

Groups and Social Norms in the Economic Context: A Preliminary Experimental Investigation

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1 Intro

The aim of this economic experimental contribution is to better understand the influence of group membership in terms of economic decisions. While experimental studies on groups are not new in other fields than economics, economic experimental methodology has not been yet considerably applied to group dimension. The basic experimental design implied is a variation of the well-known investment game. The paper is organized in the following way: section 2 sketches the importance of groups in the economic context; section 3 provides a description of the experimental setting; in section 4 a detailed analysis of laboratory outcomes is provided; in section 5 outcomes of the experiment are discussed according to some hypothesis previously defined; in section 6 some conclusions are drawn with particular attention to further research opportunities.

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2 Groups and the Economic Context

Economics has traditionally focused on self-regarding, individualistic agents completely devoted to the efficient maximisation of their utility given a budget constraint. As Sugden (2000) poses it:” *In that theory [theory of rational choice], the only ultimate actors are individual human beings: it is individuals, not groups, which face decision problem. The question ‘What should we choose?’ simply cannot be formulated within the theory*” This undersocialized description of economic behaviour is deeply rooted in the utilitarian tradition and has become the dominant paradigm in Economics. Social atomisation, in fact, is a necessary condition in the perfect competition approach which is characterized by an highly mathematically-formalized analytical apparatus. Granovetter (1985) considers not only the fallacy of an undersocialized approach but also of an *oversocialized* view of economic life which has characterized some sociological analysis. In this kind of approach the decision-maker is influenced by institutions in a mechanical way and shares with the homo economicus the same atomistic perspective. A possible answer given by the author to this two approaches is the *embeddedness* argument which ”*stresses instead the role of concrete personal relations and structures (or “networks”) of such relations*”. The importance of different groups and institutions in defining the structure of effective incentives has been widely described by (Bowles, 1998): the more transactions are regulated by markets mechanisms the more subject will reveal themselves as individualistic and self-regarding. The bigger the part played by non-market transaction the more other-regarding and socialized will be the agents. The role of trust in originating and sustaining networks (groups) in the economic context has been evidenced by Bowles and Gintis (2000). The authors use the term *parochialism* to define exclusionary practices between groups characterized by

different cultural aspects. Parochialism favours trust intended as the cooperation between individuals when informations about the trading partner are absent or too costly. Instead of the term "group" the authors employ the concept of network which is a "set of agents engaged in relatively frequent, non-anonymous interactions structured by high entry and exit costs, but lacking centralized collective decision-making institutions". The basic trade off embedded in networks or groups is between some advantages in terms of control over the other's action and the loss in exchange opportunities. More specifically the advantages are to be searched in the possibility of retaliation and in the acquisition of low cost information on the group members. When this positive attributes of groups overcome losses due to trading limitations groups will exist and constitute and adaptive social device. It must be noticed that, in this perspective, identification motivations which are usually invoked as the fundant element of groups might be instead a device in order to easily acquire informations about the others. Groups with a high degree of homogeneity (fan clubs, sport associations, political parties, ...) might thus originate from the consideration made by the chooser that is easier to infer the action of the other when he is similar to him. This will in turn originate trust inside the group which will help in solve coordination problems when contractual bindings are loose. An additional value component of group membership is that it is easier to retaliate against damaging behavior inside a group where relations are closer than when two monads interact occasionally. The model proposed by Bowles and Gintis (2000) considers three type of actions which agents can undertake: they can locate in one of many networks or remain outside the network system as anonymous traders, they can choose which kind of strategy adopt with the trading partner and they update their strategies after having considered the payoff in the previous

transactions.

Of particular interest for economists is the provision of incentives in firms. The standard approach to this topic has ignored concepts like group and identity¹. However the relevance of the group inside organizations, firms in particular, has been made clear by the seminal contributions of Simon (1991, 1993) and March (1994). The contribution of Simon tries to develop in the economic context the concept of *identification*. The level of identification is positively correlated with the adaptability of individuals to norms and pressures of the society², which, in some sense, defines also their adaptation to the social landscape. In the work of March a central role is played by the concept of *appropriateness* which represents an alternative to the traditional logic of consequences which dominates decision theory. Instead of considering the expected consequences of actions individuals might follow a rule-based reasoning in which actions are matched to situations by means of rules organized into identities. It is clear that in this kind of perspective the role of the group is fundamental in defining the process leading to the rule of decision. In this kind of process in fact the situation must firstly be recognized, the identity must be established and reference to existing rules must be considered. Groups may play an important role in guiding individual cognition in identity formation.

The importance of group identity in experimental setting has been evidenced by the pioneering contribute of Dawes (1991). In this work group identity in the laboratory has been pursued through communication among people who had never met before. Communication seems to have a considerable impact on the formation of group identity and to orient subject's

¹see Prendergast (1999) for a survey of economic literature

²Simon (1991) uses the term "docility" to connote the level of adaptation of individuals to norms and pressures of the society; "...to be docile means to be tractable, manageable and, above all, teachable."

actions to group-oriented behaviors which are different from self-regarding traditional economic behavior. The role of identity and of groups has been recently formalized inside a agency theory perspective by Akerlof and Kranton (2003). The formal model proposed by the authors tries to capture some empirical observed facts which reveal that in some situations economic incentives are not the only determinants of intended actions. The basic idea through which identity is incorporated into a traditional agent-based model is that a subject belonging to a category (group) has an ideal type of someone belonging to that category. The subject derives utility from belonging to a category but loses utility when not behaving like the ideal type”. The psychological background of a utility function defined in this way might be searched in a cognitive dissonance mechanism (Festinger, 1957). An attempt to formalize group identity in an evolutionary perspective has been provided by Bowles and Choi (2003). In the simulation presented different groups in terms of ”altruistic” propensity fight between them. The basic intuition of the model is that more altruistic (or cooperative ?) groups which face a public good problem fit better the environment with respect to less altruistic groups. The evolutionary mechanism thus selects more altruistic groups versus less altruistic.

The role of teams in preference definition has been considered by Sugden (2000). In the theory presented *team preferences* are methodologically similar to *individual preferences*. The latter have to be considered as a generalization of the former. The aim of the work is to ”*represent and codify forms of reasoning which people in fact use, perhaps informally or even consciously, when making decisions as collectives*”³. In putting forward this instance the author deals with two distinct problems: existence and objectives. The for-

³(Sugden, 2000, p.178)

mer refers to the recognition made by the individuals that they are members of a group and that they consider this fact when taking decisions while the latter refers to the definition of the group's task. In order to address this two arguments it is fundamental to understand the dimension of *team preferences*. At the team level of the team preferences are revealed by the ranking made by the team over a set of opportunities. At the individual level the team preferences derive from a team directed reasoning which defines the strategy to be chosen. Sugden's football players example⁴ underlights the coordination role of team reasoning. In a situation like the one described individual rationality (What should *I* do ?) does not warrant to reach the higher payoff while team-directed reasoning (What should *we* do ?) points to the pareto dominant payoff.

