Group Preferences or Group Strategies?
Untangling the Determinants of Successful Collective Action Among Ethnic and Gender Groups*

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Abstract

Previous attempts to distinguish between other regarding and reciprocity effects in explaining deviations from game-theoretic equilibria have been unable to independently identify each of these effects. In this paper we present the results of an experiment with a unique information structure that allows us to determine the salience of each of these explanations. We use this information structure to examine recent findings in the literature on gender and ethnicity effects. We find independent evidence for the existence of other regarding preferences and reciprocity effects. We show that these effects account for about 20-25% of the average offer in a dictator game with no information on both players. We find that average offers rise as the amount of information on the recipient increases. We do not find evidence for differential reactions to social distance across gender or ethnicity pairings. Further, we find that reciprocity effects are predominantly within male offerers. We find weak evidence that males tend to favor co-ethnics and display chivalrous behavior in two sided information games with females. Females however tend to give more to other females under the two-way information treatment. We conclude that reciprocity effects are subject to discrimination that is probably driven by differential costs of poor reputations across groups. We compare offers in the ultimatum and dictator games and find very little evidence for other regarding motivations in the ultimatum game. We find that in treatments with information on offerer and no information on receiver, men offer nearly 25% more than women, a result we also obtain in the dictator game.

I Introduction

There are multiple explanations in the literature for observed deviations from the equilibria predicted by game theoretic models. Two predominant explanations have been suggested. Firstly, individuals are posited to have other regarding preferences. Such individuals make positive contributions because they care about the recipient. The second explanation asserts that individuals are induced by reciprocity concerns. Such individuals do not care about the recipient *per se,* but worry about the potential repercussions arising from a reputation of being "un-fair". Bohnet and Frey (1999) find evidence for the former, while Hoffman et. al. (1996) provide evidence for the reciprocity based motivations.

The two sets of experiments that form the basis of the explanations above are however unable to test the alternative hypotheses that are implicit in their tests. In this paper we present the results of dictator and ultimatum games with an information structure that allows us to explicitly test for the salience of each of these explanations. Our innovation relies on the manipulation of the amount of information on each of the players resulting in four information direction treatments:

1. games with no information on either player
2. games with information only on the receiver
3. games with information only on the offerer
4. games with information on both players.

Each of these directions of information is captured in a public information box that makes the information treatment common knowledge to both players. In addition we vary the amount of information in each of these direction treatments in order to provide more traction in resolving the questions posed above. Information on a player takes the form of:

- a head shot picture of the player
- a video file with the player greeting their matched counterpart
- a video file with the player stating their name and greeting their counterpart.

We also examine two aspects of identity made salient by this information structure: gender and ethnicity. There have been a number of recent papers showing differences in behavior

across gender and between and within different ethnic groups.[1] We investigate in particular the relative strength of the two explanations between males and females, and the extent to which these explanations are more salient within co-ethnic pairings.

Exploiting the information structure outlined above, we find independent evidence for other regarding behavior and social sanctions motivations. In particular, we find that offers rise by 4-7 cents (or about 20-35% of the average no-information offer) when the receiver can be identified. The differences between the no information offer and the information offers are significant at the usual levels.

Comparing games with information only on the offerer with no information games reveals an increase in the offer, relative to the no information games, of 6.5 cents or about 25% of the average no-information offer.[2] Overall we find that males respond much more to information on the offerer: the difference in average offers between males and females is significant at the 1% level.

Examining differences in average offers between one-sided information games and two-sided games we find some evidence of discrimination within and across gender and ethnicity pairings. In particular we find no evidence of discrimination either across gender or ethnicity pairing under the one-sided information treatment. However, under the two-sided information games, males and females tend to give more to females and males give slightly more to co-ethnics. We conclude that other regarding behavior in this sample of subjects is not subject to discrimination while reciprocity effects are. We argue that this is probably driven by the differential costs across different groups of having a poor reputation. We do not find any evidence for other regarding effects in the ultimatum game.

The rest of the paper is divided as follows. Section 2 describes our identification strategy, section 3 reviews related literature. We present the experimental protocols and discuss the data in section 4, the results in section 5 and we conclude in section 6.

[1] Glaeser et. al (1999), Fershtman and Gneezy (2001), Eckel and Grossman (2004) and Burns (2003) are some examples.

[2] We are unable to investigate the role of different levels of information on the role of sanctions as only one level of information is available (head shot) in this information direction treatment.

II Identification Strategy

The observational equivalence of apparently altruistic behavior driven by other-regarding preferences or reciprocity motivations is a problem for both empirical work and experimental games. Both of these approaches tend to focus only on a short series of players' actions, yet players themselves may treat their actions as if they were part of a longer terms set of interactions (Hoffman et al 1996). Our identification strategy relies on an information structure that captures the ideas raised by Schelling (1968): "the more we know the more we care" and Roth's (1995) explanation that face to face contact brings to bear on the allocation decision, all the subject's social training. By simulating one-way identification of the receiver and two-way identification (face-to-face) interactions, we are able to independently test for the mechanisms outlined above.

The observations used to test the explanations above, come from dictator and ultimatum games. The dictator game is a game in which the dictator is asked to divide an amount of money between her and the recipient. The receiver cannot reject the offer. In the ultimatum game, the offerer is asked to divide a certain amount of money between him and a receiver. This time however, the receiver can either reject/accept the offer (in a sequential game) or state a minimum acceptable offer (simultaneous game) in which case the allocation is implemented if the offer exceeds the MAO. Otherwise both players receive zero.

The information levels associated with each particular matching are randomly assigned. A crucial part of our design is the use of a common knowledge box in which the information levels of each player in a matching are available to both players. Since assignment to various information directions and levels is orthogonal to other characteristics, we are confident that estimates are not subject to omitted variable problems. The following diagram illustrates the identification strategy used to estimate other regarding and reciprocity effects.

	No Information on Receiver	Information on Receiver
No information on Offerer	BASELINE	OTHER REGARDING
Information on Offerer	RECIPROCITY	RECIPROCITY + OTHER REGARDING

The games with no information on either player provide us with baseline measures of offers when players have no information.[3] Games with no information on the offerer but some information on the receiver provide estimates of other regarding behavior. The difference in average offers between other regarding offers and the baseline provide us with an estimate for the size of other regarding effects. Games with information on the offerer but no information on the receiver allow us to estimate the effect of reciprocity effects. Note that the offerer is not motivated by other regarding concerns as there is no information on the receiver. Rather, concern about the fact that the receiver sees his/her image could change the subject's behavior. Differences between average offers in these games and the baseline provide an estimate of the size of reciprocity effects. Finally comparing games with information on both players and games with one-sided information allows us to observe the relative importance of other regarding vs reciprocity concerns.

