Available online at www.sciencedirect.com
ScienceDirect
Journal of Economic Psychology 28 (2007) 324–337
JOURNAL OF Economic Psychology
www.elsevier.com/locate/joep

Group identity, social distance and intergroup bias

Ali M. Ahmed *

Centre for Labour Market Policy Research (CAFO), Växjö University, SE-351 95 Växjö, Sweden

Received 30 November 2005; received in revised form 8 December 2006; accepted 24 January 2007
Available online 8 February 2007

Abstract

This paper studies how group identity, social distance and intergroup bias may affect economic decision-making. Two types of experimental groupings are created, and subjects are then paired with either an in-group member or an out-group member in a number of two-person games. The result of this experiment shows that out-group members face a risk of being discriminated against. The cause of the discrimination is not hostility toward out-group members; the discrimination is triggered because of higher expectations or favoritism of in-group members. This type of behavior holds, regardless of the grouping procedure.

JEL classification: J7; C9

PsycINFO classification: 2900; 3000

Keywords: Discrimination; Intergroup bias; Group identity; Social distance; Experiment

1. Introduction

When most economists think of discrimination, model discrimination or study discrimination, they picture it as the result of a group having either negative tastes or negative stereotypes toward another group. Research in social psychology has found that discrimination may also be a function of favoritism toward one's own group rather than negative feelings toward other groups. This type of differential treatment of diverse group

* Tel.: +46 470 708046.
E-mail address: ali.ahmed@vxu.se

0167-4870/$ - see front matter © 2007 Elsevier B.V. All rights reserved.
doi:10.1016/j.joep.2007.01.007

members is called *intergroup bias*. As noted by Akerlof and Kranton (2000), group belonging and group identity are important in economic decision-making, hiring decisions and bargaining, though there has not been much research done in this area. This paper studies how intergroup bias may affect economic decision-making. Results from controlled experiments are presented that test whether the intergroup bias extends to an economic setting.

To do this, we conduct two experiments: an original experiment and a replication. An in-group and an out-group are experimentally induced where the groups created are trivial. For example, in the replication, people are randomly divided into the groups by the "heads or tails" method. An in-group is a group to which someone belongs, while an out-group is a group to which a person does not belong. Participants are then paired with either an in-group member or an out-group member in four situations: the *prisoner's dilemma game*, *the stag hunt game*, *the battle of the sexes game* and *a money allocation decision*. The difference between the first and the replication experiment is the way groups were induced.

This paper makes three main contributions. First, the paper raises the question of whether behavioral patterns revealed in social psychology literature persist in economic experiments where participants are also concerned with the financial consequences of their actions. There is previous experimental economic literature on group identity and intergroup bias.[1] Orbell, van de Kragt, and Dawes (1988), and Brown-Kruse and Hummels (1988) are two early papers that examine whether some form of group identity might cause cooperation to increase in public-good games. Both indicated the answer is "Yes." A recent article on intergroup bias is by Ruffle and Sosis (2006). They conducted a field experiment to test whether the bias extends to the cooperative behavior of the Israeli kibbutz. They found that in a public-good game, kibbutz members are more cooperative toward anonymous kibbutz members than they are toward anonymous city residents. In general, most previous laboratory studies of intergroup bias draw on settings from public-good experiments, which are different from ours. In particular, the stag hunt game has not previously been studied in this context (not even in social psychology).

Second, this paper tries to empirically distinguish between discrimination against and discrimination in favor. Most empirical studies do not separate these two types of discrimination. One reason for this is that in his seminal analysis of discrimination, Becker (1957[1979]) distinguished between discrimination against and discrimination in favor, but also postulated that the economic implications of both types of discrimination would be similar. Goldberg (1982), however, shows that discrimination in favor, in contrast to discrimination against, is expected to survive in the long run. Thus, discrimination against and in favor, which appear to be semantically equivalent, lead to opposite predictions in the persistence of discrimination. Yet, the distinction between discrimination against and in favor is an empirical puzzle. This study circumvents such difficulty by using the behavioral definitions of discrimination in Fershtman, Gneezy, and Verboven (2005). They define discrimination against as the behavior observed when people treat anonymous people in the same way they treat in-group members, but treat out-group members negatively. In contrast, discrimination in favor is defined as the behavior observed when people treat anonymous people just as they treat out-group members, but treat in-group members positively.

[1] An overview of experimental studies on discrimination can be found in Anderson, Fryer, and Holt (2006). A part of their article surveys some experimental research on intergroup bias conducted in social psychology.

