CONTRIBUTIONS TO EXPERIMENTAL ECONOMICS

7

BARGAINING BEHAVIOR

Edited by
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J. C. B. Mohr (Paul Siebeck) Tübingen
PD. Having intermediate choices led to less conflict in this case. In conclusion, having intermediate choices may be harmful, helpful, or of little consequence, depending on the dyad type.

REFERENCES


ALTRUISM AND BARGAINING

by

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This experiment investigated some of the conditions under which a subject will engage in altruistic behavior in relation to another when it is possible that others may not, in return, act altruistically toward him. One condition compared a created social context in which the subject and the other participants were members of a cohesive group with a created context in which the subject had no ties to the other participants. The second condition varied the probability of future interaction: the subject had a 1.00 or 0.50 or a 0.00 chance of interacting again with the person toward whom the subject had the choice of engaging in altruistic behavior. It was hypothesized that subjects in the high, as compared to the low, cohesive condition would display more altruistic behavior. It was further hypothesized that more altruistic behavior would be evidenced the higher the probability of future interaction with the same person. However, it was also hypothesized that the differences due to probability of future interaction will be smaller in the high as compared with the low cohesive condition. Although the experimental variables were created less strongly than we intended, the results support our first two hypotheses but not our interaction hypothesis.

Until recently, economists have paid little attention to the important roles of altruism and trust in economic processes. Guided by Adam Smith's pronouncement that "It is not from the benevolence of the butcher ... that we expect our dinner but from his regard to his own self interest," classical economists made no room for altruism and trust in the marketplace. Presumably, a foresightful butcher confronted with informed

* This research was done while the authors were at the Russell Sage Foundation; the senior author as Visiting Scholar and the junior author as Research Assistant. The research was supported in part by NSF grant, BNS74-02477, for which Morton Deutsch is Principal Investigator.
and alert housewives would not find it to his self-interest to short-weigh or otherwise try to cheat his vigilant customers; nor would the housewife find it to her interest to pay with a bad check.

Social reality is, unfortunately, more complex than classical economics allows. Neither buyers nor sellers are inherently omniscient and there are formidable costs and difficulties in acquiring the information and capabilities necessary for informed, foresightful marketplace decisions. As Phelps (1975, pp. 5-6) has pointed out:

"Some early steps have recently been taken toward the development of non-Walrasian models of economic behavior in which the participants have to make decisions without perfect information and perfect foresight. From that more realistic view of the economic environment one sees unsafe factories and unsafe products (beyond the economical danger point), labor unions and business associations, bad debts, discrimination (of the statistical sort), gouging, extortion, and short-weighing by Smithian butchers. But in that frightening world one is relieved to see also the prevalence of altruistic behavior: a producer may advertise his product truthfully when he need not, a labor union may refrain from breaking the law when it could do so for a net gain, a producer may resist contaminating a river when he could do so without detection, a firm may elect to pay "fair wage rates" when it could exploit some workers' ignorance of wage rates and job availability elsewhere with impunity, a benevolent butcher may abstain from short-weighing. These altruistic practices involve imperfections of information and foresight in a central way: they represent the refusal to deceive through false information (truthfulness) or the refusal to mislead through concealed information (disclosure), or the refusal to test the information costs for others of investigation and prosecution (lawfulness), or the refusal to let uncertainty that others will keep their bargain discourage one's own good faith (trustingness).

The prevalence of such altruistic conduct in non-Walrasian markets contributes to their economic efficiency. Certainly it reduces the risks and anxieties of being cheated or exploited. Beyond that, it tends to improve market resource allocation by lowering the transaction costs of an
informational origin that society pays in doing business and running mar-
teks. Truthfulness and disclosure by others will often avert initial mis-
allocations and subsequent search costs; there may result a reduction in
the investment of resources in gathering information necessary to achieve
a given resource allocation. Lawfulness reduces the costs of protection
against crime, particularly the costs of enforcing market contracts and
the tax system. Mutual trust in the adherence to some contract or obliga-
tion will often permit a resource allocation that is superior for everyone
to any allocation reached by the noncooperative actions of distrustful in-
dividuals. Paradoxically, the presence of these altruistic virtues in the
real non-Malrasian world, with its vast potential for damage and waste,
may make the Malrasian perfect-information model a more accurate descrip-
tion than it could be if these virtues were absent."