Furthermore, we can examine the effects of "reducing the social distance between players" or a greater ability to identify the "victim" on other regarding preferences by comparing games with low levels of information to games in which subjects state their names (Bohnet and Frey, (1999), Eckel and Grossman (1993)). Bohnet and Frey (1999) find that when offerers have some information about recipients but recipients have no information about offerers, and when offerers and recipients both have information about each other, the mean allocation is about 50% compared to 26% when offerers have no information about recipients. Contrary to claims in Hoffman et al (1996), they argue that other-regarding preferences (what they term "identifiability-based other regardedness") and not strategic behavior (what they call "reciprocity-based other regardedness") are what explains the increased levels of offers in games with higher levels of information.

The ideas espoused by Schelling (1968) and Roth (1995) implicitly assume homogeneity of both offerers and receivers. The information structure that we employ allows us to relax this assumption. Using the identification strategy outlined above we are able to examine whether other regarding and reciprocity concerns differ across gender or whether the effects are stronger within co-ethnic matchings. In particular we test for the relative strength of other-regarding behavior within and across ethnic pairings and genders.

[3] Probably also captures other aspects of the experiment such as the extent to which this design preserves subject anonymity.

III Previous Results

An advantage of using the dictator and ultimatum games is that they have both been studied extensively by economists and psychologists.[4] Researchers have employed different versions of the games in which the structure of the games, amount of information offerers have or the amounts of money to be divided are manipulated.

The results of studies using the dictator game overwhelmingly point to deviations from the game-theoretic equilibrium predictions. According to these predictions, a self-interested dictator should keep the entire pie. Contrary to this prediction, dictators typically offer an average of 20-30% of the stakes. Similarly, the predicted offer in the ultimatum game is for the proposer to offer ε and for the receiver to accept it. Average offers in ultimatum games are about 40% of stakes and more than half the offers less than 20% are rejected by receivers (Camerer 2003). Positive offers in both of these games have been interpreted as a failure of the assumption of income maximization by selfish agents. The results of these studies seem to suggest that subjects care about recipients and are willing to pay a price to punish what is considered an unfair offer.

A number of variations of the dictator/ultimatum games have been studied since the early experiments of Guth (1982) and Kahneman et al (1986). These variations include altering the size of the pie to be divided and having subjects play multiple games to examine the impact of experience on subject offers (e.g., Roth et. al 1991; Bolton and Zwick 1995). The results do not show strong evidence of an impact of the size of the pie or subject experience. Furthermore, dictator/ultimatum games played in different parts of the world have, with very few exceptions, generated results consistent with the general pattern outlined above (Forsythe et al 1994; Roth et. al 1991; Cameron 1995; Henrich et al 2004). Some studies have also tested for effects related to the anonymity of the subjects with respect to the experimenter. The results for the dictator game indicate an attenuation effect when anonymity is introduced with a mean allocation of about 10%, or about half the typical offer in dictator games (Hoffman et. al 1994). However this result has not been replicated in other studies (see Bolton and Zwick 1995).

Close to the issues examined in this paper are studies that estimate the impact of demographic variation in the pairings of offerers and receivers on offers and MAOs. The

effect of gender on offers in both games and rejection rates in the ultimatum game has received the most attention from experimentalists. Bolton and Katok (1995) do not find any significant gender differences in the dictator game. Overall small differences across gender have been noted, with women accepting more offers (Eckel and Grossman 1993); receiving higher offers, especially from men (Dufwenberg and Muren 2002; Eckel and Grossman 2001); and being more likely to be classified as "Rawlsian," despite average offers being similar to males (Andreoni and Vesterlund 1998).

Eckel and Grossman (1993) find that African-american students offer more and reject more often in ultimatum games. Glaeser et al (2000) employ the trust game and find that white students do not repay the trust of Asian students. And Fershtmann and Gneezy (2001) find that Ashkenazic Jews, whose identities are signaled by their names, receive lower offers in the trust game from all subjects.[5] A number of recent studies have combined variation in both gender and race and find that these two factors are crucial for the initiation and reciprocation of trust (e.g., Burns 2003, Eckel and Wilson 2004; Buchan, Croson and Solnick 2003).[6]

IV Experimental Design

IV.1 Recruitment

Subjects were recruited in two phases from the undergraduate student populations at the University of California, Los Angeles (UCLA) and the University of Southern California (USC).

In the first phase, subjects were explicitly recruited from four ethnic groups: African Americans, Latino/as, Arabs, and Persians. We also invited students from three additional groups (Caucasians, Asians, and Indians/South Asians) to join the project. The leaders of student organizations from each of these communities (e.g., the Black Students' Association,

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[4] See Thaler (1988) and Camerer (2003) for reviews.

[5] This discriminating behavior is concentrated predominantly within the male sample.

[6] Other variations include age of subjects, levels of development of market institutions, academic major, and the effects of beauty. In general, students studying economics or business make lower offers. The explanation for this appears to be a selection argument, as older students in these degree programs are no different from those starting out. Very young participants typically make lower offers suggesting that socialization is at the root of altruistic behavior.

El Centro Chicano, the United Arab Society, etc.) were contacted and asked to help recruit subjects from their groups for our experiment. They were informed that the experiment brought together students from a number of California-based universities to play interactive games with each other over a computer network. Interested students were instructed to go to a specially designed web site to register for the experiment. At the web site, they were asked to provide their email address, indicate their university affiliation from a pull-down menu, and sign-up for the first session of the experiment.

As a result of a shortfall in the desired sample size, a second phase of recruiting was conducted at UCLA. In this phase, students who had signed up for other experiments at UCLA's California Social Science Experimental Laboratory (CASSEL), were asked to fill out a short screening questionnaire as they waited for their experiment to begin. The questionnaire included a question about their ethnic background. Students from our four target groups were then contacted by email and invited to visit our web site to register for the project. Subjects were given the same information about the project as those in the first phase. A total sample of 120 students was recruited from two campuses in the two phases.[7]

Neither the subjects nor the recruiters in the first phase were told that the purpose of the experiment was to analyze the effects of ethnic group membership or gender. The student organization leaders were told that they were being contacted because we were interested in recruiting subjects from communities that were traditionally under-represented in experimental research.[8] In addition, subjects were not informed that the only two universities from which subjects were recruited were UCLA and USC. As noted, they were told that the project involved students from multiple California-based colleges and universities, and the pull-down menu from which they chose their university affiliation when they registered to participate in the project on our web page listed several other universities in addition to UCLA and USC.

