

**TRUST, RECIPROCITY AND SOCIAL DISTANCE IN CHINA:
AN EXPERIMENTAL INVESTIGATION**

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ABSTRACT

We examine the influence of social distance between two parties on levels of trust and reciprocity in China. Social distance, reflected in the indigenous concept of *guanxi*, is of central importance to Chinese culture. In our study, some participants participated in two financially salient trust games to measure behavior, one with an anonymous classmate and the other with an anonymous student from a demographically identical but different class. Classes are often very tightly knit units in China, and were so at the university site of our study. Other participants, drawn from the same population, completed hypothetical surveys to gauge both hypothetical behavior and expectations of others. Social distance effects on actual and hypothetical behavior were statistically indistinguishable both from each other and from expectations about others' behavior. The results together corroborated the expected negative relationship between trust and social distance. However, reciprocity, while proportional to trust, was not responsive to social distance. In examining reciprocity, we consider two different proposed ways of measuring it in the context of the trust game, and stress the importance of controlling for trust received when measuring reciprocity as the amount sent divided by the resultant total wealth of the trustee.

Keywords: Trust, reciprocity, *guanxi*, China, social distance, expectations.

INTRODUCTION

The significance of trust and reciprocity in social life has long been recognized by various social sciences: anthropology, psychology, economics, sociology, and management studies. Across disciplines there is a consensus that trust and reciprocity as forms of social capital are critical to our society. As noted by Buchan, Johnson, and Croson (2006): “Trust and reciprocity are integral elements in economic transactions between companies, customers and retailers, between employees and employers, as well as in determining economic performance.” Nobel Laureate Kenneth Arrow (1972) cogently remarked: “Virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can plausibly be argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence.” The logic underlying this statement is that in high-trust societies individuals need to spend fewer resources to protect themselves from being exploited in economic transactions.

Building upon this notion, Fukuyama (1995) argues that the culture of trust is the source of spontaneous sociability that allows enterprises to grow beyond family into professionally managed organizations. Fukuyama further suggests that in each society there exists a boundary of trust, such that people in relationships within that boundary are trusted and trustworthy, while those outside the boundary are not. In the economics literature, a similar notion is often described in terms of social distance (Akerlof 1997). Unlike the boundary idea, which implies a binary distinction, social distance denotes a continuous measure of closeness versus distance. As applied by Buchan and Croson (2004), social distance is a measure of the closeness between interacting parties in a strategic interaction. It has been argued that it is an important variable in explaining individual decisions bearing social consequences. For example, Glaeser et al. (2000), in a trust game conducted in the United States, demonstrate that lower levels of trust and reciprocity emerge as social distance, represented in their work by less demographic similarity between two parties, increases. Similarly, Hoffman, McCabe and Smith (1996) observe a

negative relationship between dictators' offers and social distance in a dictator game.¹

In this paper we focus on the influence of social distance on trust and reciprocity in one particular country, China. We focus on China for several reasons. First, Chinese culture is often described as highly collective (e.g., Hofstede 1991), with boundaries of trust that are quite narrowly drawn (Bond 1991). Second, several previous studies have presented some intriguing observations summarized below that merit further investigation (e.g. Buchan et al. 2006; Buchan and Croson 2004). Third, the role of social distance is generally considered especially salient in the dealings that Chinese people have both with each other and with non-Chinese. The central importance of social distance is captured by the indigenous notion of *guanxi*, which literally means relationship, but more broadly refers to the existence and importance of direct or indirect particularistic ties based on both demographic and long-standing experiential factors between an individual and others (Tsui and Farh 1997). Thus, the primary goal of this paper is to extend past work by examining the impact of social distance, represented empirically by naturally-occurring relationship levels, on trust and reciprocity behavior in China.

A second goal is to explore the convergent validity of behavioral (see Camerer 2003, pp. 83–100, for an extensive review of the large empirical literature using behavioral measures) and hypothetical (e.g. Mayer, Davis, and Schoorman 1995; Robinson 1996; Rotter 1967) measures of trust and reciprocity, both of which are widely employed in the current empirical literature. It is unclear whether these two types of measures produce identical results, and more importantly, whether researchers can directly compare the data collected using these two methodologies. This issue is not only important for empirical research, but has potential theoretical implications as well. Earlier research shows that the psychological distance between one's current state and the focal situation can make it difficult for people to imagine accurately how their behavior might be influenced by emotional or visceral forces that can be felt only in the actual situation (Loewenstein 1996; Van Boven, Dunning, and Loewenstein 2000). In such circumstances,

¹ The dictator game involves a simple act of a participant (the dictator or allocator) dividing a resource, typically money, between him/herself and a passive recipient.

people may not be able to predict correctly how they would act. By comparing behavioral and hypothetical data, we will extend research on the psychological distance effect by examining its impact in the context of social and strategic interactions, where trust and reciprocity play an important role. Specifically, under the framework of the widely adopted trust game, we both observe actual behavior from one set of participants and collect behavioral intentions from another, randomly selecting both sets of individuals from the same subject pool. We then examine the relationship between actual and hypothetical behavior.

A third goal of the paper is to compare both actual and hypothetical behavior with expectations about the behavior of others. Earlier research has demonstrated that people's impressions and expectations of themselves and others are often biased (e.g., Alicke, et al. 1995). On the one hand, people typically believe that they are morally superior, i.e. more selfless, kind, just, brave and generous than average (e.g., Miller and Ratner 1998). On the other hand, people's impressions and expectations of others are often negatively biased (e.g., Diekmann, et al. 1996; Tenbrunsel 1998). By comparing actual and hypothetical behavior with expectations about the behavior of others, we examine the extent to which such biases are present in the context of trust and reciprocity interactions. If such biases are related to social distance, they may influence the relationship between social distance and trusting behavior since trusting behavior may well depend upon expectations about the trustworthiness of others. Thus, an understanding of peoples' expectations of others is intimately related to the primary focus of this research on the impact of social distance on trust and reciprocity behavior.

The paper will proceed as follows. In the next section, we discuss how social distance may influence the dynamics of trust and reciprocity in interpersonal relations in China. The specifics of our experimental study design are reported in the third section, while the results are presented in the fourth section. Conclusions and discussion are offered in the last section.

THEORETICAL AND EMPIRICAL BACKGROUND

In the current literature, various definitions of trust have been proposed. We adopt the widely used definition of trust by Rousseau et al. (1998) as: "a psychological state comprising the

intention to accept vulnerability based upon positive expectations of the intentions or behavior of another” (p.395). In our study, this definition is broadened to include both the expression of a hypothetical intention to accept such vulnerability and explicit behavior resulting from such an intention. Correspondingly, we adopt a definition of reciprocity as the act of “voluntarily repaying a trusting move at a later point in time, although defaulting on such repayment is in the short-term self-interest of the reciprocator” (Gunnthorsdottir, McCabe, and Smith 2002, p. 50).

Guanxi is an idea familiar to virtually every Chinese person. It expresses the central importance of the degree of social distance within Chinese society. Literally, it means "relation" or "relationship". Of course, interpersonal relationships exist everywhere. Indeed, the importance of personal relationships in socio-economic life has been well documented in both Western and Chinese societies (e.g., Burt 1992, Luo 2000, Tsui and Farh 1997, Xin and Pearce 1996). However, it is argued that in China they are ubiquitous in that the whole society is structured around webs of *guanxi*, i.e. social relationships (Bian 1997). Chiao (1982) and King (1991) suggest that Chinese *guanxi* is often based on factors that promote shared social experience between and among individuals, such as being part of the same family, attending the same class, studying the same major, and living in the same village or district. According to Yang (1994), *guanxi* also implies "social connections" built implicitly, without the need for explicit discussion or arrangements, upon mutual interest and benefits. Once two people have established a sufficient level of *guanxi*, each can request a favor from the other knowing that the opportunity to reciprocate will arise at an appropriate time in the future. Tsui and Farh (1997) note further that such interpersonal favors and acts of generosity are rendered with the anticipation that they will be reciprocated. A later extension of this research (Xin and Pearce 1996) found that local private business executives made use of their *guanxi* connections to reduce threats to their business such as extortion or appropriation. Generally speaking, *guanxi* is used as a substitute for more formal institutional forms such as contracting.

