The Role of Gender and Race in Cooperation and Trust: Experimental Examination of Identity Based Strategic Interaction

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ABSTRACT: Recent work in behavioral and experimental economics has focused on the role of identity in the choices individuals make in strategic settings. This study uses an experiment to examine group behavior along two dimensions of identity: gender and race. To this end, I employ a modified version of the prisoner's dilemma in which a player may cooperate with a certain trust level or defect. The instrument produces similar results to previous studies, however, identifying a partner's gender and race saliently with a name does not result in significant group behavior. Taking these findings and other similar recent works into account, I speculate that racial group behavior varies depending on the racial composition and attitudes of the population being observed.

1. Introduction

At the University of California San Diego flagship library, there is a recurring issue of laptop thefts. If a student needs to temporarily leave the area in which they are studying for whatever reason they are left to decide between three options: they may leave their laptop unattended, they may ask someone nearby to watch their laptop, or they may pack up their belongings and carry them around. In this simple example, the third option is the most costly since it requires a student to pack up and unpack their belongings for a short excursion. However, the other two options require a degree of trust. In the first case, an individual must trust that the other library patrons will not steal her belongings. In the second case, she must trust whomever she tasks with watching her belongings first to actually prevent a theft and second to not steal the belongings themselves.

In trusting another individual, the library patron in this story is making themselves vulnerable to another's actions based on beliefs about that other person (Bohnet, 2008). In the case of a total stranger, these beliefs must be based on very superficial information about the identity of the stranger such as race or gender. Both the identity of the stranger and that of the individual doing the trusting can play an important role in whether or not a temporary relationship of trust can be established in this scenario.

Trust is an important aspect of economic activity because a great deal of economic actions rely on some degree of trust between agents. Consider, for instance, a case where two parties must be involved in a simple contract. Each party is rendering some level of trust on the other to perform in this transaction. In many countries one participant in a contract failing to perform would be cause for legal action, but such action is costly in both time and resources, thus by entering into the agreement both parties are exposing themselves to a certain level of risk

determined by the probable actions of the other. The ability to trust another individual is also a key factor in social capital as defined by Bowles and Gintis (2002). Economic agents who do not trust each other may be more wary of engaging in business transactions or may take costly measures to reduce potential risk incurred by exposing themselves to untrustworthy agents. Both of these situations are clearly a friction to efficient economic activity. This idea has been demonstrated empirically by Knack and Keefer (1997) who use measures of various aspects of social capital from the World Value Survey and find that trust is strongly correlated with growth in 29 market economies examined.

Recent work in experimental and behavioral economics has been focusing extensively on the role of identity in behavior. Identity as defined by Akerlof and Kranton (2008) is a person's self-image or sense of self, the economic implications of which stem from how one's identity and identity relative to others influences decisions. As institutions such as the workplace become more diverse, understanding the complexities of individual decision making in the context of working with others becomes more and more important. In order to work effectively, workers of different identities must be able to cooperate with and trust their co-workers.

In this study, I examine two elements of identity, race and gender by using a modified continuous trust version of the prisoner's dilemma in which participants may choose a level to trust their partner once they choose to cooperate. The purpose is to examine how an individual's identity and the identity of their partner factors in to their trusting behavior – that is their willingness to expose themselves to the decisions of their partner. My experiment is run in two undergraduate economics classes at the University of California, San Diego. In keeping with the demographic characteristics of these classes and parallel works in the literature from which this

study is derived, I examine interactions between players who identify themselves as Asian or white only.

2. Previous Literature

The literature on trust and cooperation in economic experiments is extensive and various studies in the literature cover aspects relating to both gender and race. Both gender and ethnicity with respect to the individual and the partner have differing effects on behavior. Fershtman and Gneezy (2001) utilize a series of trust games to demonstrate that racial discrimination in Israeli Jewish society is entirely a male phenomenon – that is that women do not discriminate based on race. This result indicates that any examination of differences in strategic preference based on partner characteristics should examine gender and race. With this in mind, I first examine the literature related to gender.

2.1 Gender

A survey of experiments on gender preferences conducted by Croson and Gneezy (2009) finds that current studies on trust and gender are somewhat divided. Out of 17 studies examined in the survey, nine found men to be more trusting and six found men and women equally trusting[1]. Croson and Gneezy's examination of the various methodologies of the studies surveyed lead to the conclusion that women are more responsive to experimental conditions. Eckel and Wilson (2004) most clearly supports this interpretation of the various experimental results. In series of two person games, information about a partner is conveyed either with a photograph of the partner or by supplying a written name. With written information, the study finds that men are more trusting than women but women are more trusting than men with

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[1] The remaining two found women more trusting.

photographic information. In both cases the characteristics of the partner played a significant part in the decision to trust. It should be noted that women's behavior was found to be more variable than men's in these studies.

Buchan, Croson, & Solnick (2008) also utilize names as a salient way of identifying the gender of a partner and found men to be more trusting than women. What is significant about this study is that it decomposed trusting and trustworthy behavior. Once again, trusting behavior is the willingness of an individual to expose themselves to the actions of others while trustworthy behavior is defined to be rewarding trust through reciprocation. Overall, men were found to be more trusting in a situation in which participants sent money to a receiver with the expectation of some return; that is that they were more willing to expose themselves to other's decisions while women were more trustworthy. This experiment also found that men were more trusting partly due to expectation of some return in this setting. Dreber and Johannesson (2008) also put participants in anonymous pairs with one being a "sender" and the other being the "receiver". However, in their experiment, the sender can send a message to the receiver and has an incentive to use the message to deceive the receiver. The study found that men and women trust equally but men were more likely to use the message to deceive their partner for monetary gain.

With respect to cooperation, Croson and Gneezy (2009) also finds that women are more sensitive to experimental conditions. Ortmann and Tichy (1999) explores cooperation differences between men and women in repeated prisoner's dilemma type games. Women were found to cooperate more than men in the first round but over time their cooperation rates declines. In the final round the difference in cooperation rates between genders disappeared entirely. The most significant result from this study was that the gender composition of the subject pool had a large effect on cooperation rates for women – which once again falls in line with the theory that

women's behavior is highly dependent on the conditions of the experiment. Women were also found to be more cooperative in mixed gender groups than in groups consisting entirely of women, a result which would indicate that gender variation may be an important factor of cooperation.

These results are consistent with older experiments which show that both genders believe that men are more likely to defect in prisoner's dilemma settings (King, Miles, & Kniska, 1991). Orbell, Dawes, and Schwartz-Shea (1994) utilize a prisoner's dilemma augmented with the choice to play or not play to examine the relationship between trust and cooperation. The study found that women are more trusted to cooperate by both genders.

Translating the meaning of these experimental results into a real world setting can be difficult. Andersen, et al. (2008) may provide on explanation in results from a field study which shows that women are generally more socially minded than men. This social mindedness presents itself in the study as demonstrating a greater provision of public goods.

2.2 Race

The issue of race and race relations is one that has been studied extensively in the literature. Bertrand and Mullainathan (2003) demonstrate that racial inferences can be drawn and acted upon from as little as a name. In a field experiment, resumes were sent out in response to various job offers; the results show that employers were significantly less likely to call back for resumes which had a name which identified a black applicant.

Obviously the social interactions between racial groups are complicated and very nuanced and trust between groups should not be expected to be any different. Alesina and Ferrara (2002) uses data from the General Social Survey (GSS) to look at the factors that come

into play in interracial trust. The most significant factor in reducing trust is whether or not the group has suffered a recent trauma or has been historically discriminated against such as certain minorities and, to a lesser extent, women. An important result which I will discuss later is that levels of trust vary greatly by region in the United States with southern and east coast states exhibiting less trust and the Pacific Northwest exhibiting more trust. Alesina and Ferrara also note that regions which exhibit less trust are more heterogeneous with respect to whites and blacks and that these regions have a significant history of racial tension. Indeed, more racially fragmented communities were found to exhibit less trust especially when the community harbored strong anti-race mixing feelings. It is also noted that an experimental study by Glaeser, et al. (2000) has brought into question the interpretation of the GSS trust questions, finding that they are more predictive of trustworthy behavior than trusting behavior. However, this experiment was conducted with the very specific sample of Harvard University undergraduates and so the ubiquity of the claim is still in question. For the purposes of this paper, I will use the GSS survey questions on trust only as a check of behavior which will be discussed more later.