Similarly, ARROW (1975, p. 24) has written:
"Virtually every commercial transaction has within itself an element of
trust, certainly any transaction conducted over a period of time. It can
be plausibly that much of the economic backwardness in the world can be
explained by the lack of mutual confidence...."

Although economists are now beginning to recognize that the process
of exchange requires or at least is greatly facilitated by such social
virtues as altruism, trust, responsibility, and truth, they have not been
concerned with understanding the conditions which determine whether these
virtues flourish or fade. This task has been more the concern of the disci-
pline of social psychology. A considerable body of research in our lab-
atory (summarized in DEUTSCH, 1973) has been addressed to this end.

Let me summarize the results of this research briefly. One of the
basic dimensions for characterizing interpersonal relations and the rela-
tions between other types of social units is a dimension which I have
termed "cooperative-competitive." Other dimensions include: "the distri-
bution of power," "the degree of intimacy," "the importance of the rela-
tionship," and "the task-orientedness of the relationship." Associated
with the cooperative-competitive dimension are a syndrome of closely rela-
ted states and processes. Thus, comparing an idealized or pure cooperative
process with a pure competitive process one finds the following differences:
1. Communication

(a) A cooperative process is characterized by open and honest communication of relevant information between the participants. Each is interested in informing as well as being informed by the other.

(b) A competitive process is characterized by either lack of communication or misleading communication. Each is interested in obtaining information about the other and in providing discouraging or misleading information to the other.

2. Perception

(a) A cooperative process tends to increase sensitivity to similarities and common interests, while minimizing the salience of differences. It stimulates a convergence or conformity of beliefs and values.

(b) A competitive process tends to increase sensitivity to differences and threats, while minimizing the awareness of similarities. It stimulates the sense of complete oppositeness: "You are bad, I am good." It seems likely that competition produces a stronger bias toward misperceiving the other's neutral or conciliatory actions as malevolently motivated than the bias induced by cooperation to see the other's actions as benevolently intended.

3. Attitudes toward one another

(a) A cooperative process leads to a trusting, friendly attitude and it increases the willingness to respond helpfully to the other's needs and requests.

(b) A competitive process leads to a suspicious, hostile attitude and it increases the readiness to exploit the other's needs and to respond negatively to the other's requests.

4. Task orientation

(a) A cooperative process leads to a definition of conflicting interests as a mutual problem to be solved by collaborative effort. It facilitates the recognition of the legitimacy of each other's interests
and of the necessity of searching for a solution which is responsive to the needs of each side. It tends to limit rather than expand the scope of conflicting interests. It enables the participants to approach the mutually acknowledged problem in a way which utilizes their special talents and enables them to substitute for one another in their joint work so that duplication of effort is reduced. Influence attempts tend to be limited to processes of persuasion. The enhancement of mutual power becomes an objective.

(b) A competitive process stimulates the view that the solution of conflict can only be of the type that is imposed by one side on the other. The enhancement of one's own power and minimization of the other's power becomes an objective. It leads to a minimization of the legitimacy of the other side's interests in the situation and tends to expand the scope of the issues in conflict, so that conflict becomes a matter of general principle rather than a confrontation confined to a particular issue at a given time and place. The expansion of conflict increases its motivational significance to the participants and intensifies their emotional involvement in it; these, in turn, may make a limited defeat less acceptable or more humiliating than mutual disaster. Duplication of effort, so that the competitors become mirror-images of one another, is more likely than division of effort in the competitive process. Influence attempts tend to employ coercive processes.

This sketch of some aspects of competitive and cooperative processes suggests that each process tends to be self-confirming, so that the experience of cooperation will induce a benign spiral of increasing cooperation, while competition will induce a vicious spiral of intensifying competition. Indeed, this is likely to some extent, but there are restraints which usually operate to limit the spiralling of both types of processes. Not the least of these restraints arise from the fact that a person or group is usually involved in many situations and relationships simultaneously, and his other involvements and relationships usually restrain what might be termed an obsessional intensification of any particular relationship.
The above summary of the typical effects of cooperative and competitive processes suggests that the social virtues of altruism, trust, responsibility, truthfulness, and the like are more likely to be associated with cooperative than competitive processes. Another strand of research which has been concerned with the induction of cooperative or competitive processes suggests that the various elements of the syndrome of effects associated with a cooperative or competitive process tend to induce one another. DEUTSCH (1913) has summarized the results of this latter research in a crude but heuristic hypothesis: *the typical consequences of a cooperative process tend to induce one another as well as inducing a cooperative process; while the typical consequences of a competitive process tend to induce one another as well as inducing a competitive process.* Thus, from this hypothesis, it would be predicted that the sense of being a member of a cohesive group and an altruistic orientation toward others with whom one had been cooperating would both emerge from a successful cooperative process. Further, if one could induce the sense of being members of a cohesive group (among people who had no prior cooperative interaction), one would also induce an altruistic orientation toward one another among the members of such a group.