How does *guanxi* affect trust and reciprocity in social exchanges? According to Butterfield (1983), Chinese people have a much stronger tendency to divide people into categories and treat

them accordingly. As such, *guanxi* critically affects behavior toward others in Chinese societies. Moreover, it is argued that the most important outcome of a *guanxi* connection may be trust between two individuals since trust toward members of one's ingroup and distrust toward others is one of the strongest characteristics of interpersonal relations in China (Yang 1994). Following this logic, we hypothesize that social closeness or the strength of a *guanxi* connection between two people is positively correlated with the extent of trust and reciprocity between those two people in Chinese society.

Two prior studies have examined these issues empirically in the context of a trust game in China. The first is by Buchan and Croson (2004), who examined the effect of social distance on trust and reciprocity in both the United States and China. The authors conducted questionnaire surveys in both countries to examine "the interaction of trust and reciprocity with naturally-occurring social institutions of family and social networks". Results showed persistent sensitivity to social distance for both trust and reciprocity in both countries based on hypothetical intentional/belief data. As discussed above, it is both theoretically interesting and empirically important to investigate whether these findings will be corroborated using behavioral data collected in the context of salient financial incentives. Moreover, the methodology used by Buchan and Croson (2004) involved presenting to their trust game participants an ordered list of hypothetical counterparts organized by increasing social distance as parent, sibling, cousin, fellow student you know well, student from a near-by university, stranger from your home town, and stranger from another country. The order of the social distance manipulation was not reversed or counterbalanced in their study. As the authors pointed out, an order effect could have contributed to the monotonic reduction of trust and reciprocity with increasing social distance found in their study. This potential confound warrants further investigation. Lastly, rather than using the conventional measure of reciprocity, Buchan and Croson (2004) used a different measure. Due to the different properties of these two measures, it is unclear whether their conclusions concerning reciprocity would be replicated using the more conventional measure. If not, the issue of how to interpret each measure must be confronted. Details of these two kinds of

reciprocity measures will be discussed in the methods section.

The second paper is by Buchan, Johnson, and Croson (2006), who conducted a trust-game experiment in four countries, China, Japan, Korea, and the United States, to examine the influence of social distance and communication on trust and reciprocity. Using an *ad hoc* group-formation procedure in an attempt to create ingroups and outgroups in the laboratory, the authors found that, contrary to the hypothesized social-distance effect, Chinese participants actually exhibited more trust and reciprocity toward outgroups. This is a puzzling result, given that studies using a similar methodology, i.e. the minimal group paradigm, in North America (e.g., Brewer and Brown 1998; Tajfel and Turner 1986) have showed compelling evidence that categorization into groups, even when based on the most arbitrary and transient criteria, can lead group members of one group to perceive members of another group as less trustworthy, less honest, and less cooperative than members of their own group. Indeed, the American participants in the Buchan et al. (2006) study reacted to the manipulation as expected, exhibiting more trust and reciprocity to the *ad hoc* ingroups. The unexpected reaction to this manipulation by the Chinese participants may have arisen from the failure of the manipulation to capture the essence of Chinese *guanxi*, which requires deeper commonality than that achievable in an *ad hoc* laboratory manipulation. A natural extension of Buchan et al. (2006) is to explore the social-distance effect on trust and reciprocity behavior in China using naturally occurring social groups that are more likely to reflect differing levels of *guanxi*.

Our study makes four important methodological innovations that contribute toward a deeper understanding of the relationship between trust, reciprocity and social distance in China. First, we focus on the importance of *guanxi* in China, and empirically implement different levels of *guanxi* by using a naturally occurring social institution rather than an experimental manipulation to investigate the effects of social distance not only on hypothetical beliefs about behavior, but also on actual financially salient trust and reciprocity decisions. Specifically, each participant in our study was asked either to respond to a hypothetical questionnaire about how s/he would play the trust game or actually to play the trust game both with a fellow classmate whom the

participant knows very well (labeled ingroup hereafter) and with another student from the same university whom the participant does not know (labeled outgroup hereafter). Thus, each participant made two decisions. Each decision involved a different anonymous counterpart, representing different levels of *guanxi* or social distance, thus creating the within-person treatment condition that is the focus of our investigation. Second, we examine the possibility that the order in which social distance levels are presented to participants might affect beliefs and behavior by reversing this order for half of the interacting parties. Third, we examine the relationship between beliefs about behavior and actual behavior. In particular, we compare actual behavior in the trust game with both hypothetical behavior and expectations about the behavior of others, and test whether there are any discrepancies between hypothetical decisions, expectations, and actual decisions. Furthermore, we examine how any such discrepancies affect the relationship between social distance and trust or reciprocity. Finally, we compare two different measures of reciprocity, the conventional one used by many researchers in the context of the trust game, and the contrasting one used by Buchan and Croson (2004) and Buchan et al. (2006) in the two previous studies on trust and social distance in China, and explore whether these different ways of operationalizing reciprocity can produce different conclusions.

METHODS

Methodological Framework and Background

We use a variant of the widely employed “trust” game (Berg et al. 1995), to model and measure trust and reciprocity in the laboratory. Participants are randomly assigned to be either trustors or trustees and given a monetary endowment at the beginning of the game. Each trustor then decides how much of his/her endowment to send to an anonymous counterpart (trustee), with whom s/he is paired at random. Any amount from zero to the entire endowment may be sent. All participants are informed that the experimenter will triple the amount sent before it is passed on to the trustee. After receiving the money, each trustee then decides how to split his/her total wealth, i.e., the sum of his/her initial endowment plus the tripled amount received, between

him/herself and the trustor as an act of reciprocity.² Each trustee is permitted to divide his/her post-transfer level of wealth in any manner s/he desires between him/herself and the trustor with whom s/he was randomly matched.

This framework is consistent with the conceptual notion of trust. Behavioral trust in this game is represented by the amount sent by the trustor. In accordance with Rousseau et al.'s (1998) definition of trust, a decision to send money involves an expectation that the other party will honor one's trust while simultaneously making oneself vulnerable to exploitation. As discussed earlier, there are two ways of measuring reciprocity in the context of this trust game in the literature. Many researchers have used the ratio between the amount sent back by the trustee and the amount sent by the trustor (hereafter Ratio 1) (e.g., Berg et al. 1995; Camerer 2003; Meidinger et al. 1999; Song 2009; 2008)³, while others, notably the authors of the two papers which have previously examined trust and social distance in China, have used the ratio between the amount sent back and the total wealth of the trustee, i.e., the sum of his/her initial endowment plus the tripled amount received (hereafter Ratio 2) (Buchan et al. 2006; Buchan et al. 2002; Buchan and Croson 2004). These two measures have rather different properties. First, Ratio 1 excludes cases of zero trust. Since the level of trust is in the denominator of Ratio 1, Ratio 1 is undefined when no money is sent. Conceptually, this may be thought of as reflecting the notion that reciprocity is impossible when no trust has been forthcoming. Second, if Ratio 1 is constant regardless of the level of trust offered, Ratio 2 will necessarily be positively correlated with the level of trust.⁴ Consider the following simple example. Suppose that the trustor and trustee are each given an initial endowment of 20. Imagine that the trustor sends 10 to the trustee. If the

² In Berg et al. (1995), trustees are permitted to send back any amount up to a maximum of the tripled-amount received. We follow Buchan and Croson (2004) and Buchan et al. (2006) in permitting trustees to send back any amount up to the total value of their post-transfer wealth inclusive of their original endowment in order to make our results comparable to those studies, which also examine the effect of social distance on trust and reciprocity in China.