The present study, however, differs from Fershtman et al. (2005) in that their participants are categorized in groups that exist in real life, while the different groups in the present experiment are created experimentally and do not mean anything to participants in real life. We want to see if even mere membership also stimulates intergroup bias. Also, Fershtman et al. (2005) uses a different experimental setting than ours.

Third, this paper joins the growing body of literature on social distance starting with Hoffman, McCabe, and Smith (1996) and many others thereafter (see, for example, Dufwenberg & Muren, 2006; Buchan, Johnson, & Croson, 2006, for most recent papers on this topic). Social distance is the perceived affinity and nearness between people or groups. Hoffman et al. (1996), and Dufwenberg and Muren (2006) study social distance through conditions of anonymity in dictator games, but their results are split. While Hoffman et al. (1996) find that dictator donations decrease with increased social distance, Dufwenberg and Muren (2006) observe the opposite outcome. Mixed results are also found by Buchan et al. (2006) who use the investment game. Their results demonstrate a negative effect of social distance among Americans, but not among Chinese. This study is closest to Buchan et al. (2006) in that they also manipulated social distance by experimentally induced groups and not by conditions of anonymity. However, this study differs from Buchan et al. (2006) in that they let each group engage in non-relevant communication before the experiment, which the present study does not. Also, this paper provides data for four situations that are different from previous settings (dictator game or investment game).

Our results strongly suggest that findings of social psychology do persist in economic experiments. Part of the discrimination in different situations can be explained simply by natural human behavior and the fact that in many cases, occurrences of discrimination are a result of in-group favoritism rather than out-group hostility. In fact, an identified out-group is not even needed to trigger in-group favoritism. Finally, our results suggest that social distance matters when people are paired with their own group members; people react more positively when they interact with an in-group member.

2. The social psychology of discrimination

In-group/out-group terminology was introduced by Sumner (1906[1992]). He suggested that attachment to in-groups and preference for in-groups over out-groups may be a universal characteristic of human social life. The vast literature in social psychology inspired by Tajfel (1970) has supported the general idea that a *we/they* distinction is sufficient to activate differential responses to others on the basis of in-group or out-group membership.

In-group members are more likely to be positively valued than out-group members (Brewer, 1979), arouse more a positive affect and trust (Kramer & Brewer, 1984), and bring out cooperative behavior (Schopler & Insko, 1992). Experimental evidence shows that the concepts "we" and "us" carry positive emotional significance that is activated automatically and unconsciously (see, for example, Perdue, Dovidio, Gurtman, & Tyler, 1990).

When a particular in-group/out-group distinction is activated, differences in response to in-group and out-group members can arise from any of three sources. First, discrimination may arise from the positive consequences of in-group formation. This will lead to enhanced favoritism toward in-group members without any change in affect toward those who do not share the common group identity. On the other hand, discrimination may reflect the negative consequences of out-group differentiation. This enhances hostility and

distrust of groups that are different from one's own. Finally, discrimination may be the product of intergroup social competition, where the attainment of a relative advantage by the in-group over the out-group underlies differential treatment.

In much of the literature on intergroup bias, in-group favoritism and out-group hatred are assumed to be reciprocally related. This was also the original treatment in Sumner (1906[1992]). Sumner believed that positive feelings toward the in-group were directly correlated with contempt, hatred and hostility toward out-groups. However, Allport (1954) recognized that attachment to one's in-groups does not necessarily require hostility toward out-groups. Allport postulated that in-groups are psychologically primary, in the sense that familiarity, attachment and preference for one's in-groups come prior to the development of attitudes toward specific out-groups.

There is now considerable empirical evidence that the three components of intergroup discrimination are essentially independent. Increases in in-group positivity are not necessarily accompanied by increased contempt for out-groups (see for example Brewer, 1979). Also, Struch and Schwartz (1989) show that hostility toward out-groups seems to be controlled by variables other than in-group bias. In many cases, in-group favoritism means directing more positive outcomes to the in-group than to the out-group, but not treating the out-group negatively.

Intergroup bias does not necessarily mean hostility against out-groups, but do in-groups *require* out-groups? Does the definition of an in-group require a definition of what it is not? Both theory and empirical research in social psychology are ambiguous on the issue of the need for specific out-groups as a factor of in-group identity. Although specific intergroup comparisons may enhance in-group awareness, such contrasts are not necessarily a condition for social identification. Brewer (1979) suggested that the existence of an identifiable out-group may not be essential to in-group favoritism.

