Trust and Reciprocity: Groups versus Individuals and Behavior versus Perceptions

By

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Abstract

Employing the widely-used experimental framework of the trust game (Berg et al., 1995) with salient monetary payoffs, I examine and contrast the level of trust and reciprocity exhibited by individuals inter-individual interactions with those by groups in inter-group interactions. A group decision in this study is a consensus decision among group members and is reached via an intra-group discussion. The results suggest that, compared to individuals, groups are neither more or less trusting, but are significantly less reciprocating. Furthermore, the results suggest that intra-group discussion does little to correct cognitive biases in strategic interactions. The biases reported in this study are remarkable in their pervasiveness on both sides of the interaction and at both the individual and group level.

1. INTRODUCTION

A strong and growing body of research suggests that trust and reciprocity are central components to many mutually beneficial interactions in organizational life. Indeed, in many cases, social interactions take place sequentially, where one party incurs a cost before obtaining a benefit. In theory, a commitment to provide a future benefit can be governed by a formal contract or by a sanctioning system. In practice, however, imperfect monitoring, information asymmetries, moral hazard, and transaction costs often make the use and enforcement of binding mechanism infeasible. Hence one has to rely on the goodwill of the other party to reciprocate and honor trust (Arrow, 1974).

To date, most research in this area conceptualizes and models trust as a psychological state or an action exhibited by an individual. In many organizational settings, however, decisions to trust or reciprocate are not made by individuals but by groups, committees, or management boards, who spend time examining an issue together in order to reach a group-level consensus decision via a collective process. This is especially true in modern organizations where teamwork is increasingly popular (Cohen & Bailey, 1997; Guzzo & Dickson, 1996; Hackman, 1987; Sundstrom, De Meuse, & Futrell, 1990). Unfortunately, we know relatively little about whether or how intra- and inter-group dynamics influence intergroup trust and reciprocity relations as the vast majority of studies in this literature have focused primarily on individuals in the context of interpersonal interactions. Importantly, trust or reciprocity is inherently social as they must take place in a social interaction. Hence, trust and reciprocity decisions may be particularly sensitive to the social context of the interaction.

Indeed, studies focusing on the impact of social dynamics in and around groups have provided compelling evidence that group behavior is qualitatively different from individual behavior, and that individuals are prone to behave differently when they are in inter-group situations. For example, Insko and colleages (e.g., Insko, Pinkley, Hoyle, Dalton, Hong, Slim, Landry, Holton, Ruffin, & Thibaut, 1987; Schopler, Insko, Graetz, Drigotas, & Smith, 1991; Wilschut, Lodewijkx, & Insko, 2001), using the Prisoner's Dilemma and other similar dyadic

games, compared individual decisions with group decisions, where group decisions were operationalized by the majority vote of the group members on whether to cooperate or not. These studies showed that intergroup relations are significantly more competitive and less cooperative than interpersonal relations, a finding labelled as the *interindividual-intergroup discontinuity effect*. Group decision rules, majority and unanimity being the most common methods of social choice (Hare, 1976; Miller, 1989), also have impact on the decision a group makes. For example, it is often more difficult to reach a group decision and require more discussion under the unanimity rule than under the majority rule (e.g. Castore & Murnighan, 1978; Miller, 1989). However, the unanimity rule may also promote more careful examination of the decision matter and allow social influence to take place. In another study, Song (2004) compared trust and reciprocity interactions in situations when people were making decisions solely on their own behalf versus when they were given the responsibility to act on behalf of their groups. The results of the study suggested that people trust less and reciprocate less when responsible for a group or organizational decision.

A primary goal of this paper is thus to investigate norms of trust and reciprocity exhibited by groups, charged with the task of making a consensus decision. For that purpose, I employ a simple, one-shot trust game (Berg, Dickhaut, & McCabe, 1995) that has been used frequently to study trust and reciprocity (e.g., Malhotra, 2004, Malhotra, & Murnighan, 2004; Pillutla, Malhotra, & Murnighan, 2003). The trust game captures a potentially profitable interaction for all parties involved, making it relevant to many forms of strategic interactions between individuals and groups within the same or different organizations, and organizations. First, I examine and contrast the level of trust and reciprocity exhibited by individuals in inter-individual interactions with those made by groups in inter-group interactions. A group decision in this study is a consensus decision among group members and is reached via an intra-group discussion. The second research question deals with the role of beliefs and expectations, which are often considered as important predictors of behavior. There is evidence that people are insensitive and have difficulty accurately predicting about the cognition and behavior of others

(Messick, Moore, and Bazerman, 1997). In this study, I compare actual trust / reciprocity behavior with forecasts for such behavior both at the individual and group level. Thus, I am able to examine whether groups have cognitive biases in regard to the discrepancy between *forecast* about one's own level of trust/reciprocity and those of others, the discrepancy between hypothetical *self-forecast and other-forecast* and the *actual* level of trust/reciprocity observed in the situation, and the underlying causes of such discrepancies if they indeed exist.

The rest of the paper is organized in the following way. In the theory section below, I provide some theoretical and empirical foundations and formulate some hypotheses. In the third section, I present the specifics of my study. Data analysis and the results of the study are presented in the fourth section. Discussions and conclusions are offered in the final section.

2. THEORETICAL AND EMPIRICAL FOUNDATIONS AND HYPOTHESES

2.1 Trust and Reciprocity Interaction: Theoretical and Experimental Framework

In trust and reciprocity relations, one's action prompts another's response, the anticipation of which in turn affects the first party's action. Hence, a game-theoretic approach, analyzing strategic decision situations with an explicit emphasis on exchange, conflict, and interdependence, is appropriate for studying such a phenomenon (Murnighan, 1994). A widely employed game-theoretic experimental framework – the trust game (Berg, et al., 1995) is adopted in this research. The trust game is played as follows. Players are randomly assigned as either trustors or trustees and given an endowment at the beginning of the game. Each trustor must decide how much of his/her endowment to send to an anonymous counterpart (trustee). All players are informed that each dollar sent by the trustor will be tripled by the time it reaches the trustee. This tripling mechanism is designed as a way to model the essential characteristic of social exchange induced by trust: value generation. After receiving the money, each trustee decides how to split his/her 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.

