Raising the Minimum in the Minimal Group Paradigm

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ABSTRACT

Ingroup bias found in the Minimal Group Paradigm is an important finding for theories of intergroup relations. However, explanation of the finding is controversial. In this study, we contrast the Social Identity Theory explanation of ingroup bias with a new alternative hypothesis. We argue that ingroup bias is a result of subjects employing a self-interested quasi-strategy in an attempt to gain greater material benefits for themselves. Although the strategy cannot be successful, we argue that the interdependence situation characteristic of the Minimal Group Paradigm deceives subjects into believing it can be successful. Consequently, when subjects are not dependent on other subjects for their own rewards in the Minimal Group Paradigm, ingroup bias disappears. Results of our experiment support the interdependence hypothesis.

Key words: minimal paradigm, ingroup bias, intergroup relations, social interdependence.

In 1971, Tajfel and his colleagues (Tajfel, Billig, Bundy, & Flament, 1971) published the first article in an area subsequently called the minimal group paradigm. The minimal group paradigm has been greatly influential in the area of intergroup relations particularly in its formulation of Social Identity Theory and experimental evidence demonstrating ingroup favoritism. In the original piece, a set of experimental procedures were used to categorize subjects into essentially arbitrary groups. Such categorization was sufficient to produce ingroup bias in the allocation of rewards between members of an ingroup and members of an outgroup. This study and its many replications have received widespread attention and stimulated recent theoretical developments of intergroup relations and prejudice (cf. Turner, 1987, and review articles by Brewer, 1979; Wilder, 1986; Messick & Mackie, 1989). We believe, however, that the ingroup bias is produced by a factor beyond the minimal group situation. More specifically, the goal of our research is demonstrate that the in-

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group bias previously found in the minimal group situation requires interdependence of interests among group members, the factor which has been believed not to exist in the minimal group experimental paradigm.

The Social Identity Explanation of Ingroup Bias in the Minimal Group Situation

Social Identity Theory (Billig & Tajfel, 1973; Tajfel, 1982; Tajfel & Turner, 1986) was developed to explain the ingroup favoritism observed in experiments using the minimal group paradigm. The social identity theorists argue that showing ingroup favoritism is used as a means of raising self-esteem because the greater outcomes of the ingroup raise its status relative to the outgroup’s lesser outcomes. The relative superiority of one group’s outcomes is more important for self-esteem than the actual total rewards accrued. Subjects are not merely maximizing their own group rewards, but creating a differential between ingroup and outgroup rewards in social competition. The theory assumes that self-evaluation is, in part, shaped by group membership. Thus a favorable comparison of one’s own group to another leads to a favorable evaluation of self.

Social identity theory as an explanation of ingroup favoritism in the minimal group situation, however, has been debated both on theoretical and methodological grounds (Messick & Mackie, 1989; Insikko & Schopler, 1987; Rabbie, Schot, & Visser, 1989). Bornstein, Crum, Wittenbraker, Harring, Insikko, & Thibaut (1983), using an alternative dependent measure, demonstrated that subjects in the minimal group situation are rarely maximizing the difference between ingroup and outgroup gains as implied by the social identity argument and by its measures. And, as discussed below, Rabbie et al. (1989) has shown ingroup bias is caused by subjects’ desire to obtain more rewards rather than a desire to boost their self-esteem. In the research reported below, we join the group of critics of the social identity explanation of ingroup favoritism observed in the minimal group paradigm. We hope this research is more straightforward in disproving the social identity explanation than previous critical studies and in providing an alternative theory.

The Role of Interdependence in the Minimal Group Paradigm

We argue below that the experimental situation involved in the minimal group paradigm is not as minimal as it has been believed. Demonstrating this is the purpose of the research reported below. According to Tajfel et al. (1971), six criteria must be met to experimentally create the minimal group situation: (1) no face-to-face interaction among subjects, (2) anonymity of other subjects’ group membership, (3) “no instrumental or rational link between the criteria for intergroup categorization and the nature of ingroup and out-group responses requested from the subjects” (p. 154), (4) the subject’s allocation decision has no utilitarian value to the subject, (5) a choice be presented to the subject between maximizing benefits to all and maximizing benefits to the ingroup, and (6) the subjects be presented with a decision to divide real rewards between other subjects “rather than some form of evaluation of others” (p. 154).