One startling aspect of intergroup bias is how easily it is triggered. This finding was already documented in a series of experiments by Tajfel (1970). Tajfel invented what is now known as the *minimal group paradigm*. This is an experimental technique in which people are divided into groups on the basis of minimal information, i.e. people are assigned to relatively novel and mutually exclusive social categories, for example, persons preferring action movies versus comedy movies. What Tajfel discovered is that groups formed on the basis of almost any distinction are prone to intergroup bias. Within minutes of being divided into groups, people tend to see their own group as superior to other groups, and they will frequently seek to maintain an advantage over other groups.

3. Experiment I

3.1. Experimental design

A total number of 138 undergraduate students were recruited from various courses in economics, business administration and political science at Växjö University. Sixty-five of the participants were female and 73 were male. Students were invited to participate in the experiment, and given the time and place during their lectures. The experiment was conducted in the last two weeks of February 2005.

Subjects were confronted with four tasks where they were asked to make a choice between two alternatives. In the first three tasks, subjects were paired with another participant, and the payoffs in these cases depended on the strategy chosen by both participants.

Information about the matching was given in three different ways, depending on which treatment group a subject belonged to.

1. *Control treatment*: The information given to subjects in the control treatment was that they would be paired with another person in the study. They knew that their session was one of many in the study. No more information was available about the matching. Subjects did not know if their co-player was in the same session or in another session.
2. *In-group treatment*: The information given to subjects in the in-group treatment was that they would be paired with another person in the same session. Subjects in this treatment knew that their co-player was in the same room; however, they did not know who it was because of anonymity.
3. *Out-group treatment*: The information given to subjects in the out-group treatment was that they would be paired with another person in another session. Thus, participants in these sessions knew that their co-player was not present in their own session.

Two sessions were conducted with 20/22 subjects for the control treatment. Three sessions were conducted with 16/18/20 subjects for an in-group treatment.[2] Two sessions were conducted with 21/21 subjects for an out-group treatment.

In the last task, participants were asked to make a decision affecting two other participants in the study. In the control group, the two participants were called Y and Z. In the two treatment groups, participants received the information that one of the individuals was in their own session and the other person was in another session.

A session began with a welcome and placement of subjects, followed by the distribution of the experimental booklets. Participants were asked to read the first page which stated the general purpose of the study and gave the general instructions. Verbal instructions were then given, followed by the opportunity to ask questions, after which the experiment took place. The experiment took about 15 min. After the four tasks described below, the experiment ended with some questions. All participants received a participation voucher worth SEK 42.[3] In addition to the participation voucher, we used the random lottery method to pay one subject in each treatment group according to their earnings in the experiment. The possible earnings for the randomly selected person were minimum SEK 150 and maximum SEK 1250. The four tasks will now be described in detail.

3.1.1. Task I – The prisoner's dilemma game

The first task presented to subjects is a *prisoner's dilemma game*. Participants are informed that they have been paired with another person in the experiment. Participants are then asked to choose between two alternatives, A or B. If both players choose A, then they both receive SEK 300. If they both choose B, then they both receive SEK 200. If they fail to coordinate, then the one who chooses alternative A will receive SEK 150, and the one who chooses alternative B will receive SEK 350. Fig. 1 illustrates the prisoner's dilemma game used in the experiment.

In this game, alternative A is the cooperative strategy, and alternative B is the defecting strategy. Joint income is maximized if both players choose alternative A; however, each

[2] An extra session in this treatment was booked because of the low recruitment rate in the first session.

[3] At the time of the experiment in February 2005, \$1 = SEK 6.84 (Source: EcoWin).

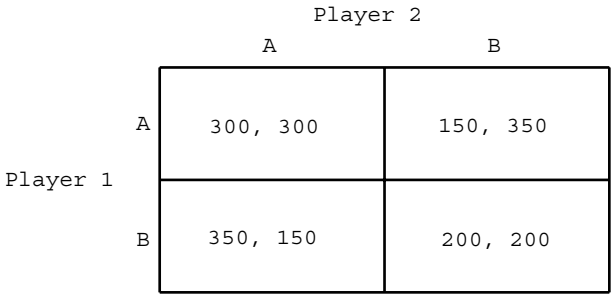

Fig. 1. The prisoner's dilemma game.

player also has an incentive to choose alternative B. For example, given that player 1 chooses alternative A, player 2 can increase income from SEK 300 to SEK 350 by free-riding off player 1.

This game also reflects how much players trust each other. Choosing alternative B minimizes the players' vulnerability to the decision of their co-players, since by choosing alternative B, players avoid the possibility of earning only SEK 150.