Group dimension seems thus to play an important role in economic context. Many aspects of economic decisions seem to be influenced by group dimension. The present work will focus mostly on the role of identification in defining social norms both within the group boundaries and between group boundaries. Laboratory evidence on this kind of dynamics might help in better understand real-life situations where natural groups in form of organizations play an important role.

⁴The situation described is a well-known game: there are two football players, A and B, who are members of a team. A has to pass te ball to B in order to score. Both players have two options: move to the left/right for B and pass to left/right for A. The probability to score is 11% if both choose right, 10% if both choose left, zero otherwise. The Nash equilibrium (pure and mixed) in this game are:L-L, R-R R-r with probability 10/21 and L-L with probability 11/21. The problem is one of equilibrium selection where the payoff dominant equilibrium is R-R

3 Description of the Experiment

3.1 Purposes of the experiment

Main purpose of the experiment is to check for reciprocity and trust in an artificially created group context. The setting implied is a so called *triadic game* (Cox, 2004) which is a variation of the traditional investment game. The triadic design allows to control for other regarding behavior and to isolate trust and reciprocity effect. An investment game, a dictator game and a dictator game with modified endowments are played in a triadic setting. The basic assumption of this setting is that social preferences are stable and exogenous. If this assumption is fulfilled it is theoretically possible to isolate the other-regarding component in an investment game from the trust and reciprocity component via a coupling with a control game. The control game in this setting is a simple dictator game which is supposed to capture the other regarding component in individual behavior.

The identification of these components of behavior is quite interesting *per sé* but can help in better understanding intergroup bias in the perspective of a recent contribution. The work of Yamagishi (2002) has moved the attention to the concept of *generalized reciprocity* as the fundamental element of observed intergroup bias (Tajfel and Turner, 1986). This position is deliberately against the well accepted explanation given by Social Identity Theory (SIT) and which emerges from Minimal Group experiments (Tajfel, 1970).

According to Yamagishi (2002) *generalized reciprocity* can take place in a *generalized exchange system* where what one receives from a partner is not the direct result of what she gave her (direct reciprocity) but just a mediated outcome of a generalized norm-oriented transaction. The expectation of the one who gives to a member of a group is that she will be reciprocated by a

generic member of that group and not necessarily from the targeted subject⁵. The behavior based on generalized reciprocity has been defined by the author as group heuristic.

The perspective of SIT is radically different from that of group heuristic. In SIT the group and the self become an indistinguishable entity and so favouring an in-group member is a pseudo-altruistic act which derives by an "egocentric" perspective. The utility of the fellows is in some sense embedded into the utility of the individual member of the group through a sympathetic process.

Three hypothesis will be tested with the experiment with the second and the third following from falsification of the first:

Hypothesis 1 *Subjects will not act according to the self-regarding theoretical solution in the investment game of session 1 and in the Dictator Game of session 2 and 3 (zero amount sent).*

From this hypothesis two other hypothesis descend:

Hypothesis 2 *People are not indifferent to group labelling both in terms of trust and reciprocity and in terms of other regarding preferences*

Hypothesis 3 *Subject will not play the same strategy in the pseudo-investment subsessions (undirect reciprocity) and in the dictator subsessions(other regarding) (sessions 2-3).*

The last hypothesis originates from the consideration that subjects may see themselves as interchangeable with other mebers of the group they belong to. If tis is true the strategies in the two games will differ and, more specifically, the strategy in the pseudo-investment game will resemble that

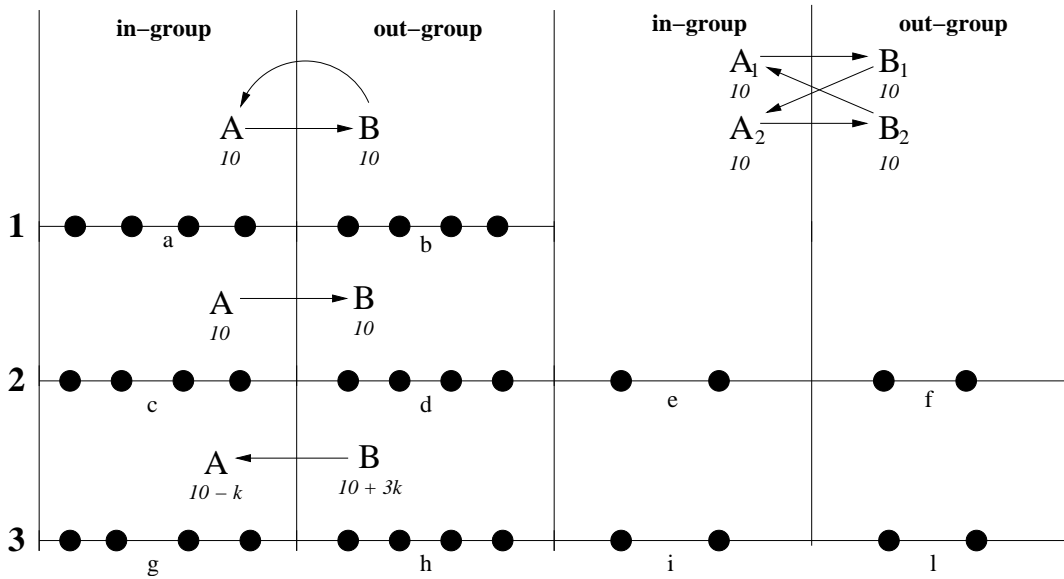
⁵"be nice with a group and the group will be nice with you"

of the investment game. If people perceive members of their group as completely different from themselves they will play a strategy similar to that of the dictator game. Experimental evidence has already shown that the first hypothesis is falsified in the laboratory setting (Berg *et al.*, 1995; Cox, 2004) while the authors were not able to find any explicit reference in the literature for what attains the other two hypothesis.

3.2 Structure of the experiment

The experiment is a computer based one. The number of participants is 12 in each treatment (a even number which half is also even). Total participants are 36. There are 3 different treatments. Groups will be aggregated via innate characteristics (support to a football team, zodiac signs, ...). An important methodological implication of group experiments is that the innate characteristics must not determine an uncontrolled selection bias. At the same time it is impossible to randomize among subjects because this will imply telling them unrealistic things (see (e.g., Tajfel, 1970) for unrealistic group formation.). The experiment is between subjects so experimental subject will be different individuals in each treatment; this is motivated by the fact that past experience in a previous experiment would have affected behavior in subsequent treatments. The payment will be proportional to the game decisions plus a show-up fee of 3 €.

