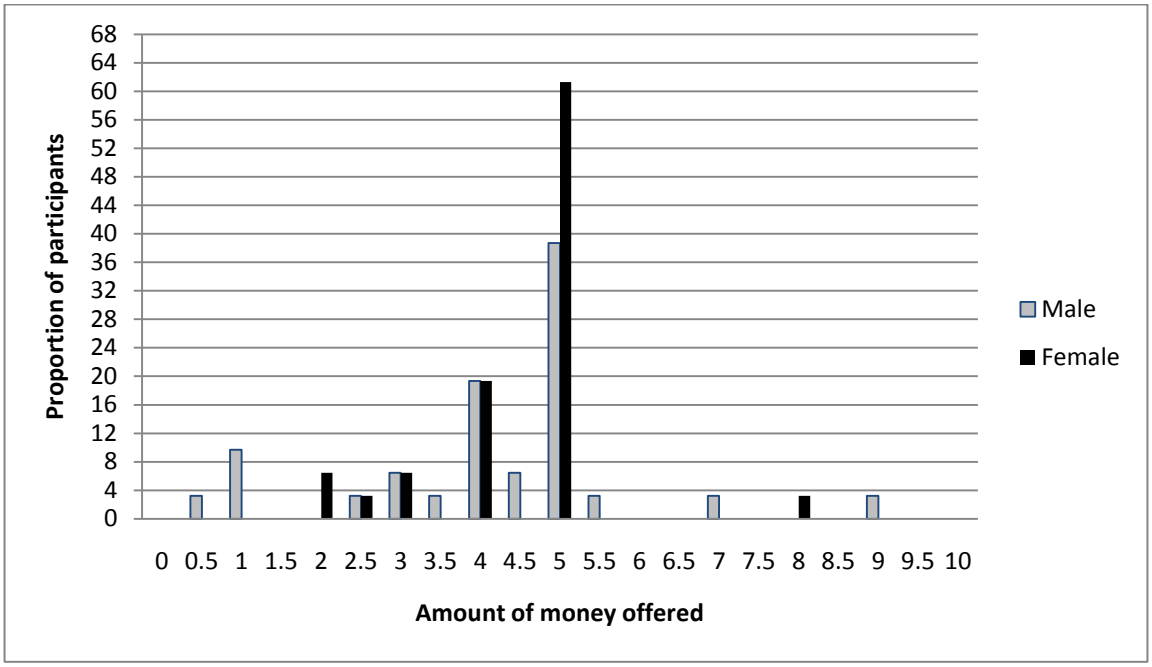

Figure 1: Round 1- Ultimatum Experiment

As can be seen by Figure 1, the amount most frequently transferred by both males and females is $5. Female participants on average have a tendency to offer more monetary contributions than their gender counterparts. The proportion of males and females transferring a

fair amount ($5) is 39% and 61%, respectively. Males offered an average of $4.19 and females offered an average of $4.50. A t-test shows the difference between male and female average contribution rate is not statistically different. Figure 1 shows that the proportion of male participants giving between $0 and $1.50 is 12.9%, while females did not make any offers of these amounts. This indicates that males are more likely to offer small amounts. Neither females nor males made any transfers of $9.50 and $10 in round one.

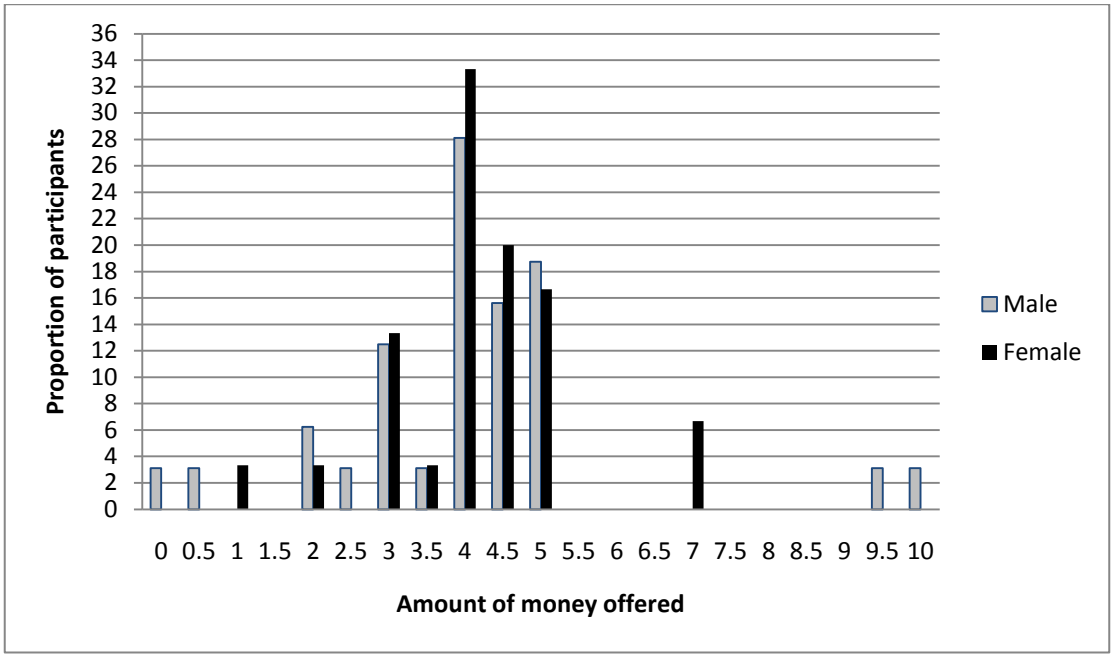

Figure 2: Round 2 – Ultimatum Experiment

Under the "watching eyes" scenario in the second round of the ultimatum experiment, the result remained consistent; females offered greater amounts than males. For round two, the amount most frequently offered is $4 in contrast to $5 for round one. The average offered was $4.08 and $4.15 by males and females, respectively.