Even though the economic prediction of this game is that individuals will choose the selfish strategy, previous experimental literature shows that a large fraction of people do in fact cooperate. An explanation of this cooperation is that societies are naturally cooperative through social norms (Fehr & Fischbacher, 2004). Other explanations are based on the fact that people are altruistic. Pure altruism, i.e. "taking pleasure in others' pleasure," and impure altruism, i.e. "doing the right and good thing," sometimes termed "the warm glow," are examples of altruistic motives for many people to cooperate (Andreoni, 1990).

Several of these explanations may be a function of group affiliation. The social norm is probably a function of the person(s) with whom the individuals are interacting. A hypothesis here is that people follow the social norm more often if they are paired with an in-group member. Also, if the motive is altruistic, people might take more pleasure in others' pleasure or feel compelled to "do the right thing" if they are interacting with someone in their own group. The hypothesis in the prisoner's dilemma game is, therefore, that individuals will cooperate to a greater extent when they are interacting with an in-group member.

3.1.2. Task II – The stag hunt game

In the prisoner's dilemma game, the socially optimal action is never a best response for selfish individuals. In many economic interactions, the action in one's best interest depends on actions taken by others. This is reflected in the second task presented to participants, a game known as the *stag hunt game*.[4] Fig. 2 illustrates the version of the stag hunt game used in this experiment.

Again, participants are told that they have been paired with another person and that they have to choose between two alternatives, A and B. If both players choose alternative

[4] The stag hunt game is based on a story told by Jean-Jacques Rousseau (1755[1992]) in his *Discourse on the Origin of Inequality*: Suppose that there are two hunters and that they must decide whether to hunt for stags or for rabbits. If both hunt for rabbits, they each will catch one. If one hunts for rabbits while the other tries to take a stag, the former will catch a rabbit and the latter will catch nothing. Hence, the chances of getting a rabbit are independent of what the other hunter does. Each hunter prefers half a stag to one rabbit.

		Player 2 A	Player 2 B
Player 1	A	300, 300	0, 200
	B	200, 0	200, 200

Fig. 2. The stag hunt game.

A, they both receive SEK 300. If both players choose alternative B, they both receive SEK 200. If one of the players chooses alternative A and the other player chooses alternative B, then the former player will receive SEK 0 while the latter will receive SEK 200.

Notice the difference between the prisoner's dilemma game presented above and the stag hunt game. In the prisoner's dilemma game, there is a conflict between individual rationality and mutual benefit. In the stag hunt situation, what is rational for a player depends on his beliefs about what the other will choose. In contrast to the prisoner's dilemma game where defecting is the best response regardless of the other player's strategy, in the stag hunt game, defecting is the best response to defect, but cooperate is the best response to cooperate. If players believe that their co-players are cooperative, then they will choose alternative A.

In the stag hunt game, what individuals choose to do depends on their expectations. The question in this case is whether group affiliation affects individuals' expectations of their co-players' choice of strategy. The hypothesis is that group affiliation affects the expectations in this game, i.e. individuals will expect co-players of their own group to play the cooperative strategy more often than out-group members.

3.1.3. Task III – the battle of the sexes game

The third task given to participants is a coordination problem with a conflict of interest. For this purpose, the *battle of the sexes game* is used. The payoff structure for this game is given in Fig. 3.

Participants are told that they are paired with another person and that they both have to make a choice between two alternatives. If they choose different alternatives, they both

		Player 2 A	Player 2 B
Player 1	A	300, 200	0, 0
	B	0, 0	200, 300

Fig. 3. The battle of the sexes game.

receive zero. If both players choose alternative A, then player 1 receives SEK 300, and player 2 receives SEK 200. If both players choose alternative B, then player 1 receives SEK 200, and player 2 receives SEK 300.[5]

Note that compared to the two previous games, there is no outcome in this game which is mutually beneficial. For player 1, alternative A is to be a hard bargainer (a hawkish alternative), and alternative B is to be a soft one (a dovish alternative). The question is how group affiliation affects the expectations in this game. A hypothesis is that participants act more dovish when paired with an in-group member compared to being paired with an out-group member because of altruistic reasons. However, if participants believe that other in-group members might think the same way, then participants will be better off if they choose the hawkish strategy; otherwise, both will receive zero payoffs. Hence, there is actually no obvious role and strategy combination that can be exploited for solving this game.