Figure 3.1 *Experimental Design*



In the figure each black dot represents a choice while the arrow which join A and B players are the graphical representation of the game played in that session. Every single game will be appropriately considered in the next session where a detailed explanation of the experiment is provided. On the vertical axis the numbers design the session and on the horizontal dimension the IN-OUT group situation is represented.

3.3 Detailed Explanation

Here below every component of the experiment is considered and explained

- **Group Formation**

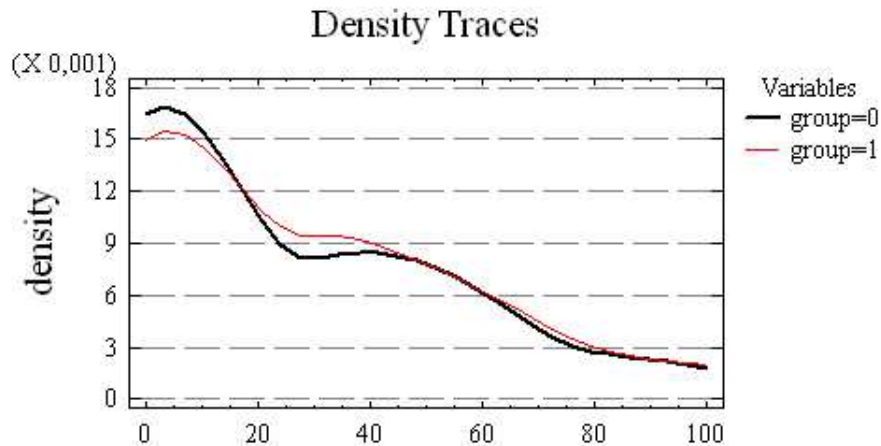
In the days preceding the experiment people were recruited in order to take part to the experiment following the usual procedure employed at the Computational and Experimental Economics laboratory (CEEL) of the University of Trento, Italy to recruit experimental subjects. During years CEEL has got a reputation among students and many of them are well introduced to the experimental practice and very anxious

to take part to an experiment (we are not, of course, saying that they are driven by greed). When people entered the lab or when they were called by phone they were asked about their day and month of birth and told that this would be employed to select them. People were also told that they had to wait the call from the laboratory confirming or disconfirming their participation to the experiment according to a selection process based on their birth date. No other detail were given. When defining some possible dimensions along which define group membership we understood that it was not that easy to select a variable without the risk of a strong selection bias. On the other side it was not possible to lie to subject because the experimental economic methodology is (rightly) quite strict on the issue of deception. Because of this reasons group formation through pseudo-similarity, a normal practice in psychological experiments, was ruled out from our opportunity set. The group formation we decided to pursue was based on the base of zodiac elements. In particular people with the same zodiac element (earth, fire, air, water) in common were members of the same group. We choose this grouping procedure in order to avoid selection bias ⁶ and to mantain at the same time the perception by the subject of group membership via a common element With this procedure we tried to replicate the minimal group formation which represents an important paradigm in social psychology At the same time we wanted to maintain a credibility reputation. It must however be noticed that is

⁶obviously those who believe in oroscope will suggest that the membership to an element will have important consequences on the innate characteristics of an individual, even in terms of altruism and scoail norms in general. We prefer to assume the perspective of the italian scientist Margerita Hack who said ” *The computation of planets’ position is an observation which has nothing to do with human life and so there are not scientific basis in this practice (to associate planets’ position with human events)*” (translated by the author as reported on the web site www.mediamente.rai.it)

not easy to deal with this methodological issue if one wants to maintain an experimental economic perspective.

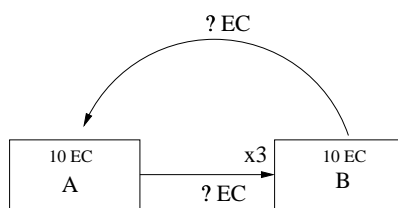
Six groups of six people each were thus formed according to the procedure above described and in each experimental session two of them were considered. The total participants to this experiment were thus 36 students randomly collected and subsequently grouped according to, from a scientific point of view, random procedure. The attention we posed to the group formation was justified by the strong bias that could have emerged from a selected sample. Aggregate data coming from the experiment in terms of behavior seem to support the hypothesis that selection based on zodiac elements is not characterized by selection bias in terms of behavior. The graph below shows the distribution of choices of groups along all three sessions.



It immediately emerges that the two distributions are quite similar and also parametric (t-test, F-test) and non parametric (Mann-Whitney test) tests confirm that there are not significant differences between the two distributions.

- **Treatment 1** Treatment 1 is a typical investment game (Berg *et al.*, 1995). Each subject has 10 EC (Experimental Currency). Subject A will be asked to transfer to anonymously paired subject B an amount (integer) (see section 3.4 for a specification of role assignment rules) of money (from 0 to 10 EC⁷). The rest will be kept by the subject. Each unit of money transferred to B will be multiplied by 3 and B will decide how much to keep for himself and how much to return to A (from 0 to the A's transfer multiplied by 3).

Figure 3.2 *Treatment 1*

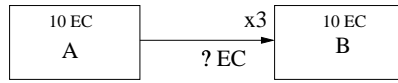


The theoretical solution is zero transfer from B and consequently zero contribution from A. Subject will play 4 times the game inside the group and 4 times outside the group. The role A or B will be randomly assigned at each repetition. Subjects will be informed of this random coupling procedure.

- **Treatment 2** Only subject A plays and decides how much to transfer to subject B multiplied by 3 which has no opportunity to return anything. Roles A and B are randomly assigned. The structure of the game is similar to a dictator game.

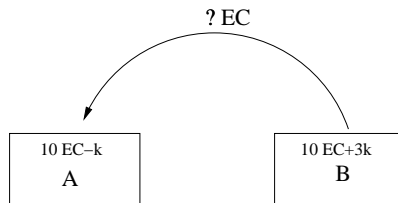
Figure 3.3 *Treatment 2*

⁷EC = Experimental Currency



- Treatment 3** Initial endowment is assigned in a non-proportional way to subject A and B. Roles A and B are randomly assigned. B is provided with 10 EC. B has an additional, randomly assigned, endowment equal to what another subject B received in treatment 1. The endowment of A consists in what another subject A kept in treatment 1. All the endowments are randomly re-assigned. Subjects are informed of the correlation between their endowment and that of the other player. This is motivated by data comparison exigencies. Subject B has to decide how much to give back to subject A.