³ In some cases, researchers have used the ratio of the amount sent back to the amount received by the trustee, the latter of which is three times the amount sent. Ratio 1 is just three times this ratio, and is thus essentially the same measure with the identical properties.

⁴ Let E = Endowment of the Trustee, S = Amount Sent by the Trustor, and R = Amount Returned by the Trustee. Then $R1 = R/S$ and $R2 = R / [(E+3 \cdot S)]$. Suppose $R1$ is a constant, i.e. it does not change as S changes. Then $\frac{\delta R2}{\delta S} = R1 \cdot \left[\frac{E}{(E + 3 \cdot S)^2} \right] > 0$. Thus, a constant $R1$ implies that $R2$ increases with the amount sent.

trustee in turn sends 10 back to the trustor, Ratio 1 equals $10/10 = 1$. Ratio 2 equals $10/50 = 0.20$, recalling the 10 sent to the trustee is tripled by the experimenter and that the trustee is also endowed with an additional 20. For 20 sent and 20 returned, Ratio 1 also equals 1. However, Ratio 2 now equals $20/80 = 0.25$. Thus for a constant level of reciprocity as measured by Ratio 1, Ratio 2 has increased with the higher level of trust. This turns out to be important when comparing the reciprocity results of our study with those of Buchan and Croson (2004). To facilitate this comparison, we report both reciprocity measures in our paper.

A standard starting point for the analysis of behavior in such a game is based on non-cooperative game theory with its fundamental assumption that individuals are both rational and self-interested. The trust game captures a one-shot, anonymous exchange in which one party acts without any knowledge of the person with whom s/he is paired at random (hereafter referred to as one's counterpart). Non-cooperative game theory predicts that trustees, self-interested and motivated to maximize their utility, would send no money back to trustors. Using backward induction, and given that there is no way of penalizing such self-interested behavior, rational trustors should then expect trustees to send nothing back. Thus, trustors have no motivation to send anything to trustees. This subgame perfect Nash equilibrium predicts neither trust nor reciprocity behavior in such an experimental setting. In stark contrast, many studies using this trust game have produced robust results indicating that many trustors send nontrivial amounts to trustees, who in turn send nontrivial amounts back. Average amounts sent have been documented to range from 40 to 60 percent, while amounts returned average 110 percent of the amount originally sent (measured as Ratio 1) (Camerer 2003, p. 86). Such findings have been attributed to individual propensities to trust and to reciprocate, social norms and moral sentiments.

Experimental Manipulation, Participants and Procedure

Using the experimental framework of the trust game, this study examines the effects of three manipulated factors. The first is a between-person factor: the random assignment of participants to the actual behavioral session or the hypothetical questionnaire session, permitting the gathering of these two types of data separately with no cross-contamination and allowing

hypothetical and expectation data from one randomly selected group of participants to be compared with the behavior of another. Note that gathering such data from the same individuals would render any such comparison suspect since people would likely report hypothetical beliefs consistent with their actual behavior. The second factor is a within-person repeated-design social-distance manipulation. Specifically, there are two levels of social distance in both the behavioral and the hypothetical sessions involving interaction with an ingroup versus an outgroup counterpart. This within-person factor is an important feature of the study. It is adopted to control for individual differences in trust/reciprocity preferences when examining the impact of social distance on trust and reciprocity. The third manipulation is a between-person factor: the order of the within-person social distance manipulations. The order of these conditions is reversed and counterbalanced to isolate the social distance effect from the order effect.

Undergraduate business students at the Dongbei University of Finance and Economics (DUFE) in Dalian, China were randomly recruited to participate in the study. At DUFE, as at most other Chinese universities, four classmates generally share a dorm room during the four years they spend at university. Females from the same class are all in adjacent rooms as are males. They take almost all of their classes together. Participants in our experiment were midway through their undergraduate education. They thus had both ample time to build *guanxi* and ample time left to utilize it. Although two students from the same university who are from different classes and do not know each other might share some *guanxi* by virtue of attending the same university, the level of such *guanxi* would be considerably lower than between two classmates. Note that whether two students were classmates or not was the only difference between the two levels of the social distance treatment. At both levels, the counterpart was a student taking similar courses in the same year of study. Thus, although demographic differences between participants can certainly have an important impact on *guanxi*, they cannot do so in our study. Moreover, at both levels, the specific identity of the counterpart was unknown. Thus, although personal feelings between two individuals who know each other can also have a strong impact on

guanxi, no such feelings can play a role in our study either.⁵ The only difference between the two levels of our social distance treatment was the *guanxi* category of the counterpart: at one level a classmate and at the other level a non-classmate at the same university. We thus examine whether simply knowing that one is interacting with an anonymous individual in a closer *guanxi* category, but in all other respects the same, can influence trust and/or reciprocity behavior in a one-shot interaction.⁶

Buchan et al. (2006) showed that a laboratory manipulation in the spirit of the minimal group paradigm produced perverse effects on trust and reciprocity in China. We are interested in whether a small, naturally occurring difference in *guanxi* category creates an ingroup bias on trust and/or reciprocity. Hence, we focus on a simple naturally occurring difference in *guanxi* categories that involves neither personal feelings between two particular individuals nor demographic differences such as age, occupation, religion, wealth, region or nationality that might influence trust and/or reciprocity in their own special ways. In other words, we ask whether a naturally occurring “minimal-*guanxi* paradigm” treatment can produce ingroup/outgroup effects on trust and/or reciprocity in China.

A total of 234 participants participated in our experiments. Participants primarily majored in Business English or Public Administration. All participants in both majors had taken similar courses including introductory economics. Thus we assume that their levels of exposure to game theory were equivalent. Participants in the behavioral session and in the hypothetical session were from the same population with identical demographic characteristics. The behavioral session consisted of 116 (79 women and 37 men) participants with average age of 20.79 (SD=0.95). The hypothetical session consisted of 118 participants (80 women and 38 men) with average age of 20.41(SD=0.93). Everyone directly involved in conducting the experiment was

⁵ This contrasts with Brandts and Solà (2009) who use Spanish laboratory data to examine how trust is partitioned between an anonymous individual and a known friend who has signed up for the experimental session together with the trustor.

⁶ Sacerdote (2001) finds that randomly-assigned freshman roommates and dormmates at Dartmouth College influence each other's choice of social group or fraternity, but do not affect other major decisions such as the choice of major. Choosing to join the same social groups reflects social closeness. Such effects might be considerably stronger among our subjects who are not only dormmates, but also classmates, for all four years of their undergraduate education in a society that emphasizes *guanxi*.

Chinese to avoid any effect of foreign involvement on behavior.