The Glaeser et al. (2000) study also found that trustworthiness declined when partners were of different races or nationalities. Such findings are mirrored in Eckel and Wilson (2002) which uses a two person sequential trust game in which participants are given a picture of their partner. Trust attitudes in this study were significantly related to the gender and race of the partner as well as other inferences which were made from the pictures such as the partner's friendliness. This result is important to the model discussed in this paper that individuals utilize characteristic cues about their partner to formulate a strategy.

Bohnet and Zeckhauser (2004) utilize an experiment to measure trust and monitor the participant's minimum acceptable probability of getting a good outcome in the experiment. In

the survey section of the experiment, roughly two-thirds of participants responded that they trust both whites and minorities while slightly fewer than 20% trusted only minorities and slightly less than 15% trusted only whites. On the surface this result contradicts other experiments which find trust between races diminishes. It is possible that the subjects did not want to appear racist and so responded inaccurately on the survey or that the population from which they were sampled is composed in such a way that there are not strong racial attitudes.

Like trust, cooperativeness in social dilemmas has a racial component. This result has been known for several decades now. The literature in social psychology, specifically Wilson and Kayatani (1968), examine the effect of a partner's race on outcomes in a prisoner's dilemma game. The study found that participants were far more cooperative with ingroup partners than with outgroup partners. This result and more recent ones such as Chen, et al. (2010) are the basis for the experiment conducted in this paper. Chen, et al. utilize various prisoner's dilemma experiments conducted at the University of Michigan and UCLA with Asian and white participants to test the effect of racial and institutional priming on cooperation. In the control groups for this study, Asians at UM were found to be more likely to cooperate with other Asians but there was no significant group favoritism in Whites at UM or in either group at UCLA. Implications of this relevant to my experiment are discussed later.

There is also field evidence which points to the conclusion that individuals utilize characteristics about their partner to make inferences which are used in formulating a strategy. List (2006) uses data collected from the television show *Friend or Foe?* in which participants play a high stakes variant of the prisoner's dilemma and are allowed to select their partner. The study finds that contestants on the show discriminate based on statistical inferences made from observable characteristics of their potential partners. For instance, women, whites, and non-

Californians are more likely to be picked due to the belief that such partners will lead to a higher return as they are perceived as being more cooperative. List points out that in the setting of the show, these beliefs are in fact statistically correct.

2.3 Identity

All of these results can be boiled down to the concept that the identity of a partner relative to an agent's own identity plays a significant role in that agent's formulation of a strategy. The basis for this theory emerged several decades ago in social psychology literature. Tajfel and Turner (1979) model a psychological basis for discrimination in which an agent models themself and others based on observable identifiable factors. This theory of behavior, known as social identity theory, highlights three components of social identity: categorization, identification, and comparison. The first two components involve individuals categorizing themselves and others by certain identifiable factors. Such identifiable factors could potentially be incredibly numerous and include characteristics such as age, race, gender, occupation, hobby, etc. (Hewstone, 1996). The third aspect of social identity involves an individual associating themselves with certain groups based on the identity they have constructed and then comparing themselves with others. A member of an ingroup would be another individual who exhibits a similar identifiable factor whereas members of the outgroup would be those who exhibit opposite factors. For example, in the context of gender: a male would consider another male to be ingroup whereas a female would be outgroup. The advantage of the experimental setting is that the signaling of these characteristics between agents can be controlled.

While the notion of identity was formalized in the social psychology literature, previous theoretical economics literature has also touched on the subject. Specifically, Phelps (1972)

outlines a theoretical statistical model for employers to use observable characteristics (race and gender) to make inferences about the productivity of potential employees. In this model, an employer may observe certain groups to have lower instances of high-skill workers and thus make inferences about the abilities of workers from that group. This theory, although developed before social identity theory was formalized, does exhibit similar characteristics as employers are utilizing the group in which their perspective employee is identified to attempt to predict productivity.

Recent work in experimental economics has touched on the concept of identity as an integral part of economic actions. Andreoni and Petrie (2004) find that knowing the identity of a partner or partners can increase public good provision in an experimental setting, a result tangentially related to this experiment which will be discussed later. More specifically, group identity has been shown in experiments to play a role in decision making in economics experiments as participants matched with ingroup partners report and demonstrate a higher concern for charity and altruism, are more likely to reward and less likely to punish, and are more likely to attempt to maximize joint payoff than when matched with an outgroup partner (Chen & Li, 2009).

3. Experimental Design

The primary goal of this study is to examine the role gender and race play on cooperation and trust with a variety of partners. Like Chen et al. (2010), I examine interactions between Asians and Caucasians only when discussing race firstly so that there is a level of comparability between the two studies and secondly to reflect the racial demographics of the population being

studied at the University of California San Diego which is racially 45% Asian[2] (University of

California, San Diego, 2010). Racial composition of the subject pool can be found in the

Appendix.

3.1 Experimental Instrument (The Game)

To test racial and gender interactions, I utilize a continuous trust version of the prisoner's

dilemma based on one outlined by Blonski and Probst (2008). In this version of the prisoner's

dilemma, players decide whether or not to cooperate or defect but those who cooperate also

decide a trust level $\tau \in (0,1]$. As τ_i increases, the payout for player i increases if both cooperate

but decreases at a greater rate if player $-i$ defects. Multipliers α and β are included in the payout

vectors to ensure that defecting is not a strictly dominant strategy and for the convenience of the

experimental setting.

3.1.1 Theoretical Aspects

Like the prisoner's dilemma, this game is symmetric with two players with the set of

players being {i, $-i$} where $-i$ is the player who is not player i. In the stage game described, the

action set for a given player is defined as $A_i := (0,1] \cup \{D_i\}$. That is, a player may choose either

to defect or cooperate with a certain trust level in the form of a coefficient. The payout vectors

for the game for player i are defined below with π_i denoting the payout from a given strategy set.

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[2] It should be noted and is obvious from data collected discussed in the Results section that Economics classes at UCSD have a much higher proportion of Asian students and a much lower proportion of Caucasian students than is representative of the rest of the campus.

	C_{-i}	D_{-i}
C_i	$\pi_i = \alpha\tau_i$	$\pi_i = -(1+\beta)\tau_i$
D_i	$\pi_i = \tau_{-i}$	$\pi_i = 0$

In the case of both players cooperating (CC), player i's payout vector is determined by their own level of trust multiplied by some $\alpha \in (0,1)$. The multiplier α ensures that for any given $\tau_i = \tau_{-i}$ with $\beta = 0$ there is always an incentive to defect. Additionally, a $\beta > 0$ provides additional incentive to defect by increasing the cost to player i of a C_iD_{-i} outcome. Just as in the prisoner's dilemma, the outcome DD leads to a Pareto inefficient outcome in which neither player gains or loses anything.

An important distinction between this game and the standard Prisoner's dilemma is that D is not a strictly dominant strategy. In situations where player i exhibits a low trust level ($\tau_i < \alpha$), the best response of player $-i$ is to cooperate with maximum (or high) trust. This creates an incentive for players who are unsure of the other player's actions to cooperate if α is sufficiently high. Theoretically, this feature implied that implementation of this game should see higher levels of cooperation than that of the standard prisoner's dilemma.

3.1.2 Implementation

For this experiment, I set $\alpha = .75$ somewhat arbitrarily so that players would not be too incentivized to defect but as to maintain the prisoner's dilemma aspect of the game. This α was picked so that the incentive to defect would be significantly lower than that of the standard prisoner's dilemma since the only case in which a defection response would be rational would be if the partner exhibited a very high level of trust. However, since this game has not been widely

used in an experimental setting, it would be prudent for future studies to examine the effect of manipulating this parameter.

The loss factor β is set so that $1 + \beta = \varepsilon$ where ε is the player's initial endowment so that in the experimental setting a player can experience zero gains without the possibility of incurring losses. For this experiment, players start with an initial endowed payout of 2 extra credit points and so $\beta = 1$.