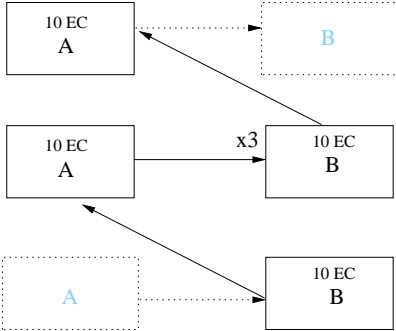
Figure 3.4 *treatment 3*



- Pseudo-investment Treatment** The last 4 rounds of session 2 and 3 were devoted to a treatment structured in the following way: a subject A has to decide how much to attribute to a subject B of his own endowment. After this the subject B has to decide how much to attribute to a subject A different from the subject A who eventually transferred her the amount of money. Both the subjects A involved in the decision of B own to the same group. 4 rounds of this game will be played in a within group setting and 4 rounds will be played in between group

setting. Within group in this setting means that both players A and player B are members of the same group.

Figure 3.5 *Pseudo Investment Treatment*



3.4 Role Attribution

In each round of each treatment both coupling and role assignment will be random. People will not know beforehand what will be their role in the next round. This design has been studied in order to prevent strategic interactions. A design of this kind will theoretically assure that each round will be played as a one shot round and that beliefs formation is ruled out thanks to fellow recombination at each round. This however is a strong assumption and some control on data will be developed in order to verify this condition. The identity of the partner is anonymous at each round.

3.5 Retribution

The retribution of the subjects was proportional to the amount collected during the experiment plus a show-up fee of 3 €. In the laboratory a conventional experimental currency will be implied. The sum collected at the end of the experiment will be changed in a real Euro amount. The maximum amount that was possible to collect was 15 €. The time required for the experiment was on average 30 minutes.

4 Analysis of the Laboratory Outcomes

4.1 Session 1

As described in session 3.2 the first session of the experiment was structured as a traditional investment game. some descriptive statistics might help in assessing aggregate behavior in this session. The following statistics refer to the behavior of subjects with role A (truster).

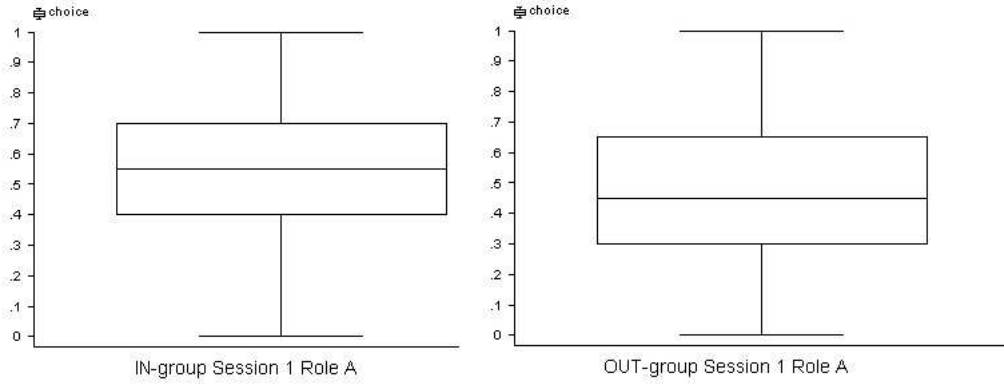
Table 4.1 *session 1 - Role A-*

	<i>IN-GROUP</i>	<i>OUT-GROUP</i>
<i>Count</i>	24	24
<i>Average</i>	.5541667	.475
<i>Median</i>	.55	.450
<i>Variance</i>	.0495471	.0776087
<i>Standard deviation</i>	.222592	.278583
<i>Minimum</i>	0,0	0,0
<i>Maximum</i>	1.0	1.0
<i>Range</i>	1.0	1.0
<i>Skewness</i>	-.2013383	.4113588
<i>Kurtosis</i>	3.131829	2.567968

Values are expressed as ratio of potential choice

The box-whisker plot (4.1) provides a convenient resume of the descriptive statistics above reported

Figure 4.1



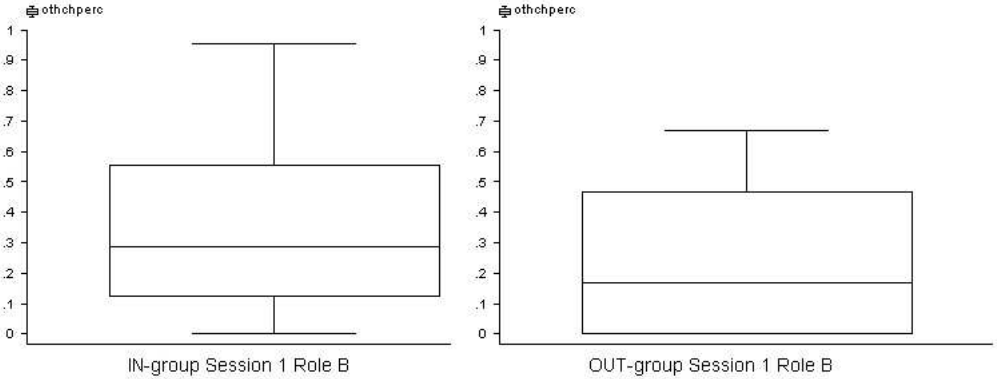
Turning to subject's B decisions the same statistics are considered

Table 4.2 *Session 1 - Role B-*

	<i>IN-GROUP</i>	<i>OUT-GROUP</i>
<i>Count</i>	23	23
<i>Average</i>	.3372613	.2406832
<i>Median</i>	.2857143	.1666667
<i>Variance</i>	.0702125	.0494345
<i>Standard deviation</i>	.2649764	.2223387
<i>Minimum</i>	0	0
<i>Maximum</i>	.952381	.6666667
<i>Range</i>	.952381	.6666667
<i>Skewness</i>	.7007297	.2430178
<i>Kurtosis</i>	2.723403	1.632134