We have observed an additional feature in the experimental settings involving the minimal group paradigm. In all experiments using the minimal group paradigm, subjects who made allocation decisions are also targets of allocation decisions by fellow group members (for example, Billig & Tajfel, 1973; Bornstein et al., 1983; Brewer & Silver, 1978; Ng, 1981; Oakes & Turner, 1980; Tajfel et al., 1971; Turner, 1975). This multilateral interdependence of allocation decisions (subjects make allocations to each other and receive allocations from each other), we believe, is the critical factor necessary for ingroup bias to occur in the minimal group paradigm. We hypothesize that ingroup bias occurs in the minimal group situation when and only when interdependence of allocation decisions exists among group members. In other words, we hypothesize that ingroup bias will not occur in the minimal group situation when the one who makes an allocation decision is not
dependent on other members for his or her reward. We will elaborate on this hypothesis after briefly reviewing Tajfel et al.’s (1971) original procedures.

**The Tajfel et al. (1971) Experimental Design**

Subjects are asked to participate in two separate and ostensibly unrelated tasks, the first of which enables group categorization, the second offers an opportunity to exhibit ingroup bias. Group categories are commonly established in two alternative ways, both of which create essentially arbitrary categories. The first is to ask subjects to estimate numbers of dots projected onto a screen. Subjects are then divided into two groups: those who overestimate most frequently, and those who underestimate most frequently. In reality, the estimations are not scored, and subjects are randomly divided. The second common procedure is to divide subjects into groups based solely on their aesthetic preference between the artists Klee and Kandinsky.

In the second task of the experiment, subjects are asked to make allocation decisions that involve dividing rewards between pairs of ingroup and outgroup members. Subjects’ decisions are anonymous and group members are not identified. A set of allocation matrices were developed by Tajfel and his colleagues from which the subjects choose. Alternative matrices have been developed, the most influential of which are the Multiple Alternative Matrices (MAM) (Bornstein et al., 1983). Differences in the form of bias have been observed between these matrices, but both do indicate bias. The value of using these matrices is in determining the specific form bias will take. For instance, the debate engendered by using the Tajfel et al. (1971) matrices or the MAM’s focuses on whether subjects are trying to maximize the difference between ingroup and outgroup gains or attempting to minimize the difference yet still favor the ingroup. In addition, some studies have simply asked subjects to divide points or money between ingroup and outgroup members (Locksley, Ortiz, & Hepburn, 1980; Ng, 1981) and have also demonstrated the bias.

In addition, we would like to emphasize the fact, which has been unnoticed so far as an important feature of the experiments conducted under the minimal group paradigm, that subjects’ payments are determined by the allocation decisions of others. That is, the reward each member receives are determined by the allocation decision of others. As discussed earlier, this makes the minimal group decision an interdependence situation. In Kelley and Thibaut’s (1978) terms of interdependence, subjects have multilateral “fate control,” meaning that each subject can at least partially affect the outcomes of other subjects in the experiment no matter what choices other subjects make. Kelley and Thibaut define interdependence by the presence of fate control and/or behavior control in each actor in a relationship. Behavior control refers to the capacity of an actor in a relation to affect the behavioral choices of another actor, while not being able to directly affect the actor’s fate.