Behavioral Session Procedure

Participants from two different university classes arrived at the experiment site. Each participant was asked to pick an identification card out of a box, which determined his/her participant code and assignment to either the “Party A” (“*Jiafang*” in Chinese) or “Party B” (“*Yifang*” in Chinese) role, corresponding to trustor and trustee respectively. In order to avoid possible framing effects, the word “trust” was not mentioned at all during the experiment. Participants were then escorted to the assigned “Party A” or “Party B” room for their class, where they stayed for the remainder of the experiment. Thus, participants sat in one of four rooms assigned on the basis of both class and role in the experiment and did not meet each other throughout the experiment. All participants received the same general instructions about the trust game. They were informed that the experiment involved the game described above in which they would either play the “Party A” or “Party B” role. The game was illustrated with several numerical examples in the instructions. The instructions were read aloud to the participants and they were then given time to ask questions. Participants were also told that they would remain anonymous during the experiment (they were only identified by their unique participant codes), and that they would get paid in cash at the end of the game based on the decisions they made and those made by another participant with whom they would be randomly paired during the game. Participants were asked to complete a numerical example quiz to make sure that they completely understood the game.

The experiment formally began at that point. Each trustor and trustee received a ¥20.00 RMB endowment at the beginning of each of the two experimental rounds. A decision record form was employed for trustors and trustees to communicate their decisions anonymously to each other. The decision record forms were delivered in envelopes. One experimenter or research assistant was permanently stationed in each room, while two additional assistants collected and delivered the decision record forms between the rooms. Finally, another research assistant sat in the control room recording all the decisions by participant code in isolation from the participants

themselves. Thus, nobody who could link a participant code with a name or a face could observe the decisions made. This decision communication procedure minimized potential confounding effects emanating from self-presentation and/or social desirability motivations. Participants made two decisions sequentially: for half of the participants, first toward an ingroup counterpart and then an outgroup counterpart; while for the other half, the order of these two decisions was reversed (IO and OI order hereafter). In addition to this reversal, the following procedures were implemented to mitigate multiple-round effects. First, participants were not told the number of decisions they would be asked to make at the beginning of the experiment, nor were they informed in the second condition that it was the last condition in the experiment. Second, the outcomes for the first condition were not revealed to the trustors till the very end of the experiment, i.e., after they completed the second condition and the post-experiment questionnaire. However, due to the game structure, a trustee always knew the result of an interaction as soon as he/she made a decision.

At the end of the experiment participants were asked to complete a short post-experiment questionnaire for information on gender and age. After completing the questionnaire, participants were paid individually in the experimental control room to protect their anonymity. The research assistants who paid the students had not worked on any other aspect of the experiment, and were unfamiliar with the structure of the game. Thus, they were unable to infer anything about the decisions made by the participants from the amounts of money earned. Only one of the two experimental rounds was randomly chosen for payment to prevent wealth effects. Each session took approximately one hour and participants earned on average ¥27.50 RMB. This has purchasing power equivalent to about \$18 US dollar and is substantially higher than the average wage of ¥10 RMB to ¥15 RMB an hour for jobs on campus.

Hypothetical Questionnaire Session Procedure

The hypothetical questionnaire session followed the same procedures employed in the behavioral session as much as possible. Participants were required to complete two separate questionnaire surveys one by one. In each questionnaire, after following along as the

experimenter read aloud the instructions for the behavioral trust game summarized above, participants were asked to respond to the following questions translated here from the Chinese:

Trustors: Imagine you were playing this game as “Party A”. Please state how much you would send to a randomly-paired “Party B”, who is your fellow classmate/a non-classmate from Dongbei University of Finance and Economics, and how much you would expect to receive back from him/her based on the amount you would send.

Trustees: Imagine you were playing this game as “Party B”. Please state how much you would expect to receive from a randomly-paired “Party A”, who is your fellow classmate/a non-classmate from Dongbei University of Finance and Economics, and how much you would return to him/her based on your expectation.

Half of the participants received two questionnaires in the IO order, while the other half received two questionnaires in the reversed order. At the end of the experiment participants were asked to complete the same post-experiment questionnaire as in the behavioral session. Since the hypothetical sessions involved purely hypothetical endowments of ¥20.00 RMB each, participants were paid a fixed participation fee of ¥10.00 RMB for about 45 minutes.

DATA ANALYSIS AND RESULTS

Overview

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Table 1 summarizes the results of both the behavioral and hypothetical survey sessions. *Behavioral trust* is the amount the trustor sent to the trustee in the behavioral session. There are two measures of behavioral reciprocity. *Behavioral Ratio 1 reciprocity* is the ratio between the amount sent back by the trustee and the amount sent by the trustor, while *Behavioral Ratio 2 reciprocity* is the ratio between the amount sent back and the total wealth of the trustee, i.e., the sum of his/her initial endowment plus the tripled amount received. Correspondingly, there are six dependent variables in the separately run hypothetical survey session: 1) *hypothetical trust* is the

amount the trustor stated s/he would send to the trustee if s/he were actually playing the game; 2) *trust expected from others* is the amount the trustee to receive from the trustor in such circumstances; 3) *hypothetical Ratio 1 reciprocity* is the ratio between the amount the trustee stated s/he would send back and the amount s/he expected to receive from the trustor; 4) *Ratio 1 reciprocity expected from others* is the ratio between the amount the trustor expected the trustee would send back and the amount s/he stated s/he would send to the trustee; 5) *hypothetical Ratio 2 reciprocity* is the ratio between the amount the trustee stated s/he would send back and his/her total wealth i.e., the sum of his/her initial endowment plus the tripled amount s/he expected to receive from the trustor, and 6) *Ratio 2 reciprocity expected from others* is the ratio between the amount the trustor expected the trustee would send back and the trustee's total wealth. For each session, the table shows the means and standard deviations for each of these measures toward both an ingroup and an outgroup member in each of the IO and OI orders.

Behavioral Session Results

Initially, we examined the potential impact of social distance on behavioral trust and reciprocity using non-parametric Wilcoxon Signed Rank tests. The tests showed that the distributions of both trust and Ratio 2 reciprocity toward an ingroup versus an outgroup counterpart were significantly different ($z = -2.719, p = 0.007$, and $z = -2.500, p = 0.012$ respectively). However, no significant difference was found for Ratio 1 reciprocity ($z = -0.441, p = 0.659$). We examined the distribution of Ratio 1 reciprocity more closely for both the ingroup and outgroup cases in Table 2. The table divides the distribution into six categories: sending back nothing ($x=0$), sending back less than the trustor sent ($0 < x < 1$), sending back exactly the amount the trustor sent ($x=1$), sending back more than the trustor sent, but keeping a higher proportion of the surplus for oneself ($1 < x < 2$), equally splitting the surplus between the trustor and oneself ($x=2$), and sending back more than half of the surplus to the trustor ($x > 2$). The modal ratio for ingroups was 2, chosen by 21 (36.2%) participants. Thirteen (22.4%) chose ratios between 1 and 2, while another 7 (12.1%) chose a ratio of 1. The modal reciprocity ratio for outgroup reciprocity was also 2, chosen by 13 (26%) participants. The lower percentage of participants at

the outgroup mode of 2 corresponded to somewhat higher percentages choosing ratios equal to 1 or between 1 and 2. However, these small differences were not enough to establish a significant difference between the two distributions.