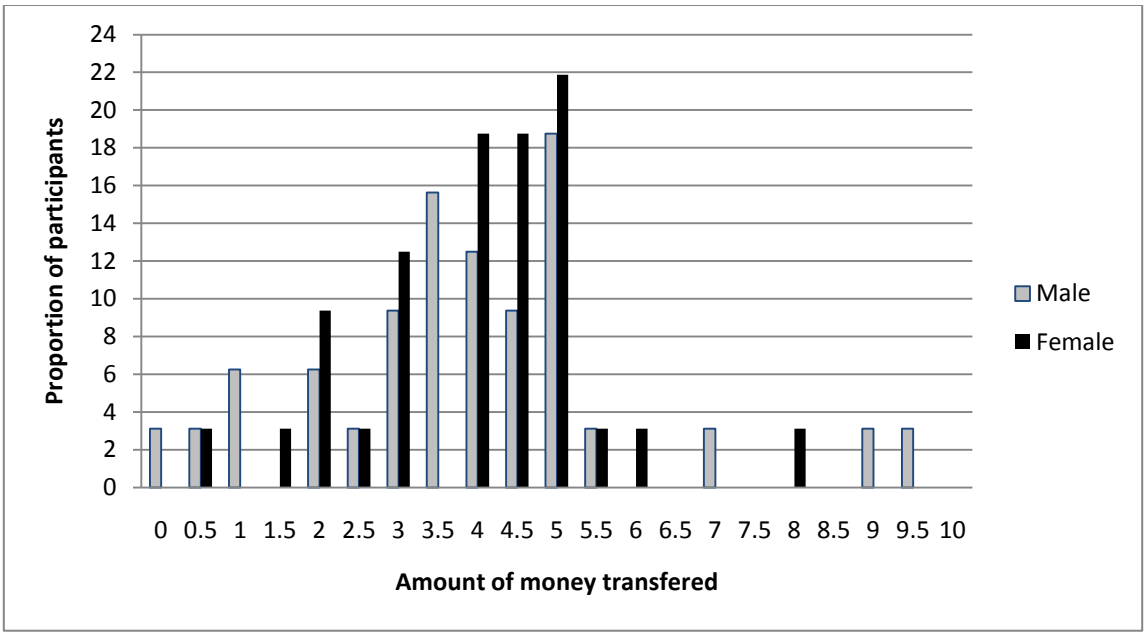

Figure 3: Round 3 – Ultimatum Experiment

In round three, monetary offers appear to be more dispersed between $0 and $10 in comparison to rounds one and two. The average amount of money offered by males was $3.94 and $4.00 by females. Neither males nor females made offers of $10. Table 1 presents the information as shown in the preceding graphs as well as the minimum, maximum, and average offer.

Table 1: Summary Ultimatum Experiment Results

	Round 1		**Round 2**		**Round 3**	
	Male	Female	Male	Female	Male	Female
% Rate Fair	61	39	17	19	22	19
Highest Offer	$ 8.00	$ 9.00	$ 7.00	$ 10.00	$ 8.00	$ 9.50
Lowest Offer	$ 2.00	$ 0.50	$ 1.00	$ 0	$ 0.50	$ 0
Ave. Offered	$ 4.50	$ 4.19	$ 4.08	$ 4.15	$ 4.00	$ 3.94

Table 2: Respondent Acceptance Rate

Female

Proposal	Accepted	Rejected
Fair	94%	6%
Unfair	49%	51%

Male

Proposal	Accepted	Rejected
Fair	91%	9%
Unfair	50%	50%

Out of a total of 188 observations, 55 participants proposed a fair exchange ($5). Of these, 94% of fair proposals made to a females were accepted (30 out of 32) and 91% of fair proposals made to males (21 out of 23) were accepted. The remaining 133 observations involved proposals that are considered unfair. Again, “unfair”, in this context, means that the allocation of money is unequal. Only about 50% of unfair trades were accepted, regardless of gender.

The smallest offer that was accepted was $1. Although some offered less than $1 (50 cents or 0), those offers were always rejected. A total of 15 people offered more to their respondents than they kept for themselves. Of these offers, 3 were rejected and 12 were accepted. Ironically, the most unequal trade that was accepted involved a proposer who gave the full $10 to their respondent.

In contrast to the ultimatum game, the dictator experiment does not involve a respondent needing to accept or reject the proposal. The participant simply indicates the monetary quantity that he/she is willing to offer to a hypothetical recipient. Figure 4 shows the results from Round one of the dictator experiment.