In this game context, trustors can risk some and all of their endowment in hopes of achieving a better outcome if trustees act honourably; meanwhile trustees have a monetary incentive to exploit such trust. As such, this trust game models trust as a decision under risk, where the risk stems from social uncertainty: in particular, the possibility of either trustworthy or opportunistic behavior by the trustee. This conceptualization, in accordance with Rousseau and colleagues' (1998) definition of trust, "a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another" (Rousseau, Sitkin, Burt, and Camerer, 1998, p.395), reflects in a parsimonious way the mixed-motive nature of a trustful act: expecting that the other party will honor the trust while simultaneously making oneself vulnerable to exploitation. Specifically, trust is measured by the amount a trustor sends to a trustee. Similarly, reciprocity is measured by the ratio between the amount a trustee receives and the amount he/she sends back (Berg, et al., 1995).

Another important theoretical feature of the trust game is that it explicitly disentangles two concepts that are sometimes treated as identical: trust, defined as the willingness to trust and measured by the amount sent by the trustor, and reciprocity, defined as the willingness to honor the trust received and measured by the ratio between amount sent by the trustor and the amount sent back by the trustee. In essence, the trust game is a prisoner's dilemma game played sequentially: the first player cooperates, exposing himself to possibly earning a lower payoff, and trusting the other player to reciprocate by cooperating back; the second player, having the knowledge of the first player's move, makes a contingent reciprocity decision. In prisoner's dilemma games, rational behavior, i.e. competition or defection, could be attributed to either greed (self-interest) or fear of non-cooperative behavior of the other party in the game. In this trust game, with the sequential mover feature, defection by the trustee could not be attributed to fear of non-cooperative behavior of the other party in the game but only to self-interest. In other words, reciprocity and self-interest are incompatible in the trust game and represent opposite poles of a continuum. Consequently, this game offers a richer structure than a simultaneous,

dichotomous-response prisoner's dilemma game, providing a particularly sharp and parsimonious test for trust and reciprocity behavior.

A standard starting point for the analysis of such a game is based on traditional, non-cooperative game theory with its fundamental assumption that individuals are self-interested and utility maximizing. The game captures a one-shot, anonymous exchange in which participants have no history with each other or possibility of future interaction. The experimental setting involves no institutional mechanism other than the abstract setting of an experimental laboratory. Consequently, informal sanctions based on embedded social relations (Granovetter, 1985) are unlikely to have any impact on the game's outcome. Trustees, self-interested and motivated to maximize their utility as assumed, would send no money back to senders. Using backward induction, rational trustors should not expect trustees to send anything back since there is no way of penalizing opportunistic behavior. Thus, trustors should send nothing to trustees. Hence the game-theoretic null hypothesis predicts no trust or reciprocity behavior in such an experimental setting. Many empirical studies using this trust game studying interpersonal trust and reciprocity have, in contrast, produced robust results indicating that many individual trustors send nontrivial amounts to individual trustees, who in turn send nontrivial amounts back. Average amounts sent reported in earlier studies ranged from 40 to 60 percent and amounts returned averaged 110 percent of the amounts originally sent (cf., Camerer, 2003: 86). Such findings are in apparent contradiction to the null hypothesis derived from the game-theoretic model and have been attributed to individual propensities to trust and to reciprocate, social norms and moral sentiments. In this current study, I compare the behavior of individuals and groups in this trust game. Since the strategic structure of the game is not affected by this group manipulation, the game-theoretic null-hypothesis remains the same, namely the trustor, whether an individual or a group, should send no money to the trustee, who, whether an individual or a group, should send nothing back. Since earlier studies on this game already demonstrated that individuals do not behave in this game-theory consistent way, so the focus in this paper is whether group behavior will be more or less consistent with game-theoretic prediction.

2.2 Group versus Individual Decisions

2.2.1. Empirical Evidence from Strategic Game Experiments

Previous literature (cf. Levine & Moreland, 1998 for a review of small group research) has established behavioral differences between individuals and small groups. Most of this research suggests that group decisions are rarely the simple sum or average of individual members' decisions. It has been documented that groups frequently perform better than individuals on intellective or analytical tasks that have a correct solution (e.g. Levine & Moreland, 1998). This phenomenon is attributed to the "truth wins" effect, meaning that a correct solution is most likely to be adopted by a group, even if it is advocated only by a single group member. For example, social psychological literature on group decision-making reported that groups are better decision-makers than individuals with "eureka-type" problems (e.g. Shaw, 1936).

Trust-and-reciprocity decisions, however, are not such "eureka-type" problems as decisions to trust / reciprocate are typically interactive, requiring both the ability to understand the strategic nature of the interaction and to anticipate the behavior of the interaction party (Kocher & Sutter, 2003). In the growing literature of behavioral economics and experimental economics, a few studies using interactive decision games have been carried out to compare decisions made by groups in inter-group interactions and those made by individuals in analogous inter-individual interactions. In those studies, a group generally consisted of two or three individuals who communicated with each other to reach a common decision. Thus, the group manipulation in those studies is consistent with the group manipulation employed in this study. The results of such studies (e.g. Bone, Hey, & Suckling, 1999; Bornstein & Yaniv, 1998; Bornstein, Kocher, Kugler, & Sutter, 2002; Bornstein, Kugler, Ziegelmeyer, 2002; Cox, 2002; Cox & Hayne, 1998) demonstrated that group decisions were generally closer to the game-theoretic equilibrium prediction than individual decisions[i]. If groups do behave in a more game-theoretic consistent manner in this trust game, then they will both send less and send back less than individuals, exhibiting a lower level of trust and reciprocity.