Values are expressed as a ratio of potential choice

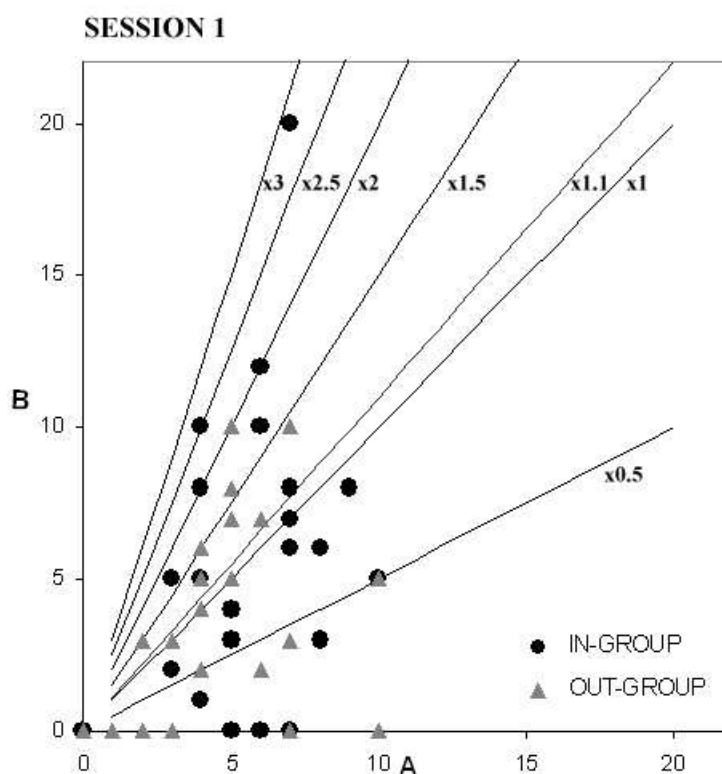
Figure 4.2



From the observation of the statistics it emerges that both choice of subject A (the truster) and of subject B (the trustee) are higher on average in the IN-GROUP treatment. It must however be observed that the standard deviation of choice B in the IN-GROUP treatment is higher than in the OUT-GROUP treatment. The underlying assumption to the way in which data are presented in the previous table are that the offer of the truster has a linear marginal effect on the trustee’s decision. The strategy presentation of section 4.1.1 tries to avoid this implication when presenting outcomes.

In order to better understand behavior in this session it is useful to consider individual behavior. The graph below (4.3) provides a representation of choices of B in response to choices of A. Each point refer thus to a couple in each round of session 1.

Figure 4.3 *Session 1 (Investment Game)*



The number paired with the diagonal lines represents the amount returned by B with respect to that received from A. Points on the left of line labelled 1.1 provide a positive return for subject A. Points on the right represent a bad investment for subject A. On line x2 subjects exit the game with the same total wealth. As emerges from graph 4.3, 7 in-group choices lie in the positive gain area while 8 out-group choices lie in the same area. The most of out-group choices are however concentrated in the area between x1.1 and x1.5 while in-group choices are more disseminated and 4 of them are situated at or above x2. Looking at the right hand side of x1 it is possible to notice that the majority of out-group choices are situated in the ideal area between x0.5 and 0 while in-group decisions are equally distributed between regions x1-x0.5 and x0.5-x0.

4.1.1 Strategy Analysis

In order to better understand individual strategies in the investment game it is useful to refer to possible strategies in the game. Four different strategies are identified with reference to the behavior of the trustee:

- altruism: when a trustee gives back more than 0.66 of what originally received he is classified as altruistic as the final allocation favours the truster
- equity: when a trustee gives a sum between 0.33 and 0.66 of the sum received his strategy is classified as oriented towards equity in the final distribution.
- quasi egoistic: when a trustee gives back a sum lower than 0.33 of the amount received but different from zero he is classified as quasi egoistic.
- egoistic: when a trustee gives back 0 amount he is classified as egoistic. This strategy corresponds to the rational one.

The figure 4.4 refers to the numerosity of trustee per classes of behavior and group status (IN = within game; OUT = between game).

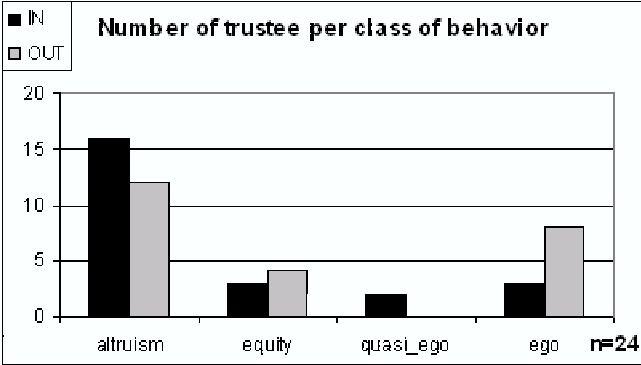


Figure 4.4

Looking at the extreme classes of the distribution it emerges that while in the altruistic class relatively more IN-GROUP transactions are present in

the egoistic class relatively more OUT-GROUP transactions are registered. This evidence seems to suggest that people tend to be less individualistic when interacting with subjects of their group than when interacting with subjects of the other group.

The impression that subjects are more kind with people from their group is confirmed also by the trusters' behavior as reported in figure 4.5. They in fact send always more on average in the IN-GROUP than in the OUT-GROUP situation. Another evidence from the figure is that there is not an immediate correlation between the amount sent and the behavior of the trustee.

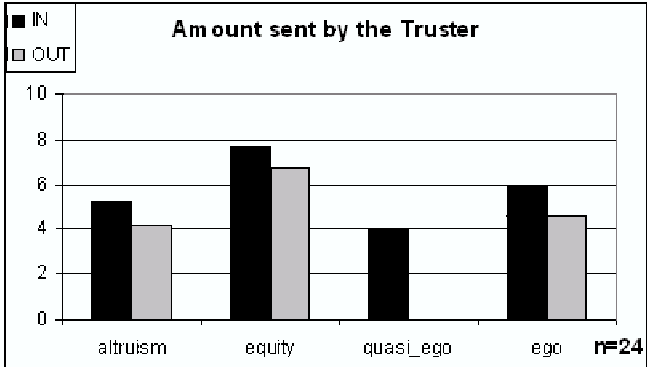


Figure 4.5

The last graph (4.6) represents the returns for trusters. All the 4 categories show an higher return for subjects under the IN-GROUP treatment.

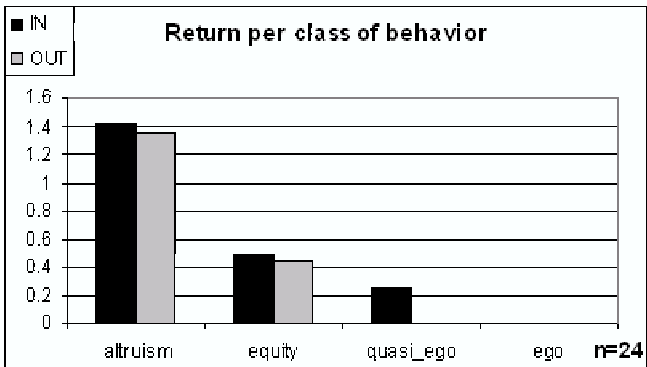


Figure 4.6

In conclusion what emerges from the analysis of strategy is that on average trustee in the IN-GROUP situation send an higher amount than in the OUT-

GROUP situation and that the same is true for trusters. Looking at the pattern joining the amount sent by the truster and the amount sent by the trustee what emerges is that the higher amount sent by the truster fall in the equity class. An unexpected outcome is that on average amount sent by the truster in the egoistic class are higher than those sent by truster in the altruistic class.