The research and theorizing which has been summarized above has largely focussed on cooperation and altruism in personal relations. In large-scale societies, many of the social and economic processes require impersonal cooperation and altruism between strangers who may be reciprocally linked, indirectly, through intermediaries. "A" who aids "B" may receive his help only indirectly from "B" - namely, through "C" who has been helped by "B." This indirect impersonal form of mutual aid seems to be intrinsically more vulnerable to doubt and degradation than that which occurs in direct interaction between the parties involved. Yet it is evident from our everyday experiences that it is possible for us to place some trust in the more indirect, impersonal forms of cooperation and altruism: strangers sometimes help us even though they won't personally benefit and butchers don't always short-weigh even when they know they won't be caught. What helps to sustain these more indirect, impersonal forms of social virtue which are so necessary to social life?
One final point. We have up until now not sharply distinguished between cooperation and altruism because the two are often closely linked. However, there are important differences between the two concepts even if their meanings shade into one another at their common border. Altruism implies the readiness to engage in behavior to benefit another materially even if one has to forego or postpone material benefits to oneself as a consequence of benefiting the other. Cooperation implies a positive interdependence between the material benefits of another and oneself: as one benefits so does the other. Deeply-rooted cooperation and altruism shade into one another: one obtains psychic benefits as one forgoes material benefits in order to benefit another.

The implication of the foregoing distinction between altruism and cooperation is that one would expect that altruistic behavior is usually rarer than such modes of cooperation as sharing, exchanging, and other forms of mutual benefit.

METHOD

SUBJECTS

Subjects were recruited from the population of male, undergraduate students at Columbia University by means of advertisements in the daily student newspaper and in-person solicitation by research assistants. Monetary reward was the most strongly emphasized incentive in the recruiting. Subjects were told they would be paid a minimum of $2.00 for participating in the experiment and that they might earn up to an additional $2.00 during the experiment. Five randomly constructed groups consisting of four subjects were run in each of the six conditions, with groups randomly assigned to conditions.

PROCEDURE

As each subject of a group of four arrived at the laboratory, he was told to select a numbered envelope in order to determine which of four essentially identical cubicles he would be assigned to for the experimental session. The subjects were then escorted to the appropriate cubicles and seated inside, with instructions to wait until the entire group of four had arrived.
The research to be presented in this paper was stimulated by the foregoing question even though it does not prented to answer it. We assumed that the indirect, impersonal form of cooperation and altruism would be more likely to be engaged in when the individual felt strongly, even if indirectly, connected to all the other people in a social network through their mutual membership in a highly cohesive group. To test our assumption, we designed an experiment in which subjects were placed in a first-round position where they had to decide essentially among giving another person a large benefit, taking for themselves a smaller benefit, combining "giving" and "taking" so as to equalize more or less the benefits between self and other (with some loss of the total benefits to be distributed), or playing individualistically (with little possibility of doing well). The choices were made under conditions in which the subjects knew that in the second round another person would be making similar choices that would affect them. The experimental format permits us to study the variables which affect how likely it is that a subject will engage in altruistic behavior toward another when it is possible that others may not, in return, act altruistically toward him. Two independent variables were manipulated experimentally. The first was concerned with the cohesiveness of the social unit and an attempt was made to create groups of high and low cohesiveness. The second variable focussed on the probability of future interaction: the subjects were led to believe that they had either a 1.00, 0.50, or a 0.00 chance of interacting again with the person toward whom they would have the first-round choice of engaging in altruistic, selfish, or sharing behavior.