3.2 Experimental Procedure

For this experiment, I utilize students in two undergraduate economics courses at UCSD: Microeconomics B (ECON 100B) and Economics of Immigration (ECON 114). The ECON 100B class will henceforth be referred to as the "core" class group while the ECON 114 class will be referred to as the "elective" class group. The experiment took place during class time and students received their payout in the form of extra credit points for the class they were enrolled in. All students were informed several days prior to the experiment that they would have the opportunity to participate in an economics experiment and that they would be able to earn extra credit points. For the purpose of the experiment, participants were led to believe that the amount of extra credit they received for participating would be based on the outcomes of the game, however due to the nature of the experiment and the payout, all participants received the same payout in the end[3].

The experiment took place in two stages conducted on different days approximately one week apart. During each stage, the game was explained both in writing and verbally and proctors

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[3] All subjects receiving a uniform payout and deception were required by the IRB due to the experiment's use of extra credit points as incentive. Every effort was made during the experiment to lead the subjects to believe that their payout was determined by the outcome of the games they were playing.

answered clarifying questions about instructions as they arose. In the interest of simplicity, the game was simplified so that players decided between discrete levels of τ so that their options, denoted as τ^*, were as follows: $\tau^* \in \{0, .1, .2, .3, .4, .5, .6, .7, .8, .9, 1\}$ with $\tau^* = 0$ being equivalent the defect option. The game was framed as an investment game with the trust levels framed as investment amounts in percentages. As previously mentioned, players are endowed with 2 extra credit points for each game. For a complete listing of payouts with τ^* and this endowment scheme, see the instructions in the Appendix.

In one stage (henceforth referred to as the anon stage), participants were told they were playing the game once with an anonymous partner about whom they would be given no information. In the other stage (henceforth referred to as the name stage), participants were told they would be playing the four independent one-shot games with four different individuals and were given a first and last name for each one. The first name is a salient way of identifying the gender of the partner while the last name is a salient way of identifying the race. In the interest of simplification to avoid intergroup conflicts amongst different Asian ethnicities and in the spirit of Chen et al. (2010), I use only Chinese names for the Asian name treatment.

In the elective class group, the anon stage was conducted first and the name stage conducted one week later. Stage order was reversed for the other class. The separation of one week between stages was intended to elicit more honest responses for a control comparison between an anonymous partner and a partner whose name and gender could be identified.

In each stage, the participant signed a consent form with their name and student ID number which allowed for the identification of individuals across the two stages for a within subject comparison. At the conclusion of whichever stage was conducted second, participants

filled out a debrief survey so that information on participant demographics, trust preferences, and background could be collected and analyzed.

3.3 Hypotheses

The initial working hypotheses for the experiment stem from experimental economics and social psychology literature regarding ingroup and outgroup behavior and differences in preferences between genders. For the purpose of these hypotheses in the context of this experiment, I define total ingroup to be a partner with the same race and gender as the subject, partial ingroup to be a partner with either the same race or same gender (but not both), and total outgroup to be a partner of the opposite gender and different race.

Hypothesis 1: Subjects will be more likely to cooperate with a partner identified as being more ingroup. That is, total ingroup would be favored over partial ingroup which would be favored over total outgroup.

$$\Pr(Cooperate\ Total\ Ingroup) > \Pr(Cooperate\ Partial\ Ingroup)$$
$$> \Pr(Cooperate\ Total\ Outgroup)$$

Hypothesis 2: Subjects will be more trusting with partner who is identified as being more ingroup.

$$\tau(Total\ Ingroup) > \tau(Partial\ Ingroup) > \tau(Total\ Outgroup)$$

Additionally, I compare base results from this study to those of other studies specifically with regards to cooperation and trust differences between gender and between races separately.

4. Results

This section summarizes the results of the experiment run in the two aforementioned UCSD undergraduate economics courses. For the analysis, the decisions made by participants are decomposed into two elements for each game played: cooperation and trust. Cooperation is determined by a player simply "investing" with their partner. Trust is measured by the discrete choice of τ made by each player in each encounter. All trust as interpreted in this analysis is conditional on cooperation due to the nature of the experimental instrument.

For the purposes of this analysis, I separate the two classes in which the experiment was run for hypothesis testing and then later pool them and control for class in the final regression analysis. This precaution is necessary for two reasons: Firstly, the aforementioned order difference in conducting the name-treatment and anonymous treatment to account for learning effects. Secondly, it is clear from the data that there is some characteristic difference between the two classes which cannot be accounted for in the data collected. Table 1A in the appendix provides summary statistics for the demographic composition of each class.

I begin with an analysis for comparison of results from this study to those in previous literature. Here I examine differences in cooperation and trust between genders and differences in cooperation and trust between races.

4.1 Gender Cooperation Comparison

Table 1 summarizes the comparison in cooperation rates between genders for both the elective and core classes. In all cases for both classes, women cooperate more than men. For the elective class, an interesting observation is that men and women cooperate at very similar rates when they have no information about their partner. This could potentially be the result of

learning effects, as the anonymous treatment was conducted first in this class and men's

cooperation rate nearly halved in subsequent encounters with the game. This possible learning

effect leading to a decrease in cooperation in the second treatment is supported by the result from

core class where the anonymous treatment was conducted second and saw slight decreases in

cooperation from the name treatment.

Table 1: Cooperation Rate by Gender

	Partner Identity				
	Anon	White Male	White Female	Asian Male	Asian Female
Male ECON 114 n=58	0.4137931 (0.0652348)	0.2413793 (0.0566794)	0.2586207 (0.0579982)	0.2586207 (0.0579982)	0.2068966 (0.2068966)
Female ECON 114 n=66	0.424224 (0.0613014)	0.3636364 (0.0596664)	0.3636364 (0.0596664)	0.3787879 (0.0601674)	0.3636364 (0.0596664)
T-statistic	*-0.1167*	*-1.4745*	*-1.2545*	*-1.4285*	*-1.9320**
Male ECON 100B n=64	0.4375 (0.0625)	0.515625 (0.0629633)	0.625 (0.0609938)	0.625 (0.0609938)	0.578125 (0.0622204)
Female ECON 100B n=45	0.7111111 (0.0683294)	0.8222222 (0.0576377)	0.7777778 (0.0626751)	0.7333333 (0.0666667)	0.7333333 (0.0666667)
T-statistic	*-2.9100****	*-3.4320****	*-1.7021**	*-1.1807*	*-1.6704**

Notes:
1. Standard errors are reported in parentheses
2. *: significant at 10-percent level, **: significant at 5-percent level, ***: significant at 1-percent level for a two-sided test
3. P-values are reported for a two-sided hypothesis test that difference between male cooperation and female cooperation is 0
4. Reported coefficients are the proportion of subjects of that group who cooperated with the given partner identity.

For all partner treatments cooperation rates for women are strictly greater than

cooperation rates for men, a finding which is consistent with previous literature. For the core

class, the result that women are more cooperative than men is significant at the 10% level for all

but one of the name treatments and is strongly significant for the anonymous treatment and the

white male name treatment. In the elective class, with the exception of the anonymous treatment previously discussion, we see women are still more cooperative than men though the result is at best approaching significance and is not statistically significant from these findings.

In the context of other work done on cooperation rates in a prisoner's dilemma style game, it is not unreasonable to conclude that women exhibit more cooperation than men. This conclusion is statistically supported by most of the name treatments for the core class group. While the elective class group does not produce a statistically different cooperation rate between genders, it is clear that after learning effects are accounted for (eg, in the names treatment) that men cooperate more than women with every name treatment. It is possible that the lack of significance in the elective class group stems from the fact that the cooperation rates are closer, in that for neither gender are they are as high as observed in the core class group. This can possibly be explained by the substantially higher variability of economics training in the elective class which included students who were not economics majors and students who had completed the entirety of the core microeconomics coursework[4].

4.2 Gender Trust Comparison

For both the 114 and 100B group, men appear to play a higher τ (which will henceforth be referred to as trust) than women with all name treatments. Once again, this result is consistent with much of the previous literature. It should be noted that both classes still seem to have a characteristic difference as trust is generally higher in the elective class group than in the core group, a result which cannot be explained by these data or the observed demographic compositions of the classes. Table 2 summarizes the differences in trust rates between genders.

