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Social Preference vs. Social Distance: An Experimental Study on the Dictator Game

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Abstract–In many games completely selfish behavior is the only Nash equilibrium, but experimental findings often contradict the Nash predictions. What motivates altruistic behavior has attracted intensive attentions. Among those motives that have been examined to date, social preference and reputation have generated a lively discussion. This paper explores the giving behavior by conducting some dictator game experiments. Students from various universities in Taiwan are recruited as the subjects. Subjects from the same universities have shorter social distances than subjects from different universities. The experimental results show that the amount of money that the dictator offers the recipient is significantly higher if they are from the same universities than if they are from different universities, thus contradicting the reputation hypothesis.

Keywords: Social preference; Social distance; Experiments; Dictator game

1. INTRODUCTION

In many games completely selfish behavior is the only Nash equilibrium. Public good provision game, ultimatum bargaining game, and dictator game are typical examples. However, experimental examinations on these games often find altruistic behavior, contradicting the Nash predictions (Marwell and Ames, 1979; Marwell and Ames, 1980; Isaac, Walker, and Thomas, 1984; Isaac and Walker, 1988; Andreoni, 1988a, 1988b; Roth, Prasnikar, Okuno-Fujiwara, and Zamir, 1991; Isaac, Walker, and Williams, 1994; Andreoni, 1995; Bolton and Zwick (1995); Eckel and Grossman, 1996; Bolton, Katok, and Zwick, 1998; Andreoni, Brown, and Vesterlund, 2002; Nelson, 2002). This gives rise to the following question: What motives make up the gap between the experimental findings and the standard game predictions? In other words, what else motivates giving other than self-interest? Among those motives that have been examined to date, social preference (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000) has generated a lively discussion. However, in a field experimental study, List (2006) finds that reputation building explains the giving behavior better than does social preference. When there is no need to build reputation, there exists no positive correlation between the quality of the sports cards that the sellers sell to buyers and the prices offered by the buyers.

This paper explores the social preference and reputation building hypotheses by conducting dictator game experiments. Four treatments, in which students are from the same or different universities, are conducted. Students from the same universities have shorter social distances than students from different universities. If dictators are not self-interest motivated, then we should observe a considerable amount of money that the dictators offer recipients, no matter the dictator's giving behavior is attributed to social preference or reputation building. However, a reputation-motivated dictator should offer the recipient more if the social distance between he (she) and the recipient is shorter.

The remainder of this paper is organized as follows. Section 2 provides the experimental design for exploring the behavior of giving. Section 3 presents and discusses the results of the experiments. Section 4 concludes.

2. EXPERIMENTAL DESIGN

The main purposes of this study are to explore the behavior of giving and whether the behavior of giving is influenced by the distances of social statuses. Unlike ultimatum games and other games that the behavior of giving may be interacted with other motivations, for instance, strategic concerns, the dictator game excludes such interferences, and therefore in the literature, the experimental results from the dictator game can be solely used to infer the behavior of giving (Forsythe, Horowitz, Savin, and Sefton, 1994). Hence, this study uses the dictator game to examine the behavior of giving. To explore further how the behavior of giving is affected by social distances, four treatments, in which the subject pools have different social distances, were conducted for this study. Table 1 illustrates the four treatments. In all four treatments subjects were randomly divided into two roles, A and B, and As and Bs were randomly paired. A is the dictator and he (she) decides alone how NT$200 were divided between A and B. A subject's payoff is his (her) earning from the experiment plus a participation fee NT$80.

[Table 1 about here]

Before conducting the experiments, we posted advertisements in the main page of National Chengchi University (NCCU) and ten department pages of some universities at the PTT Bulletin Board System.[1] We mentioned in the advertisements that we were going to conduct some experiments related to economic behavior. We also went to National Taiwan University, National Taipei University, and Soochow University to recruit subjects. All the

[1] The ten departments were randomly chosen.

interested students needed to sign up at our website, where they filled out student ID numbers, the names of their universities, which departments they belong to and the year, gender, university email addresses, whether they had participated in any experiments, and whether they had taken any economic-related courses and which ones. Our computer program also recorded the time and the ip addresses through which they linked to our website. Eventually, the students registered at our website were from nine universities in Taiwan, mostly from NCCU.

Students with one of the following situations were excluded from the short list. First, to keep subjects with similar background, graduate students were excluded. Second, students who filled out any information improperly or left any slot blank were regarded as showing some extent of insincerity and therefore were excluded. Third, since anyone can have more than one email address, to prevent double registrations or fake student ID numbers, those who did not fill in their university email addresses were excluded. Fourth, since three of the four treatments were conducted via internet, to prevent the situation that subjects might make decisions together or did not make decisions in person, any students who might be closely related to each other needed to be excluded. Anderhub, Müller, and Schmidt (2001) excluded the potential subjects whose first three digits of the ip addresses coincide with others'. Since many students (especially students from NCCU) registered at dormitories or computer labs and the ip addresses within these buildings often have the same first three digits, very few subjects would be qualified according to Anderhub, Müller, and Schmidt (2001). Therefore, we excluded only those students whose ip addresses were the same in the first three digits *and* they were in the same year and came from the same department of the same university. Of course, students whose ip addresses were the same in all four digits were absolutely excluded. Fifth and the final, since the computers used by subjects to participate the experiments may differ from the ones used to sign up, we also checked the ip

addresses of the successfully recruited subjects during and after the experiment. Any subjects whose ip addresses violate the fourth situation were excluded from our sample and were replaced.