4.2 Session 2

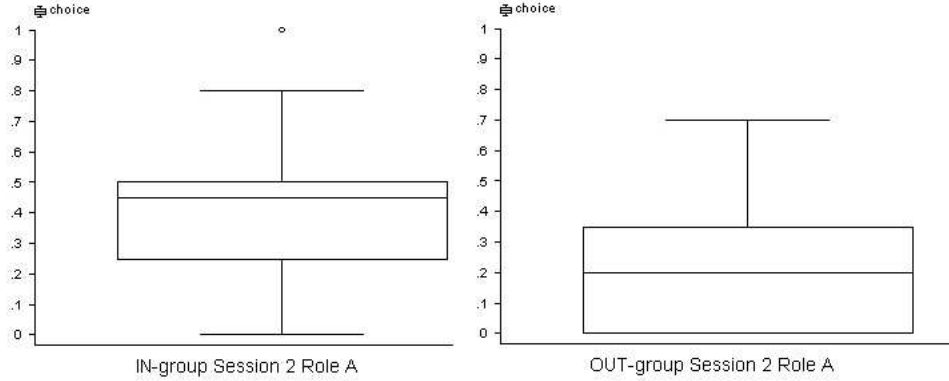
As described above the first 8 rounds of session 2 were composed by a simple dictator game. In this session only role A is active. The summary statistics for this session are reported in the table below

Table 4.3 *session 2 - Role A -*

	<i>IN-GROUP</i>	<i>OUT-GROUP</i>
<i>Count</i>	24	24
<i>Average</i>	.4125	.229167
<i>Median</i>	.45	.20
<i>Variance</i>	.0628804	.0456341
<i>Standard deviation</i>	.25076	.213621
<i>Minimum</i>	0.0	0.0
<i>Maximum</i>	1.0	7.0
<i>Range</i>	1.0	7.0
<i>Std. skewness</i>	.2104603	.5948538
<i>Std. kurtosis</i>	2.875536	2.293906

values are expressed as a ratio of potential choice

Figure 4.7



The pattern which clearly emerges from the aggregate data is that subject tend to be more altruistic with people of their same group. The differences between the two situations are also supported by statistic significativity.

4.3 Session 3

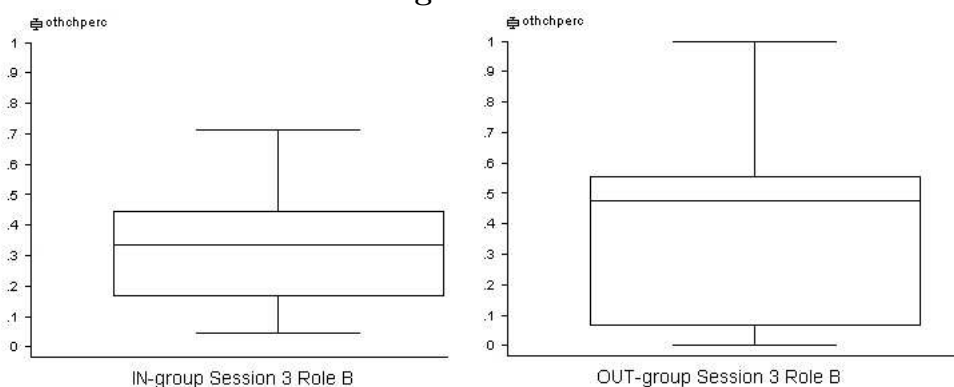
As described above (see section 3.2) the first 8 rounds of session 3 were structured as a dictator game but with differences in the subject's endowment (see section 3.2 for a detailed explanation of how the endowments were determined). Some summary statistics collected during this session are reported in the table 4.4

Table 4.4 *Session 3 - Role B -*

	<i>IN-GROUP</i>	<i>OUT-GROUP</i>
<i>Count</i>	23	23
<i>Average</i>	.3428226	.4111456
<i>Median</i>	.3333333	.4761905
<i>Variance</i>	.0375864	.1138481
<i>Standard deviation</i>	.1938721	.3374139
<i>Minimum</i>	.047619	0
<i>Maximum</i>	.7142857	1
<i>Range</i>	.6666667	1
<i>Skewness</i>	.2973659	.3649181
<i>Kurtosis</i>	2.214585	2.026572

values are expressed as a ratio of potential choice

Figure 4.8



The averages in the two situations are quite similar but the statistics referring to the OUT-GROUP treatment are slightly higher even if more volatile.

4.4 Pseudo-Investment Subsessions

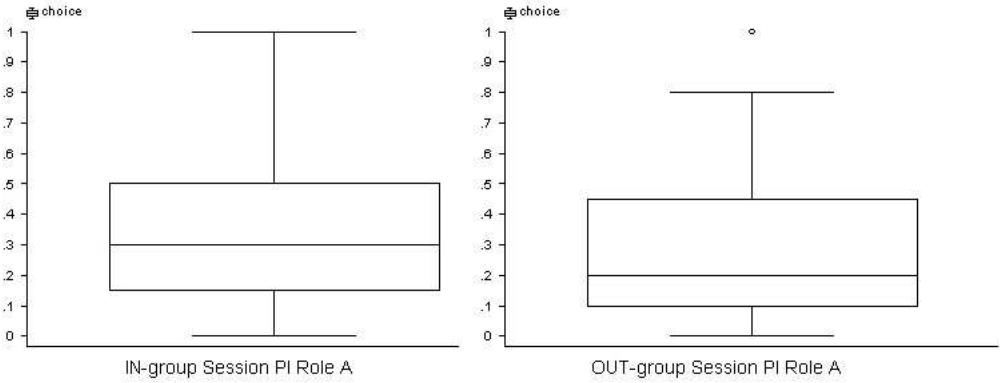
The last 4 rounds of both session 2 and session 3 were devoted to a so called Pseudo-Investment treatment (see above for a more detailed description). Summary statistics for role A are reported in table 4.5