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[4] More information of the economics training of the elective class can be found in Table 1A of the Appendix.

Table 2: Trust by Gender

	Partner Identity				
	Anon	White Male	White Female	Asian Male	Asian Female
Male elective	81.6667	70	82	76.66667	75.83333
	(5.699818)	(10.10929)	(7.380799)	(8.926508)	(8.99986)
n	24	14	15	15	12
Female elective	53.21429	50.83333	53.75	51.6	50
	(5.420263)	(5.986599)	(6.505641)	(6.155756)	(5.928316)
n	28	24	24	25	24
U-statistic (Mann-Whitney U-test)	*3.466****	*1.538*	*2.580****	*2.196***	*2.216***
Male core	62.14286	65.45455	56.75	57.5	64.86486
	(6.327841)	(5.437157)	(5.055937)	(4.760279)	(5.001826)
n	28	33	40	40	37
Female core	55.625	49.72973	48	52.42424	49.09091
	(5.118308)	(4.75348)	(4.759775)	(4.438773)	(5.063304)
n	32	37	35	33	33
U-statistic (Mann-Whitney U-test)	*0.906*	*2.152***	*1.097*	*0.649*	*2.207***

Notes:
1. Standard errors are reported in parentheses
2. *: significant at 10-percent level, **: significant at 5-percent level, ***: significant at 1-percent level

In the elective group, the result that men are more trusting than women is significant at the 5% level for all but the white male name treatment. In considering this significant, it should be noted that the sample sizes are fairly small for the elective group (relatively few instances of cooperation) for this analysis. Such results would seem to indicate that an individual's gender is a substantial factor with respect to their trusting behavior which is, once again, consistent with findings in previous studies.

The core group elicits similar results to those of the elective class group with respect to men being more trusting than women. However, the core class group does not produce a statistically significant difference for all of the treatments though numerically trust is higher for men in all instances. Again, these results taken on their own do not point to a strong conclusion due to the low sample sizes which make significance difficult to achieve. However, taken in context of previous work, these results do seem to be consistent with the notion that men are more trusting than women in experimental conditions like these. The evidence thus leads us to fail to reject that men are more trusting than women.

4.3 Race Cooperation Comparison

These data reveal no evidence that there are characteristic differences in cooperation between Asians and whites for either class. Thus we reject the hypothesis that Asians and whites exhibit different cooperation rates. The comparison of cooperation is summarized in Table 3. From these data it would also appear that there is no difference in cooperation depending on the race of the name treatment, a result which I will discuss later when examining ingroup/outgroup behavior and again in the Discussion section.

Table 3: Cooperation Rate by Race

	Partner Identity				
	Anon	White Male	White Female	Asian Male	Asian Female
White elective n=34	0.3529412 (0.083189)	0.2352941 (0.0738407)	0.2941176 (0.0793176)	0.3235294 (0.0814375)	0.2941176 (0.0793176)
Asian elective n=90	0.4444444 (0.0526717)	0.3333333 (0.499688)	0.3222222 (0.0495366)	0.3222222 (0.495366)	0.2888889 (0.048044)
T-statistic	*-0.9169*	*-1.0526*	*-0.2984*	*0.0138*	*0.0568*
White core n=21	0.5714286 (0.1106567)	0.5714286 (0.1106567)	0.6666667 (0.1054093)	0.5238095 (0.1116966)	0.6190476 (0.1085881)
Asian core n=88	0.5454545 (0.0533837)	0.6590909 (0.0508197)	0.6931818 (0.049443)	0.7045455 (0.0489148)	0.6477273 (0.0512125)
T-statistic	*0.2131*	*-0.7480*	*-0.2335*	*-1.5861*	*-0.2441*

Notes:
1. Standard errors are reported in parentheses
2. *: significant at 10-percent level, **: significant at 5-percent level, ***: significant at 1-percent level
3. P-values are reported for a two-sided hypothesis test that difference between races in cooperation rates is 0

4.4 Race Trust Comparison

The results for differences in trust between races are complicated by a low sample of whites. As shown in Table 3, there were far more Asians in both classes than there were whites; taking the subset of whites who cooperated makes this sample even smaller which complicates the statistical analysis on trust by race. As such, the discussion of the results on trust by race will be minimal here and expanded upon later along with a more detailed regression analysis. Table 4 summarizes the comparison of trust by race.

Table 4: Trust by Race

	Partner Identity				
	Anon	White Male	White Female	Asian Male	Asian Female
White	70	58.75	77	68.18182	64
elective	(9.847319)	(12.45528)	(9.893881)	(10.60173)	(10.77033)
n	12	8	10	11	10
Asian	65.25	57.66667	60.34483	58.27586	56.53846
elective	(4.909273)	(6.152905)	(6.208265)	(6.298584)	(6.15048)
n	40	30	29	29	26
U-statistic *(Mann-Whitney U-test)*	*0.483*	*0.109*	*1.520*	*0.974*	*0.592*
White	67.5	66.66667	69.28571	70.90909	70
core	(7.600339)	(7.419603)	(8.083648)	(6.530285)	(8.006408)
n	12	12	14	11	13
Asian	56.45833	55.17241	48.85246	52.41935	54.5614
core	(4.617358)	(4.154032)	(3.755494)	(3.58979)	(4.044475)
n	48	58	61	62	57
U-statistic *(Mann-Whitney U-test)*	*1.148*	*1.224*	*2.072***	*2.244***	*1.585*

Notes:
1. Standard errors are reported in parentheses
2. *: significant at 10-percent level, **: significant at 5-percent level, ***: significant at 1-percent level

In general it would appear that whites are more trusting than Asians regardless of the
partner treatment applied. This result is not significant for most of the treatments in the 114
group but is evident nonetheless. The core group also demonstrates this result though there are
statistically significant differences at the 5% level for the white female and Asian male name
treatments with the white male and Asian female treatments approaching significance and the
anonymous treatment demonstrating a similar phenomenon though not conclusively approaching
significance. Due to the low sample size of whites, we cannot make a strong conclusive

statement with respect to trust though these data appear to indicate that whites are in general slightly more trusting.

With the comparative analysis complete, I move on to testing the original hypotheses regarding ingroup/outgroup behavior. Recall that ingroup in this context is defined as an individual exhibiting the same characteristics as another along a given dimension of identity and outgroup in this context is defined as an individual exhibiting differing characteristics as another along a dimension of identity.

4.5 Hypothesis 1: Subjects are more cooperative with partners who are more ingroup

To test the hypotheses on ingroup/outgroup behavior, I rearrange each name treatments response into a category based on the subject's identity. Since I am examining two dimensions of identity, there are four cases to consider: ingroup race and gender where the experimental subject is of the same race and gender as the name treatment they are playing with (total ingroup), ingroup race and outgroup gender (same race, different gender, etc.), outgroup race and ingroup gender (partial ingroup), and lastly, ougroup race and outgroup gender (total outgroup).

Table 5 displays the results of an unpaired two-sample t test for each of the combination of ingroup and outgroup. It is clear from these data that participants were not sensitive to the name of their partner in that cooperation is significantly different with partners who are total ingroup as opposed to total outgroup or that partial ingroups are favored over total outgroups. As there is no evident group behavior with respect to cooperation for either class, we reject the hypothesis that subjects are more likely to cooperate with an individual saliently identified as being more ingroup in terms of gender or race.

Table 5: Group Behavior Cooperation Comparison

	Elective – ECON 114 (n=124)			
	In-Race, In-Gender	In-Race, Out-Gender	Out-Race, In-Gender	Out-Race, Out-Gender
In-Race, Out-Gender	0.8865			
Out-Race, In-Gender	0.4946	0.5861		
Out-Race, Out-Gender	0.6798	0.7840	0.7869	

	Core – ECON 100B (n=109)			
	In-Race, In-Gender	In-Race, Out-Gender	Out-Race, In-Gender	Out-Race, Out-Gender
In-Race, Out-Gender	0.8865			
Out-Race, In-Gender	0.4809	0.5740		
Out-Race, Out-Gender	0.7730	0.6663	0.3205	

Notes:
1. Values reported are p-values for test of difference between means using a two-sample t-test
2. All tests are two-sided

4.6 Hypothesis 2: Subjects are more trusting with partners who are more ingroup

Though the analysis of trust is once again complicated by lower sample sizes for both of the classes, there is no evidence that participants are more trusting of a partner identified saliently as more ingroup. It again appears to be the case that participants are not sensitive to the treatment names. Table 6 below summarizes the results for trust by group category of partner. As there is no significance or even result which approaches significance, we reject the hypothesis that subjects are more trusting of partners who are more ingroup in terms of gender or race.