3.1.4. Task IV – The money allocation decision

In the last task, participants are asked to allocate SEK 500 between two other participants. In the control treatment, the two participants are labeled Y and Z. In the two other treatments, participants are told that one of the two persons is sitting in their own session, and the other person is in another session. Participants can only divide the sum of money in one of two ways. Participants can either give the first person SEK 300 and the other person SEK 200, or they can give the first person SEK 200 and the other person SEK 300. In this case, participants making the allocation decision have nothing to gain and nothing to lose.

3.2. Results

The results for the first three tasks in the experiment are summarized in Table 1. Rows identify the particular task and the strategy chosen, and columns identify the treatment variable. The category control shows the results for the control group without any matching information. In-group shows the results for subjects who were matched with in-group co-players, and out-group shows the results for subjects who were matched with out-group co-players. The Fisher exact probability test is used for 2×2 contingency tables to analyze differences in proportions of subjects choosing a particular strategy. Only two-sided tests are used.[6]

Starting with the results for the prisoner's dilemma game, 76% chose the cooperative strategy when they were matched with an in-group member, while only 45% chose the cooperative strategy when they were matched with an out-group member. The corresponding number in the control group was 50%. The difference between the in-group treatment and control treatment is statistically significant ($p = 0.010$). The difference between in-group and out-group is also significant ($p = 0.002$). There is, however, no statistically significant difference between the control treatment and the out-group treatment. The above results point clearly to one of the main observations of this paper. In the prisoner's dilemma, subjects who are paired with an in-group member have a significantly higher

[5] This game has previously been used to study gender discrimination. Holm (2000) shows that participants more often chose the aggressive strategy (alternative A for player 1 and B for player 2) when the co-player was a woman.

[6] Significant gender differences were not found in the tasks given to the subjects; therefore, we only present the overall results for this study.

Table 1
Proportion of subjects choosing a particular strategy

Task and strategy	Treatment		
	Control	In-group	Out-group
PG: Cooperate	50% (21/42)	76% (41/54)	45% (19/42)
SH: Stag	60% (25/42)	78% (42/54)	60% (25/42)
BS: Dovish	55% (23/42)	35% (19/54)	33% (14/42)

Notes: PG: Cooperate gives the proportion of subjects choosing the cooperative (alternative A) strategy in the prisoner's dilemma game. SH: Stag gives the proportion of subjects choosing the stag strategy (alternative A) in the stag hunt game. BS: Dovish gives the proportion of subjects choosing the dovish strategy in the battle of the sexes game.

propensity to cooperate than when subjects are paired with an out-group member or someone totally anonymous. Hence, individuals reflect a more cooperative behavior when paired with in-group members without any change in affect toward those who do not share the common group identity.

Let us consider the results for the stag hunt game. Sixty percent of the subjects in the control treatment and in the out-group treatment chose the stag strategy, that is, to cooperate with their co-players. However, those subjects who were paired with an in-group member chose the stag strategy in 78% of the cases. This difference is statistically significant ($p = 0.073$). Hence, in the stag hunt game, when subjects are paired with an in-group member, they have a significantly higher propensity to cooperate than when subjects are paired with an out-group member or with a person without a group membership. As was the case in the prisoner's dilemma game, individuals tend to reflect a higher cooperative behavior toward in-group members without any change in affect toward those who do not share the common group identity.

Results for the battle of the sexes game show that the proportion of subjects in the control group choosing the dovish strategy is 55%, while the corresponding proportions for the in-group treatment and out-group treatment are 35% and 33%, respectively. There was no significant difference between the in-group treatment and the out-group treatment. However, the results for the control treatment are significantly different from both in-group ($p = 0.065$) and out-group ($p = 0.078$) treatments. Clearly there was no intergroup bias in the battle of the sexes game. However, adding information about group affiliation, regardless of whether subjects were paired with an in-group member or an out-group member, significantly lowered the propensity to choose a dovish strategy.

In the last task, subjects were asked to divide SEK 500 between two other participants. One of the recipients was an in-group member, and the other was an out-group member. Subjects could only allocate the money in one of two ways. Subjects could either give the in-group member SEK 300 and the out-group member SEK 200, or they could allocate the money the other way around. In the control treatment, subjects were given the same task, but the two recipients were labeled Y and Z.

Subjects in the control treatment chose to allocate SEK 300 to person Y 52% of the time and to person X 48% of the time. This is an expected result. When subjects do not belong to

a particular group and do not know anything about the two recipients, they are expected to randomly pick one of the persons to receive the larger amount of the money. Ninety-six participants belonged to a group and were given the task of dividing SEK 500 between one in-group member and one out-group member. These participants chose to allocate SEK 300 to the in-group member 74% of the time. This is significantly different from the control treatment ($p = 0.012$).