Upon receiving sufficiently enough registrations, we start the four treatments for this study. Treatment I is a typical classroom experiment with all subjects recruited from the undergraduate programs at National Chengchi University (NCCU) in Taiwan. Upon arriving, subjects were randomly assigned to two separate rooms. When the experiment started, the subjects in one room (the original room hereafter) were given written instructions in Chinese and the experimenter read the instructions aloud. After reading the instructions, subjects were asked whether they volunteered to be the monitor and finally one volunteer was chosen. The same procedure was repeated in the other room. Two balls labeled with A and B respectively were put in a jar and subjects in both rooms were informed that the role of subjects in the original room would be the letter on the ball picked and subjects in the other room would be assigned the other role. The two monitors were then lead to the original room. After the ball picked, the monitor from the other room and the experimenter went to the other room and the monitor informed subjects in that room what happed in the original room and their role.

In treatment II subjects were undergraduate students from NCCU and other universities. To overcome the difficulty in gathering subjects from different universities in the same experiment, we conducted treatment II through internet. However, a major problem with internet experiments is that subjects may doubt the existence of their partners (Frohlich, Oppenheimer, and Moore, 2001; Eckel and Wilson, 2006). To convince subjects that their partners indeed existed, two more treatments, treatments III and IV, were conducted. Before conducting these two treatments, we took photos of all subjects, and during the experiment, subjects were informed that the photos of their partners and of other subjects in the same role

as their partners would show up on their computer screens for fifteen seconds after they made decisions.[2]

3. EXPERIMENTAL RESULTS

The theoretic prediction of the dictator game is that the dictator (A) should grab the whole pie and offer the recipient (B) nothing. If players concern about their reputation after playing game, then given the experimental design, the amount of money that A offers B should be higher in treatment I than in treatment II and treatment IV, and higher in treatment III than in treatment IV.

[Figure 1 about here]

The distribution of the amount of money that the dictator (A) offers the recipient (B) in each treatment is illustrated in Figure 1. There are 25 percent, 19.05 percent, 40 percent, and 10 percent in treatment I through IV respectively of the dictators that offer nothing to the recipients. These magnitudes are far below 100 percent predicted by the game theoretic result. The reputation hypothesis is also violated. The fraction of the dictators that offer nothing to the recipients is 19.05 percent in treatment II and only 10 percent in treatment IV, which are fewer than 25 percent in treatment I and 40 percent in treatment III. By contrast, more dictators in treatment II (33.33 percent) and treatment IV (55 percent) offers recipients at least half of the pie than in treatment I (10 percent) and treatment III (30 percent). The results from a two-sided Mann-Whitney U test do not support the reputation hypothesis, either. The amount of money that dictators offer recipient is significantly higher in treatment IV than in treatment I and treatment III.

[2] Showing subjects photos before they make decisions may have some effects on their decisions. See the studies by Andreoni, and Petrie (2004) and Scharlemann, Eckel, Kacelnik, and Wilson (2001) for this issue.

4. CONCLUSION

This study uses dictator game experiments to explore the behavior of giving and whether it is affected by social distance. Undergraduate students from various universities in Taiwan are recruited. The social distance between subjects from different universities is longer than the social distance between subjects from the same universities. It is found that the completely selfish behavior predicted by the dictator game equilibrium is not supported by the experimental evidence of this paper. Overall, only 23.46 percent of the dictators offer nothing to their partners, while 32.10 percent of the dictators are willing to share at least half of the total money with the recipients. The social distance (or reputation) hypothesis fails to hold too. The amount of money offered to recipients is significantly higher if dictators and recipients are from different universities than if they are from the same universities, even though the dictators are aware that their photos will be shown to their partners at the end of the experiment. This finding indicates that reputation exists only in real relationships. If the relationships between subjects close with the ending of the experiment, there is no need to build reputation.