There are two primary concerns associated with the sampling procedure. Firstly, membership of student groups could be associated with greater concern for other in-group members or for other individuals in general. Secondly, the pool of subjects recruited in the second phase consists of players with potentially prior experience in dictator/ultimatum

[7] Four of the subjects who originally signed up to participate in the project dropped out.

games.[9] In order to address these concerns, a series of covariates were collected from the students during the sign up sessions to enable us to control for observable attributes (Table X in the appendix shows summary statistics for selected covariates of our subject pool).

In all, we were able to generate large samples of Asians, Caucasians, and Latino/as. These three groups represent two thirds of our sample and constitute the core set of groups studied when we turn to examine cross-group effects. The remaining one third of the sample was drawn from the African-American, Arab, Indian, and Persian groups. Characteristics of our sample are provided in tables 1 and 2 below.

		Ethnic Group							
		Asian	Caucasian	Latino	African-American	Arab	Indian	Persian	Total
School	UCLA	20	27	19	4	1	5	7	83
	USC	5	6	6	10	8	1	5	41
Sex	Male	12	18	7	2	4	2	2	47
	Female	13	15	18	12	5	4	10	77
	Total	25	33	25	14	9	6	12	124

Table 1: Information on the ethnicity, gender and school of subjects

Table 2 below shows that for a series of important covariates, women are comparable to men, with the exception of campus affiliation and experience with economics classes. This is comforting since it suggests that our inferences on gender are insulated against charges that effects attributed to gender are driven by other observable/measurable factors.[10]

Table 2: Socio-economic status, by gender

	Females	Males
Campus (1=UCLA)	0.62	0.74*
	(0.06)	(0.06)
Age (1=<19)	0.23	0.17
	(0.05)	(0.06)
Religiosity (Never attends houses of worship)	0.31	0.34

[8] All communications with the subjects and the student organization leaders referred to the experiment by the deliberately non-leading name "The Human Interaction Project."

[9] Contrary to earlier findings that experience does not affect play (Roth et. al (1991)) we find significant differences in the offers between first time players and more seasoned subjects.

[10] The entire sample plays 2 games with co-ethnics and 4 with non-coethnics so that we do not need to worry that any ethnicity results are driven by selection within the sample.

	(0.05)	(0.07)
Father has a college degree	0.58	0.55
	(0.06)	(0.07)
Subject voted in 2002	0.28	0.31
	(0.06)	(0.08)
Number of times played dictator game	0.57	0.41
	(0.12)	(0.11)
Number of times played ultimatum game	0.55	0.33
	(0.12)	(0.09)
Participated in other experiments at CASSEL	0.66	0.70
	(0.06)	(0.08)
Has taken a part in medical experiments	0.03	0.08
	(0.02)	(0.05)
Has taken a class in game theory	0.07	0.11
	(0.03)	(0.05)
Has taken a class in economics	0.52	0.73**
	(0.07)	(0.07)

Standard Errors in Parentheses. * , **, *** indicate 90, 95 and 99% confidence levels.

Before the experiment, we collected three different digital images of each subject: a headshot, a brief video clip in which the subject greeted the camera and said "Hello, I am looking forward to playing the game with you," and another brief video clip in which the subject again greeted the camera, but this time also gave his/her full name (e.g., "Hello, I am looking forward to playing the game with you. My name is John Doe."). While we allowed some variation in the exact wording of these statements, the meaning conveyed in each of these videos is generally uniform, and no other information other than the way in which the subjects delivered these messages is contained in the video files. All images were collected using the same background, and care was taken to ensure that subjects were not wearing any apparel indicating their school.[11] Waiting students were asked to fill in a questionnaire collecting a set of socio-economic variables. We are confident that the questions asked (which included ethnic affiliation) did not prime the subjects to ethnicity. Surveys that elicit socio-economic information including ethnicity are relatively common on college campuses. Subjects were paid a show up fee of $10 for the recording and questionnaire session.

The use of actual names in the games raises some human subjects concerns.[12] One way that the experiment design deals with this is that many different front ends are played in

[11] These clothing items included head gear and sweatshirts. A few subjects were dropped from the sample as a result of this.

[12] Because the games were played across different campuses, with UCLA players matched with USC players, and because the students did not know what other university the other players were from, we are quite confident that the use of actual names does not violate any human subject concerns related to post-experiment interactions. Approval for the experiments was secured from the Human Subjects Review Boards at both USC and UCLA.

any given session, which implies that individuals see about 9-10 different individuals per session. In addition, subjects do not know the exact offer a particular offerer makes. Rather they know the sum of all offers made by all their matched offerers and they only find this out after the second session, which is typically one week later.

IV.2 Protocols

All the games were played on computers in two labs on both campuses. At UCLA the games were played at CASSEL, while at USC, games were played in the law school library computer room. Subjects were asked to sign up for a series of game sessions a week before play. The games were programmed using CASSEL's modified multi-stage platform. The modifications were made to accommodate the fact that games could not be played simultaneously and had to be played across different campuses.[13] A crucial addition was a facility to store game information, which would be used by matched players on the other campus playing at different times. This made the scheduling of games more flexible thereby reducing potential attrition.

The dictator and ultimatum games were played over two sessions, with the offers and minimum acceptable offers being made in the first session and the back end aspects such as guessing of offers being completed in the second session.

In order to control for pre-game acquaintance, we include a check box for "know this person." While play across two campuses reduces the likelihood of this sort of contamination, the possibility of cross-campus acquaintances is high in a sample including ethnic minorities.

A particular innovation to the multistage platform was the inclusion of a public information box that contains information about each of the players in that matching (see Figure 1; also see the proctor's explanation of the public information box, reproduced in Appendix B). The game begins with the player clicking on the messages "meet player 1" and "meet player 2," following which either a still photograph would appear, a brief video of the player greeting them would play, or a message would indicate that "no information is available for this player for this round." The public information box makes the interaction much more realistic by increasing the credibility of the existence of the other player. Its most important effect however is that because both individuals playing observe the exact

same information, the public information boxes produces *common knowledge*. Hence, if we use the public information box to provide information about the identity of the offerer only, it is not simply the case that we provide information to the receiver about the offerer; we also, simultaneously, tell the offerer that the receiver has this information, and the offerer that the receiver knows that the offerer has this information, and so on.