4. Experiment II

4.1. Experimental design

The previous experiment was replicated. The same experimental design was used, but the creation of in-groups and out-groups was done differently. A total number of 100 participants were recruited from economics and political science courses at Växjö University, and the experiment was carried out May 16 and 17, 2005. Half of the subjects were in the in-group treatment, and the other half were in the out-group treatment. Forty-eight participants were female and 52 male. An additional control group was not created. The control group used in this experiment is the same as in the previous experiment. The purpose of this second experiment is to study if mere membership in the most trivial or arbitrary of groups is enough to trigger intergroup discrimination.

The in-groups and out-groups were created in the following way. All subjects were told that they would be randomly divided into two groups. The group they belonged to was written in the experimental booklet they received. The groups they were randomly assigned to were called *heads* and *tails*. Each subject was either paired with an in-group member or an out-group member in the three first tasks: the prisoner's dilemma game, the stag hunt game and the battle of the sexes game. In the last task, participants made an allocation decision for two other participants, of whom one was an in-group member and the other was an out-group member. The experiment was identical to the first experiment in all other aspects: general instructions, payoffs and payments.

4.2. Results

The results for the first three tasks in the experiment are summarized in Table 2. Again, rows identify the particular task and strategy chosen, and columns identify the treatment variable. Observe that the control group used is the same as in the previous experiment.

Starting again with the results for the prisoner's dilemma game, 68% chose the cooperative strategy when matched with an in-group member, while only 36% chose the cooperative strategy when matched with an out-group member. The difference between the in-group treatment and out-group treatment is statistically significant ($p = 0.002$). The difference between the in-group treatment and the control treatment is weakly significant ($p = 0.091$). There is no significant difference between the control treatment and the out-group treatment. These results are in line with the corresponding results in the previous experiment. Once again, subjects paired with an in-group member have a significantly higher propensity to cooperate than subjects paired with an out-group member or a totally anonymous person.

Let us turn to the results for the stag hunt game. Fifty-six percent of the subjects in the out-group treatment chose the cooperative strategy, while those subjects paired with an

Table 2
Proportion of subjects choosing a particular strategy

Task and strategy	Treatment		
	Control	In-group	Out-group
PG: Cooperate	50% (21/42)	68% (34/50)	36% (18/50)
SH: Stag	60% (25/42)	78% (39/50)	56% (28/50)
BS: Dovish	55% (23/42)	46% (23/50)	40% (20/50)

Notes: PG: Cooperate gives the proportion of subjects choosing the cooperative (alternative A) strategy in the prisoner's dilemma game. SH: Stag gives the proportion of subjects choosing the stag strategy (alternative A) in the stag hunt game. BS: Dovish gives the proportion of subjects choosing the dovish strategy in the battle of the sexes game.

in-group member chose the stag strategy 78% of the time. This difference is statistically significant ($p = 0.033$). The difference between the control treatment and the in-group treatment is also significant ($p = 0.070$). The difference between the control group and the group of subjects who were paired with an out-group member is not significant. As in the first experiment, when subjects are paired with an in-group member, they have a significantly higher propensity to choose the stag (cooperative) strategy than when subjects are paired with an out-group member or with a person without a group membership.

The results for the battle of the sexes show that the proportion of subjects in the in-group treatment and in the out-group treatment choosing the dovish strategy was 46 and 40%, respectively. These figures are not statistically different from the proportion of subjects choosing the dovish strategy in the control group. Once again, there was no intergroup bias in the battle of the sexes game. There is one small difference in the results of the battle of the sexes game in this experiment compared to the previous experiment; there was no significant difference between the control group and the two treatment groups.

In the last task, 100 participants belonged to a group and were given the task of dividing SEK 500 between one in-group member and one out-group member. These participants chose to allocate SEK 300 to the in-group member 72% of the time. This is significantly different from the control treatment ($p = 0.032$).

5. Concluding discussion

This paper presents the results of two experiments testing the influence of intergroup bias on economic decision-making. In the first experiment, the in-group and the out-group were created by matching each participant either with a person in the same session or with a person in another session. Note that in the first experiment, an identifiable out-group is not required to trigger the intergroup bias. Subjects who were paired with an in-group member were only told that they would be paired with another person in the same session. They were not told that other participants in other session might have been paired with an out-group member. The out-group for subjects in the in-group treatment was never identified.