----- INSERT TABLE 2 ABOUT HERE -----

We next analyzed the social distance effect on trust, Ratio 1 and Ratio 2 reciprocity, using regression analysis, and controlling for both order and gender. The dependent variables, within-person differences in trust or reciprocity, were measured as the within-person difference between trust or Ratio 1 and Ratio 2 reciprocity toward an ingroup versus an outgroup counterpart. For order and gender, we adopted effects coding with the IO order as -0.5, the OI order as 0.5, male as -0.5 and female as 0.5. This allows the intercept to be interpreted as the main treatment effect of the social-distance level on trust or reciprocity, averaged over the two presentation orders and over the male and female participants. The following two regressions were run for trust and the two reciprocity ratios respectively:

$$\text{Within-person Differences in Trust} = \beta_0 + \beta_1 (\text{Order}) + \beta_2 (\text{Gender}) + \varepsilon \quad (1)$$

$$\text{Within-person Differences in Reciprocity} = \beta_0 + \beta_1 (\text{Order}) + \beta_2 (\text{Gender}) + \beta_3 (\text{Difference in Trust Received}) + \varepsilon \quad (2)$$

----- INSERT TABLE 3 ABOUT HERE -----

Regression results are summarized in Table 3. For behavioral trust, we found that the main effect of social-distance level remained significant ($p = 0.011$) after controlling for gender and order. Moreover, neither of the control variables had a significant impact on the size of the social-distance effect. In contrast, Ratio 1 reciprocity was not responsive to differences in social-distance levels ($p = 0.742$). Neither order, nor gender nor the level of trust received had a significant impact on the lack of social-distance effect for Ratio 1. For Ratio 2 reciprocity, the social-distance effect was also insignificant ($p = 0.224$). Although gender had no impact, there was a significant order effect ($p = 0.016$).⁷

⁷ Our data allow us to run analogous regressions using between-person data. In particular, we are able to use the first round of the IO treatment as ingroup data and the first round of the OI treatment as outgroup data. We lose degrees of freedom, but still find a

In contrast to the results for Ratio 1 reciprocity, the individual differences in Ratio 2 reciprocity between the two social-distance levels were significantly influenced by the differences in the levels of trust received at the two levels ($p=0.000$). This is not surprising. As discussed earlier in the paper and proven in footnote 3, if differences in the level of trust received do not affect reciprocity as measured by Ratio 1, they must positively affect Ratio 2 as observed in these results. Since the level of trust was significantly and systematically different between the two social-distance levels, comparing Ratio 2 reciprocity without controlling for the level of trust received produces apparent differences in reciprocity between the two levels as well. This is consistent with the apparently significant social-distance effect found using the non-parametric Wilcoxon Signed Rank test reported above. It is important to note that Buchan and Croson (2004), who reported a significant effect of social distance on Ratio 2, did not control for within-person differences in the levels of trust received in their analysis.⁸ When we removed this control from our Ratio 2 reciprocity regression, the social distance effect became significant in our data as well ($p=0.039$), consistent with our non-parametric analysis and reflecting the systematic difference in trust received at different levels of social distance rather than any systematic social-distance effect on reciprocity.

Since we found a significant effect of presentation order on the relationship between social-distance level and Ratio 2 reciprocity, we examined whether the treatment effect of social distance on reciprocity measured both by Ratio 1 and Ratio 2 differed under the two different presentation orders. Given that gender did not have any significant impact on the effects of social distance, we controlled only for the difference in trust received in this analysis. There was no significant order effect for Ratio 1 reciprocity. Correspondingly, in both the IO and OI orders a change in social-distance level had no significant effects. However, for Ratio 2 reciprocity, there was an apparently significant effect of social-distance level in the IO data ($p=0.045$), but not in

marginally significant ($p=0.094$) social-distance effect on trust. As in the within-person comparison, there is no social distance effect on Ratio 1 or Ratio 2 reciprocity.

⁸ Since Buchan and Croson's (2004) data are hypothetical, trustees made decisions based on what they expected to receive from trustors at the specified levels of social distance.

the OI data. Together, these results suggest that the significant declines in reciprocity observed by Buchan and Croson (2004) with an increase in social distance, a finding that contrasts with ours, could be the cumulative result of two factors: first Ratio 2 was used to measure reciprocity without controlling for the within-person difference in trust received at different levels of social distance, and second, all the data were collected in the IO order.

Hypothetical Survey Session Results

Regressions (1) and (2) were then run for hypothetical trust and hypothetical Ratios 1 and 2 reciprocity; as well as for trust expected from others and Ratios 1 and 2 reciprocity expected from others. These regression results, summarized in Table 4, reveal a similar pattern to the one that emerged from the behavioral data. First, there was a social-distance effect on the level of hypothetical trust exhibited toward an ingroup versus an outgroup counterpart as well as on the level of trust expected from ingroup versus outgroup others ($p = 0.000$ in both cases). Second, neither order nor gender had a significant impact on the social-distance treatment effect for hypothetical trust. Thus, hypothetical and actual behavioral data yielded qualitatively the same result. In contrast, there were significant effects of both order and gender on the social-distance treatment effect for trust expected from others. In particular, trustees expected a significantly bigger difference in trust from ingroup versus outgroup counterparts when they played in the OI order and when they were male.

----- INSERT TABLE 4 ABOUT HERE -----

Third, echoing our behavioral results, neither hypothetical reciprocity nor reciprocity expected from others (whether measured by Ratio 1 or 2) were significantly influenced by different levels of social distance with counterparts though hypothetical Ratio 1 reciprocity came close ($p=0.084$). Fourth, there was a significant order effect ($p = 0.049$) for Ratio 1 reciprocity expected from others. In addition, the difference in level of trust received also significantly influenced the difference in both hypothetical Ratio 2 reciprocity and Ratio 2 reciprocity expected from others ($p = 0.000$ for both cases) between the two social-distance levels, consistent

with the mathematical relationship between Ratio 1 and Ratio 2 discussed in footnote 3 above.⁹ In sum, these results show that participants' hypothetical decisions and expectations of others concerning the influence of social distance on trust and reciprocity were both qualitatively consistent with what we observed in actual behavior with salient financial consequences: trust decreases when social distance decreases whereas reciprocity is not responsive to a change in social distance.¹⁰ Finally, three further tests were run to compare the size of the social-distance effect on trust between the behavioral and hypothetical data, between the behavioral and expectational data, and between the hypothetical and expectational data. In none of these cases was there a significant difference.^{11 12}

Comparing Hypothetical and Expected Trust and Reciprocity Levels with Each Other and with Behavior

Although there are no significant differences in the effects of social distance on either trust or reciprocity when comparing hypothetical, expectational and behavioral data, there may nonetheless be differences in trust and reciprocity levels between these three sets of data. In particular, hypothetical statements about one's own behavior may differ from expectations of others if a "holier-than-thou" bias is present in the context of trust and reciprocity interactions. Table 5 presents a between-person comparison of hypothetical trust and reciprocity levels for oneself versus expectations of how others would behave towards ingroup and outgroup counterparts.¹³

----- INSERT TABLE 5 ABOUT HERE -----

⁹ The "level of trust received" is measured by the trust expected from others for hypothetical Ratio 2 reciprocity and by hypothetical trust for Ratio 2 reciprocity expected from others.

¹⁰ Doing a between-person comparison in the manner discussed in footnote 6, we find a significant social distance effect for both hypothetical trust ($p=0.004$) and trust expected from others ($p=0.025$). There are no significant social distance effects for reciprocity.

¹¹ In each case, we appropriately controlled for order and gender. Since there were no significant social-distance effects on reciprocity in either the behavioral or hypothetical data, there was no need to do similar tests comparing the size of reciprocity effects in the different data sets.

¹² As demonstrated by Ben-Ner, Kramer, and Levy (2008) in the context of a comparison between hypothetical and real dictator games, the lack of a significant difference in behavior averaged across individuals does not rule out the possibility that individuals would exhibit systematically different behavior in a hypothetical context versus one with salient financial incentives.

¹³ We also ran all of these tests in a regression framework controlling for order and gender. The results were statistically identical to those reported in Table 5.