**The Illusion of Control Hypothesis**

Interdependence of allocation decisions was first pointed out as the cause for ingroup bias in the minimal group paradigm by Rabbie et al. (1989). They argue that due to the interdependent nature of reward allocation, subjects could expect a better outcome from their fellow group members by showing them favor. In other words, they argue that subjects in the minimal group situation favor ingroup members expecting that the latter will return the favor. That is, “although subjects is the standard minimal group paradigm cannot directly allocate money to themselves, they can do it indirectly, on their reasonable assumption that the other ingroup members will do the same to them. By giving more to their ingroup members than to the outgroup members -- in the expectation that the other ingroup member will reciprocate this implicit cooperative interaction -- they will increase their chances of maximizing their own outcomes” (italics added, p. 176). Thus, according to Rabbie et al. (1989), “there is a rational link between economic self-interests and the strategy of
ingroup favoritism in the MGP [minimal group paradigm].” (italics added, p. 196).

We agree with Rabbie et al. (1989) in that this may be what subjects in the minimal group paradigm would think. That is, we agree that subjects in the minimal group paradigm would think that they could be reciprocated for the favoritism they show to ingroup members. On the other hand, we cannot agree with Rabbie et al. (1989) in their claim that ingroup bias is actually rational, since one member’s allocation decision cannot have any impact at all on other members’ allocation decisions in the minimal group situation. Similarly, it is impossible in the minimal group situation that subjects “increase their chances of maximizing their own outcomes” simply by “giving more to their ingroup members.” In sum, we argue that Rabbie et al.’s (1989) claim is not true as an objective description of the interdependence situation of the minimal group paradigm. However, we argue that it would be a true description of the subjective perception of the interdependence situation by the subjects. We hypothesize that it is this illusionary control over other members’ decisions that produces ingroup bias in the minimal group paradigm.

One of the criteria specified by Tajfel et al. (1971) for the creation of the minimal group situation is that subject’s allocation decision have no utility to self. In Kelley and Thibaut’s (1978) terms of interdependence, this criterion means that subjects cannot have behavior control; they cannot influence the allocation decisions of others that will, in turn, benefit one’s own outcomes. However, in Tajfel et al.’s (1971) procedures, they do have fate control. They can, and are asked to, influence the outcomes of others. We believe that naive subjects in an interdependent situation without behavior control do not always recognize their lack of behavior control, believing instead that their own decisions can influence others’ choices. We believe that subjects in this situation often exhibit an irrational belief that they can influence others, and consequently their own outcomes, when, in fact, they cannot. We will call such a belief an “illusion of control.” Even though subject’s allocations cannot directly benefit the subject him or herself, subjects may very well be acting as if their allocations can. If this is so, ingroup bias may be explained as a self-interested strategy, with a goal of gathering material rather than psychological benefits.

As noted above, our idea is similar to that of Rabbie et al.’s (1989) with one important exception. We argue that the expectation of reciprocation for ingroup favoritism is illusory whereas Rabbie and his colleagues argue that it is real. Despite this difference, our explanation of ingroup bias in the minimal group paradigm leads us to the same set of experimental predictions used by Rabbie and his colleagues in their effort to test their version of interdependence explanation of the ingroup bias. Rabbie et al. (1989) hypothesized that “the greater the perceived interdependence of outcomes on the ingroup, the more ingroup favoritism will be observed. Similarly, the greater the perceived outcome interdependence on the outgroup, the more outgroup favoritism will occur” (p. 179). In their test of this hypothesis they employed a minimal group design with several modifications, one of which is relevant here. In their replication condition, subjects made allocations to both ingroup and outgroup members, and their own outcomes were dependent upon both groups. In the second condition, subjects made allocations to both groups but depended only upon the ingroup for their own rewards. In the third condition, subjects depended only upon the outgroup for their own rewards. When subjects could only receive money from the ingroup, ingroup bias was highest, and when limited to the outgroup, outgroup bias occurred.