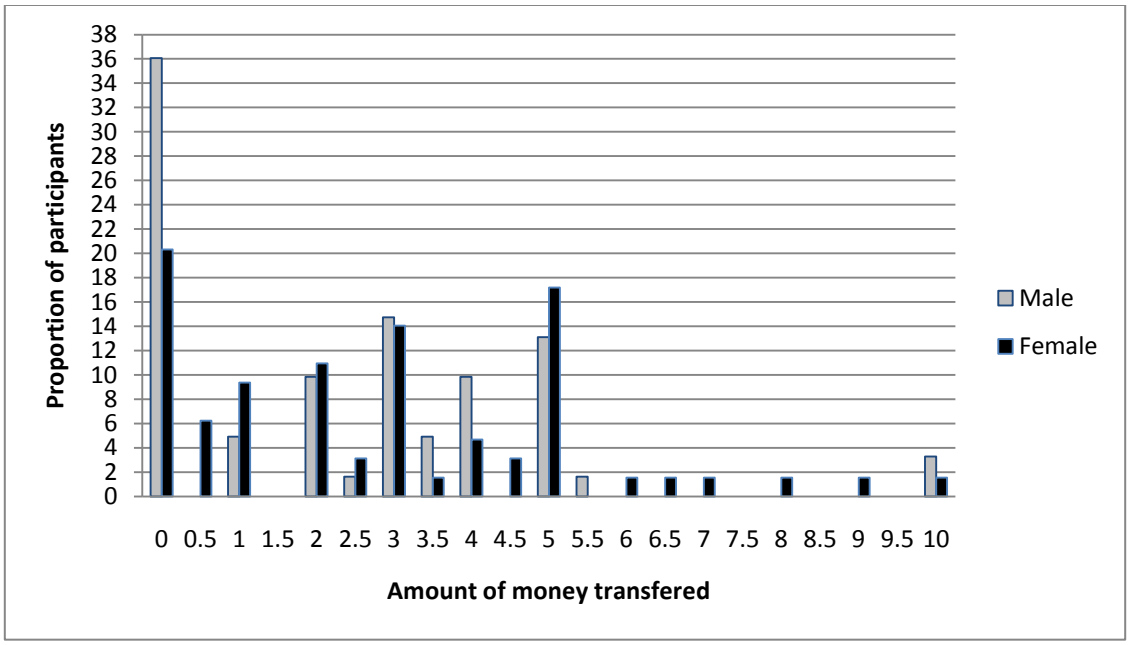

Figure 4: Round 1- Dictator Experiment

The percentage of dictators that chose the dominant strategy of transferring $0 is 36% and 20% for males and females, respectively. Unlike the ultimatum experiment the distribution of monetary offers is concentrated below the level of equality. Overall, as shown in the graph, female participants had a greater tendency to offer amounts greater than $5. Males offered an average of $2.37 and females offered an average of $2.81. As can be seen in Figure 5, the results from round two coincide with round one.

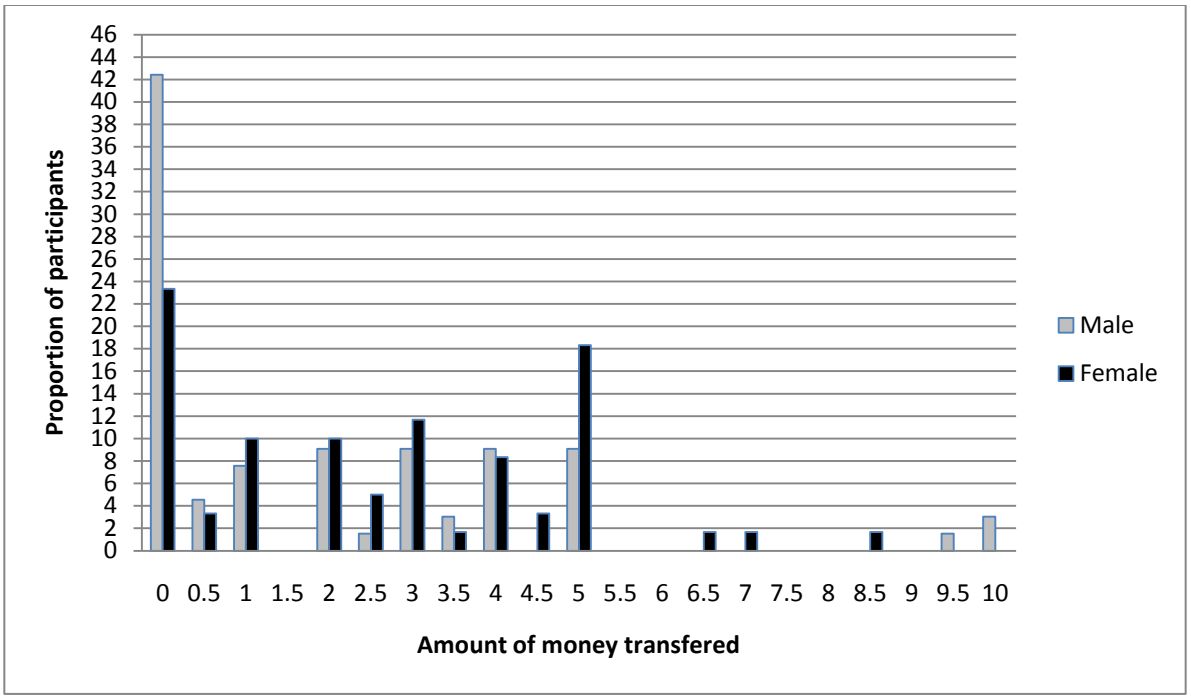

Figure 5: Round 2- Dictator Experiment

Contrary to expectations, creating an environment in which the participant feels observed increased the percentage of participants who chose to offer monetary quantities below the fair level. Although it worked in other studies, it is also possible that the "watching eyes" did not create a watched environment in this experiment (Rigdon et al., 2009). About 42% of males and 23% of females chose not to offer any money at all. The average money offered by males was $1.96 and $2.62 by females, a substantial decrease from round one.

The distribution of the money offered in the third round can be seen in Figure 6.