Each session was run by one of the co-authors in conjunction with the programmer. A set of instructions was read out at the beginning of every session with a PowerPoint illustration of the features of the games to be played (see Appendix B). Players were identified for each session with the e-mail address given during the sign-up. The multistage platform would authenticate each player session and games would only begin when the subjects present had all been successfully authenticated. Players were matched with other players using a randomized matching matrix that ensured that subjects played two games with co-ethnics and four with non-coethnics. Information levels for each player were also randomly assigned. While it was possible for a subject to be matched with another subject more than once, care was taken to ensure that the information levels of the repeat matchings were different and did not create "familiarity".

Playing games over more than one session leads to potential attrition bias as the players that do not show up for the second session are likely to be different in important ways from those that complete their games. In addition, loss of observations associated with attrition leads to imprecise estimates.[14] Attrition is not a serious concern in this paper as we deal with the offers and MAOs made in the first week of the experiment which is associated with the lowest attrition rates (~15%--CHECK).

[13] Lack of access to the network on one of the campuses made simultaneous play impossible.
[14] For some of the back-end games that involved using information about matched players that did not show up at the second session, the sample average offer/MAO was used and players were informed that their matched counterpart had not shown up. The attrition problem is only relevant in determining the payoffs associated with the back-ends of the dictator game and success or failure in the ultimatum game.

Figure 1: Front End of the Dictator Game

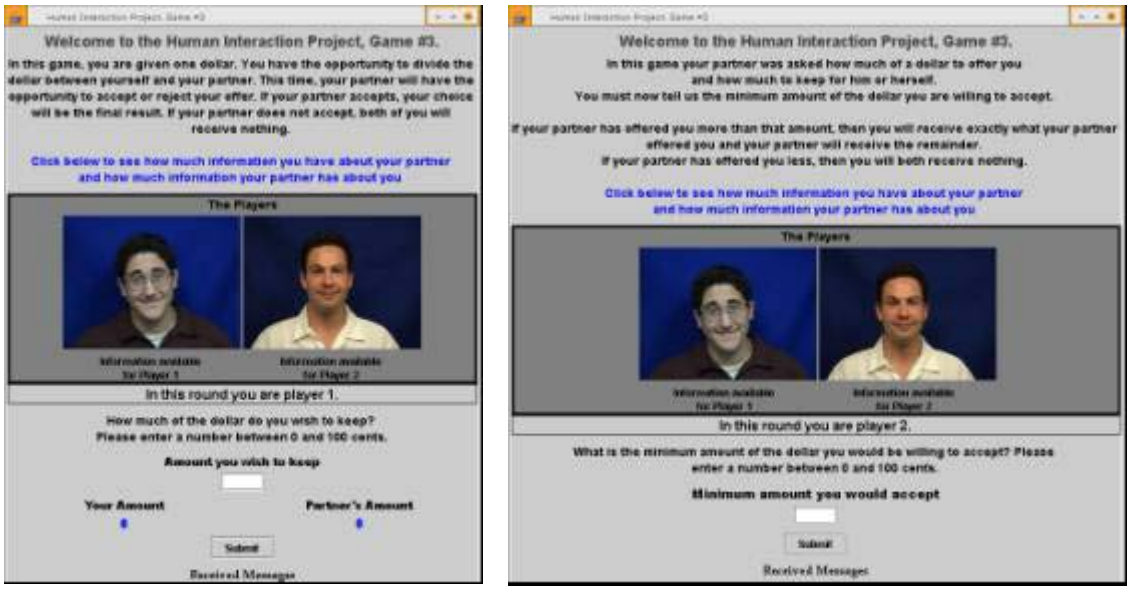

Figure 2: Front and Back Ends of the Ultimatum Game

V Results

V.1 Other-Regarding Preferences

Information Effect

In order to test for the presence of other regarding effects, we compare offers in games with no information on both players with offers in games with information only on the receiver. We also test for the effects of declining social distance on average offers by exploiting variation in the amount of information on the receiver. Social distance between the offerer and the receiver falls as we move from games with no information on the receiver to games with a video file in which the receiver states his/her name. The results of this treatment are shown in table W below.

Table 2: Impact of information levels on Offers: Treatment --No Information on Offerers, Information on Receivers.

Amount of Information on the Receiver	No information offer	Average Offer	Difference (means)	Differences between no information distribution Mann-Whitney test Prob >z
No Information	23.04 (1.61)			
Head Shot		27.29 (1.64)	4.25* (2.3)	0.112
Video with greeting only		32.45 (1.99)	9.41*** (2.56)	0.001
Video with greeting and name		30.54 (1.87)	7.5*** (2.47)	0.007

Standard Errors in Parentheses. * , **, *** indicate 90, 95 and 99% confidence levels.

The average offer in the no information games is 23 cents. This lies in the range of average offers reported in previous studies of the dictator game (Camerer 2003). In moving from games with no information, to games in which the offerer sees a still head shot of the receiver, average offers increase by 4.3 cents (significant at the 10% level). This is an appreciable difference equivalent to 18% of the average offer in the no information games. A test of the equality of distributions of offers under the no information and head shot treatments has a Mann Whitney p-value of 0.112. This is barely outside the range in which we would reject the null of no differences in the distributions.

Average offers are considerably higher in games in which the receiver is represented by the video treatments. Average offers increase by 9.4 and 7.5 cents for the video with greeting and video with greeting and name, respectively. This change in offers is equivalent to 41% and 33% of the no information average and both are significant at the 1% level. Tests of equality of distributions of offers under the video treatments and the no information treatment can be rejected at the 1% level. The difference in the average offers between the two video treatments has the wrong sign albeit insignificant. A strictly monotonic relationship between other regarding behavior and social distance would predict a positive sign since social distance is minimized in the treatment in which the subject states their name.[15]

[15] It is possible that if subjects do not believe that receivers are truthfully revealing their names, that there is no difference in the social distance implied by each of these video treatments. Assigning zero probability on truth telling seems unlikely since subjects would recall recording images in which they stated their real names.

Other Regarding Preferences: Gender Effects

A number of papers in the psychology and experimental literature have suggested possible differences between males and females other regarding behavior. We proceed to examine this by looking at average offers by gender of the offerer and level of information on the receiver. Table X below presents the results. While there is weak evidence that women give more under the no information games, there is no apparent difference in the average offers across each of the different levels of information on the receiver.

	Females	Males	Difference
No information	24.84	20.49	4.35
	(2.07)	(2.54)	(3.67)
Head shot	26.08	29.00	-2.92
	(1.99)	(2.78)	(3.42)
Video with greeting only	31.80	33.30	-1.50
	(2.17)	(3.64)	(4.16)
Video with greeting and name	30.67	30.31	-0.36
	(2.18)	(3.42)	(4.06)

Standard errors in Parentheses.