2.2.2. Inter-group versus Inter-individual Trust

Social psychological research (e.g. Kelly & Thibalt, 1978; Thibalt & Kelly, 1959) has shown that the influence of both objective/structural features of social situations and the way in which those situations are construed have impacts on decision-making. For example, drawing upon Social Identity Theory, Brewer, Kramer and their colleagues conducted a series of studies, demonstrating that categorization into groups, even when based on the most arbitrary and transient criteria, can influence ingroup members to perceive outgroup members as less trustworthy, less honest, and less cooperative than members of their own group (Brewer & Brown, 1998; Kramer, 1994; Kramer & Messick, 1998). The evidence presented in these studies suggests a lower level of trust in inter-group interactions than in analogous interpersonal interactions, hence consistent with most of the findings reported in previous strategic game studies.

> Hypothesis 1a – Groups will behave in a less trusting manner than individuals in the analogous situation.

Due to the mixed-motive nature of trust and reciprocity interaction, a trusting act is also a risky one because the other party may exploit such trust. Thus, it is possible that the motivation to trust has to do with the risk-taking motivation. Earlier studies on risk-taking have shown that it is not based on rational calculations alone (e.g., Kahneman & Tversky, 1979). Most notably, Keynes speculated that taking risk requires optimism and so-called "animal spirits" (cf., Krueger & Dickson, 1994). In line with Keynes's speculation, Krueger and Dickson (1994), using a experimental decision-making game with salient financial rewards for performance, demonstrated that subjects who had higher self-efficacy, i.e., who believed in themselves, saw more opportunities in a risky choice and took greater risks. Small unitary groups, with their distinct intragroup social dynamics, may have higher efficacy in themselves than individuals do. Such high efficacy in a unitary group setting in turn may lead to a higher risk-taking attitude. Indeed, the "risk-shift" effect, reviewed by Myers & Lamn (1976), and the "groupthink" phenomena (e.g. Janis, 1972) already provide some evidence that groups tend to take greater

risks than individual members acting alone. More recently, Tindale, Sheffey, and Scott (1993) reported that groups chose the riskier alternative even when a majority of the members favored the less risky alternative. Following this perspective, I contend that groups may behave in a more trusting manner because trust and risk-taking are closely related in this trust game. This hypothesis contradicts Hypothesis 1a.

> Hypothesis 1b: Groups will behave in a more risk-taking and hence more trusting manner than will individuals in the analogous situation.

2.2.3. Inter-group versus Inter-individual Reciprocity

Given that trustees have a monetary incentive to exploit the trust they receive, reciprocity, honouring the trust received, is costly. Thus, reciprocity and self-interest are opposing motivations in this game. In explaining why groups were more competitive than individuals in prisoner's dilemma games, Insko and colleagues (1987) argued that the inter-group situation creates an illusion of social support for self-interest. Such social support, of course, is necessarily absent for individuals in interpersonal interactions. Hence, self-regarding behavior may increase and reciprocating behavior decrease in the context of an inter-group interaction. Perhaps ironically, in such situations, people may have a self-serving belief that it is "altruistic" to be self-interested on behalf of their group members and themselves. This argument seems to apply even more clearly within the context where a group decision is a unanimous decision made via intra-group discussion, where social dynamics are expected to play an even stronger role than in majority vote contexts. Echoing this view, Charness (2000) suggested that the group decision-making mechanism may also provoke the so-called "responsibility-alleviation" effect. The responsibility-alleviation effect suggests that the shift of responsibility for an outcome to an external authority impairs one's moral sentiments toward honesty, loyalty, or generosity. Thus, a consensus group decision-making mechanism, arguably external to any individual decision-maker, may dampen an individual group member's moral sentiment to honor the trust he/she receives. Hence, both the "social-support-for-self-interest" effect and the "responsibility-alleviation" effect lead to the group reciprocity hypothesis such that groups will exhibit a lower

degree of reciprocity than individuals. This hypothesis is consistent with the rational group decision argument.

> Hypothesis 2a: Groups will behave in a less reciprocating manner than as individuals in the analogous situation.

In contrast to the prediction stated in Hypothesis 2a, Cason and Mui (1997), in a study using the dictator game[ii], reported that group decisions were more other-regarding and less self-interested than individual decisions. The authors attributed this effect to normative social influence. Specifically, based on Social Comparison Theory (Festinger, 1954), the authors suggested that people are motivated both to perceive and to present themselves as more favorable than what they believe to be the average tendency, a notion similar to the "better-than-average" or "holier-than-thou" bias. In line with this cognitive bias, they further conjectured that people will be motivated to observe the "norm" in their group during the group discussion and then adjusts their behavior to present him/herself in a more socially desirable manner. Given that both the trustee in the trust game and the dictator in the dictator game have the asymmetric power to divide the social wealth between themselves and the other party in the game, a trustee's decision is structurally equivalent to a dictator's decision in the dictator game. Thus, if group discussion, a form of intra-group interaction in which normative social influence takes place, led to socially more desirable behavior in a dictator game as reported in Cason and Mui (1997), a higher reciprocity in groups may also be observed in the trust game. This is a competing hypothesis to Hypothesis 2a.

> Hypothesis 2b: Groups will behave in a more reciprocating manner than individuals in the analogous situation.

2.3 Group Decision Biases

Earlier research has identified a number of pervasive cognitive errors that bias individual decision-making. The last theoretical issue investigated in this paper concerns whether groups also fall prey to the same cognitive biases found in individuals and, if so, the effects of such

biases in trust and reciprocity relations. Previous research has shown that people often have idiosyncratic, self-oriented sets of evaluations and perspectives about the situation, making it difficult to assess accurately others' intentions and behavior (e.g., Bazerman, 1994; Samuelson & Bazerman, 1985; Neale & Bazerman, 1991; Snijders, 1996). Indeed, research in strategic interaction has shown that individuals routinely think too little about others when making predictions about the outcomes of strategic interactions and when selecting strategies. For example, research on cognitive biases has suggested that people often overestimate the quality of their strategies and the likely outcomes of the strategic interaction for themselves (e.g., Bazerman, 1994). Similarly, Song (2004), using the same trust game, reported that people were poor at making accurate behavioural forecasts for themselves and others. Specifically, Song (2004) demonstrated that individual participants' behavioral forecasts of what they themselves would do had they been assigned as allocators (henceforth "self-forecasts") and analogous forecasts of what their allocators will in fact do (henceforth "other-forecasts") were significantly different from the actual behavior observed in the game, revealing a discrepancy between cognitions and actual behavior. Focusing on the effect of the group decision process on bias and bias correction, Tindale (1993) showed that a simple majority decision process either attenuated or exacerbated a particular bias, depending on how prevalent the bias was at the individual level. This current research will look at the effect of the group consensus decision process on biases and bias attenuation.