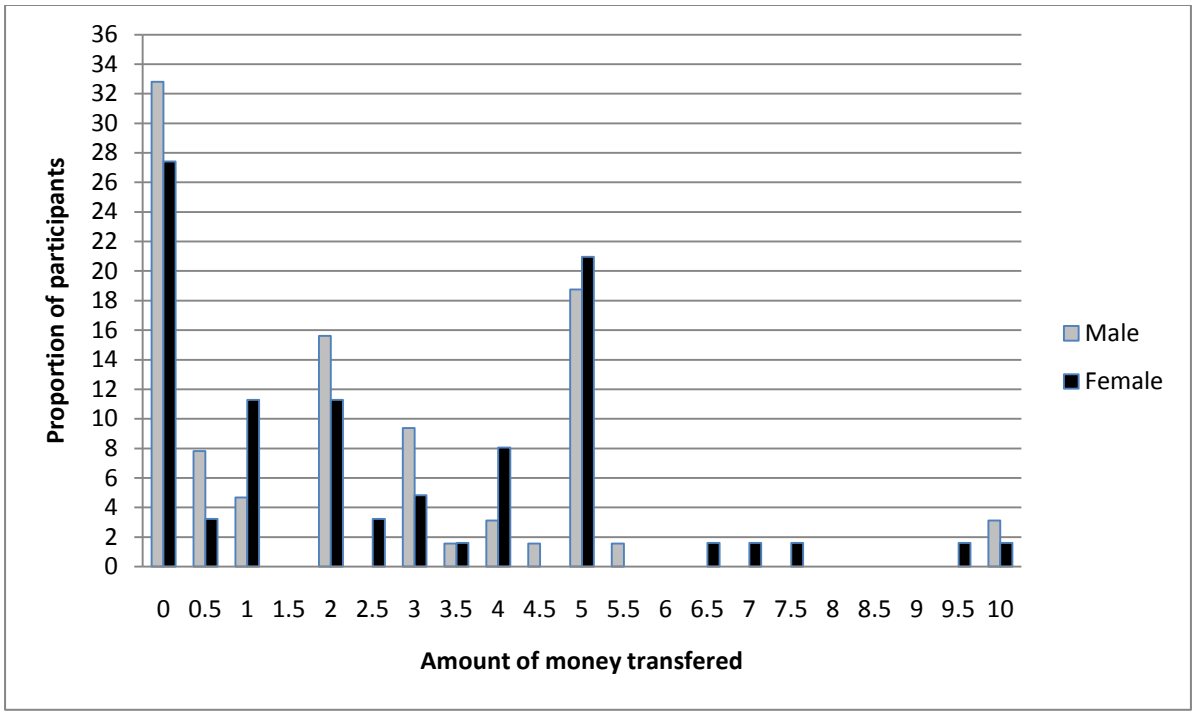

Figure 6: Round 3- Dictator Experiment

Throughout the three rounds of the dictator experiment most participants chose to offer less than $5, while under the ultimatum game participants were more concerned about an equal distribution of funds. In both experiments, females had a tendency to offer a greater amount of funds.

It can be observed that there is a difference in behavior between the ultimatum and dictator game. People generally seek to maximize their utility in the dictator game and this can be due to the fact that there is no risk of the offer being rejected by the respondent. On the other hand, the second most frequently offered amount in the dictator game was $5, which reveals that altruism was a part of the economic decision for some people. Table 3 presents the information as shown in the preceding graphs as well as the minimum, maximum, and average offer.

Table 3: Summary Dictator Experiment Results

	Round 1		Round 2		Round 3	
	Male	Female	Male	Female	Male	Female
% Rate Fair	17	13	18	9	20	19
Highest Offer	$ 10.00	$ 10.00	$ 8.50	$ 10.00	$ 10.00	$ 10.00
Lower Offer	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
Ave. Offered	$ 2.81	$ 2.37	$ 2.62	$ 1.96	$ 2.66	$ 2.27

The following table reports the Eviews regression results on the effect of gender, experience, and social pressure in dictator and ultimatum games. Social pressure is proxied by the "watching eye" treatment. The effect of this treatment is measured by the coefficient in round two. The effect of experience is measured by the coefficient of round three. The role of gender is represented by the dummy variable PG. Approximately 13.4% of the variation in giving is explained by the independent variables.

Table 4: Statistical Test Results

Dependent Variable: **Give**
Number of Observations: 562

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Probability**
Constant	4.111425	0.223201	18.42032	0.0000
Dictator Game	-1.706474	0.192990	-8.842301	0.0000
Female	0.422779	0.182447	2.317275	0.0209
Round2	-0.295171	0.223188	-1.322520	0.1865
Round3	-0.270570	0.223505	-1.210580	0.2266

R-Squared	0.134033	Mean dependent var	2.993932
Adjusted R-squared	0.127814	S.D dependent var	2.313885
S.E. of regression	2.160958	Akaike info criterion	4.387837
Sum squared resid	2601.044	Schwarz criterion	4.426374
Log likelihood	-1227.982	Hannan-Quinn criter	4.402882
F-statistic	21.55288	Durbin-Watson stat	1.941166
Prob(F-statistic)	0.000000		

Results from the regression show evidence that gender influences the amount offered. Females offered $4.53 on average whereas males offered $4.11 which indicates that females are more generous than males in the ultimatum game offering on average 42 cents more than males. Similarly, in the dictator game females offered on average 41 cents more than males. Females offered $2.82 and males $2.40 in the dictator game. These results are statistically significant at a 5% level.

The regression also shows that the type of game has a significant effect on the amount offered. On average, participants offered $1.71 more in the ultimatum game than in the dictator game. The more generous giving behavior observed in the ultimatum game may be due to fear of rejection rather that to altruism.

Table 5: T-test: Dictator Experiment

	Round 1	Round 2	Round 1	Round 3	Round 2	Round 3
Sample size	125	125	125	125	125	125
Mean	2.596	2.72	2.596	2.42	2.272	2.42
	Round1 vs Round 2		**Round 1 vs Round 3**		**Round 2 vs Round 3**	
t-test	1.0803		0.5762		0.4894	
p-value	0.281		0.565		0.625	

Table 6: T-test: Dictator Experiment: Males vs. Females

	Round 1		Round 2		Round 3	
	Male	**Female**	**Male**	**Female**	**Male**	**Female**
t-test	1.672		1.582		0.724	
p-value	0.097		0.116		0.47	
Sample size	65	60	66	59	64	61
Mean	2.25	2.97	1.96	2.62	2.27	2.58

Table 7: T-test: Ultimatum Experiment

	Round 1	Round 2	Round 1	Round 3	Round 2	Round 3
Sample size	62	62	62	64	62	64
Mean	4.346774	4.112903	4.346774	3.96875	4.112903	3.96875
	Round1 vs Round 2		**Round 1 vs Round 3**		**Round 2 vs Round 3**	
t-test	0.8453		1.2971		0.4765	
p-value	0.3996		0.1971		0.6346	

Table 8: T-test: Ultimatum Experiment: Males vs. Females

	Round 1		Round 2		Round 3	
	Male	**Female**	**Male**	**Female**	**Male**	**Female**
t-test	0.817		0.177		0.139	
p-value	0.418		0.86		0.89	
Sample size	31	31	32	30	32	32
Mean	4.194	4.5	4.08	4.15	3.94	4

In the dictator game under the "watching eyes" scenario participants offered slightly less in round two in comparison to round one. However, the t-test of the differences in the means between these rounds indicates no significant difference at a 95 % confidence level. Thus, the treatment variable, in this case, did not induce participants to be more cooperative. The mean is $2.59 for round one and the mean is $2.42 for round three. The resulting t-test indicates that there was only a slight change in behavior throughout the rounds which is not significant at a 5% significance level. Therefore, it can be said that there was no experience gained in the development of the experiment.

The t-test for males and females in round one and two for the dictator game indicates there is a marginally significant difference in giving behavior between males and females. Women are more generous than men. However the difference between male and female giving rates is not significant in round three of the dictator experiment or in any round of the ultimatum experiment.