Other Regarding Preferences: Coethnic Identity

Table Showing Impact of information levels on Offers by Co-ethnic.

	Perfect Identifiability			Modal Identifiability		
	Coethnic	Non-Coethnic	Difference significant	Coethnic	Non-coethnic	Difference significant
No information	22.24	23.31	NO	23.16	22.99	NO
	(2.93)	(1.92)		(2.79)	(1.98)	
Head shot	20.42	29.26	YES	21.96	29.24	YES
	(3.22)	(1.87)		(2.98)	(1.93)	
Video with greeting only	36.61	31.25	NO	35.81	31.23	NO
	(4.64)	(2.19)		(4.07)	(2.28)	
Video with greeting and name	29.21	30.94	NO	30.40	30.60	NO
	(3.94)	(2.13)		(3.49)	(2.22)	

Standard Errors in Parentheses.

A number of theories explaining the relevance of shared ethnicity in solving a series of collective action problems suggest the existence of differential other regarding preferences within and across ethnic groups (Tajfel et. al. 1971). We investigate this possibility by examining average offers under different social distance treatments across co-ethnic and non-ethnic pairings. We consider both the case of perfect identifiability where subjects are categorized according to self-reported ethnicity and the case where we use the modal ethnicity from an identification game using the same subjects' images/videos.

As table Y above shows, we do not find any evidence to suggest differential other regarding behavior within and across coethnic pairings in this sample of subjects. This finding is robust

to both definitions of co-ethnicity. We observe a weak ethnicity bias in offers under the video with greeting only treatment, but the difference in average offers is not significant at the usual levels. Surprisingly, we find a statistically significant difference in average offers under the head shot treatment.

V.2 Reciprocity or Strategic Behavior

Head shots only: Comparison of Other Regarding vs Social Sanctions

Information Treatment	Entire Sample	Correcting for Sampling Differences: All	Difference from no information average	Correcting for Sampling Differences: Females	Correcting for Sampling Differences: Males	Male-Female Differences statistically significant?
No Information on both players	23.04 (1.61)	25.46 (1.89)	-	25.92 (2.33)	24.67 (3.25)	NO
Information on receiver only	27.29 (1.64)	30.42 (2.01)	4.96* (2.76)	25.77 (2.51)	36.93 (3.13)	YES
Information on offerer only	**31.93 (2.84)**	**31.93 (2.84)**	**6.47* (3.41)**	**27.63 (3.43)**	**38.71 (4.73)**	YES
Information on both players	31.26 (2.74)	33.27 (3.62)	7.81* (4.1)	27.43 (3.70)	49.00 (7.53)	YES

Standard Errors in Parentheses.

In table Z above we compare several information-direction treatments in games using the head shot with games with no information on both players. The evidence for reciprocity-based motivations comes from games in which there is information about the offerer (the offerer can be identified) but there is no information on the receiver. This treatment removes any other regarding motivations as the social distance to the receiver is no different than the no information games. Owing to the fact that only a subset of the subjects was exposed to this treatment, we restrict our analysis to these subjects. Column 2 shows the results for the full sample, while columns 3-7 present results that control for the sampling differences. The average offer under the information on offerer only treatment (third row) is 6.5 cents higher than the no information average. This difference is significant at the 10% level. It is important to point out that this difference cannot be due to the offerer conditioning her actions on the attributes of the receiver as there is no information on the receiver. A test of the equality of distributions with the no information games is rejected at the 1% level.

Columns 6 and 7 show the corresponding averages for females and males. It is clear from these two columns that the response to information on the offerer is predominantly among males. In going from the no information games, average offers increase by 14 cents (more than 50% of the no information average) amongst males but by only 1.7 cents amongst

females. The difference in the average offers and distributions between male and female offerers is significant at the usual levels.

The table above allows us also to estimate the relative size of the effects driven by other regarding preferences and reciprocity-based motivations driven by concern about reputation or manners (Camerer and Thaler 2000). Row 3 presents results of games in which there is information on the receiver but no information on the offerer and row 5 presents results of games with information on both players. In moving from the no information games to the games with information only on the receiver, average offers increase by a significant 4.96 cents (p-value < 10%). Using the same sample to investigate the effect of information on the offerer, we obtain an increase in average offers of 6.5 cents (p-value <10%). Finally going from games with no information to games with information on both players results in a change in average offers of 7.8 cents (p-value <10%). Surprisingly, the offer under the two-way information treatment is not statistically different from average offers under the one-way treatments. This does suggest the existence of possible threshold effects when the two effects operate in tandem. The differences in average offers under the two one-way treatments and the two-way information treatments are not statistically significant. However, relative to the no information games, this comparison provides clear evidence for the existence of independent other regarding behavior and reciprocity based motivations.

V.3 Gender-Ethnicity Interaction and Chivalry

	One Way (Information on The receiver)		Offers signficantly different	Two Way (Information on Both receiver and offerer)		Offers signficantly different
Overall Sample	29.73 (1.05)			31.52 (1.22)		
Offerer Gender	Receiver Gender			Receiver Gender		
	Female	Male		Female	Male	
Female	29.57 (1.50)	28.18 (2.15)	NO	33.10 (1.78)	27.49 (2.34)	YES
Male	30.44 (2.44)	30.99 (2.93)	NO	36.37 (2.83)	26.31 (3.47)	YES
	Coethnic	Non-Coethnic		Coethnic	Non-Coethnic	
Female	25.48 (2.69)	30.11 (1.37)	NO	29.67 (3.83)	30.98 (1.53)	NO
Male	30.72 (3.99)	30.64 (2.11)	NO	35.79 (4.57)	31.81 (2.54)	NO

Standard Errors in Parentheses.

Table B above presents our evidence for gender and ethnicity based discrimination under different informational treatments. Subjects do not exhibit any gender discrimination under the one-way treatment in which they have information on receivers but receivers have no information about them. However, when both players have information about each other females give statistically more to other females while males give more to females. The latter result is consistent with Eckel and Wilson (2004a). The average offers to the favored groups are also larger than the averages under the one way treatment suggesting that the favored groups represent the groups in which reputation is relatively more important. We interpret this as evidence for reciprocity-based motivations under the assumption that the cost of poor reputation differs across various reference groups.

The table shows the same results for self-reported ethnicity based pairings by gender of the offerer. Females tend to exhibit a negative ethnic bias under the one-way information treatment. The difference in offers between coethnics and non-coethnics is negative and has a t-stat of 1.52. Males do not exhibit any ethnic biases under this one-way information treatment. Under the two-way treatment there is no difference in average offers for females, but males exhibit a weak positive ethnic bias.