Table 6: Group Behavior Trust Comparison

	Elective (ECON 114)			
	In-Race, In-Gender	In-Race, Out-Gender	Out-Race, In-Gender	Out-Race, Out-Gender
In-Race, Out-Gender	0.4790			
Out-Race, In-Gender	0.4614	0.9742		
Out-Race, Out-Gender	0.8350	0.3462	0.3315	

	Core (ECON 100B)			
	In-Race, In-Gender	In-Race, Out-Gender	Out-Race, In-Gender	Out-Race, Out-Gender
In-Race, Out-Gender	0.4217			
Out-Race, In-Gender	0.7071	0.6899		
Out-Race, Out-Gender	0.9962	0.4256	0.7111	

Notes:
1. Values reported are p-values for test of difference between means using a two-sample t-test
2. All tests are two-sided

4.7 Pooled Regression Analysis

Lastly, we come to a regression analysis of the experimental results. This entails a total of eight regressions. Four of these regressions are probability derivatives to determine the marginal effect of gender and race characteristics of the subject on cooperation with a partner identified as total ingroup, partial ingroup, or total outgroup. These results are checked against a linear probability model for each case, the results of which are detailed in Table 2A in the appendix. The remaining four regressions are OLS regressions for the effect of certain characteristics of the subject on trust with a given relative group characteristic of the partner. For this analysis, I pool the results from both classes and control for the difference in class.

4.7.1 Probit Cooperation Analysis

In keeping with the precedent set by the rest of the analysis, we first examine the cooperation probit model. In these models, I test the marginal effect of gender and race on cooperation with each group category. The probit model takes the following form:

$$\Pr(CooperateGroup)_i$$
$$= \Phi(\beta_0 + \beta_1 female_i + \beta_2 asian_i + \beta_3 attentionidpartner_i$$
$$+ \beta_4 trustlevelanon_i + \beta_5 beliefdefect_i + \beta_6 trusting_i + \beta_7 econ100c_i$$
$$+ \beta_8 class_i)$$

The LHS of this equation is the probability that a subject will cooperate with a given relative group (total ingroup, partial ingroup, total outgroup) given the RHS variables. The variables female and Asian are dummy variables for the reported gender and race of the subject. Next, "attentionidpartner" is a self-reported metric on the discrete integer scale of 1 to 7 of how much attention the subject paid to the identity of the partner they were playing with in each game with 1 being not at all and 7 being very much[5]. "Trustlevelanon" is the trust level an individual picked with the anonymous partner, the idea being to control for trust which the individual exhibits with a person about whom they have no knowledge. The trust level with the anonymous partner takes on a value of 0 if the subject in question defected with the anonymous partner. The subject's reported belief that their partner will defect is also controlled for as is standard when performing an empirical analysis with a prisoner's dilemma-type game. This belief was reported independently for each instance a subject played the game and so the belief is for the partner of the specific group being examined in the probit model. Trusting is a dummy variable which takes

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[5] Details on how this question was asked in the post-experiment debrief and summary statistics of the results are located in the Appendix.

a value 1 if the subject reported themselves as either "always trusting" or "usually trusting" to the appropriate GSS trust question and 0 if "usually not trusting" or "always not trusting" was reported. The "econ100c" variable is a dummy for whether or not the subject had completed their core microeconomics coursework and thus had more advanced economics training. Lastly, which class group the subject was in is controlled for. The results are reported in Table 7.

Table 7: Likelihood of Cooperation – Marginal Effects

	Partner Identity Relative to Subject Identity			
	In-Race, In-Gender	In-Race, Out-Gender	Out-Race, In-Gender	Out-Race, Out-Gender
Female	0.1480109	0.154948	0.1769228	0.1606153
	(0.08853)*	(0.08555)*	(0.08292)**	(0.08609)*
Asian	0.1782972	-0.0436971	0.0032526	-0.0.132877
	(0.09493*	(0.10031)	(0.0968)	(0.10328)
Attention id partner	0.0531943	0.0141307	0.0432888	0.0223208
	(0.0234)**	(0.02269)	(0.0218)**	(0.02269)
Trust level w/ Anon	0.0047301	0.0038273	0.0058275	0.0033272
	(0.00118)***	(0.0011)***	(0.0011)***	(0.00116)***
Belief Defect	-0.5156127	-0.5517475	-0.3898952	-0.5097926
	(0.07061)***	(0.06259)***	(0.07718)***	(0.07261)***
GSS Trusting	0.1712176	0.085472	0.0167913	0.2312529
	(0.09585)*	(0.0986)	(0.09959)	(0.09419)**
Core Econ Coursework Completed	-0.1746668	-0.0309653	-0.1504148	-0.1232344
	(0.11466)	(0.11822)	(0.10957)	(0.11392)
Class (elective)	-0.2833174	-0.3248821	-0.207905	-0.3062143
	(0.09697)***	(0.08931)***	(0.09277)**	(0.09138)***
n	227	227	227	226
Pseudo R^2	0.4573	0.4068	0.3623	0.4067

Notes:
1. Coefficients are probability margins at means for other control variables
2. Standard errors are reported in parentheses
3. *: significant at 10-percent level, **: significant at 5-percent level, ***: significant at 1-percent level
4. Pseudo R^2 is reported for the probit model from which margins were derived

From this analysis, we see that women are indeed more likely to cooperate than men, a result which is significant at the 10% level for all relative partner identities. Note that conversely, race is not a significant predictor of cooperation except with a total ingroup partner where it is significant at the 10% level. It is possible that Asians are more likely to cooperate with a total ingroup partner and this effect overpowers that of the gender effect where women are more likely to cooperate. One interesting observation with respect to the race factor becoming significant with a total ingroup partner is that the attention paid to the identity of the partner shows strongest significance (at the 5% level with greater magnitude) for the total ingroup partner.

Not surprisingly, trusting the anonymous partner more is a strongly significant predictor of cooperating with a name treatment of any relative group. Also not surprising is the significance of a belief the partner would defect in drastically reducing the probability that a subject would cooperate for a partner of any group. One interesting result is that the GSS trust question is not a strong predictor of cooperation, though it weakly predicts cooperation in some instances. This is not entirely surprising as the cooperate or defect strategies of the normal prisoner's dilemma are not effective predictors of trust (Camerer, 2003). However, the game used in this experiment allows for some leeway for an individual to be more inclined to cooperate to various degrees depending on how much they trust their partner. The notion that more trusting individuals[6] are more inclined to cooperate in this iteration of the prisoner's dilemma is somewhat reflected in the data, though it is not universally significant. Interestingly enough, being trusting according to the GSS trust question is a significant predictor at the 5% level of cooperating with a partner saliently identified as a total outgroup.

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[6] There is some debate in the literature as to the accuracy of GSS trust questions in predicting trusting and trustworthy behavior (Glaeser, Laibson, Scheinkman, & Soutter, 2000).

4.7.2 OLS Regression Trust Analysis

The regressions run for the analysis of trust is similar in structure to the ones used for cooperation. The dependent variable in each regression is trust level conditional on cooperation with a particular group identity relative to the subject of the partner. Once again the independent variables are the identity characteristics of the subject for race and gender with added controls for attention paid to the identity of the partner for the experiment, trust level with the anonymous partner, and finally a control for class to absorb population differences between classes and difference in experimental treatment order. The model used to for trusting behavior takes the following form:

$$TrustLevelGroup_i$$

$$= \gamma_0 + \gamma_1 female_i + \gamma_2 asian_i + \gamma_3 attentionidpartner_i + \gamma_4 trustlevelanon_i$$

$$+ \gamma_5 trusting_i + \gamma_6 beliefflow_i + \gamma_7 beliefhigh_i + \gamma_8 econ100c_i + \gamma_9 class_i$$

The LHS of this equation is the trust level (τ) which a subject chose with a partner of the given relative group. For this regression, we examine only individuals who cooperated with their partner in a given instance since otherwise there is no trust level to report. Once again the RHS variables female and Asian are dummies for the reported gender and race of the given subject. All other variables except for the beliefs correspond to those used in the probit model. The two belief variables are dummies for the individual reporting they thought their partner would trust[7] high (defined as over 50) or low (defined as less than or equal to 50). The results of the regressions are reported in Table 8.