In the ultimatum game the t-test indicates no significant difference between the mean from round one and two. This parallels what was found in the dictator game. The "watching

eyes” did not affect behavior. The mean from round one is $4.34 and $4.11 for round two; it can be observed that there is a slight difference in behavior but instead of encouraging participants to be more cooperative it appears to stimulate the opposite effect. In addition, the regression shows that the effect of the “watching eyes” treatment in round two did not differ between males and females. The mean was $4.34 for round one and $3.96 for round three. Thus, the t-test of the difference in the means between these rounds indicates that behavior remained roughly unchanged.

CHAPTER 5: CONCLUSION

This research looked at gender-related inequality aversion, altruism and the effect of gender on decision-making. A triple-anonymous design was employed in combination with ultimatum and dictator experiments. Gender differences in altruism and inequality aversion were examined when social pressures are removed. In addition, a visual cue was incorporated into the experiment to test how sensitive altruism is to social pressure. This social cue was expected to increase giving behavior by making people feel that someone was watching. The ABA experimental design allows testing any effect of social pressure as well as the effect of experience gained throughout the experiment.

The results obtained in this study show that there is a significant difference in giving between games. In the dictator game participants are less inclined to offer higher amounts than in the ultimatum game. This result is expected since there is a risk that the amount offered can be rejected in the ultimatum game. Therefore people are more selfish in the dictator game. Contrary to the results obtained in previous literature the social cue “watching eyes” did not, in this design, affect giving behavior. This could be explained by the fact that the “watching eyes” were displayed on a screen in front of the room instead of on a sheet of paper immediately in front of the subjects. The added distance from the “watching eyes” may have limited the sensation of being monitored. Altruism does seem to be a factor in giving decisions. The most important finding is that the degree of altruism expressed does vary depending on gender. Women are likely to give larger amounts than men. In addition, women are slightly more likely to accept fair

proposals and slightly less to accept unfair proposals. This indicates that women show more inequality aversion than men.

One unique point of this thesis was to eliminate any need to identify oneself to the experimenter (as when requesting monetary payment in other experiments). This is the essence of the "triple-anonymous" experimental design. A consequence of the hypothetical nature of monetary transactions in this experiment is that it eliminates social pressure exerted by the experimenter on the subjects. One of the reasons why this study obtained different results than previous ones could be that it was a hypothetical economic experiment that did not involve monetary transactions. It may be that people are not entirely honest about how much they are willing to give to others. Another reason why different results were obtained may be related to the large proportion of Hispanics in the city where the study was conducted. Like gender, race and ethnicity may affect giving behavior. This could be a topic for future research.

If gender plays a role in inequality aversion and altruistic behavior, this could produce significant economic consequences. For example fundraisers for charity have come to realize the substantial giving potential of female donors and are designing sex specific solicitation strategies. Policy makers have noted sex differences in philanthropy. Women tend to be more responsive to the need of charitable giving. Such differences could affect economic models, data analyses and research methodologies if altruism is a factor in decision making (Andreoni & Vesterlund, 2001).

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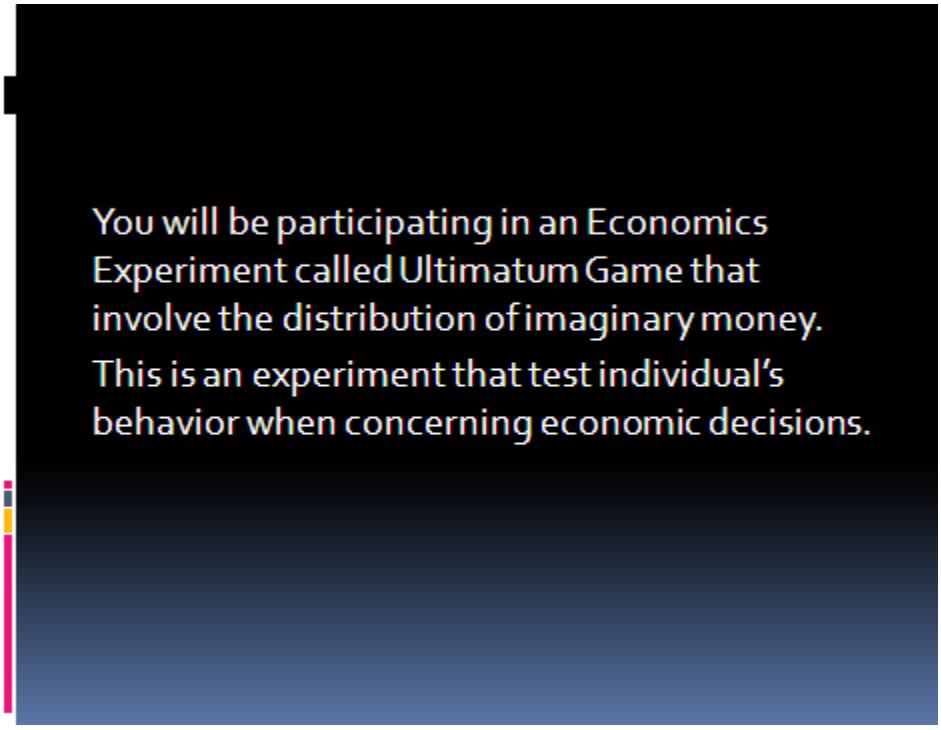
APPENDIX A: POWERPOINT PRESENTATION



Instructions

The purpose of the game is for one group of students to propose a monetary division, and the other group to accept or deny the proposed division.

- The classroom will be divided into two groups.
- One group will be assigned as Proposers and the other as Respondents.
- The proposer will determine how the money will be divided.
- The respondent will either accept or reject the division.
- The game will consist of three rounds.
- Steps will be repeated for every round.

Round 1

➢ Proposers:

Out of 10 dollars:

- Write the amount of money that you will keep and the amount that you will give, all on increments of 50 cents.
- Keep in mind that somebody from the respondent side is going to receive the offer but you are not going to be able to know who this person will be.
- After writing your decision, place the index cards on the box located at the desk.