The results above suggest that other regarding behavior is not subject to discriminatory behavior while reciprocity based motivations which are invoked under the two-way information treatments, are. The difference in offers to various groups under the two-way information treatment is likely to be driven by the fact that information flows within different groups where interactions are more frequent or interactions are better monitored/enforced will produce differential costs for poor reputations.

V.4 Ultimatum Results: Offers

We contrast the offers made in the ultimatum and dictator games under the same information treatments. In this way we are able to establish the extent to which other regarding and strategic motivations drive the offers in the ultimatum game. Table 1 in the appendix shows the average offers in ultimatum games with no information on the offerer and various levels of information on the receiver. Average offers in the ultimatum game are 41.6 cents. This is also consistent with the results reported in other studies (Camerer 2003) Unlike offers in the dictator game, there is no clear relationship between average offers and the amount of information on the recipient. The same conclusion is reached when we examine average offers by gender of the offerer. Similarly in table 2 we show average offers by self-reported and modal co-ethnicity and information levels. There is no particular pattern of discrimination for or against coethnics at any information level.

In table 3 in the appendix, we examine the effect of information on the offerer and no information on the receiver. Recall that this is how we determine the existence of reciprocal effects in the dictator game. Surprisingly, we find that the average offer under this information treatment is less than the no information offer, but the difference is not statistically significant. However the differences across gender observed in the dictator game under this treatment are still maintained. The average offer for males is 43 cents compared to 33 cents for women. The male offer is also marginally greater than the no information offer. The gender difference is also observed under the two-way treatment in which males offer considerably more than females.

Surprisingly, we do not observe significant levels of discrimination across gender and ethnicity. Table 4 in the appendix shows that males and females give equally to both genders and across all ethnicities. This observation holds true under the one way and two way

treatments. Overall, the explanation for the results above is that other regarding motivations are swamped by strategic considerations in the ultimatum game.

VI Conclusion

Our experimental design allows us to distinguish between two rival explanations for why groups succeed in achieving successful collective action: preference-based explanations and strategy-based explanations. We employ two well-known experimental games – the dictator game and the ultimatum game – adding in each case a number of innovations. One key innovation is the use of a full set of controls over the information combinations that offerers and receivers have about each other. This allows us to discern evidence for strategic motivations that exist independent of preference-driven motivations, and that are masked in designs that do not allow for the possibility that offerers do not observe, but know that they are observed by, receivers. A second innovation is to extend the study of preferences and strategies to examine how these relate to membership of ethnic and gender groups.

Our results suggest that strategic considerations play as prominent a role as other regarding preferences in explaining variation in offers across different levels and directions of information. We do not find any evidence for stronger other regarding preferences across gender and ethnic groups in our sample of university student subjects. We find weak evidence that males have stronger preferences for co-ethnics than for non-co-ethnics. Nonetheless, strategic action can be observed, especially within gendered pairings. Men, we find, act "chivalrously" towards women, *but only when they can be seen to be acting chivalrously*. Curiously women offer more to women under this information treatment than to men. We conclude that strategic behavior within particular groups depends on the relative costs associated with having a bad reputation within the group.

VII References

Bohnet, Iris, and Bruno S. Frey. 1999. "Social Distance and Other-Regarding Behavior in Dictator Games: Comment." *American Economic Review* 89 (March): 335-339.

Brewer Marilynn. 1996. "In-group favoritism: the subtle side of intergroup discrimination." In *Codes of Conduct: Behavioral Research and Business Ethics*, ed. Messick and Tenbrunsel. New York: Russell Sage Foundation: 160-71.

Buchan, Nancy R., Rachel T. A. Croson, and Eric J. Johnson. 2001. "Trust and Reciprocity: an International Experiment." University of Pennsylvania Working Paper.

Cameron, Lisa. 1999. "Raising the Stakes in the Ultimatum Game: Experimental Evidence From Indonesia." *Economic Inquiry* 37 (XXXX), p. 47-59.

Cooper, R., DeJong, D., Forsythe, R. and Ross, T. 1993. 'Forward Induction in the Battle-of-the-Sexes Games." *American Economic Review* 83: 1303-1316

Croson, Rachel, and Nancy Buchan, 1999, "Gender and Culture: International Experimental Evidence from Trust Games." *American Economic Review* 89 (March): 386-391.

Dufwenberg, Martin and Astri Muren. 2002. "Discrimination by Gender and Social Distance." Working Paper. Stockholm University.

Eckel, C. and P. Grossman. 2001. "Chivalry and Solidarity in Ultimatum Games." *Economic Inquiry* 39 (XXX): 171-188.

Eckel, C. and P. Grossman. 1996. "The Relative Price of Fairness: Gender Differences in a Punishment Game." *Journal of Economic Behavior and Organization* 30 (XXXX): 143—58.

Fehr, Ernst, S. Gachter, and G. Kirchsteiger. 1997. "Reciprocity as a Contract Enforcement Device: Experimental Evidence." *Econometrica* 65 (XXXX): 833-860.

Fershtman, Chaim and Uri Gneezy. 2001. "Discrimination in a Segmented Society: An Experimental Approach." *Quarterly Journal of Economics* 116 (XXXX): 351-377.

Frey, Bruno S., and Iris Bohnet. 1997. "Identification in Democratic Society." *Journal of Socio-Economics* 26 (XXXX): 25-38.

Fudenberg, Drew, David K. Levine and Eric Maskin. 1994. "The Folk Theorem with Imperfect Public Information." *Econometrica* 62 (XXXX): 997-1039.

Gil-White, Francisco J. 2004. "Ultimatum Game with an Ethnicity Manipulation: Results from Bulgan Sum, Mongoloa." In Joseph Henrich et al., *Foundations of Human Sociality: Economic Experiments and Ethnographic Evidence from Fifteen Small-Scale Societies*. New York: Oxford University Press: pp. 260-304.

Glaeser, Edward L., David Laibson, Jose A. Scheinkman, and Christine L. Soutter. 2000. "Measuring Trust." *Quarterly Journal of Economics* 65 (August): 811-846.

Harris, David. 2002. "In the Eye of the Beholder: Observed Race and Observer Characteristics." Unpublished Paper.

Henrich, J., R. Boyd, S. Bowles, C. Camerer, E. Fehr, H. Gintis, R. McElreath, M. Alvard, A. Barr, J. Ensminger, K. Hill, F. Gil-White, M. Gurven, F. Marlowe, J. Patton, N. Smith, and D. Tracer. 2001. "'Economic Man' in Cross-cultural Perspective: Economic Experiments in 15 Small Scale Societies," Working paper. Sante Fe Institute.