The cognitive bias examined here is the positive illusion bias (Taylor, 1989; Taylor & Brown, 1988). Numerous studies have demonstrated that people typically believe that they are better than others in terms of desirable attributes, i.e., more selfless, kind, and generous, than others (e.g., Epley & Dunning, 2000; Miller & Ratner, 1998). In investigating whether this "better-than-thou" bias is due to the fact that people overestimate their own attributes or underestimate those of others, some research has shown that people have unrealistically positive self-evaluations (Brown, 1986; Epley & Dunning, 2000), while other research has suggested that people often have idiosyncratic, self-oriented sets of information and perspectives, making it

difficult to accurately assess others' intentions and behavior (e.g., Bazerman, 1994; Samuelson & Bazerman, 1985; Neale & Bazerman, 1991; Snijders, 1996). Following this stream of literature, this study will look at how accurate self-forecasts and other-forecasts are both at the individual level and the group level. Specifically, I examine whether individuals and groups in this study have a positive illusion that they are more trusting/trustworthy than those with whom they are playing. More importantly, I explore whether such a bias is caused by self-overestimation bias, other-underestimation bias, or a combination of both.

This leads to the following self-overestimation and other-underestimation hypotheses.

Hypothesis 3: For both individuals and groups, one's expectation about one's own level of trust / reciprocity will be higher than one's expectation of the other party.

Hypothesis 4: Compared to the actual behavior observed in the experiment, both individuals and groups will overestimate their own level of trust / reciprocity.

Hypothesis 5: Compared to the actual behavior observed in the experiment, both individuals and groups will underestimate the level trust/reciprocity of others.

3. METHODOLODY

3.1 Participants

Undergraduate business students at a large metropolitan University were randomly recruited in a cafeteria on campus. They were informed at the time of the recruitment that they would receive money for their participation and performance. A total of a hundred and forty-four students (84 men, 60 women) volunteered and received cash payments for participating in the experiment. Participants' average age was 20.4 (S.D. = 1.4).

3.2 Experimental Design and Procedure

Based on the experimental framework of the trust game, this study had a between-person manipulation, i.e. the random assignment of the trustor and the trustee role. This study also employed a within-person design of two experimental conditions: the inter-individual and the

inter-group interactions, the latter case involved a group of three reaching a consensus group decision through an intra-group discussion. In the first half of the experiment, subjects played the trust game as individuals, with no knowledge about the second half of the experiment. After completing the inter-individual game, participants were randomly divided into groups of three. In part two of the experiment, each group played the same game again as a group: subjects were asked to discuss with their group members and reach a consensus about how their group would act in the game. This specific order of the experimental conditions allowed me to measure individual members' initial decisions that were unaffected by group discussion or any other kind of group dynamics. Thus, the order of the two experimental conditions were not reversed and counter-balanced. In order to avoid possible confound of the specific ordering effect of the two conditions, the following procedures were implemented. First, participants were not told about the inter-group condition when they were completing the inter-individual condition. Neither were they informed that the inter-group condition was the last condition in the experiment when they were completing the inter-group condition. Second, the outcomes for the inter-individual condition were not revealed to the participants till the very end of the experiment (after they completed the inter-group condition and post-experiment questionnaire). However, due to the structure of the game, trustees always knew the result of an interaction as soon as they made their choice. Third, participants were informed at the beginning of the inter-group condition that there were two random pairings in the experiment, i.e. participants were matched with different people in the two experimental conditions.

For the inter-individual condition, all participants, both trustors and trustees, were endowed with $5. In order to keep the payoff parameter equivalent across experimental conditions, the endowment to the groups of three was the sum of all individual members' endowments and the payoff for each group was equally divided between the three individual members. The procedure and specifics of the experiment are described below.

When participants arrived at the experimental site, they were asked to pick an identification card out of a box. The identification card determined their participant codes and assignments as either "BLUE" or "RED" roles (trustor and trustee respectively). In order to avoid possible framing effects[iii], the word "trust" was not mentioned at all during the experiment and the neutral terms BLUE and RED participants were used instead of terms such as trustor/trustee, sender/receiver, or partner/other. Participants were then escorted to the assigned BLUE or RED room where they stayed for the remainder of the experiment. Thus, trustors and trustees never met each other throughout the experiment.

Upon entering the respective rooms, all participants received the same general instructions about the trust game. They were informed that the experiment involved a game about social interactions, in which they would either play the "Blue" or the "Red" role. The game was illustrated with several numerical examples. 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 at the end of the game based on the decisions they made and those made by the person with whom they were paired (hereafter referred to as a player's counterpart) during the game. A decision record form was employed for trustors and trustees, who were seated in two separate rooms, to communicate their decisions to each other. The decision record forms were delivered in envelopes. There were three research assistants, two of whom stayed in the two rooms where participants were seated while the third sat in the control room recording all the decisions. This decision communication procedure ensured double-blind anonymity, an important experimental control to minimize self-presentation and social desirability effect.

In addition to the behavioral data, I also collected perceptual data on behavioral forecasts. In order to avoid cross-contamination of perception and behavioral data, trustees, who were asked to make a reciprocity decision *behaviorally*; were asked to *hypothetically forecast* how much

they would send if they were in their counterpart's role (a measure of self-forecast of trust) and how much they forecast their counterparts would send to them (a measure of other-forecast of trust). In order to avoid the possible influence from the level of trust they received from the trustors, trustees were asked to fill out the questionnaire about self- and other-predictions about trust *before* they received the decision record. In other words, while trustees were waiting for the trustors' decision to arrive, they completed the behavioral forecasts questionnaire. Trustors, on the other hand, filled out the questionnaire after sending money to the trustees. Trustors were asked to give self-forecast and other-forecast of reciprocity, i.e. if they were to play the other role in the experiment, how much they would send back (self-forecast of reciprocity), as well as how much they forecast their other would send back (other-forecast of reciprocity).