The experiment reported below was designed to further strengthen the interdependence explanation of ingroup bias by testing the critical role of interdependence (and the role of illusionary control that could operate only in interdependence situations) in a more straightforward way than in Rabbie et al.’s (1989) study. For this purpose, we created two “minimal group situations.” The first situation is a replication of the commonly used
The minimal group paradigm, in which subjects independently make allocation decisions that affect each other's outcomes, was used. We call this the unilateral allocation condition. The second situation also met all six criteria for the minimal group paradigm, but lacked the additional feature mentioned earlier. In this case, subjects' allocations were not multilaterally interdependent. Instead, subjects were assigned the role of an allocator who made allocation decisions, but were paid by the experimenter a fixed amount instead of being a target of other members' allocation decisions (see the procedure section for more details). We call this the unilateral allocation condition. In the unilateral allocation condition, it is clear to the subjects whatever decision they make cannot affect the reward they receive since their reward is predetermined. If our explanation of the ingroup bias is true, ingroup bias should occur only in the multilateral allocation condition, and not in the unilateral allocation condition. On the other hand, if the social identity explanation is true, ingroup bias should occur in both situations since both satisfy the six criteria for the minimal group paradigm specified by Tajfel et al. (1971).

The major difference between the current experiment and Rabbie et al.'s (1989) is as follows. In Rabbie et al.'s (1989) experiment, all subjects were at least partially interdependent on other subjects. Interdependence was present in all conditions, though less so than in the original minimal group experiments. Therefore, intergroup bias, either in the form of ingroup or outgroup bias, appeared in all conditions. They did not demonstrate that intergroup bias will disappear if interdependence is removed from the situation. Demonstrating the direct effect of interdependence is the primary purpose of our design.

Method

Design

The experiment involved only one manipulated factor, interdependence of allocations. The manipulated factor consisted of two conditions: (1) the multilateral allocation condition in which all subjects made decisions and were targets of other members' decisions, and (2) the unilateral allocation condition in which subjects made decisions for other members, but they were not targets of other members' allocation decisions.

Subjects

Thirty-six subjects participated in the experiment. All were undergraduate students from Hokkaido University, Sapporo, Japan, enrolled in an introductory psychology course. The experiment was run with 6 person groups. The 6 groups of 6 subjects were constructed based on the availability of subjects for particular time slots, and the groups were then randomly assigned to the two conditions.

Procedure

The basic procedure used in the experiment replicated the major features of Tajfel et al.'s (1971) original minimal group design. Upon arrival, subjects were informed that they would be completing two separate and unrelated tasks. The first was explained to be a perception task, and upon completion of it, subjects were given a small payment for the participation. In order to emphasize the unrelatedness of the two tasks, a second experimenter conducted the second task. Subjects in both conditions completed the same first task.

In the first task, subjects estimated the number of dots projected on a screen for approximately one second. They estimated 30 projections after 3 practice trials. The number of dots were randomly generated between 70 and 130. Upon completion, score sheets were collected and the subjects were given a "mini-debriefing." It was explained that the task was designed to validate a theory that some people consistently overestimate the number of dots and others consistently underestimate. While this was being explained, an assistant to the first experimenter left the room with the score sheets. Ostensibly, she was scoring the estimations. Subjects were then paid for their participation in task one.
The new experimenter then introduced the second task. For both conditions, the experimenter explained that the second task required the group be divided in half. For convenience only, it was said, one group would consist of those who overestimated the most, and the other group would be underestimators based on the just scored data. Subjects were led to separate booths each of which contained instructions for the second task. These booths were partitioned cubicles in the large room in which task one was completed. They allowed subjects to be separated from view, enabling them to make allocation decisions anonymously and disallowing them from discovering the group memberships and decisions of other subjects and communicating with them. At this time, the first experimenter’s assistant returned to the room and subjects were given a score sheet disclosing his or her own group membership. Subjects were told they would be making an allocation decision. They were told that all of the subjects were making the same decision. The allocation involved dividing 500 yen ($3.85) between two other members of the experimental group. One member would be an underestimator and the other an overestimator (ingroup and outgroup members depending on own membership). In addition, they were told that each member would receive an allocation from both an ingroup and an outgroup member, and their final payment would be the average of the two allocations. Subjects could not identify the membership of other subjects, and their allocation decisions were anonymous. Upon completing the task, subjects’ allocations were averaged and each subject was paid accordingly. Subjects were interdependent in that multilateral fate control existed; subjects affected others’ outcomes and were affected by others’ choices.