Henrich, Joseph et al., 2004, *Foundations of Human Sociality: Economic Experiments and Ethnographic Evidence from Fifteen Small-Scale Societies*. New York: Oxford University Press.

Hoffman, Elizabeth, Kevin McCabe, and Vernon L. Smith. 1996. "Social Distance and Other- Regarding Behavior in Dictator Games." *American Economic Review* 86 (June): 653-660.

Hoffman, Elizabeth, Kevin McCabe, and Vernon L. Smith. 1999. "Social Distance and other-regarding Behavior in Dictator Games: Reply" *The American Economic Review* 89 (March): 340-341.

Lewis, David and Andrew Weigert. 1985. "Trust as a social reality." *Social Forces* 63 (XXXX):967-85

Myerson, Roger and Mark Satterthwaite. 1983. "Efficient Mechanisms for Bilateral Trading." *Journal of Economic Theory* 28 (XXXX): 265-81.

Orbell, John M., Alphons van de Kragt, and Robyn M. Dawes. 1998. "Explaining Discussion-Induced Cooperation." *Journal of Personality and Social Psychology* 54 (XXXX): 811-819.

Ostrom, Elinor and T.K. Ahn. 2002. "Social Capital and the Second Generation Theories of Collective Action." Presented at the annual meetings of the APSA, Boston.

Platteau, J.P. 1994. "Behind the Market Stage Where Real Societies Exist." *Journal of Development Studies* 30(XXXX and XXXX): 533-77 and 753-817.

Radner, Roy. 1986. "Repeated Partnership Games with Imperfect Monitoring and No Discounting." *Review of Economic Studies* 53 (XXXX): 59-70.

Schelling, Thomas. 1968. 'The Life You Save May Be Your Own.'" In S.B. Chase Jr (ed), *Problems in Public Expenditure Analysis*. Washington DC: The Brookings Institution.

Tajfel, Henri, Michael Billig, R.P. Bundy and Claude Flament. 1971. "Social Categorization and Intergroup Behavior." *European Journal of Social Psychology* 1 (XXXX): 149-178.

Weber, Roberto and Colin Camerer. 2002. "Timing and Virtual Observability in Ultimatum Bargaining and 'Weak Link' Coordination Games." Working Paper. Carnegie Mellon University.

Appendix A (Proctor Instructions)

Welcome to the Human Interaction Project. You are about to participate in a series of experiments on decision-making. Students from a number of other colleges and universities in California will be participating. All interaction between you and your partners in each experiment will take place through the computer terminals.

We will start with a brief instruction period.

Today, you will be participating in several different types of games. Before each one begins, we will provide a description of the main features of the game.

The Public Information Box

Before we explain the specific rules for each game, we will first go over a central feature of our experiment that you will see in all the games you will play.

In every game, you will be playing with one or two other players, and we will provide you with some information about who they are. Please look up at the screen.

[*Show slide of public information box with the images unopened, indicating that "in this round you are player 1."*]

This is called the public information box. Both you and the person you are playing with will see exactly the same box with exactly the same information in it. The first thing you will do is click on the buttons to "meet player 1" and then "meet player 2." Sometimes, "player 1" will be you, and sometimes "player 2" will be you.

In this particular round, you are player 1. After you click "meet player 1" a box will appear. The box will contain one of several things. Sometimes, it will contain a message that says: "No information about this player has been provided for this round."

[*Show slide of public information box, indicating that "you are player 1." It should be a slide with the "no information" message for player 1 and the box for player 2 unopened.*]

This means that neither you nor your partner has any information about the player (of course, since the player in this example is you, you know who you are – but the other player does not). Sometimes, when you click "meet player 1" you will see a picture of player 1 (in this case, a picture of yourself, since you are player 1).

[*Show slide of public information box, indicating that "you are player 1." It should be a slide with the still image of player 1 opened and the box for player 2 unopened.*]

And sometimes you will see a brief video clip of player 1 greeting you (in this case, since you are player 1, you would see a brief video clip of yourself).

[*Show slide of public information box, indicating that "you are player 1." It should be a slide with the video clip of player 1 opened and the box for player 2 unopened.*]

Of course, to hear what the person is saying, you will need to put on headphones. This is why there is a pair of headphones in front of you.

After you have met player one, you will click "meet player 2." Again, you will see one of three things: a message telling you that "no information about this player has been provided for this round," a picture of the player, or a short video clip of the player greeting you. Make sure that you wait until the video clip of player 1 is finished before clicking on "meet player 2." Otherwise, both videos will play simultaneously and the two players will talk over each other.

[*Show same slide as last one, but this time open the box for player 2 as well.*]

The important thing to remember about the public information box is that both you and the person you are playing with will see exactly the same thing. If you see a picture of the other player and a picture of yourself, they will also see a picture of you and a picture of themselves. If you see "no information" about yourself and a video clip of them, they will see a video clip of themselves and a message telling them that they have no information about you.

Also, remember that this is the only information that you will have about them and that they will ever have about you. With only a handful of exceptions, you will only be playing with players from other colleges and universities

One last thing: after meeting the players you will be asked to indicate whether you know your partner. By this we mean, do you know your partner personally, outside of the context of this experiment. If you know the other player, check the box labeled "I know the other player."

Does anyone have any questions about the public information box?

Dictator Game Instructions (Front End)

Game 1 is very simple. At the beginning of the game, you will be given one dollar and asked to divide that dollar between yourself and your partner. We will implement whatever choice you make. Your decision about how to divide the dollar is final and will be reflected in the ultimate payoffs that you will receive at the end of the third session.

Before you make this decision, you will be asked to meet both players, just as we have discussed. In some versions of this game, your partner will not be given information about you, but you will be given information about them. In other versions, you will be given information about your partner, and they will be given information about you.

Remember: if you know the other player, be sure to check the box indicating that you know the other player.

After you have met the players, you will be asked to enter the amount of the dollar that you wish to keep. The computer will calculate what you and your partner will get, based on what you enter.

Are there any questions?

Chris will monitor the progress of each player from the central server. After everyone enters a response, he will allow you advance to the next round. Please take as much time as you need. Chris will only begin the next round when everyone has finished making their decision. But you should not feel that you have to rush. Please take as much time as you need to think through how much

money you would like to keep and how much you would like to give your partner. There will be twelve rounds to Game 1.

The game will begin when you are asked to enter your client information. Where it says name, please enter your email address. Please be sure to use the email address printed on the card that was given to you, which should be the same email address that you signed up with. And be careful to enter it correctly as the computer network does not handle typing errors very well! We will use your email address to keep track of your responses and to calculate your payoffs.