In the inter-group condition, each group was encouraged to engage in a group discussion for as long as they wanted until they could reach a consensus. Each group also filled out one questionnaire together as a group as the group-level perceptual data. Having completed both conditions, participants were asked to go back to their individual seat and complete a short post-experiment questionnaire for demographic background information. Finally, participants were paid individually in the experimental control room to protect their anonymity. Each session took approximately 1 hour and participants earned on average $17. This amount is equivalent to or higher than an average wage of $8 to $10 an hour for work-study jobs on campus.

3.3. Experimental Manipulations, Independent and Dependent Variables

Based on this experimental framework, this study examined the effects of two manipulated factors. The first was a within-person factor: the individual versus group condition. The second was a between-person factor: the random assignment of participants to the trustor or the trustee role in the game. Trust and reciprocity behavior, self-forecast, and other-forecast of trust and reciprocity are the dependent variables. Trust behavior was measured by the amount sent by the trustor or trustor group. Reciprocity behaviour was measured by the ratio between the amount sent back by the trustee or trustee group and the amount sent by the counterpart trustor. Self-forecasts

were measured by questionnaire responses as an individual and as a group representative to questions about how much one would do if he/she/ the group were in the counterpart role. Other-forecasts were measured by questionnaire responses about how much he/she/the group thought the counterpart would do.

4. DATA ANALYSIS AND RESULTS

4.1 Descriptive Data

A summary of the means and standard deviations across the two experimental conditions for the dependent variables were summarized Table 1. For each condition, the table shows the amount sent by trustors as the measure of trust, the ratio between amount sent by the trustor and the amount sent back by the trustee as the measure of reciprocity, and the self- and other-forecasts about the level of trust /reciprocity in both experimental conditions. The results of this experiment, consistent with earlier studies, rejected the game-theoretic null hypothesis, showing that people do trust and reciprocate in a laboratory trust game with salient rewards.

Insert Table 1 about here

4.2 Hypothesis Testing

4.2.1 Trust and Reciprocity Behavior at the Individual versus Group level

H1a/b and H2 a/b, two sets of competing hypotheses concerning the behavioral differences of trust and reciprocity between groups and individuals, were tested using two-sample between-subject comparisons. The ANOVA (Analysis of Variance) analysis showed that: 1) there was no significant difference between the level of trust exhibited by an individual and a group ($Mean_{individual} = 3.35$, $Mean_{group} = 3.65$, $t = -1.19$, $p = .246$); and 2) there was a significant difference between the level of reciprocity exhibited by an individual and a group ($Mean_{individual} = 1.39$, $Mean_{group} = .55$, $t = 4.04$, $p < .001$). Since the reciprocity ratio may depend on the level of trust received, I then added the amount sent by the trustor (level of trust received) as a control variable for this analysis. With this added control variable, the main effect of the experimental treatments remained significant ($F(1, 94) = 4.34$ $p < .001$) while the control variable was also

significant ($F(1, 94) = 2.50$, $p = .01$). These results suggested that the level of trust did not differ between groups and individuals, but groups were significantly less reciprocating than individuals. Therefore, neither H1a nor H1b was corroborated, but Hypothesis 2a was supported by the data.

To explore further the relationship between an individual member's initial preference and the group consensus decision, I employed a within-subject repeated-measures analysis of variance (ANOVA), with the average level of trust or reciprocity exhibited by the three individual group members in the individual condition as the first level, and the consensus decision made in the group condition as the second level of the repeated measures factor. In this manner, I tested whether the mean of the individual data in each group was significantly different from that of the group consensus data. Such within-subject tests yielded similar results as the between-subject ANOVA tests. Specifically, in terms of the level of trust exhibited, group discussion didn't significantly change the level of trust. Individual group members and their groups did not differ in the level of trust exhibited in the analogous situation ($Mean_{member} = 3.35$, $Mean_{group} = 3.65$, $F = 1.417$, $p = .246$). However, groups sent back significantly less in the inter-group condition than did their individual members in the analogous inter-individual condition, controlling for the amount received ($F = 29.156$, $p < .001$). These results suggest that, after intra-group discussion, trustor groups became neither more nor less trusting. However, trustee groups became significantly less reciprocating than their individual members in the analogous inter-individual interactions. Supporting these ANOVA results, correlation analyses revealed that there was a positive correlation between the mean of individual member trust and group consensus trust ($r = .68$, $p < .001$). However, no significant correlation was found between the mean of individual member reciprocity and group consensus reciprocity ($r = .25$, $p < .23$).

Having established the relationship between the mean of the individual member's initial preference and the group consensus, I then investigated the relative influence of each group member's initial decisions on the group consensus. In particular, the three group members' individual preferences were first ranked as the highest, the median, and the lowest, and then were

regressed independently on the group consensus. The following regression was run for both trust and reciprocity decisions:

$$DV = \beta_0 + \beta_1 (Member_{low}) + \beta_2 (Member_{median}) + \beta_3 (Member_{high}) + \varepsilon \quad (1)$$

where the dependent variable is the group consensus decision on trust or reciprocity exhibited by the group and ε is a random disturbance term.

Insert Table 2 about here

As summarized in Table 2, for trust decisions, the group consensus was best predicted by the median individual decision of the three member decisions. Hierarchical regression analysis also revealed that, the median individual decision alone in the equation accounted for an R-square of .49 ($p < .001$), while the R-square for the most trusting / reciprocating individual decision alone was .26 ($p = .01$). The step of adding the highest and lowest individual decisions to the model increased the R-square to .55, which was not significant (delta R-square = .06, $p = .93$). In contrast, no individual preference seemed to have a significant influence on the group reciprocity level.