Round 1

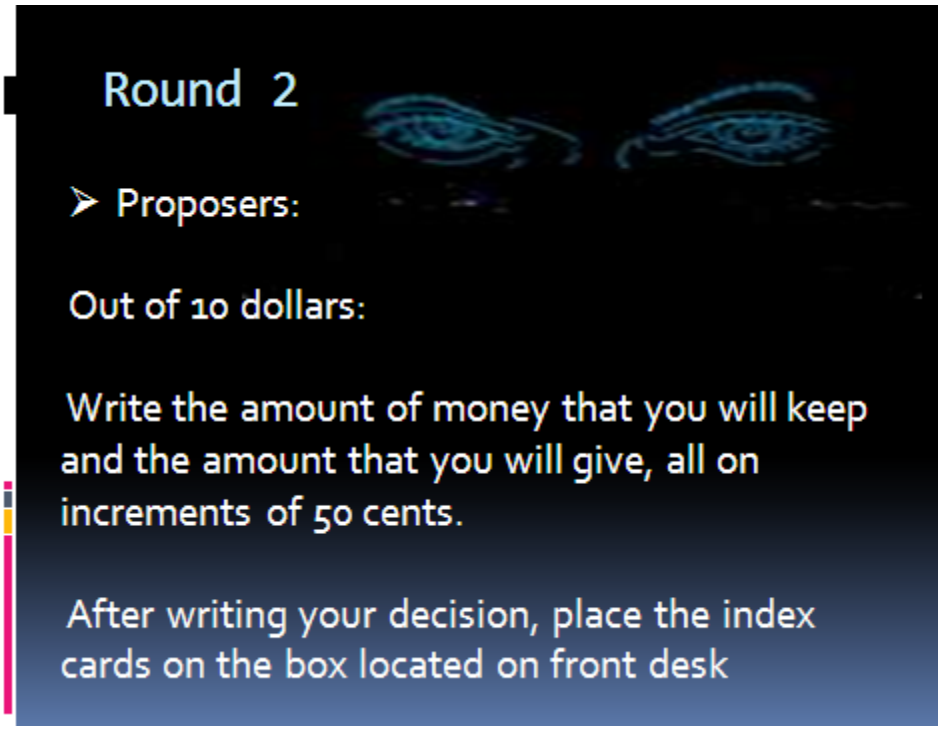
- Respondents:

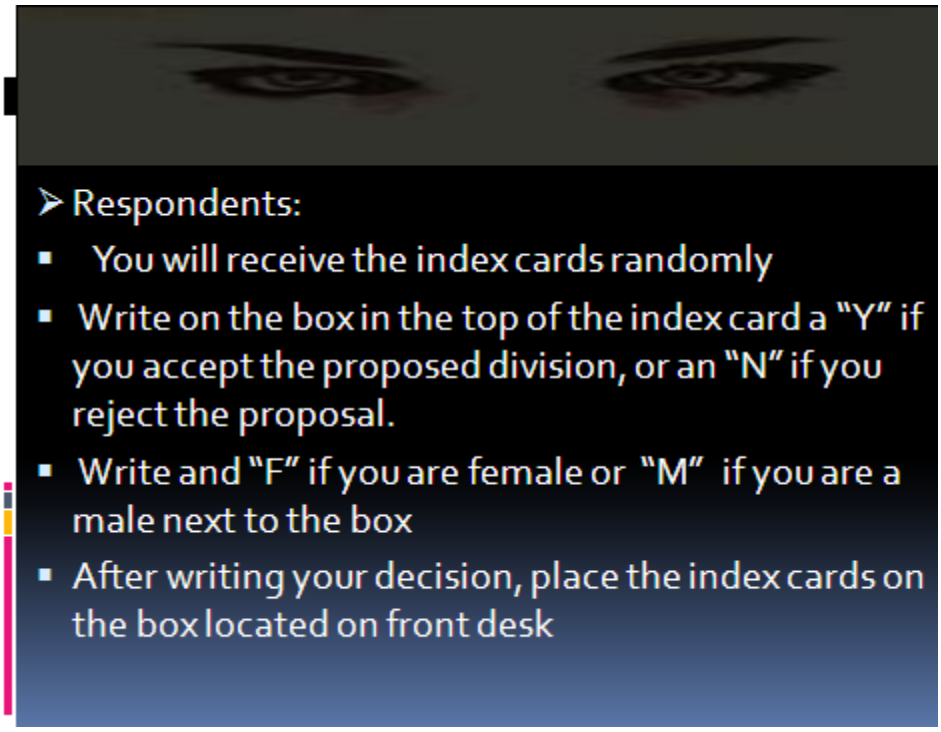
- You will receive the index cards randomly.

- Write on the box in the top of the index card a "Y" if you accept the proposed division, or an "N" if you reject the proposal.

- Write an "F" if you are female or "M" if you are male next to the box.

- After writing your decision, place the index cards on the box located on front desk


Round 2
Proposers:
Out of 10 dollars:
Write the amount of money that you will keep and the amount that you will give, all on increments of 50 cents.
After writing your decision, place the index cards on the box located on front desk


Respondents:
You will receive the index cards randomly
Write on the box in the top of the index card a "Y" if you accept the proposed division, or an "N" if you reject the proposal.
Write and "F" if you are female or "M" if you are a male next to the box
After writing your decision, place the index cards on the box located on front desk

Round 3

- Proposers:

Out of 10 dollars:

- Write the amount of money that you will keep and the amount that you will give, all in increments of 50 cents.
- After writing your decision, place the index cards on the box located on front desk.

Round 3

- Respondents:

- You will receive the index cards randomly.
- Write on the box in the top of the index card a "Y" if you accept the proposed division, or "N" if you reject the proposal.
- Write "F" if you are female or "M" if you are male next to the box.

- After writing your decision, place the index cards on the box located on front desk.

Thank you all for your participation.

Have a nice day!

DICTATOR GAME

The purpose of this game is to identify the student's behavior when confronted with economic decisions.

- You are going to participate in a series of games consisting of the distribution of imaginary 10 dollars.
- You each will receive an index card which contains the space to write your monetary division.
- The game will be repeated for a second and third time.