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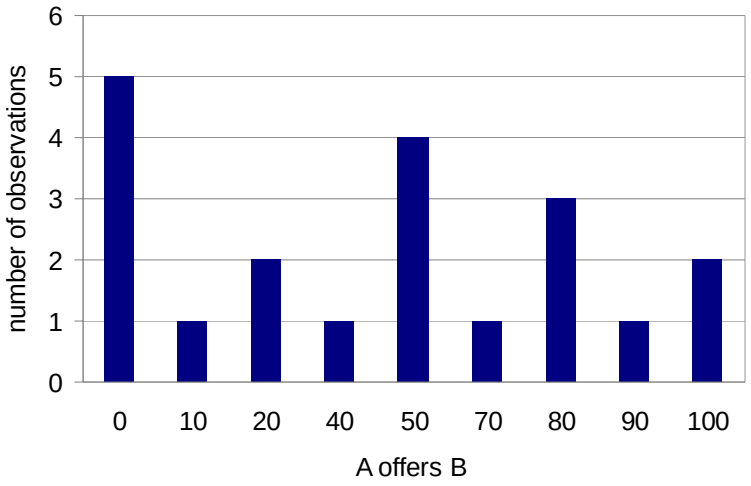
TABLE 1

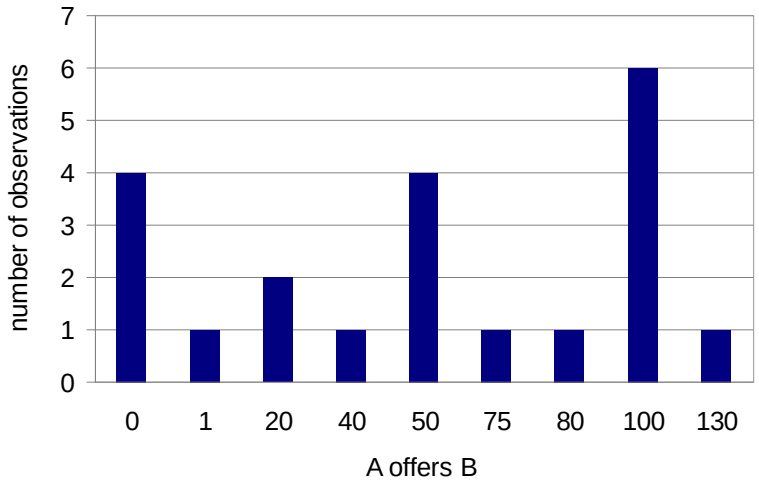
THE FRAMEWORK OF EXPERIMENTS

Treatment	Experiment type	Source of subjects	Number of subjects	Date or period conducted
I	Classroom experiment	Undergraduate students from NCCU	40	2008/11/3
II	Web experiment without photo	Undergraduate students from NCCU and other universities	42	2008/11/4~2008/11/14
III	Web experiment with photo	Undergraduate students from NCCU	40	2008/12/11~2009/1/21
IV	Web experiment with photo	Undergraduate students from NCCU and other universities	40	2008/12/11~2009/1/16

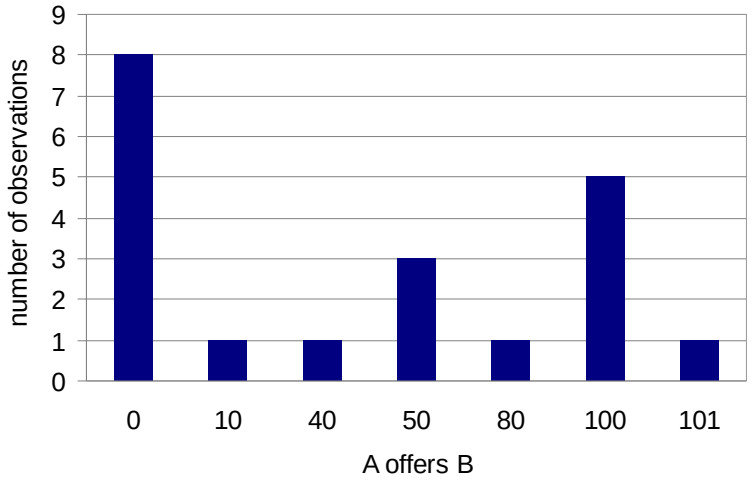
Figure 1. The Distribution of the Amount of Money That A Offers B



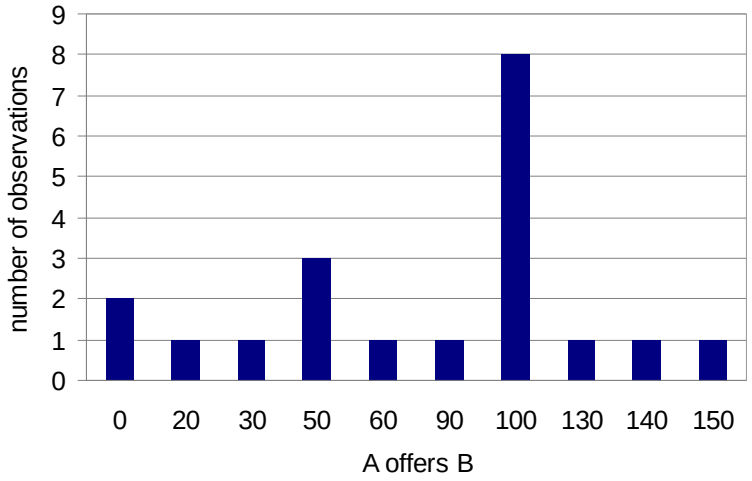
Treatment I



Treatment II



Treatment III



Treatment IV