The comparison revealed that trust levels indicated by hypothetical trustors was significantly higher than trust levels expected from others by hypothetical trustees toward both ingroup- and outgroup-counterparts ($p = 0.043$ and $p = 0.002$ respectively). We then examined whether this difference reflected an overestimation of how trusting one would oneself be, or an underestimation of how trusting other people would be relative to actual behavior. Comparing these data with the actual behavior of different participants from the same population, we found that 84% of the holier-than-thou bias concerning trust toward ingroup counterparts came from an overestimation of how trusting participants believed they themselves would be toward an ingroup person, while only 16% came from an underestimation of others. However, this apparent self-overestimation bias was not significant at conventional levels ($p = 0.075$), so this result is suggestive only. In contrast, for trust toward outgroup participants, 67% of the bias came from an underestimation of how trusting others would be toward an outgroup person relative to actual behavior and this underestimation was significant ($p = 0.026$).

In contrast, there were no such effects in reciprocity forecasts. Although it initially seems that hypothetical trustors thought other people would be more reciprocating to an outgroup person than hypothetical trustees thought they would be themselves when measured by Ratio 2 ($p = 0.049$), this anomalous result disappears when we control for trust received. As stressed earlier, this control is essential for Ratio 2. Without it, Ratio 2 reciprocity expected from others will be higher than one's own stated hypothetical Ratio 2 reciprocity simply because hypothetical trust is significantly higher than the trust expected from others.¹⁴ Surprisingly, Ratio 2 reciprocity expected from others is significantly higher than actual behavior, even after controlling for trust received ($p = 0.042$). As there is no theoretical explanation for this isolated result, we suspect it may be due to Type 1 error.

CONCLUSION AND DISCUSSION

¹⁴ Recall that the hypothetical trustor states a level of hypothetical trust and an expectation of reciprocity based on that hypothetical trust level, while the hypothetical trustee states the level of trust expected from others and a level of hypothetical reciprocity based on that expectation. Thus, it is the level of hypothetical trust that affects the bias of expected Ratio 2 reciprocity, and the level of expected trust that affects the bias of hypothetical Ratio 2 reciprocity if the trust control is omitted.

The primary goal of this paper was to investigate how social distance between exchange parties may influence trust and reciprocity behavior in China. The China setting is directly related to the choice of social-distance treatment, which exploits the strong camaraderie among classmates at Chinese universities who live and work so closely together. However, the reader is reminded that like most studies, this one is set in just one country. Thus, we make no claim that our results are unique to China or depend uniquely on Chinese notions of *guanxi*. Rather the central importance of *guanxi* in China and the perverse results arising from attempts to establish ingroups through a laboratory manipulation akin to the minimal-group paradigm in Buchan et al. (2006) provide part of the motivation for undertaking this study.

Building on the work of both Buchan and Croson (2004) and Buchan et al. (2006), we conducted a study in which participants either participated in a financially salient one-shot trust game or completed a hypothetical survey. We measured the changes in actual and hypothetical trust and reciprocity as well as the changes in expectations of others due to differences in social-distance levels using naturally occurring differences in *guanxi* categories. We extended past work in the following five ways. First, we collected data on both actual behavioral decisions with salient financial consequences and hypothetical decisions with no financial consequences within the same methodological framework and explored whether and to what extent these two methods of gathering data yield different results. Second, we used naturally occurring *guanxi* categories rather than an experimental manipulation in the laboratory to investigate the impact of social distance on trust and reciprocity behavior in China. In particular, counterparts were anonymous and demographically identical except for being either classmates or non-classmates. Third, we controlled for possible order effects, which may have influenced previously reported results, by reversing the presentation order of social-distance levels between interacting parties. Fourth, we explored the implications of two reciprocity measures used in earlier research employing the trust game. Fifth, we investigated potential holier-than-thou effects by comparing hypothetical decisions and expectations of others both with each other and with the actual behavior of participants from the same population. Key findings are summarized and discussed below.

Our Chinese participants exhibited significantly more trust toward ingroup than toward outgroup members. This social-distance effect was present and statistically indistinguishable in magnitude in both our behavioral and hypothetical data. However, it contrasts with Buchan et al.'s (2006) finding of significantly more trust toward outgroup members. One key methodological difference was likely responsible for these contrasting results. Buchan et al. (2006) employed a laboratory manipulation akin to the minimal-group paradigm for the manipulation of social-distance levels between the interacting parties. In contrast, in our study no such laboratory manipulation was used. Instead we employed a naturally occurring “minimal-*guanxi* paradigm” treatment in which counterparts were anonymous and demographically identical except for being either classmates or non-classmates. There is evidence in cross-cultural research suggesting that the minimal-group paradigm may not work as well in some countries as in others (Mann et al., 1985) and more importantly, that while the ingroup-outgroup boundary is salient among natural groups in collective societies, it may be less pronounced for *ad hoc* groups that are temporarily constructed in a laboratory setting (Triandis 1995). Thus, as Buchan et al. (2006) conjectured when discussing their results, it might be more difficult to form temporary *ad hoc* ingroups among Chinese participants due to China's collectivist culture. Moreover, it is possible that the very manipulation used to form *ad hoc* groups caused some discomfort among the Chinese participants, thus influencing their mood and hence their behavior. Although this latter point is speculative, the distinction between naturally occurring *guanxi* categories versus temporarily constructed *ad hoc* groups in China was almost certainly responsible for the differing results in the two studies. The fact that our results concerning trust were consistent with Buchan and Croson's (2004) survey data, which also employed naturally occurring *guanxi* categories, lends further support to the notion that this is a critical factor in the examination of the impact of social distance on trust in China.

In contrast to trust, reciprocity behavior was not sensitive to social distance as measured by the two *guanxi* categories in our study. This result is contrary to the results of Buchan and Croson (2004), who found a significant drop in reciprocity as social distance increased. Buchan

and Croson (2004) used hypothetical questionnaire data. However, this was not the reason for the discrepancy in results. Indeed our own hypothetical questionnaire data gave identical results to our behavioral data regarding the lack of a social-distance effect on reciprocity. Instead, our results point to a combination of two other factors that is likely responsible for the difference in results. First, Buchan and Croson (2004) define reciprocity using Ratio 2 and do not control for the trust their hypothetical trustees expected to receive. Although the level of trust received has no significant impact on reciprocity as defined by Ratio 1, it does have a significant impact on reciprocity as defined by Ratio 2. Indeed, we have both shown mathematically that this must be the case, and verified that it is the case in both our behavioral and hypothetical data. Omitting a control for the difference in trust received causes an apparent social-distance effect on Ratio 2 reciprocity. However, this apparent effect is the result of specification error resulting from a missing control variable in the statistical model, and is merely a reflection of the social-distance effect on the level of trust. Second, the order in which the social-distance levels are presented to participants can significantly affect their choices. In the ingroup-outgroup order a significant fall in reciprocity emerged as social distance increased in both Buchan and Croson (2004) and in our study. Conversely, in the reversed order in our study, trustees reciprocated as much toward outgroup as toward ingroup members. The reduction in reciprocity in the IO order may have been affected by the order and manner in which the levels of social distance were presented. Specifically, in the IO order, a trustor is given a justification to trust less when s/he is presented with an outgroup counterpart after playing with an ingroup member. In contrast, s/he may not feel similarly motivated to trust more in the reversed order, when presented with an ingroup counterpart after playing with an outgroup member. In addition, the simultaneous monotonic presentation of multiple levels of social distance from closest to farthest in the Buchan and Croson (2004) study may have implicitly motivated a monotonic reaction both for reasons of psychological consistency and because participants may have believed that this was what was expected of them.

Of course, there were more social-distance levels in Buchan and Croson (2004). The ability

to examine trust and reciprocity at many different social distance levels is one of the big advantages of a hypothetical over a more costly salient behavioral study. We cannot of course rule out an impact of social distance on reciprocity when the difference between levels of social distance is larger than in our study or when such differences include such demographic factors as age, occupation, wealth, religion, language, or region. This is a matter for future research.