Round 1

Out of 10 dollars:

- Write the amount of money that you will keep in the space labeled "I will keep:"
- Write the amount of money that you will be giving to the other student in the space labeled "I will give." All on increments of 50 cents.
- After writing your decision, place the cards in the box located in the front desk, take your seat and wait for the next round.

Round 2

Out 10 dollars:

- Write the amount of money that you will keep in the space labeled "I will keep:"
- Write the amount of money that you will be giving to the other student in the space labeled "I will give." All on increments of 50 cents.
- After writing your decision, place the cards in the box located in the front desk, take your seat and wait for the next round.

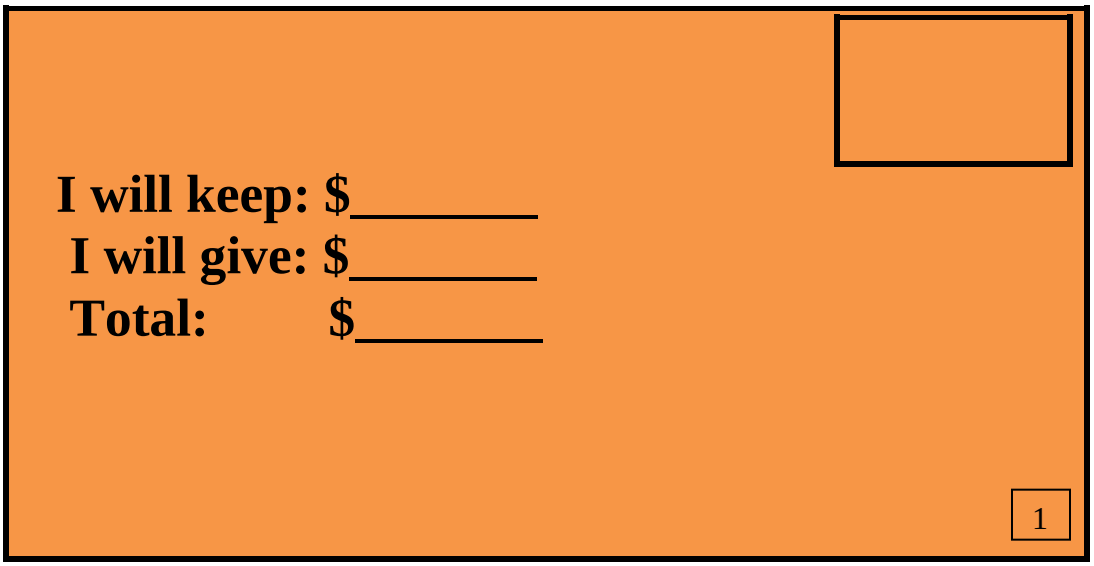
Round 3

- Write the amount of money that you will keep in the space labeled "I will keep:"
- Write the amount of money that you will be giving to the other student in the space labeled "I will give."
- After writing your decision, place the cards in the box located in the front desk, take your seat and wait for the next round.

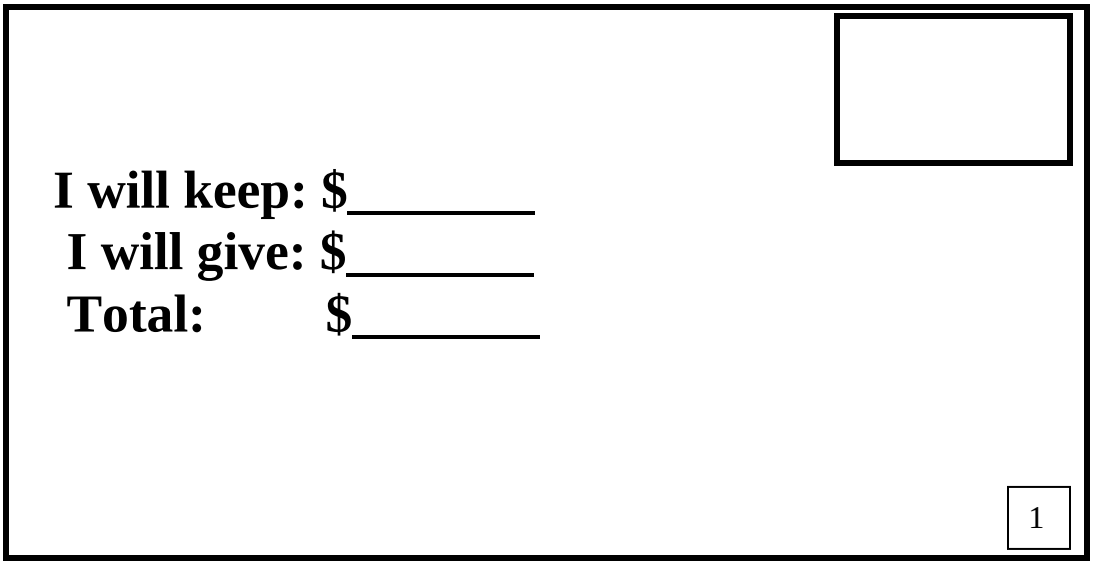

Thank you all for your participation.
Have a nice day!

APPENDIX B: INDEX CARD

Index card for Male:



Index card for female:



APPENDIX C: DATA

Table C1: Dictator Proportions

	Round 1	%	Round 2	%	Round 3	%
0	35	28	42	33.6	38	30.4
0.5	4	3.2	5	4	7	5.6
1	9	7.2	11	8.8	10	8
1.5	0	0	0	0	0	0
2	13	10.4	12	9.6	17	13.6
2.5	3	2.4	3	2.4	2	1.6
3	18	14.4	13	10.4	9	7.2
3.5	4	3.2	3	2.4	2	1.6
4	9	7.2	11	8.8	7	5.6
4.5	2	1.6	2	1.6	1	0.8
5	19	15.2	17	13.6	25	20
5.5	1	0.8	0	0	1	0.8
6	1	0.8	0	0	0	0
6.5	1	0.8	1	0.8	1	0.8
7	1	0.8	1	0.8	1	0.8
7.5	0	0	0	0	0	0
8	1	0.8	0	0	0	0
8.5	0	0	1	0.8	0	0
9	1	0.8	0	0	0	0
9.5	0	0	1	0.8	1	0.8
10	3	2.4	2	1.6	3	2.4
Total	125	100	125	100	125	100