Unilateral condition: In this condition, all subjects made the same allocation decision of dividing 500 yen to an ingroup and outgroup member. However, the cover story changed as did the method of payment. In the instruction sheet, each subject was told that two of the six subjects in each group had been selected at random to complete the allocation task, while the other four subjects would be completing separate and unrelated tasks. In reality, all subjects were allocators. The subject was told that for completing the allocation task, he or she would be paid 300 yen.3

No interdependence existed in this condition. While the subject had fate control over two other subjects, he or she was not dependent upon them for own rewards. It was explained that the “selected” allocators were members of different groups (one overestimator, one underestimator). Each subject would make one allocation decision to one pair of the other subjects consisting of an overestimator and an underestimator. One subject allocated to one pair, while the other subject allocated to the other pair.

Hypotheses

Based on the hypothesis that the ingroup bias...
would occur only in the multilateral allocation condition, not in the unilateral allocation condition, the following three specific predictions were derived.

**Hypothesis 1**: Subjects in the multilateral allocation condition will allocate more to the ingroup member than those in the unilateral allocation condition.

**Hypothesis 2**: Subjects in the multilateral allocation condition will allocate more than a half of the total reward (i.e., more than 250 yen) to the ingroup member.

**Hypothesis 3**: Subjects in the unilateral allocation condition will not allocate more than a half of the total reward to the ingroup member.

### Results

Although the experiment was run in 6-person groups, subjects did not interact with each other and made decisions independently in the second task. Therefore, we used subjects, not groups, as the unit of analysis. The dependent variable in the following analyses is *ingroup bias*: the deviation of the allocation to the ingroup member from the 50-50 allocation (the actual amount allocated to the ingroup member minus 250 yen). Since two subjects in the multilateral allocation condition and four in the unilateral allocation condition indicated, on their questionnaire responses, that they did not very well understand the instructions for the second task, they were excluded from the following analysis. As shown below, all three predictions were clearly supported.

**Hypothesis 1**: The average ingroup bias was much higher in the multilateral allocation condition (33.44, \(N=16\), \(SD=53.56\)) than in the unilateral allocation condition (0.07, \(N=14\), \(SD=20.00\)), and the difference was statistically significant, \(F(1,29)=7.00, p<.05\).

**Hypothesis 2**: The average ingroup bias in the multilateral allocation condition (33.44) was significantly greater than zero, \(t=2.50, df=15, p<.05\), one-tailed.

**Hypothesis 3**: The average ingroup bias in the unilateral allocation condition hardly existed (0.07), and the deviation from zero was not statistically significant, \(t=.01, df=13, ns\).

From the above results, it can be concluded that (1) ingroup bias occurs only when a subject’s own reward is dependent on the allocation choices of other subjects, and (2) ingroup bias does not occur when a subject’s reward is not dependent on other subjects’ decisions (and subjects understand the allocation task correctly).

### Discussion

This experiment was designed to test the effect of interdependence on ingroup favoritism in the minimal group paradigm. Results indicate that when subjects are dependent on others for their own outcomes (the situation in the previous experiments using the minimal group paradigm), ingroup bias occurs as in previous studies. However, when subjects are not dependent on other subjects for their own outcomes (the situation that satisfies the six criteria for the minimal group paradigm discussed by Tajfel et al., 1971, but does not have the additional feature of reward interdependence), the ingroup bias totally disappears. From the results, we can conclude that interdependence is a critical condition in eliciting ingroup bias. Since interdependence has not been mentioned as a necessary condition for the social identity effect nor is it logically a necessary condition for the social identity effect, these results clearly indicate that social identity alone is not sufficient to elicit ingroup bias.