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[7] In the context of the game, this was framed as "invest high" or "invest low"

Table 8: Trust OLS Regressions

	Partner Identity Relative to Subject Identity			
	In-Race, In-Gender	In-Race, Out-Gender	Out-Race, In-Gender	Out-Race, Out-Gender
Female	-9.012358	-15.60923	-16.39371	-11.5647
	(5.697179)	(5.262653)***	(5.775521)***	(5.481316)**
Asian	-14.57645	-10.08554	-7.695967	-12.00993
	(7.270598)**	(6.38296)	(5.737981)	(6.328628)*
Attention id partner	1.385262	0.960421	1.284768	-0.3569873
	(1.349671)	(1.320814)	(1.488983)	(1.470437)
Trust level w/ anon	0.3120724	0.2649711	0.1727674	0.2096201
	(0.0839471)***	(0.0798179)***	(0.0839622)**	(0.088246)**
GSS Trusting	-3.42603	0.1092947	-1.991062	-9.348848
	(7.683686)	(6.372272)	(8.256212)	(6.931418)
Belief Partner Invest Low	-22.26554	-25.25963	4.026467	-9.795988
	(11.39534)*	(11.51256)**	(11.84278)	(9.576879)
Belief Partner Invest High	-4.939699	-1.833216	32.09109	4.211072
	(10.74869)	(11.2066)	(11.78221)***	(9.576879)
Core Econ Coursework Completed	9.224342	-3.166195	-3.848025	0.752136
	(10.2275)	(8.901928)	(9.942379)	(11.47176)
Class (elective)	1.1796	-3.602491	-0.1551949	8.457572
	(5.64246)	(5.265576)	(6.292614)	(6.229182)
Constant	66.90587	71.19641	44.16207	72.45364
	(14.63394)***	(13.53135)***	(14.94804)***	(11.76091)***
n	109	108	108	114
R^2	0.3659	0.4136	0.3415	0.2595

Notes:
1. Robust standard errors are reported in parentheses
2. *: significant at 10-percent level, **: significant at 5-percent level, ***: significant at 1-percent level

The analysis of trust paints a similar picture to that of cooperation and further confirms

the initial findings regarding trust differences in women. With all but the total ingroup partner,

women are statistically significantly less trusting than men at the 1% level for partial ingroup and

the 5% level for total outgroup. However, like with the probit cooperation model, gender significance is lost for the total ingroup but the racial difference is significant for this group. Interestingly, Asians are significantly less likely at the 5% level to trust other Asians of the same gender. Perhaps Asian subjects were more willing to cooperate with partners identified as Asian of the same gender but were less convinced that their ingroup partner would do the same. Alternatively, white subjects could be less willing to cooperate with a white partner of the same gender but those that do are more trusting. While it is difficult to determine why significance changes for this group, it is an indicator that there is at least some group effect that is related to race though it is in the opposite direction of what would be expected. Indeed, these results seem to confirm the earlier finding that white subjects were more trusting of their partners regardless of their relative identity. The result that Asians are particularly less trusting of a total ingroup is puzzling as it opposes results from similar research on group identity behavior. Implications of this result are discussed in the next section.

Interestingly, subjects self-reported attitudes on trusting other people from the GSS trust questions had no significant impact on their trust level with any group. On the contrary, the sign of the result is the opposite of what would be expected through all of the coefficients for the GSS trust question are statistically insignificant to the point where it would be safe to conclude that the answer to the trust question has no bearing on trusting behavior.

Results for subjects' beliefs about their partner's behavior are inconsistent. For the total ingroup and same-race partial ingroup, a belief that their partner would invest low correlates with a statistically significant decrease in trust. This could potentially be because subjects felt that their partner in these groups would also cooperate but would be unsure if the subject would cooperate. For the same-gender partial ingroup, a belief that the partner would invest high results

in a statistically significant increase in trust. This could potentially be due to reciprocity but it should also be noted that the constant coefficient for this regression is much lower than that of the other regressions and it is possible that this results in the significant, high magnitude effect of a belief the partner would invest high.

5. Discussion

One of the most notable results is that the relative identity of the partner did not make a significant difference to either cooperation or trust. I comment on two possibilities for why this may have been the case. First, as mentioned previously, it is possible that subjects on the whole did not pay attention to the gender or racial implications of their partner in a particular name treatment. If this were the case for enough subjects, then we would expect there to be effectively no difference in strategy between different name treatments. Indeed, on the surface there is no statistically significant difference in strategy between name treatments and the relative identity of the partner. However, when additional controls are added and the results from the two class groups are pooled, there were some interesting differences between groups such as a more significant racial effect for a total ingroup overpowering the gender effect.

An alternative explanation for the lack of group behavior is that the population from which the subjects were drawn, UCSD undergraduate economics students, is not sensitive to the identity of their partner even if they acknowledge the identity implications of the name. Indeed, there is some evidence for this explanation from previous literature. Recall that Chen et. al (2011) observed that Asians at the University of Michigan were more likely to cooperate with a racial ingroup partner identified as such by last name but that whites at University of Michigan were not responsive to identity implications. More importantly from this study, racial identity of

the partner as identified by last name for both Asian and white students at UCLA did not play a significant role. If we assume that the population at UCLA and UCSD are similar in composition and disposition, then it would imply that racial identity plays a role in strategic interaction for certain populations but not for others.

The notion that different populations exhibit different reactions to race has been explored in previous literature as well. Alesina and Ferrara (2002) in particular comes to mind as this study notes differences in racial attitudes depending on geographic region. This would suggest that university populations of more western regions such as California exhibit different strategic preferences with partners of different group identity than those of regions such as Michigan. It is also possible that the lack of racial group behavior in the UC schools can be attributed to increased instances of interaction between Asians and whites as UCSD has a far higher proportion of Asian students than the University of Michigan, whose undergraduate population is roughly 12% Asian (University of Michigan, 2009). It is possible that groups which are a smaller minority in a population exhibit stronger group behavior.

Another important element of this study to discuss is the sensitivity of subjects to the nuances of the game being used. Recall that unlike the normal prisoner's dilemma, players can minimize their risk of loss to defection by cooperating with a certain trust level. We would thus expect to see a higher instance of cooperation. Frank, Gilovich and Regan (1993) observe that economics majors exhibit around a 70% defection rate in a standard prisoner's dilemma game. Referring back to Tables 1 and 3, we can see that the 114 class exhibited similar rates of cooperation to the Grank, Gilovich, and Regan study with only about 30% of a given group cooperating. However, with the 100B class, there is a much higher rate of cooperation. This is

possibly due subjects in the 114 class having more economics training despite it being a lower level elective.

Another metric of how this modified prisoner's dilemma compares to a standard prisoner's dilemma is the strategies subjects employed based on their beliefs about their opponent. Indeed, like a standard prisoner's dilemma, the belief of defection is a strong indicator of defection. However, recall that defecting is not a strictly dominant strategy and that a best response to a partner who exhibits a low trust level is to trust high. With this in mind, we would expect to see that a belief that their partner would invest low would be correlated with a higher trust level, however, this is not the case. In Table 7 we see that in instances where the belief of a low investment level is significant, it exhibits the opposite sign of what we would expect given the best response in this game. This could be because participants were not sensitive to the nuances of this version of the prisoner's dilemma.

Finally, I discuss potential weaknesses in the way that the experiment was conducted which should be noted. Firstly the game was framed as an investment game which could potentially have impacted the way that participants made decisions. Research into the use of games as an instrument for obtaining data in an experimental setting has shown that different framing of the same game can produce drastically different outcomes. For instance, Liberman, Samuels, and Ross (2004) show that naming the same prisoner's dilemma game "The Community Game" produces drastically different results in a laboratory setting from naming the same game "The Wall Street Game". However, since the same framing was applied in all instances of the experiment, the results are still comparable.