The results are clear for the prisoner's dilemma game and the stag hunt game. However, the results for the battle of the sexes game are unclear. First, there is no sign of intergroup

bias in the game. Second, in the first experiments, the proportion choosing the dovish strategy is significantly lower in the treatment groups than in the control group. Individuals have to predict if their counterpart is dovish or hawkish in this game. If individuals believe that their in-group is kind and therefore its members would choose the dovish strategy, then it is best for them to choose the hawkish strategy, opposite to their beliefs about their own group and themselves. If not, they and their counterparts will receive zero amounts. Therefore, in this game, it is not simple to predict what your counterpart will do, even if you believe that your in-group is kind. The opposite argument can be presented when individuals are paired with out-group members. There is no clear explanation to the results for this game; it could simply be a random effect. Replication studies are requested.

In the second experiment, participants were randomly divided into two groups by just tossing a coin. The purpose of this experiment was to study how easily intergroup bias is triggered. One other difference from the first experiment is that the in-group is better defined in this experiment, since subjects in this experiment know that an out-group exists. An out-group is identified in this experiment. The results are similar to the results of the first experiment. Intergroup bias is identified in the prisoner's dilemma game and the stag hunt game, but not in the battle of the sexes game.

The last task given to subjects in both experiments was to divide SEK 500 between two other participants, one of whom was an in-group member. Results clearly show that the majority of the participants chose to allocate the larger part of the pie to their in-group member. In the control group, where there were only neutral labels given, participants chose an action almost randomly. Some participants in the control group even wrote a comment on the answer sheet indicating that the task was unfair. No such comment was received in the treatment groups. One might argue that if participants had been offered a third choice where they could have divided the amount of SEK 500 into equal shares, most of the subjects would have chosen that action. This prediction is probably true. However, the whole point of the last task is to explore the behavior of individuals when they do not have the possibility of a fair decision. Consider, for example, a hiring decision where an employer has only one job to fill. Suppose that two workers qualify for the job, and they are equally productive and able. In this case, the decision-maker (the employer) cannot make a fair decision. The employer has to choose one of the workers.

It may seem odd that intergroup bias develops so easily. These findings are, however, consistent with research showing that social bonds and attraction can willingly form on the basis of seemingly minor characteristics. Miller, Downs, and Prentice (1998), for example, found that people are more likely to cooperate with another person when they learn that the person shares their birthday. Pelham, Mirenberg, and Jones (2002) found that even major life decisions such as whom to marry, where to live and what occupation to choose can be influenced by relatively minor similarities.

An explanation to the findings in this paper can be found in the *social identity theory* developed by Tajfel and Turner (1986). They argued that the reason why we favor our in-group over the out-group is that group membership is vital to our self-esteem. According to the theory, our identity is derived from the groups we belong to, and we can only feel good about ourselves if we can maximize the status, prestige and success of the groups we identify with. It is vital to our self-esteem that the identity we are able to create for ourselves is a positive and valued one. We are, therefore, predisposed to think highly of the groups and categories to which we are affiliated.

The results can also be interpreted in terms of social distance. In both the prisoner's dilemma game and the stag hunt game, people were more cooperative when there was less social distance. Notice that being matched with an out-group member compared to an anonymous person does not change the behavior. It was when people were paired with an in-group member that they felt akin to the other person. The results show that even simple bonds between people can reduce or increase social distance. The results may even have important implications for how certain experiments should be conducted. Can the use of different words or phrases generate different results?

To summarize, discrimination occurs as an outcome of intergroup bias where the discrimination is not a result of hostility toward out-group members, but is rather a result of in-group loving. Also, an identified out-group is not necessarily required to create an in-group feeling. Finally, the less the social distance, the more positive and cooperative the behavior.

Acknowledgements

I am thankful to James Albrecht, Dominique Anxo, Fredrik Carlsson, Jan Ekberg, Håkan Locking, Shyam Sunder, Susan Vroman and an anonymous referee for valuable comments and suggestions. I have also benefited from the advice from participants at the Economic Science Association 2005 European Conference and seminar participants at Växjö University. I would like to thank Lena Hjalmar and Maria Mikkonen for their help during the experiment.

References

Akerlof, George A., & Kranton, Rachel E. (2000). Economics and identity. *The Quarterly Journal of Economics, 115*(3), 715–753.

Allport, Gordon W. (1954). *The nature of prejudice* (second ed.). Reading, MA: Addison-Wesley.