4.2.2 Cognitive Biases at the Individual and Group Level

I tested the Positive Illusion Hypothesis (H3) by examining the difference between one's self-forecast of trust/reciprocity and the same person/group's other-forecast for their counterpart. The results revealed that trustees, who gave self- and other-forecast of trust, showed a "more-trusting-than-thou" bias both as individuals ($Mean_{self\text{-}forecast} - Mean_{other\text{-}forecast} = .92$, $t = 4.64$, $p < .001$) and as groups ($Mean_{self\text{-}forecast} - Mean_{other\text{-}forecast} = .72$, $t = 2.78$, $p = .01$). Trustors, who gave self- and other-forecast of reciprocity, showed a "more-reciprocating-than-thou" bias as individuals ($Mean_{self\text{-}forecast} - Mean_{other\text{-}forecast} = .26$, $t = 4.27$, $p < .001$), and only marginal evidence of such a bias as groups ($Mean_{self\text{-}forecast} - Mean_{other\text{-}forecast} = .23$, $t = 1.70$, $p = .10$). Thus, the group consensus decision process did not correct for such a positive illusion and groups were not immune to this bias. Hypothesis 3, suggesting that both individuals and groups will have a positive illusion about themselves, was supported by the data.

To further examine such a positive cognitive illusion, I ran two other tests to explore whether such egocentric biases were due to the fact that people overestimated the level of trust / reciprocity in themselves, underestimated that of others, or a combination of both. Ordinary-least-squares regressions with a dummy variable equal to zero for actual behavior and one for hypothetical predictions were run to test the hypothesis concerning the overestimation of one's own trust/reciprocity or the underestimation of the level of trust/reciprocity that would be exhibited by one's counterpart. The analysis of the individual data revealed that, individuals did not overestimate their own level of trust ($Mean_{self\text{-}forecast} = 3.58$, $Mean_{behavior} = 3.35$, $F = .83$, $p = .325$), but did underestimate their counterpart's trust ($Mean_{other\text{-}forecast} = 2.64$, $Mean_{behavior} = 3.35$, $F = 6.06$, $p = .015$). In other words, the data showed that individuals believed that they were more trusting than others and that this cognitive bias was due largely to the underestimation of others, lending support to Hypothesis 5.

For reciprocity, neither did self-overestimation ($Mean_{self\text{-}forecast} = 1.49$, $Mean_{behavior} = 1.39$, $F = .60$, $p = .440$), nor other-underestimation ($Mean_{other\text{-}forecast} = 1.23$, $Mean_{behavior} = 1.39$, $F = 1.29$, $p = .257$) occur at the individual level. Thus, in the individual condition neither was self-forecast nor other-forecast significantly different than the actual reciprocity behaviour observed in the study, lending support to neither Hypothesis 4 nor 5. In regard to the group consensus data, the analysis showed that groups did not significantly overestimate their own level of trust ($Mean_{self\text{-}forecast} = 4.13$, $Mean_{behavior} = 3.65$, $F = 1.06$, $p = .309$), nor did they significantly underestimate that of others relative to behavior ($Mean_{other\text{-}forecast} = 3.4125$, $Mean_{behavior} = 3.65$, $F = .25$ $p = .621$), lending no support to Hypothesis 4 or 5. Nevertheless, the discrepancy between the two hypothetical estimations of trust, self-prediction and prediction about the counterpart was significant enough to suggest a "more-trusting-than-thou" perceptual bias, hence in support of H3. At the group level, in contrast, groups not only overestimated their own level of reciprocity ($Mean_{self\text{-}forecast} = 1.32$, $Mean_{behavior} = .55$, $F = 12.82$, $p = .001$), but also overestimated the level of reciprocity of others ($Mean_{other\text{-}forecast} = 1.08$, $Mean_{behavior} = .55$, $F = 6.00$, $p = .018$). This result was possibly due the fact that the trust strategy chosen by the trustor may have affected

reciprocity and reciprocity in turn has a direct impact on the trustor's payoff. Research on cognitive biases has suggested that people often overestimate the quality of their strategies and the likely outcomes of the strategic interaction for themselves (e.g., Bazerman, 1994). Such a cognitive bias may have occurred here. When asked to predict how much their counterparts would send back, rather than focusing solely on the trustworthiness of the other party, trustor groups may have actually focused on their own "better-than-average" strategies, thus overestimating the level of reciprocity of their counterparts!

In sum, these results suggested that groups were no more superior than individuals as they also had the egocentric bias to perceive themselves to be "more-trusting/reciprocating-than-thou". In regard to prediction accuracy when hypothetical behavioral forecasts were gauged against actual behavior observed in the experiment, groups were better at making predictions about how much others would trust or what they themselves would do if they were in other's role than individuals. However, when it comes to reciprocity forecasts, the study revealed that group-level self- and other-forecasts were not consistent at all with actual group behavior exhibited.

5. DISCUSSION

5.1 Key Findings and Theoretical Implications

The goal of this paper was to examine and contrast trust and reciprocity at the individual and the group levels. I first examined trust and reciprocity behavior in the trust game, which has been widely used to study interpersonal trust and reciprocity interactions. The game-theoretic null hypothesis of the game states that players, whether individuals or groups, should send nothing as trustors and should send nothing back as trustees. Previous studies at the individual level demonstrated that people do not act in such a strictly "rational" way in this game. Once again, the results of this study provide little support for the game-theoretic null hypothesis as both individual and group trustors send nontrivial amounts to individual and group trustees, who in turn send nontrivial amounts back. Such results are generally consistent with past research using the trust game framework. The fact that neither individuals nor groups are much like those

depicted by rational game-theoretic economic models expands our understanding of the strict descriptive utility of rational economic models in strategic interactions.

Second, I examined whether there was any difference in the level of trust and reciprocity exhibited by groups versus individuals. The results in this study suggest that, groups don't become more or less trusting, but are significantly less reciprocating when they were making a consensus decision. The finding that groups did not differ from individuals in the level of trust exhibited could be caused by the fact that a *distrust shift*, i.e. people have a lower level of trust towards a group versus an individual; and a *risky shift*, i.e., groups take greater risks and send more money to their counterparts; may have offset each other, leading to the non-significant difference between the level of trust exhibited by groups and by individuals.