Now please put on your headphones. If you need to adjust the sound level, there is a volume control on the headphone cord. Let's begin.

Ultimatum Game Instructions (Front End)

In Game 2, you will again be given one dollar and asked to divide it between yourself and your partner.

This game has a very important difference from the earlier one, however. In the earlier games, we implemented whatever proposal you made. In this game, your partner can accept or reject your offer. If she accepts the offer, then whatever division you proposed is implemented. If she rejects your offer, both of you receive nothing.

Are there any questions?

Chris will start the game. You will be asked to log in again with your email address, and we will play a total of six rounds. Remember that the rules of this game are different from the two earlier one. Take the time to think through your decision.

Now please put on your headphones. Let's begin.

Dictator Game Instructions (Back End)[16]

[16] The back ends of the games were played approximately a week after the front ends of the games.

Today, you will be participating in several different types of games. You have played each of these games before, although today you will be participating in a different role. Whereas before you were making offers to your partners, this time you will be on the receiving end. Your job will be to decide how to respond to the offers that other players have made to you. As before, each game will be slightly different. Before each game begins, we will provide a brief description of its main features.

As in the games last week, each game has a public information box. As you will recall, the key feature of the public information box is that both you and the person you are playing with will see exactly the same box with exactly the same information in it. As you did last week, you will want to click to "meet player 1" and to "meet player 2" before you begin each game.

In this game, your partner was given one dollar and asked to decide how much to give to you. Whatever choice she made is final. What we ask you to do is guess how much your partner decided to give you. In addition to whatever your partner decided to give you, you will receive an extra 50 cents at the end of the game if your guess falls within five cents above or below what your partner actually offered you.

In this game, your partner may or may not have had information about, and you may or may not be given information about them. So when you go to "meet the players," you may see a photo or a video clip of yourself and your partner, or you may see a message that you have no information about them (or yourself).

Are there any questions?

There will be twelve rounds to this game. As last week, Chris will monitor the progress of each player from the central server. After everyone enters a response, he will allow you advance to the next round.

The game will begin when you are asked to enter your client information. Where it says name, please enter your email address. Please be sure to use the same email address printed on the card that was given to you, which should be the email address that you signed up with. And, again, be careful to enter it correctly.

Now please put on your headphones and, if necessary, adjust the volume. Let's begin.

Ultimatum Game Instructions (Back End)

This game has a more fundamental difference from the last one. In this game, your partner was given one dollar and asked to divide it between the two of you, just as in the other games. This time, however, you have the opportunity to accept or reject her offer. If you accept the offer, then whatever division she proposed is implemented. If you reject the offer, both of you receive nothing.

You accept or reject the offer by entering a number, what we call the "minimum" amount of the dollar that you are willing to accept from your partner.

If your partner offered you more than this minimum amount, then her division is implemented. If, however, your partner offered you less than the minimum amount you are willing to accept, your partner's offer is rejected and both of you receive nothing.

For example, you might decide that the minimum amount that you are willing to accept is 50 cents. In this case, if your partner offered you more than 50 cents, whatever division of the dollar she proposed would be implemented. If, she offered you less than 50 cents, her offer would be rejected and you would both receive nothing.

This game also has a public information box. Please be aware of the information that has been provided to you and your partner. Sometimes information will be provided about both you and them. In other situations, it will not be.

Are there any questions?

Chris will start the game. You will be asked to log in again with your email address, and we will play a total of six rounds.

Now please put on your headphones. Let's begin.

VII.1 Appendix B: Ultimatum Games: Offers

One-way P-R: Information on Receiver and Gender effects.

media_on_r	Full Sample	Females	Males
No information	40.78 (1.20)	40.59 (1.71)	41.04 (1.65)
Head shot	44.08 (1.13)	43.39 (1.29)	45.25 (2.14)
Video + greeting	40.54 (1.50)	38.91 (1.82)	43.65 (2.55)
Video + greeting + name	39.89 (1.46)	41.28 (1.77)	37.75 (2.50)
Total	41.63 (0.65)	41.32 (0.81)	42.12 (1.09)

One-way P-R: Information on Receiver and Ethnicity effects.

media_on_r	NON-COETHNIC	COETHNIC	NON-COETHNIC (ID)	ID_COETHNIC
No information	40.59 (1.21)	41.50 (3.47)	40.65 (1.28)	41.09 (2.73)
Head shot	44.11 (1.37)	44.00 (1.66)	44.61 (1.43)	42.73 (1.73)
Video + greeting	41.30 (1.65)	38.29 (3.40)	40.73 (1.55)	40.05 (3.61)
Video + greeting + name	38.91 (1.68)	44.23 (2.46)	39.72 (1.71)	40.39 (2.86)
Total	41.51 (0.73)	42.05 (1.44)	41.75 (0.75)	41.30 (1.31)

Social Sanctions Motivations

Identification	Full Sample	Sample Correction	Sample Correction: Females	Sample Correction: Males
No Info	40.78	39.71	36.92	41.72
	(1.20)	(2.54)	(4.48)	(2.96)
One-way P-R	44.08	45.74	45.00	46.48
	(1.13)	(1.73)	(3.16)	(1.48)
One-way R-P	**37.89**	**37.89**	**33.25**	**43.06**
	(2.63)	**(2.63)**	**(3.41)**	**(3.79)**
Two-way	46.17	49.78	35.00	54.00
	(2.20)	(4.52)	(10.00)	(4.11)
Total	42.40	42.00	38.57	45.00
	(0.76)	(1.30)	(2.09)	(1.54)

Gender Ethnicity Interaction and One vs Two-way information

	One Way (Information on The receiver)		Offers signficantly different	Two Way (Information on Both receiver and offerer)		Offers signficantly different
Overall Sample	41.99 (0.78)			44.98 (0.85)		
Offerer Gender	Receiver Gender			Receiver Gender		
	Female	Male		Female	Male	
Female	41.28 (1.16)	42.09 (1.48)	NO	44.88 (1.03)	44.95 (1.70)	NO
Male	42.36 (2.13)	43.08 (1.58)	NO	46.12 (1.66)	43.78 (3.19)	NO
	Coethnic	Non-Coethnic		Coethnic	Non-Coethnic	
Female	40.59 (2.25)	41.83 (1.00)	NO	43.95 (1.87)	45.11 (1.01)	NO
Male	44.19 (1.68)	42.07 (1.83)	NO	50.24 (4.11)	43.58 (1.75)	NO