Our explanation of an illusion of control is

4) Even when these six subjects were retained in the analysis, the average ingroup bias in the multilateral allocation condition (46.39 yen) was much greater than in the unilateral allocation condition (8.39 yen), and the difference was statistically significant, \(F(1,35)=5.62, p<.05\). However, the slight ingroup bias of 8.39 yen in the unilateral allocation condition, which was not significantly different from zero (\(t=1.37, df=17, ns\), one-tailed), made the support for Hypothesis 2 less clear when these subjects were included in the analysis.
based on the idea that subjects mistakenly presume to have behavior control in an interdependent situation when they do not. This mistaken belief may be an overgeneralization from instances when behavioral control does exist. A similar phenomenon seems to occur in one-shot social dilemmas. A surprising degree of cooperation exists in one-shot dilemmas even though the dominant strategy is non-cooperation (Marwell & Ames, 1981; Quesbell, van de Kragt, & Dawes, 1988). High levels of cooperation in iterated dilemmas may be explained by the presence of behavior control, which enables such strategies as tit-for-tat to be so successful (Axelrod, 1984). Both the one-shot social dilemma and the minimal group paradigm are artificial situations quite unlike group experiences in the real world. Typically, group relations are ongoing in which reciprocation occurs and behavior control is a possibility. An overgeneralization from the more common group experience to the minimal group situation would not be surprising.

Our experiment does not preclude the possibility of another explanation, and further testing might distinguish these. This possibility is the occurrence of what Quattrone and Tversky (1984) call the "voter's illusion." The voter's illusion posits that individuals may select an action on the basis of correlating one's own behavior with like-minded others and with favorable own outcomes. For example, a voter may take his or her own act of voting as an indication that like-minded people have also voted. Similarly, if the individual has not voted, then this is an indication that like-minded people have also not voted. The voter's illusion occurs when an individual takes this premise, which is the false consensus effect (Ross, Greene, & House, 1977; Marks & Miller, 1987), as a basis for action; believing that one had better vote if one's political cause is to be victorious. Thus, one's own behavior is transformed from being merely indicative or diagnostic to being causal. One's own vote is believed to influence the choices of countless others. Quattrone and Tversky's (1984) experiments demonstrate such an effect.

Such a process may occur in the minimal group paradigm. Subjects have a vested interest in the outcomes of other's choices. If other subjects choose to favor some subjects over others, some subjects will make more money. Furthermore, Meske and Sivacek (1979) demonstrated that the false consensus effect is stronger in an interdependent situation than not. Specifically, subjects in their experiment predicted that the interdependent partner was more likely to make the same choice as themselves than non-interdependent other players in a Prisoner's Dilemma game. In the minimal group situation, given the vested interest in own favorable outcomes, subjects may choose ingroup favoritism as a "causal" device to "induce" others to favor themselves. They simultaneously choose to favor the ingroup to "induce" other ingroup members to reward themselves, and predict that ingroup members will do so because their own actions are used an indicator of other ingroup members' actions.

The voter's illusion explanation of the current experimental results is similar to our illusion of control explanation in that both assume that subjects try to control other members' allocation decisions. The two differ in the hypothesized mechanism responsible for the illusion of control. Having established that interdependence is the necessary condition for the ingroup bias in the minimal group paradigm, distinguishing between these two potential sources of the illusion should be investigated next.

5) Ng's (1981) experiment had a condition which is similar to our unilateral condition, and he did not find any bias in the condition, which is supportive of our hypothesis. However, the description of the design is not clear enough to assess the comparability of conditions. Platow, McClintock, & Liebrand (1990) replicated Ng's study, and obtained results that conflicted with Ng's. However, their study did not involve monetary rewards, which would exclude it from Tajfel et al.'s (1971) minimal group criteria and we do not make any predictions about non-monetary interdependence here.

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Meanwhile, the conclusion that may be drawn from this research is that interdependence is a necessary precondition for ingroup bias. It may be too early to draw a definite conclusion before the current experimental results are well replicated, but the results certainly suggest that the overpsychologized view of intergroup conflicts that the mere existence of social categories produces ingroup favoritism is founded on a rather dubious ground.

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