Table 4.5 *Pseudo-Investment - Role A -*

	<i>IN-GROUP</i>	<i>OUT-GROUP</i>
<i>Count</i>	24	24
<i>Average</i>	.366667	.3125
<i>Median</i>	.30	.20
<i>Variance</i>	.0997101	.101141
<i>Standard deviation</i>	.315769	.318027
<i>Minimum</i>	0.0	0.0
<i>Maximum</i>	1.0	1.0
<i>Range</i>	1.0	1.0
<i>Skewness</i>	.8551389	.8551389
<i>Kurtosis</i>	2.770416	2.831924

values are expressed as a ratio of potential choice

Figure 4.9



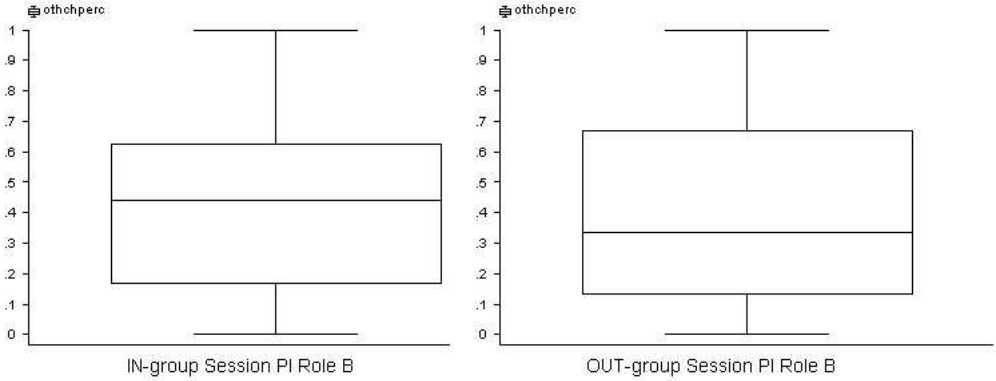
Choice of subject B is reported in the table below as a percentage of the sum received from subject A.

Table 4.6 Generalized Reciprocity - Role B -

	<i>IN-GROUP</i>	<i>OUT-GROUP</i>
<i>Count</i>	20	19
<i>Average</i>	.3925	.4289474
<i>Median</i>	.4416667	.333333
<i>Variance</i>	.0799587	.1320939
<i>Standard deviation</i>	.2827696	.3634472
<i>Minimum</i>	0.0	0.0
<i>Maximum</i>	1.0	1.0
<i>Range</i>	1.0	1.0
<i>Skewness</i>	.1077257	.4812222
<i>Kurtosis</i>	2.283688	1.951265

values are expressed as a ratio of potential choice

Figure 4.10



The choices of A and B are thus higher in the IN-GROUP treatment even if they are quite volatile. From the collected data no clear pattern emerges and any possible conclusion is quite far to be drawn.

4.5 Outcomes across Sessions

As mentioned in the description of the structure of the experiment the triadic form implied in the experiment allows to control for other regarding preferences in trust and reciprocity decisions. The underlying assumption to this experimental design is that social preferences are innate and stable and that there are no complementarities between trust-reciprocity and other regarding preferences. In order to isolate trust from other regarding preferences the decisions of subject A in session 1 and in session 2 will be compared. In order to isolate reciprocity from other regarding preferences the decisions of subject B in session 1 and in session 3 will be compared. The results of this kind of analysis are reported in the appendix (see E) The pattern which emerge from this kind of analysis are quite puzzling. Looking at data what clearly results is that subject in the in-group treatment trust less their partners than when playing the out-group treatment but are more altruistic with the in-group members. The differential between session 1 and three is even

more problematic: subjects seem to be characterized by negative reciprocity but at the same time by altruism. This result is obviously difficult to support and hard to reconcile with the existing literature. Some tentative hypothesis on the origin of this observation will be sketched in session 6. In particular the invoked explanation refers to endogeneity of social preferences.

5 Discussion

According to the null Hypothesis 1 the theoretical solution for all the games which compose the experiment is zero amount sent. What instead emerges is that both in the investment and in the pseudo-investment (see tab. 4.1, 4.2, 4.5 and 4.6) and in the dictator sessions (see tab. 4.3 and 4.4) subjects on average give something either when playing as A player or as role B player. At the same time, as it emerges from disaggregated data (see tab. A, B, C and D), there are subjects who send zero to the other party. Even considering these subjects it seems still possible to state that the perfect rationality self regarding population which lead to the formulation of hypothesis 1 is different from that observed in the laboratory.

For what attains Hypothesis 2 the observations on *other regarding* behavior are the following: in session 2 (dictator) the group label has a significant effect on the amount given on average, with the amount given to in-group subjects sensibly higher (4.125 vs. 2.29)(see tab 4.3). As specified in section 3.3 the *trust* component might be isolated comparing session 1 and session 2. What emerges from session 1 is that subjects A give more on average in the in-group session (5.54 vs. 4.75) with a standard deviation of 2.22 vs. 2.78 (see tab. 4.1). The average differentials between session 1 and 2 are reported in the appendix E. From the value observed it emerges that there is higher trust in the OUT-group setting than in the IN-group setting.

This result is quite unexpected both the real implications of this observations are discussed below. The *direct reciprocity* component emerges from the comparison of session 1 with session 3. Both in the IN-group and in the OUT-group situation subjects give more on average in the dictator game than in the investment game⁸ (see tab. E). From this observation, according to triadic design, follows that subject reveal on average negative reciprocity both towards IN-group and OUT-group members with an higher effect on OUT-group members. This observation, like the previous one deriving from sessions comparisons, is quite unexpected and difficult to support in the perspective of the dominant literature on direct reciprocity. (Charness and Rabin, 2000). Considering Hypothesis 3 session 2 and pseudo-investment game have to be considered for what attains player A. From average data (see 4.3 and 4.5) it emerges that the dictator game session is more discriminatory along group membership. An indirect consequence of this is that subjects give more on average to IN-group members in the Dictator game while they give more to the OUT-group members in the pseudo-investment game. A comparison might be developed also for what attains subject B referring to session 3 (see 4.4 and 4.6). Subjects B discriminate less between IN-group and OUT-group but tend to give more in the dictator game. Moreover it must be noticed that even if on average subjects give more to OUT-group members both in the dictator and in the pseudo-investment session the variance is sensibly higher in the OUT-group data than in the IN-group observations. Thus it does not emerge a clear pattern in the data from the comparison between session 3 and pseudo-investment session.

⁸the comparison is on the absolute sum given and not on percentage because of the coupled design of session 1 and session 3 (see section 3.2)

6 Conclusions

During the experiment it has been observed an average tendency to group discrimination assuming the form of a more generous amount sent to group fellows. However in some of the sessions this observation is weak (Pseudo-Investment) and in one of them (role B in session 3) goes even in the opposite direction. One possible hypothesis on this data structure is that whenever the game is not played only among two players but there is a third real player or an exogenous chooser subjects loose their identification with the group. "Exclusive" interaction might be a fundamental element in defining identity in the laboratory environment.

Another relevant pattern which emerges from data is that no discrimination á la Tajfel has been observed in the sense that subjects do not play deliberately against OUT-group subjects but are simply less favourable towards them. One of the possible explanation of this observation might be found in the presence of generalized reciprocity in all the sessions. Another plausible explanation might reside in the fact that with real reward subjects are less prone to "punish" members of the other group.