While great effort was taken to make sure instructions to participants were clear and all questions were answered, there is still the possibility that some participants did not fully understand the instructions and proceeded without asking for clarification. In a laboratory setting, understanding of the game is normally checked through a short quiz about payouts and procedures. Due to constraints on time and resources, a quiz was not administered for this experiment and so there is no check to see whether or not some participants made uninformed decisions. Additionally, there is some concern that the use of percentages to quantify trust level (framed to participants as investment level) may have been confusing though there is no way to gauge whether or not this actually caused confusion in subjects. However, given that upper division economics courses were used, I believe it is safe to assume that the majority of participants had sufficient economics and mathematical training to understand the game and instructions on the level required for informed decision-making. Thus, any confused participants would be simply be noise in the data.

6. Appendix

6.1 Tables

Table 1A: Demographic Composition and Post-Experiment Survey Results

	Core Group (ECON 100B)	Elective Group (ECON 114)
Male	58.7%	46.8%
Asian	80.7%	72.6%
Age*	21.63303 (2.668959)	21.15447 (1.722715)
College Year*	3.527778 (0.9418448)	3.596774 (0.7204262)
Economics Major	84.4%	70.2%
Immigrant (Alien)	21.3%	14.5%
Immigrant (1st Generation)	40.0%	28.2%
Immigrant (2nd Generation)	25.0%	37.9%
Immigrant (3rd+ Generation)	13.0%	20.0%
Speak non-English language	84.3%	86.3%
GSS – Always Trusted	4.6%	1.6%
GSS – Usually Trusted	59.6%	59.7%
GSS – Usually not Trusted	29.4%	33.9%
GSS – Never Trusted	6.4%	4.8%
GSS – Always Trusting	14.7%	12.9%
GSS – Usually Trusting	64.2%	64.5%
GSS – Usually not Trusting	20.2%	20.2%
GSS – Never Trusting	0.9%	2.4%
Attention ID Partner*	3.486239 (1.998215)	3.016129 (1.967144)

Maximize own payout*	5.348624 (1.62376)	5.532258 (1.527182)
Maximize partner payout*	3.211009 (2.032483)	3.185484 (2.065461)
Know partner	13.9%	3.2%
ID experiment race/gender related	13.8%	18.5%
ECON 2 (Basic game theory skills)	43.1%	46.0%
ECON 100C (Core microeconomics courses completed)	0.9%	36.3%
ECON 109 (Undergraduate game theory skills)	0%	5.6%
Previous participation in economics experiment	30.6%	29.8%
n	109	124

Notes:
1. * indicates mean reported with standard deviation in parentheses
2. Economics major indicates either an Economics BA or Management Science BS
3. Attention ID Partner, max own payout, and max partner payout reported by subject on a scale of 1 to 7
4. Only subjects who were present in their class for both sessions are reported, subjects in both classes are counted only for the elective class since that class was used for the experiment first
5. Only Asian and White subjects were used in the analysis of this experiment and as such data for only these subjects are reported

Table 2A: Likelihood of Cooperation – Linear Probability Model

	Partner Identity Relative to Subject Identity			
	In-Race, In-Gender	In-Race, Out-Gender	Out-Race, In-Gender	Out-Race, Out-Gender
Female	0.0802325	0.0863124	0.1145126	0.0939858
	(0.049421)	(0.0518658)*	(0.0535742)**	(0.0509692)*
Asian	0.0875092	-0.0309833	-0.0069502	-0.0162032
	(0.0587422)	(0.0611424)	(0.0632622)	(0.060646)
Attention id partner	0.0258112	0.0056453	0.0249583	0.0120645
	(0.0130404)**	(0.0136673)***	(0.0142331)*	(0.0136719)
Trust level w/ Anon	0.0027555	0.0024286	0.004218	0.0021686
	(0.0006721)***	(0.0006835)***	(0.0007176)***	(0.0006984)***
Belief Defect	-0.4214427	-0.4813859	-0.3264779	-0.4441905
	(0.0595717)***	(0.0594252)***	(0.0638217)***	(0.06188)***
GSS Trusting	0.1383907	0.0749618	0.0347295	0.1795706
	(0.0598499)**	(0.0620958)	(0.0648425)	(0.061743)***
Core Econ Coursework Completed	-0.1222245	-0.0354673	-0.1037738	-0.1007181
	(0.0669215)*	(0.0695279)	(0.0724963)	(0.0689547)
Class (elective)	-0.1672829	-0.2061265	-0.1290934	-0.2028213
	(0.0592656)***	(0.0594682)***	(0.062617)**	(0.0598889)***
Constant	0.3821926	0.6152851	0.4089058	0.5270492
	(0.0818834)***	(0.0851088)***	(0.0912443)	(0.0851491)***
n	227	227	227	226
R^2	0.5032	0.4631	0.4173	0.4736

Notes:
1. Standard errors reported in parentheses
2. *: significant at 10-percent level, **: significant at 5-percent level, ***: significant at 1-percent level

6.2 Experimental Documents/Instructions

6.2.1 Consent Form

University of California, San Diego
Consent to Act as a Research Subject

Partnered Investment Game Behavioral Study

Vincent Leah-Martin (Principal Investigator) is conducting a research study into the behavior of individuals in a partnered investment game. This study is being conducted under the supervision of Professor Ross Starr. You have been asked to participate in this study as a student of ECON 114, Economics of Immigration. There will be approximately 200 participants in this study.

This study will involve two stages. The first stage will be conducted today and the second stage will be conducted in a few weeks. In order to have the opportunity to earn bonus points in both stages you must sign the consent form (either to participate or not participate) before both stages. If you are present and participate for stage one but are not present in class for stage two, you will not be eligible for bonus points for the second stage either by participating or with an alternative assignment.

Participation in this study may involve some risks and discomforts. These include:

1. A potential for loss of confidentiality. In the course of this study you will be asked to fill out a survey in addition to making decisions in a partnered investment game. The decisions and survey answers will be linked to your student ID number (for the purposes of providing your payout in the form of extra credit for this class). Your responses will be kept in sealed envelopes and will only be handled by individuals associated with this study. Once you have received your bonus points for this class, any information linking your responses to yourself will be destroyed or deleted.

2. There is potential for boredom, confusion, fatigue, or frustration from participating in this study.

3. Because this is ongoing research, there is potential for additional risks which are currently unforeseen to arise. In the event that such risks arise, you will be notified.

The alternative to participate in this study is to not participate. If you choose to not participate you may request an alternative assignment so that you have the opportunity to earn extra credit points you could have earned by participating in this study. Understand that if you request an alternative assignment, the number of extra credit points you receive will be subjective based on your performance on the assignment. ***It is important to note that the extra credit points earned by yourself or your classmates will be added after the curve is set and so they cannot negatively impact your class standing in any way.***

There will likely be no direct benefit to you from participating in this study other than any bonus points you earn and the opportunity to witness behavioral economic research. The investigator, however, may learn more about decision making under certain conditions and society may benefit from this knowledge.

Participation in research is entirely voluntary. You may refuse to participate or withdraw or

refuse to answer specific questions in an interview or on a questionnaire at any time without penalty or loss of benefits to which you are entitled. If you decide that you no longer wish to continue in this study, please indicate so by writing "stop participation" on your survey and/or game instructions.

The PI may remove you from the study without your consent if the PI feels it is in your best interest or the best interest of the study. You may also be withdrawn from the study if you do not follow the instructions given you by the study personnel.

You will be told if any important new information is found during the course of this study that may affect your wanting to continue.

There will be no cost to you for participating in this study.

By signing below you are indicating that you understand the above and that Vincent Leah-Martin and/or Professor David Bernotas has explained this study to you and answered your questions. If you have other questions or research-related problems, you may reach Vincent Leah-Martin at (408) 313-9374. You may call the Human Research Protections Program Office at (858) 455-5050 to inquire about your rights as a research subject or to report research-related problems.