Anderson, Lisa R., Fryer, Roland G., Jr., & Holt, Charles A. (2006). Discrimination: Experimental evidence from psychology and economics. In William Rogers (Ed.), *Handbook on economics of discrimination*. Cheltenham, UK: Edward Elgar Publishing.

Andreoni, James (1990). Impure altruism and donations to public goods: A theory of warm-glow giving. *The Economic Journal, 100*(401), 464–477.

Becker, Gary S. (1957[1979]). *The economics of discrimination* (second ed.). Chicago: Chicago University Press.

Brewer, Marilynn B. (1979). In-group bias in the minimal intergroup situation: A cognitive-motivational analysis. *Psychological Bulletin, 86*(2), 307–324.

Brown-Kruse, Jamie, & Hummels, David (1988). Gender effects in laboratory public goods contribution: Do individuals put their money where their mouth is? *Journal of Economic Behavior and Organization, 22*(3), 255–267.

Buchan, Nancy R., Johnson, Eric J., & Croson, Rachel T. A. (2006). Let's get personal: An international examination of the influence of communication, culture and social distance on other regarding preferences. *Journal of Economic Behavior and Organization, 60*(3), 373–398.

Dufwenberg, Martin, & Muren, Astri (2006). Generosity, anonymity, gender. *Journal of Economic Behavior and Organization, 61*(1), 42–49.

Fehr, Ernst, & Fischbacher, Urs (2004). Social norms and human cooperation. *TRENDS in Cognitive Sciences, 8*(4), 185–190.

Fershtman, Chaim, Gneezy, Uri, & Verboven, Frank (2005). Discrimination and nepotism: The efficiency of the anonymity rule. *Journal of Legal Studies, 34*(2), 371–394.

Goldberg, M. S. (1982). Discrimination, nepotism, and long-run wage differentials. *The Quarterly Journal of Economics, 97*(2), 307–319.

Hoffman, Elizabeth, McCabe, Kevin, & Smith, Vernon L. (1996). Social distance and other-regarding behavior in dictator games. *American Economic Review, 86*(3), 653–660.

Holm, Håkan J. (2000). Gender-based focal points. *Games and Economic Behavior, 32*(2), 292–314.
Kramer, Roderick M., & Brewer, Marilynn B. (1984). Effects of group identity on resource use in a simulated commons dilemma. *Journal of Personality and Social Psychology, 46*(5), 1044–1057.
Miller, Dale T., Downs, Julie S., & Prentice, Deborah A. (1998). Minimal conditions for the creation of a unit relationship: The social bond between birthdaymates. *European Journal of Social Psychology, 28*(3), 475–481.
Orbell, John M., van de Kragt, Alphons J., & Dawes, Robyn M. (1988). Explaining discussion-induced cooperation. *Journal of Personality and Social Psychology, 54*(5), 811–819.
Pelham, Brett W., Mirenberg, Matthew C., & Jones, John T. (2002). Why Susie sells seashells by the seashore: Implicit egotism and major life decisions. *Journal of Personality and Social Psychology, 82*(4), 469–487.
Perdue, Charles W., Dovidio, John F., Gurtman, Michael B., & Tyler, Richard B. (1990). Us and them: Social categorization and the process of intergroup bias. *Journal of Personality and Social Psychology, 59*(3), 475–486.
Rousseau, Jean-Jacques (1755[1992]). *Discourse on the origin of inequality*. Cambridge, MA: Hackett Publications.
Ruffle, Bradley J., & Sosis, Richard (2006). Cooperation and the in-group-out-group bias: A field test on israeli kibbutz members and city residents. *Journal of Economic Behavior and Organization, 60*(2), 147–163.
Schopler, John, & Insko, Chester A. (1992). The discontinuity effect in interpersonal and intergroup relations: Generality and mediation. In Miles Hewstone & Wolfgang Stroebe (Eds.), *European Review of Social Psychology* (Vol. 3, pp. 121–151). Oxford, England: John Wiley and Sons.
Struch, Naomi, & Schwartz, Shalom H. (1989). Intergroup aggression: Its predictors and distinctness from in-group bias. *Journal of Personality and Social Psychology, 56*(3), 364–373.
Sumner, William Graham (1906[1992]). *Folkways*. Salem, NH: Ayer Company Publishers.
Tajfel, Henri (1970). Experiments in intergroup discrimination. *Scientific American, 223*(5), 96–102.
Tajfel, Henri, & Turner, John C. (1986). The social identity theory of inter-group behavior. In Stephen Worchel & William G. Austin (Eds.), *Psychology of intergroup relations* (pp. 21–61). Chicago: Nelson-Hall.