The isolation of trust and reciprocity from other regarding behavior has revealed itself quite problematic with the triadic setting implied. With this procedure in fact negative reciprocity emerges and more trust goes to OUT-group members. At the same time altruistic preferences are observed. This findings are not only surprising but also quite difficult to support. One possible alternative hypotheses is that people do not have stable social preferences but that preferences are embedded in the game that is going to be played. In this sense preferences are endogenous and strongly related to the game played⁹.

⁹referring to Bowles (1998) games might be seen as an institution. Games which repli-

Looking at the data contained in Berg *et al.* (1995) it emerges that the average amount given on average in investment game by subject A is 0.52 of the possible choice and by subject B is 0.298. The outcomes in our experiment are 0.5541 in the IN-group and 0.475 in the OUT-group for subject A and respectively 0.337 and 0.2407 for the subject B. In both situations the data collected by Berg *et al.* are situated between the IN-group and the OUT-group data. While this observation seems to confirm the existence of group effect it will be interesting to identify the net effect of generalized reciprocity comparing a purposely built control experiment replicating that of Berg *et al.* (1995) and an experiment without group labelling. Only with this procedure the real generalized reciprocity effect will be detected theoretically.

As a conclusion what should be remarked is that data reveal in general a relative group effect which tends to favour IN-group members against OUT-group members. Data obtained from session 1 might be compared with those of Berg *et al.*. What emerges from this comparison is that the ranking of amounts sent is IN-group > Individual > OUT-group. While this goes in the direction of a negative effect towards OUT-group members it is not in line with previous findings of Tajfel. Subjects are not deliberately against OUT-group members but simply less favourable. This is confirmed also by data from dictator game session where subjects are on average still altruistic towards OUT-group members. On discrimination it must be noticed that this pattern is more present where game structure involves direct interaction with another player. In sessions where a third party, either real or virtual, is present (session three and Pseudo-Investment session) discrimination is less evident. The last remark goes to triadic setting which has provided outcomes difficult to interpret. From comparison of different session indeed emerges

cate a market structure may activate more self-regarding preferences while games less market oriented might favour altruistic preferences.

that there is negative reciprocity and that OUT-group members are trusted more. The source of this outcome is not clear but some hypothesis are more likely to be true than others. The observation might be related to the small sample implied. Another possibility is that social preferences are not stable and innate but that they are related to the situation in which subject acts. In this sense social preferences might be endogenous with respect to the institution which is embedded in the game.

APPENDIX

A Session One: Individual Choices

	IN-group	IN-group	OUT-group	OUT-group
round	role A	role B	role A	role B
1	4	1	4	5
1	4	10	7	10
1	0	0	5	10
1	9	8	7	0
1	7	20	3	0
1	8	6	5	8
2	7	8	4	4
2	7	6	10	0
2	6	10	5	7
2	3	5	3	0
2	6	0	1	0
2	8	3	2	3
3	4	1	10	0
3	7	7	10	5
3	5	3	4	2
3	7	0	6	7
3	4	5	4	6
3	4	8	2	0
4	10	5	7	3
4	4	5	0	0
4	5	4	6	2
4	3	2	3	3
4	6	12	5	5
4	5	0	1	0

B Session2: Individual Choices

	IN-group	OUT-group
round	role A	role A
1	3	2
1	5	5
1	5	5
1	10	0
1	0	4
1	5	1
2	4	5
2	5	0
2	7	1
2	2	0
2	6	3
2	4	2
3	5	3
3	5	2
3	8	7
3	0	0
3	2	0
3	3	6
4	3	3
4	5	0
4	7	3
4	0	0
4	2	2
4	3	1

C Session 3: Individual Data

		In-group		OUT-group
Round	Endow	Role B	Endow	Role B
1	4	6	4	0
1	4	5	7	10
1	0	0	5	1
1	9	15	7	10
1	7	2	3	5
1	8	10	5	1
2	7	1	4	1
2	7	15	10	13
2	6	4	5	8
2	3	4	3	9
2	6	2	1	0
2	8	2	2	3
3	4	2	10	20
3	7	7	10	1
3	5	10	4	2
3	7	7	6	18
3	4	2	4	10
3	3	3	2	2
4	10	5	7	3
4	4	4	0	0
4	5	10	6	0
4	3	3	3	9
4	6	8	5	8
4	5	5	3	5

D Session Pseudo-Investment: Individual Data

	IN-group	IN-group	OUT-group	OUT-group
Round	Role A	Role B	Role A	Role B
1a	8	6	7	0
1a	0	0	5	2
1a	2	3	0	0
1a	6	2	2	1
1a	5	8	3	3
1a	2	3	2	0
2a	3	0	8	0
2a	0	0	2	0
2a	10	8	0	0
2a	3	2	2	2
2a	3	0	2	3
2a	4	4	0	0
1b	1	2	1	3
1b	1	0	4	10
1b	2	4	1	1
1b	10	30	3	9
1b	2	4	8	10
1b	4	5	1	3
2b	0	0	2	4
2b	5	7	0	0
2b	3	0	4	12
2b	4	7	2	2
2b	10	20	10	20
2b	0	0	10	8

E Net Effects

A's CHOICE IN SESSION 1 AND 2

IN-GROUP	Obs	Mean	Std. Dev.	Min	Max
choice A1	24	5.541667	2.225918	0	10
choice A2	24	4.125	2.507597	0	10

OUT-GROUP	Obs	Mean	Std. Dev.	Min	Max
choice A1	24	4.75	2.785834	0	10
choice A2	24	2.291667	2.136213	0	7

B's CHOICE IN SESSION 1 AND 3

IN-GROUP	Obs	Mean	Std. Dev.	Min	Max
choice B1	24	5.375	4.679395	0	20
choice B3	24	5.5	4.086031	0	15

OUT-GROUP	Obs	Mean	Std. Dev.	Min	Max
choice B1	24	3.333333	3.344907	0	10
choice B3	24	5.791667	5.740619	0	20

DIFFERENTIAL BETWEEN SESSION 2 AND 1

IN-GROUP	Obs	Mean	Std. Dev.	Min	Max
diff2-1	24	-1.416667	3.091597	-7	5

OUT-GROUP	Obs	Mean	Std. Dev.	Min	Max
diff2-1	24	-2.458333	3.562842	-10	4

DIFFERENTIAL BETWEEN SESSION 3 AND 1

IN-GROUP	Obs	Mean	Std. Dev.	Min	Max
diff3-1	24	.125	5.980494	-18	9

OUT-GROUP	Obs	Mean	Std. Dev.	Min	Max
diff3-1	24	2.458333	6.678839	-9	20

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