Table C2: Ultimatum Proportions

	Round 1	%	Round 2	%	Round 3	%
0	0	0	1	1.613	1	1.56
0.5	1	1.613	1	1.613	2	3.13
1	3	4.839	1	1.613	2	3.13
1.5	0	0	0	0	1	1.56
2	2	3.226	3	4.839	5	7.81
2.5	2	3.226	1	1.613	2	3.13
3	4	6.452	8	12.9	7	10.94
3.5	1	1.613	2	3.226	5	7.81
4	12	19.35	19	30.65	10	15.63
4.5	2	3.226	11	17.74	9	14.06
5	31	50	11	17.74	13	20.31
5.5	1	1.613	0	0	2	3.13
6	0	0	0	0	1	1.56
6.5	0	0	0	0	0	0
7	1	1.613	2	3.226	1	1.56
7.5	0	0	0	0	0	0
8	1	1.613	0	0	1	1.56
8.5	0	0	0	0	0	0
9	1	1.613	0	0	1	1.56
9.5	0	0	1	1.613	1	1.56
10	0	0	1	1.613	0	0
Total	62	100	62	100	64	100

Table C3: Dictator Male and Female Proportions

	Round 1				Round2				Round 3			
	Male	**%**	**Female**	**%**	**Male**	**%**	**Female**	**%**	**Male**	**%**	**Female**	**%**
0	22	36.1	13	20.3	28	42.4	14	23.3	21	32.8	17	27.4
0.5	0	0.0	4	6.3	3	4.5	2	3.3	5	7.8	2	3.2
1	3	4.9	6	9.4	5	7.6	6	10.0	3	4.7	7	11.3
1.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
2	6	9.8	7	10.9	6	9.1	6	10.0	10	15.6	7	11.3
2.5	1	1.6	2	3.1	1	1.5	3	5.0	0	0.0	2	3.2
3	9	14.8	9	14.1	6	9.1	7	11.7	6	9.4	3	4.8
3.5	3	4.9	1	1.6	2	3.0	1	1.7	1	1.6	1	1.6
4	6	9.8	3	4.7	6	9.1	5	8.3	2	3.1	5	8.1
4.5	0	0.0	2	3.1	0	0.0	2	3.3	1	1.6	0	0.0
5	8	13.1	11	17.2	6	9.1	11	18.3	12	18.8	13	21.0
5.5	1	1.6	0	0.0	0	0.0	0	0.0	1	1.6	0	0.0
6	0	0.0	1	1.6	0	0.0	0	0.0	0	0.0	0	0.0
6.5	0	0.0	1	1.6	0	0.0	1	1.7	0	0.0	1	1.6
7	0	0.0	1	1.6	0	0.0	1	1.7	0	0.0	1	1.6
7.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	1.6
8	0	0.0	1	1.6	0	0.0	0	0.0	0	0.0	0	0.0
8.5	0	0.0	0	0.0	0	0.0	1	1.7	0	0.0	0	0.0
9	0	0.0	1	1.6	0	0.0	0	0.0	0	0.0	0	0.0
9.5	0	0.0	0	0.0	1	1.5	0	0.0	0	0.0	1	1.6
10	2	3.3	1	1.6	2	3.0	0	0.0	2	3.1	1	1.6
Observations	61		64		66		60		64		62	
Total	$144.50		$180.00		$129.50		$157.00		$145.00		$165.00	
Average Donation	$2.37		$2.81		$1.96		$2.62		$2.27		$2.66	

Table C4: Ultimatum Male and Female Proportions

	Round 1				Round 2				Round 3			
	Male	**%**	**Female**	**%**	**Male**	**%**	**Female**	**%**	**Male**	**%**	**Female**	**%**
0	0	0.0	0	0.0	1	3.1	0	0.0	1	3.1	0	0.0
0.5	1	3.2	0	0.0	1	3.1	0	0.0	1	3.1	1	3.1
1	3	9.7	0	0.0	0	0.0	1	3.3	2	6.3	0	0.0
1.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	3.1
2	0	0.0	2	6.5	2	6.3	1	3.3	2	6.3	3	9.4
2.5	1	3.2	1	3.2	1	3.1	0	0.0	1	3.1	1	3.1
3	2	6.5	2	6.5	4	12.5	4	13.3	3	9.4	4	12.5
3.5	1	3.2	0	0.0	1	3.1	1	3.3	5	15.6	0	0.0
4	6	19.4	6	19.4	9	28.1	10	33.3	4	12.5	6	18.8
4.5	2	6.5	0	0.0	5	15.6	6	20.0	3	9.4	6	18.8
5	12	38.7	19	61.3	6	18.8	5	16.7	6	18.8	7	21.9
5.5	1	3.2	0	0.0	0	0.0	0	0.0	1	3.1	1	3.1
6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	3.1
6.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
7	1	3.2	0	0.0	0	0.0	2	6.7	1	3.1	0	0.0
7.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
8	0	0.0	1	3.2	0	0.0	0	0.0	0	0.0	1	3.1
8.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
9	1	3.2	0	0.0	0	0.0	0	0.0	1	3.1	0	0.0
9.5	0	0.0	0	0.0	1	3.1	0	0.0	1	3.1	0	0.0
10	0	0.0	0	0.0	1	3.1	0	0.0	0	0.0	0	0.0
Observations	31		31		32		30		32		32	
Total	$ 130.00		$ 139.50		$ 130.50		$ 124.50		$ 126.00		$ 128.00	
Average Donation	$ 4.19		$ 4.50		$ 4.08		$ 4.15		$ 3.94		$ 4.00	

CURRICULUM VITA

Carolina del Pilar Cerda was born in Mexico D.F, to Elvia and Jose Luis Cerda. She graduated from Universidad Autonoma de Chihuahua at Chihuahua, Chih, Mexico with a Bachelor of Business Administration in the Fall of 2004. After finishing the undergraduate degree she entered the Graduate School at the University of Texas at El Paso. As a graduate student, she worked as a Research and Teaching Assistant for the Department of Information and Decision Sciences at the University of Texas at El Paso.

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