Comparing hypothetical decisions with expectations of others' decisions, we found a significant holier-than-thou effect for trust at both social-distance levels, but not for reciprocity. Importantly, there were no such discrepancies regarding the social-distance effect itself on either trust or reciprocity. Moreover, neither the hypothetical nor expectational data concerning the social distance effect differed statistically from the behavior of other participants drawn from the same population who actually played a trust game with salient financial incentives. This is a comforting result. That both the social-distance effect on trust and the lack of such an effect on reciprocity were robust to different investigative approaches gives added support to the important relationship between social distance and trust in China.

Our results are however puzzling in one important respect. While non-classmates were actually as trustworthy as classmates, and furthermore expected to be so, they nonetheless received less trust.¹⁵ If trustors pass more money to ingroup members even though ingroup members are expected to be no more trustworthy than outgroup members, it might be argued that the motive for doing so must be other-regarding preferences or altruism biased towards the ingroup. However, if other-regarding preferences are biased in this manner, it is difficult to explain why the same bias is not exhibited by trustees who return money in proportion to the amount received without any apparent ingroup bias. One possible explanation is that while point predictions of ingroup versus outgroup reciprocity are no different statistically, the unobserved confidence intervals surrounding these predictions might differ. If risk-averse trustors are less

¹⁵ A similar apparent disconnect between trustors and trustees is reported by Cox and Deck (2005) in a different kind of trust game in which first movers choose either to engage or exit while second movers choose either to cooperate or defect. Decreasing anonymity leads to a higher rate of cooperation by second movers, but has no effect on the rate at which first movers choose to engage.

certain about how much will be sent back by outgroup trustees, they might decide to send them less even though the expected value of outgroup reciprocity may not differ from that of the ingroup. Whether or not this is the case cannot be determined by the point estimates of reciprocity gathered in our study. However, it should be pointed out that the standard deviations of actual reciprocity behavior reported in Table 1 are no larger for outgroup reciprocity than for ingroup reciprocity. Thus, there appears to be little behavioral foundation for such a lack of confidence in predictions of outgroup reciprocity. This issue requires further study.

Building closer and deeper *guanxi* relationships engenders trust. This in turn promotes the creation of social surplus. At the levels of reciprocity observed in our study, both trustors and trustees benefit from this surplus even though the level of reciprocity is not itself directly affected by social distance as measured by the naturally occurring *guanxi* category of one's counterpart.¹⁶ This suggests a potential to extend the boundaries of trust in China, creating benefits for individuals and organizations both as trustors and trustees. Meanwhile, investing in *guanxi* is an important priority for those doing business in China.

¹⁶ The average level of Ratio 1 reciprocity ranged from 1.33 to 1.92 in our behavioral treatments and 1.66 to 1.95 in our hypothetical treatments. As long as this ratio is above 1, the surplus will be shared between the trustor and the trustee.

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Table 1**Data Summary: Means and Standard Deviations by Experimental Treatment**

Variable	Ingroup (S.D.)		Outgroup (S.D.)	
	IO order	OI order	IO order	OI order
Panel A: Behavioral Session Data				
Behavioral Trust (n=58)	9.98 (6.35)	9.34 (6.44)	7.41 (6.50)	7.27 (6.25)
Behavioral Reciprocity – Ratio 1 (n=50)	1.92 (1.37)	1.40 (0.70)	1.33 (1.38)	1.57 (0.55)
Behavioral Reciprocity – Ratio 2 (n=58)	0.33 (0.23)	0.25 (0.16)	0.18 (0.18)	0.22 (0.14)
Panel B: Hypothetical Survey Session Data				
Panel B-1: Data from the Trustors				
Hypothetical Trust (n=59)	11.58 (6.17)	11.15 (6.79)	8.68 (5.42)	7.43 (5.62)
Ratio 1 Reciprocity Expected from Others (n=59)	1.76 (0.47)	1.78 (0.57)	1.46 (0.59)	1.81 (1.21)
Ratio 2 Reciprocity Expected from Others (n=59)	0.34 (0.12)	0.33 (0.14)	0.26 (0.13)	0.28 (0.20)
Panel B-2: Data from the Trustees				
Trust Expected from Others (n=59)	8.00 (5.82)	10.69 (6.76)	5.62 (4.10)	5.14 (4.63)
Hypothetical Ratio 1 Reciprocity (n=59)	1.95 (0.62)	1.80 (0.48)	1.66 (0.69)	1.69 (0.60)
Hypothetical Ratio 2 Reciprocity (n=59)	0.32 (0.20)	0.33 (0.13)	0.23 (0.14)	0.20 (0.13)

Table 2**Behavioral Session: Distribution of Reciprocity Ratio 1 (Percentage in parentheses)**

	Ingroup	Outgroup
x=0	3 (5.2%)	4 (8.0%)
0<x<1	8 (13.8%)	6 (12.0%)
x=1	7 (12.1%)	10 (20.0%)
1<x<2	13 (22.4%)	12 (24.0%)
x=2	21 (36.2%)	13 (26.0%)
x>2	6 (10.3%)	5 (10.0%)
Total	58 (100%)	50 (100%)

Table 3**Behavioral Data: Within-Person Social-Distance Effect**

DV Within- Person Difference	Constant β_0 (p)	Order B_1 (p)	Gender B_2 (p)	Diff. in Trust Received B_3 (p)	Overall Fit F -stat. (p)
Trust (n=58)	2.549 (0.011)	-0.705 (0.709)	-1.848 (0.344)	N/A	0.492 (0.614)
Ratio 1 (n=50)	0.066 (0.742)	-0.671 (0.069)	0.198 (0.619)	-0.007 (0.743)	1.203 (0.319)
Ratio 2 (n=58)	0.042 (0.224)	-0.114 (0.016)	0.052 (0.699)	0.015 (0.000)	7.307 (0.000)
Ratio 2 (n=58)	0.80 (0.039)	-0.121 (0.079)	0.042 (0.585)	Removed	1.652 (0.201)

Table 4**Hypothetical Survey Data: Within-Person Social-Distance Effect**

DV Within-Person Difference	Constant β_0 (p)	Order B_1 (p)	Gender B_2 (p)	Diff. in Trust Received B_6 (p)	Overall Fit F -stat. (p)
Hypothetical Trust (n=58)	3.411 (0.000)	0.559 (0.646)	-0.788 (0.532)	N/A	0.455 (0.637)
Trust Expected from Others (n=58)	4.841 (0.000)	3.133 (0.031)	-3.818 (0.020)	N/A	5.361 (0.007)
Hypothetical Ratio 1 Reciprocity (n=50)	0.206 (0.084)	-0.201 (0.221)	-0.262 (0.178)	0.016 (0.352)	1.772 (0.164)
Ratio 1 Reciprocity Expected from Others (n=58)	0.067 (0.618)	-0.440 (0.049)	-0.244 (0.285)	0.029 (0.234)	1.852 (0.149)
Hypothetical Ratio 2 Reciprocity (n=50)	0.028 (0.119)	-0.031 (0.225)	0.038 (0.188)	0.022 (0.000)	36.607 (0.000)
Ratio 2 Reciprocity Expected from Others (n=58)	0.019 (0.348)	-0.040 (0.216)	-0.003 (0.930)	0.016 (0.000)	7.074 (0.000)