The results of reciprocity at the group level stand in marked contrast to the trust results: groups were significantly less reciprocating and more selfish. This is indeed consistent with the previous studies, which have shown that, although groups are not strictly "rational", they are more game-theoretic consistent than individuals. Furthermore, this result also supports the "responsibility-alleviation" argument (Charness, 2000). In an earlier study of a resource allocation task, Murnighan, Oesch, & Pillutla (2001) found that participants acted in a more greedy way when they could attribute doing so to external causes. However, when such external attributions were unavailable, participants engaged in more fair-minded acts. The group reciprocity behavioral finding of this study is consistent with Murnighan et al.'s (2001) result. This finding has a pertinent implication given the growing importance of managing complex interpersonal and intergroup ties within and between organizations and their members. As suggested in this study, inter-departmental and inter-firm partnerships and collaborations carry great opportunities as well as potential temptations and vulnerabilities. Cultivating and managing such relationships is essential to business as it provides a source of competitive advantage (Barney & Hansen, 1994). Therefore, the ability to develop accountability in group decision-making processes and maintain a mutually beneficial relationship of trust and reciprocity is critical to modern organizational practices.

Third, I examined that relationship between individual members' initial preferences and the group consensus decisions. The analysis revealed that there was no significant difference between the group consensus trust decision and its members' individual decisions. However, the reciprocity exhibited by a group was significantly lower than that exhibited by its individual members. Similarly, there was a positive correlation between the level of the average individual member's trust and the group consensus trust, whereas no significant correlation was found between those for reciprocity. A further inquiry into the effect the relative impact of individual members' initial preferences on the group consensus decision revealed that, for trust decisions, the group consensus was best predicted by the median individual decision of the three member decisions. In contrast, no individual preference seemed to have a significant influence on the group reciprocity level.

Fourth, this study extends earlier research in this area by highlighting the role of expectations on reciprocity. Earlier research has demonstrated that individuals often focus only on their own side of the interaction and the perspective they take is often egocentrically biased (e.g., Gilbert & Jones, 1986; Tor & Bazerman, 2003). Groups, like individuals, also believed that they were more trusting and reciprocating than others, demonstrating a positive illusion about themselves. One interpretation is that, when it comes to individual "better-than-average" biases, they are not corrected by the group discussion. More importantly, trustor groups significantly overestimated their counterpart's level of reciprocity. One interpretation of this overestimation effect could be trustor groups' cognitive bias of their "better-than-average" strategy. This intriguing finding represents a potentially important extension by demonstrating that groups are also the victim of the "focus-of-attention" problem as they also only focus only on their own side of the interaction and the perspective they take is, unknowingly, egocentrically biased. In general, this study demonstrated that the egocentric biases not only exist at the individual level, but at the group level as well.

Previous research has shown that exposure to others can reduce egocentric cognitive biases (Wade-Benzoni, Tenbrunsel, & Bazerman, 1996). In the current research, participants were not

only asked to hypothetically predict what they themselves would do if they were in their counterpart's shoes, and what they thought their counterpart would do, but were also asked to discuss group prediction with their group members. However, intra-group discussion did little to correct such cognitive biases. The prediction biases reported in this study are remarkable in their pervasiveness on both sides of the interaction and at both the individual and group level, even in the face of salient and material incentives to do well and despite intra-group peer discussion. As a result, an important area of future research should focus on developing prescriptive research that can attenuate such biases both at the individual and group level.

5.2 Limitations and Future Directions for Research

Laboratory experimentation, with its particular strength in creating conditions that are *a priori* specified in the theory, is an important compliment to survey studies and field studies. In this study, the clarity of the experimental task, the powerful and parsimonious contrast of the differing levels of trust/reciprocity in the individual and group conditions, and the availability of objective measures of trust and reciprocity judgments and behaviours combine to make this a powerful method to study trust and reciprocity interactions at both the individual and group level. However, this methodology does have limitations.

First, the laboratory nature of the task and the starkness of the interactions necessarily limit the direct generalizability of the findings to complex organizational settings. The logic of experimentation requires us to eliminate or control for all possible influences other than the factors under investigation. In contrast, outside the laboratory doors, people are influenced simultaneously by many factors. Hence, a monetary allocation to an anonymous recipient, designed as a measure of trust and reciprocity behavior in an experiment, reflects just one aspect of the multi-faceted nature of such interaction in the real world. Therefore, field studies are an important complement to laboratory research on the role of trust and reciprocity norms and expectations in organizational settings both at the individual and group level.

In addition, trust and reciprocity are intimately related: trust leads to reciprocity; and reciprocation of an initially trusting act can instigate a beneficial cycle of increasing trust and

reciprocation. In contrast, exploiting trust can seriously damage a relationship and weaken its prospects. The one-shot nature of the game in the current study did not allow me to examine the complex effect of interaction on both trust and reciprocity. For example, had trustor groups received a beneficial level of reciprocity from their counterpart groups, they might have rationally changed their strategy in the following round. Similarly, trustee groups may not have acted in such an untrustworthy way if the game had been played more than once. Following this logic, it is essential for researchers to conduct multiple-rounds trust games or field longitudinal studies in order to examine how trust and reciprocity relationships evolve and develop in inter-group relations as well as to study what factors within and across groups may enhance or weaken inter-group trust and reciprocity. It is possible that in a multi-round setting, "the shadow of future" (Alexrod, 1984) may help develop a mutually beneficial cycle of high trust and reciprocity, resulting in higher levels of trust and reciprocity than what observed in this one-shot setting. Similarly, future research could also shed much light on the complex nature of group-level decision-making process by studying the process of the group consensus formulation. Exploring important intervening, mediating, and moderating variables that impact on the shift of the group consensus from initial group member preferences would indeed further our understanding on this issue.