Please check one:

_____ I **agree to participate** in this study and I understand my rights, potential benefits, and the risks as explained above.

_____ I **do not agree to participate** in this study. I understand that I may request an alternative extra credit assignment for which bonus points will be subjectively assigned based on performance.

_____   _____
Signature   Date

_____
Printed name

_____
Student ID number

6.2.2 Instructions (Anon Stage)

Investment Game

Today you will be playing a game with an anonymous, randomly assigned partner. You are playing this game for extra credit points which will be added to your final grade in the class.

You will receive the sum of all points earned from all games played including this stage and the stage conducted a few weeks ago.

The partner will make a decision with no knowledge about you.

You and your partner will be playing an investment game. You will start each round of the game with 2 bonus points. You have two options:

- You can invest your points.
- You can opt out of investing your points.

How many points you earn at the end of the game is determined by the decisions you and your partner make. If you decide to invest you must pick how much to invest [10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, or 100%].

If <u>you choose to invest</u> then how much you receive is determined by how much you chose to invest:

You invest	You receive if your partner chooses to invest:	You receive if your partner chooses to not invest:
10.00%	2.08	1.80
20.00%	2.15	1.60
30.00%	2.23	1.40
40.00%	2.30	1.20
50.00%	2.38	1.00
60.00%	2.45	0.80
70.00%	2.53	0.60
80.00%	2.60	0.40
90.00%	2.68	0.20
100.00%	2.75	0.00

Remember: How many points you receive if both you and your partner invest is based on what **you** invested. If, for example, your partner invested 10% and you invested 100%, you will receive 2.75 points for the game.

Instructions continue on next page

If <u>you choose to not invest</u> (opt out) then how much you receive is determined by how much your partner invested:

Your partner's investment:	You receive:
10.00%	2.10
20.00%	2.20
30.00%	2.30
40.00%	2.40
50.00%	2.50
60.00%	2.60
70.00%	2.70
80.00%	2.80
90.00%	2.90
100.00%	3.00

If both of you decide to opt out you will simply receive your initial 2 points.

Please circle how much you would like to invest with your partner (choose one):

Invest 10%   Invest 20%   Invest 30%   Invest 40%

Invest 50%   Invest 60%   Invest 70%   Invest 80%

Invest 90%   Invest 100%   Opt out

Please circle what you believe your partner will do (choose one):

Low Investment (10-50%)   High Investment (50-100%)   Opt out

6.2.3 Instructions (Name Stage)

Investment Game

Today you will be playing a series of games with a group of partners. In this stage, you will be given the first and last name of each partner. You are playing these games for extra credit points which will be added to your final grade in the class.

You will receive the sum of all points earned from all games from this stage and the next stage (which will be conducted in approximately one week).

Each game is independent and the partner for each game will make a decision with no knowledge about you.

You and your partner will be playing an investment game. You will start each round of the game with 2 bonus points. You have two options:

- You can invest your points.
- You can opt out of investing your points.

How many points you earn at the end of the game is determined by the decisions you and your partner make. If you decide to invest you must pick how much to invest [10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, or 100%].

If <u>you choose to invest</u> then how much you receive is determined by how much you chose to invest:

You invest	You receive if your partner chooses to invest:	You receive if your partner chooses to not invest:
10.00%	2.08	1.80
20.00%	2.15	1.60
30.00%	2.23	1.40
40.00%	2.30	1.20
50.00%	2.38	1.00
60.00%	2.45	0.80
70.00%	2.53	0.60
80.00%	2.60	0.40
90.00%	2.68	0.20
100.00%	2.75	0.00

Remember: How many points you receive if you both invest is based on what you invested. If, for example, your partner invested 10% and you invested 100%, you will receive 2.75 points for the game.

If you choose to not invest (opt out) then how much you receive is determined by how much your partner invested:

Your partner's investment:	You receive:
10.00%	2.10
20.00%	2.20
30.00%	2.30
40.00%	2.40
50.00%	2.50
60.00%	2.60
70.00%	2.70
80.00%	2.80
90.00%	2.90
100.00%	3.00

If both of you decide to opt out you will simply receive your initial 2 points.

Edward Anderson

Please circle how much you would like to invest with this partner:

Invest 10%   **Invest 20%**   **Invest 30%**   **Invest 40%**

Invest 50%   **Invest 60%**   **Invest 70%**   **Invest 80%**

Invest 90%   **Invest 100%**   **Opt out**

Please circle how much you believe this volunteer partner is going to invest:

Invest 10%   **Invest 20%**   **Invest 30%**   **Invest 40%**

Invest 50%   **Invest 60%**   **Invest 70%**   **Invest 80%**

Invest 90%   **Invest 100%**   **Opt out**

Emily Williams

Please circle how much you would like to invest with this partner:

Invest 10%   Invest 20%   Invest 30%   Invest 40%

Invest 50%   Invest 60%   Invest 70%   Invest 80%

Invest 90%   Invest 100%   Opt out

Please circle how much you believe this partner is going to invest:

Invest 10%   Invest 20%   Invest 30%   Invest 40%

Invest 50%   Invest 60%   Invest 70%   Invest 80%

Invest 90%   Invest 100%   Opt out

Luke Chen

Please circle how much you would like to invest with this partner:

Invest 10%   Invest 20%   Invest 30%   Invest 40%

Invest 50%   Invest 60%   Invest 70%   Invest 80%

Invest 90%   Invest 100%   Opt out

Please circle how much you believe this partner is going to invest:

Invest 10%   Invest 20%   Invest 30%   Invest 40%

Invest 50%   Invest 60%   Invest 70%   Invest 80%

Invest 90%   Invest 100%   Opt out

Sarah Chiang

Please circle how much you would like to invest with this volunteer partner:

Invest 10%   Invest 20%   Invest 30%   Invest 40%

Invest 50%   Invest 60%   Invest 70%   Invest 80%

Invest 90%   Invest 100%   Opt out

Please circle how much you believe this volunteer partner is going to invest:

Invest 10%   Invest 20%   Invest 30%   Invest 40%

Invest 50%   Invest 60%   Invest 70%   Invest 80%

Invest 90%   Invest 100%   Opt out

6.2.4 Post-Experiment Debrief Survey

Investment Game Post-Experiment Debrief

Please answer the following questions about yourself:

1. Gender (circle one):

Male   Female

2. Ethnicity (circle one):

African   Asian   European   Hispanic
Other (please specify): _____

3. Age:

____

4. Grade/Year (circle one):

First year

2nd year

3rd year

4th year

5th+ year

Other (please specify): _____

5. What is your academic major and minor? (please list all and specify):

_____

___

6. Immigrant generation (circle one):

Non-immigrant alien (ie. international student, temporary visitor, vacation etc.)

1st generation immigrant (you or your parents are naturalized immigrants)

2nd generation immigrant (you were born a U.S. citizen but your parents were not)

3rd+ generation immigrant or native (you and your parents were both born U.S. citizens)

7. From what country did your family originate?

_____

8. What languages do you speak? (please list all):

_____

_____

9. Generally speaking would you say people can be trusted or that you can't be too careful dealing with people? (circle one):

Always trusted

Usually trusted

Usually not trusted

Never trusted

10. How trusting are you? (circle one):

Always trusting

Usually trusting

Usually not trusting

Never trusting

11. During the experiment, how much did you pay attention to the identity of the volunteer you were playing with? (please answer on a scale from 1 to 7 with 1 being not at all, and 7 being very much)

____

12. During the experiment, how focused were you on maximising your own payoff? (please answer on a scale from 1 to 7 with 1 being not at all, and 7 being very much)

____

13. During the experiment, how concerned were you of the payoff of the person you were playing with? (please answer on a scale from 1 to 7 with 1 being not at all, and 7 being very much)

____

14. Do you know any of the volunteers you played with in today's experiment? (circle one)

Yes   No

15. What do you think this experiment is about?

_____

_____

_____
16. Have you taken any of the following economics classes or their equivalents? (please circle all that apply)

ECON 2 - Market Imperfections & Policy

ECON 100C - Microeconomics C

ECON 109 - Game Theory

17. Have you ever participated in an economics experiment before? (please circle one)

Yes   No

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