Table 5
Contrasting Behavioral, Hypothetical and Expectational Data

Variable	1. Actual Behavior (n=58)	2. Hypothetical (n=59)	3. Expectations of Others (n=59)	2 - 3 t-stat. (p-value)	2 - 1 t-stat. (p-value)	1 - 3 t-stat. (p-value)
Ingroup Trust	9.65 ^ψ	11.36 [§]	9.32 ^φ	1.727 (0.043)	1.448 (0.075)	.278 (0.390)
Outgroup Trust	7.34 ^ψ	8.05 [§]	5.38 ^φ	2.921 (0.002)	0.649 (0.258)	1.955 (0.026)
Ingroup Ratio 1	1.65 ^η	1.88 ^φ	1.77 [§]	1.080 (0.141)	1.409 (0.080)	-.755 (0.226)
Outgroup Ratio 1	1.46 ^η	1.67 ^φ	1.64 [§]	0.216 (0.414)	1.308 (0.097)	-.961 (0.169)
Ingroup Ratio 2	0.29 ^η	0.32 ^φ	0.34 [§]	-0.012 (0.328)	0.037 (0.142)	-0.049 (0.060)
				0.009* (0.394)	-0.051* (0.069)	0.052* (0.069)
Outgroup Ratio 2	0.19 ^η	0.22 ^φ	0.27 [§]	-0.047 (0.049)	0.020 (0.239)	-0.067 (0.016)
				0.009* (0.677)	0.038* (0.159)	-0.059* (0.042)

Note: ^ψ Data collected from Trustors in the Behavioral Session.

^η Data collected from Trustees in the Behavioral Session.

[§] Data collected from Trustors in the Hypothetical Survey Session.

^φ Data collected from Trustees in the Hypothetical Survey Session.

* Adding trust received (or expected trust for hypothetical survey data) as a control variable in the analysis. The control variable was significant ($p = 0.000$) in all six Ratio 2 regressions. It was never significant for Ratio 1, and did not change any of the statistical inferences. To save space, these Ratio 1 results are not reported here.

SUPPLEMENTARY MATERIALS FOR REVIEWERS ONLY: NOT FOR PUBLICATION

Instructions for Referees: Trustors in Ingroup-Outgroup Order

Thank you for participating today. In this experiment, you will have the opportunity to earn money. The actual amount of money you will earn depends on your choices and the choices of another participant in the experiment. Throughout this experiment you will be asked to make a series of decisions. Please make sure that you completely understand the instructions for each part of the experiment before making any decisions in that part of the experiment. If you have any questions at any point or need clarifications, please raise your hand and the experimenter will come to you and answer your question. Your decisions and answers to the questionnaire are confidential and will not be revealed to anyone other than the experimenters. The data will only be identified by the participant code assigned to you and will not at any point be connected to your name in any way.

The study consists of several parts. Each part will involve an opportunity to earn a similar amount of money. At the end of the session, one of these parts will be randomly chosen. You will be paid in cash the amount of money you earned in the chosen part.

In the first part, the experiment will be conducted in pairs: one Party-A [*jia(3) fang(1)* in Chinese] participant in this room will be paired at random with one Party-B [*yi(3) fang(1)* in Chinese] participant seated in another room. **The Party-B participant with whom you are paired is a student from your class.** Each participant, whether Party A or B, will receive the same instructions and be allocated a sum of 20 RMB as the first part of the session begins.

You, playing the Party-A role, will have the opportunity to send some, all, or none of your 20 RMB to a Party-B participant, who is another student from your class. The amount you send should be rounded to the nearest 0.1 RMB. The amount you send to the Party-B participant will be tripled before it is given to him/her. For example, if you send X RMB, the Party-B participant will receive 3X RMB. Whatever amount you don't send, you get to keep at its original value. After the Party-B participant receives the tripled amount, he/she will decide how to divide the sum of his/her 20 RMB endowment plus the tripled amount received, 3X RMB, between him/herself and you. The amount the Party-B participant sends back to you will NOT be tripled. In other words, you will receive the exact amount the Party-B participant chooses to send back.

Here is a numerical example: say you decide to send 1.00 RMB to the Party-B participant with whom you are paired and keep 19.00 RMB for yourself. The amount sent will be tripled to 3.00 RMB. The Party-B participant then decides how much of his/her wealth ($¥20.00 + ¥3.00 = ¥23.00$) to send back to you. Suppose the Party-B participant chooses to send 4.00 RMB back to you and keeps 19.00 RMB for him/herself. At the end of the experiment, you would earn $¥20.00 - ¥1.00 + ¥4.00 = ¥23.00$, and the Party-B participant would earn $¥20.00 + ¥3.00 - ¥4.00 = ¥19.00$.

Please take a minute to study the attached pictures, which illustrate the decisions that must be made by both the Party-B and the Party-A participants.

Now let's do another numerical exercise, using a decision record similar to the one you will be using in this part of the experiment. This form will be used for you to record and communicate your decision to the Party-B participant with whom you are paired.

DECISION RECORD FOR PARTY-A PARTICIPANTS

PARTY-A Participant Code: _____

PARTY-A Participant Endowment: ¥20.00.

The amount you decide to send to the Party-B participant: ¥ 3.50 .

PARTY-A Participant Final payment = ¥20.00 – ¥____ (amount sent) + ¥ ____ (amount received back) = ¥____.

DECISION RECORD FOR PARTY-B PARTICIPANTS

PARTY-B Participant Code: _____

PARTY-B Participant Endowment: ¥20.00.

The tripled amount you received: ¥ _____.

Your total wealth = ¥20.00 + ¥ _____ (amount received) = ¥ _____.

The amount you decide to send back to the Party-A participant: ¥ 0.00 _____.

PARTY-B Participant Final payment = ¥20.00 + ¥ ____ (amount received) – ¥ ____ (amount sent back) = ¥____.

How much do you get at the end of the experiment? _____

How much does the other person get at the end of the experiment? _____

In order to ensure the anonymity of decisions, please use only your participant code to indicate your identity. We will give each of you a folded decision form just like the form on this page. Please indicate on the decision form how much you decide to send to the Party-B participant. Once you have recorded your decision, please fold it back. We will collect all the folded forms and deliver them to another research assistant who sits in a third room. That research assistant will then record the amount you sent, triple it, and then send the form to the Party-B participant with whom you are paired in the other room. At that point, your paired Party-B participant will open the envelope and decide how much to keep and how much to send back to you from the sum of his/her 20 RMB endowment plus the tripled amount received. This mechanism of a

decision record form and two research assistants ensures your decision will be anonymous to both research assistants and to the Party-B participant with whom you are paired.

PLEASE OPEN THE ENVELOPE AND RECORD YOUR DECISION ON THE DECISION FORM.

Part II: The Outgroup Treatment (received after the completion of Part I)

This is the second part of the experiment. In this part of the experiment, you are paired at random with another Party-B participant. Please note that the Party-B participant with whom you are paired at random for this part of experiment is **a student from your own university but from a different class and major**. Each participant, whether Party A or PARTY B, will receive the same instructions and be allocated a sum of 20 RMB as in the first part of the session.

PLEASE OPEN THE ENVELOPE AND RECORD YOUR DECISION ON THE DECISION FORM.

Questionnaire A for Hypothetical Session (distributed to half of the participants)

Imagine you were playing this game as “Party A”. Please state how much you would send to a randomly-paired “Party B”, who is your fellow classmate/a non-classmate from Dongbei University of Finance and Economics, and how much you would expect to receive back from him/her based on the amount you would send.

1. I would send _____ RMB.
2. Based on sending the amount I specified above, I would expect to receive _____ RMB back.

Questionnaire B for Hypothetical Session (distributed to the other half of the participants)

Imagine you were playing this game as “Party B”. Please state how much you would expect to receive from a randomly-paired “Party A”, who is your fellow classmate/a non-classmate from Dongbei University of Finance and Economics, and how much you would return to him/her based on your expectation.

1. I would expect to receive _____ RMB.
2. Based on this expectation, I would return _____ RMB.