Another limitation of this study is the *ad hoc* nature of the experimental groups and the relatively small group size employed in the group-level treatment. The expected sentiments and feelings towards group members with whom one was randomly paired for a one-hour experimental game may not be salient enough for subjects drastically to change their behavior. It would not be surprising if, with real or larger groups, the difference in trust and reciprocity between the group and individual conditions became even clearer and sharper. Hence, a natural extension of this research would be to use real and/or larger groups. Similarly, future research might also look into the dynamics of social interactions in which an individual trustor interacts with a group trustee, or vice versa. Such an interaction involves two parties from different levels: the individual and group level. Thus, each party may have quite different perspectives

about their counterpart and the interaction, which in turn may have effects on the outcome of such interactions.

6. CONCLUSIONS

For most modern organizations, the days of a single person at the top of the organizational hierarchy making decisions single-handedly are long past. Rather, most managerial decisions are handled by groups and many social exchanges are carried out by groups. Given that group behavior and decision-making are not readily inferred from individual level research (e.g. Davis, 1992; Kerr, MacKoun & Kramer, 1996), a central question in this study of trust and reciprocity relations is the comparison of individual and group trust and reciprocity. The current research extends past research on individual versus group decision-making in strategic interactions with a focus on trust and reciprocity relations. In particular, this paper investigates norms of trust and reciprocity exhibited by groups via a group consensus decision process. The experiment reported here was designed to examine whether groups would trust /reciprocate more (or less) when they must reach a consensus decision than individuals. The experiment also allowed me to examine the behavioral forecasts individuals and groups have for themselves and others.

Both theoretically and practically, this paper makes a number of important contributions. In terms of theory advancement, this paper integrated the trust literature and research on social dynamics and group relations. In particular, this research suggests that it is misleading to assume that trust and reciprocity relations between groups are identical to those in interpersonal relations. Indeed, the results of this study show, in a carefully controlled way, that interpersonal and intergroup trust and reciprocity are not to be treated as identical and interchangeable. Furthermore, it sheds light on the importance of carefully considering the level of analysis when theorizing about the role of trust and reciprocity in organizational settings. Therefore, this study adds important insights to the growing literature on linkages between units at different levels of analysis.

In regard to its practical implications, the findings of this research are especially pertinent given the growing importance of managing complex interpersonal and intergroup ties within and

between organizations and their members. The proliferation of team-based production and management as more flexible forms of organization calls for the ability to build and maintain mutually beneficial working relationships within and across organizational boundaries (Child & McGrath, 2001). Such inter-departmental and inter-firm partnerships and collaborations carry great opportunities as well as potential temptations and vulnerabilities as demonstrated in this research. As a result, the ability to develop, foster, and maintain a mutually beneficial relationship of trust and reciprocity at the group and organizational level is critical to modern organizations. The second major practical implication highlights the importance of perspective-taking abilities. This research suggests that effective managers are those who are able to see and understand interactions and relations not only from their own perspective, but from their counterpart's as well. Specific advice derived from the findings of this study include to take into account situational forces and be more attentive to the factors that are important to the other party in order to maximize both the individual and joint gains of interactions.

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Table 1. Data Summary: Means and Standard Deviations of the Dependent Variables in the Two Experimental Conditions

	Inter-individual Mean (S. D.) n=72	Inter-group Mean (S. D.) n=24	Overall Mean (S. D.) n=96
Trust Behavior*	3.3517 (1.54950)	3.6525 (1.66158)	3.4269 (1.57478)
Reciprocity Behavior**	1.3869 (.92169)	.5525 (.71917)	1.1783 (.94448)
Trust Self-forecast	3.5803 (1.45844)	4.1317 (1.56346)	3.7196 (1.49671)
Trust Other-forecast	2.6443 (1.86335)	3.4125 (1.67308)	2.8406 (1.83901
Reciprocity Self-forecast	1.4921 (.68462)	1.3158 (.75815)	1.4477 (70397)
Reciprocity Other-forecast	1.2306 (.70513)	1.0822 (.77870)	1.1931 (.72307)

* Trust is measured as the amount sent in dollar sent by the trustor.

** Reciprocity is measured as the ratio between the amount sent by the trustor and the amount sent back by the trustee.

Table 2. Regression on Group-level Trust/Reciprocity

$DV = \beta_0 + \beta_1 (Member_{low}) + \beta_2 (Member_{median}) + \beta_3 (Member_{high}) + \varepsilon$

D. V.	β_0 (p-value)	β_1 (p-value)	β_2 (p-value)	β_3 (p-value)	R Square	Overall Fit F (p-value)
Group Trust	-.975 (.462)	-.022 (.932)	**.714 (.005)**	.476 (.136)	.549	8.107 (.001)
Group Reciprocity	.049 (.920)	-.076 (.813)	.267 (.402)	.095 (.698)	.082	.594 (.626)

Table 3. Hypothetical Predictions, Actual Behavior, and Cognitive Biases

Variable	Other-Forecast	Actual Behavior	Self-Forecast	Better-than-Thou Bias F-value (p-value)	Self -Overestimation F-value (p-value)	Other – Underestimation F-value (p-value)
Individual Trust	2.6443	3.3517	3.5803	8.174 (.000)	-.908 (.365)	2.462 (.015)
Group Trust	3.4132	3.6528	4.1319	2.781 (.011)	1.029 (.309)	.498 (.621)
Individual Reciprocity	1.2306	1.3869	1.4921	4.230 (.000)	.774 (.440)	1.138 (.257)
Group Reciprocity	1.0822	.5525	1.3163	1.693 (.104)	3.581 (.001)	-2.448 (.018)

[i] There are also a few notable exceptions to this general finding. For example, Cason and Mui (1997) showed that two-person groups who must reach a joint consensus decision gave away significantly more in a dictator game than did the same two people playing individually, indicating a further deviation from game-theory predictions.

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

[iii] Burnham, McCabe, and Smith (2000) conducted an experiment using the trust game to examine the specific framing effect that human subjects have a preconscious friend-or-foe (FOF) mental mechanism for evaluating the intentions of another person. In their experiment, instructions were used to weakly prime the FOF state: when referring to the person that an individual is matched with, the word "partner" was used in one treatment and "other" in the other. This treatment produced a significant difference in trust and trustworthiness behavior in repeated interactions over time. Trustworthiness with "partner" was over twice that for "opponent" and this reinforced trust.