Our experimental hypotheses were:

1. The likelihood of altruistic behavior would be greater in the high as compared to the low cohesion groups.

2. The likelihood of altruistic behavior would decrease as the probability of future interaction with one's initial partner decreased.

3. There would be an interaction between the two experimental variables such that the probability variable would have smaller effects in the high as compared to the low cohesion groups.
and been seated. Subjects were told to refrain from opening the numbered envelope until instructed to do so by the experimenter, and were asked to complete a "demographic data form," which inquired after subjects' academic interests, demographic background, and political beliefs.

When all four subjects had arrived and been assigned to their respective cubicles, the experimenter escorted each subject to a conference room. There, with four subjects seated around a table, the experimenter outlined the signalling procedures to be used during the bargaining game and introduced the group cohesion manipulations. Subjects in the HC (high cohesion) condition were told that a review of their "demographic data sheets" indicated that they had a great deal in common, and that this would be an asset to them in the experiment because it would be important that they think of themselves as a team, and keep the interests of the group in mind at all times. In addition, subjects in the BC condition were told that after the experiment had been completed, the four subjects were to be reconvened in the conference room for a discussion of the experiment.

Subjects in the LC (low cohesion) condition were instructed to act only on the basis of their own individual interest, and were told that each subject would be escorted individually from the laboratory following the completion of the experiment.

Subjects in both cohesion conditions were told that the reason that the bargaining game made use of separate cubicles and electrical communication apparatus was to prevent extraneous information, such as "facial expressions, gestures and so on" from influencing the interaction. Subjects in both cohesion conditions were reminded that the cubicle arrangement would also insure that no subject would be able to identify personally the player with whom he was paired in the game.

Subjects were then returned to their individual cubicles and presented with a short questionnaire designed to check the impact of the group cohesion manipulations by asking subjects to rate their perceptions of the group social climate in terms of the fundamental dimensions of interpersonal relations articulated by WISH, DEUTSCH, and KAPLAN (1975).
An instruction tape was then broadcast to the four cubicles over an intercom system, reviewing the procedures of the game in detail and explaining the use of the two record forms that subjects were required to complete during the signalling. The game was described as having two rounds, each round having 20 trials. It was made clear that on every trial, each of the members of a pair would have to make a choice between playing "individually" or playing "cooperatively." It was explained that if either or both players choose individually both players would receive 4 cents for the trial. If both players choose cooperatively, one of the players, who was randomly assigned to the role of Controller for the duration of the round of 20 trials, would then have to decide whether to Give 18 cents to the other player (the Non-Controller) or to Take 12 cents for himself. A matrix representing the choices and payoffs is presented below (see Figure 1). A placard displaying the matrix was taped to each subject's desktop.

<table>
<thead>
<tr>
<th>Non-Controller</th>
<th>Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>individualistic choice</td>
<td>cooperative choice</td>
</tr>
<tr>
<td>4, 4</td>
<td>18, 0</td>
</tr>
<tr>
<td>give choice</td>
<td>take choice</td>
</tr>
<tr>
<td>4, 4</td>
<td>0, 12</td>
</tr>
</tbody>
</table>

Figure 1

At the end of the taped instructions describing the game and the signalling equipment, subjects were asked to open and examine the contents of the numbered envelope they selected upon arrival at the laboratory. Each envelope contained an index card with the word "Controller" lettered on it. The taped instructions then advised subjects that two of them had received cards that were blank, while the other two had received cards assigning them to the role of Controller for the duration of the "first round" of the signalling procedure. The instructions emphasized that these role-assign-
ments were to be in effect for the duration of the first round only, and that during the second round, those subjects who were previously Controllers were to relinquish that role to those who had drawn blank cards. In other words, all subjects were assigned to the Controller position in the first round but were led to believe that half of their group had been assigned to the Non-Controller position.

At this point, one of three instruction cassettes was broadcast in order to introduce the probability of future interaction manipulation. Subjects in the P1.0 condition were told that during the second round of the signalling procedure they would continue to be paired with the same person as in the first round. In the P0.5 condition, subjects were told that following completion of the first round, the toss of a coin would determine whether the experimenter would reconnect the signalling system so as to alter the pairings, or leave the pairings as they were in the first round. Subjects in the P0.0 condition were told that following the completion of the first round of the signalling procedure, the signalling system connections and thus the pairings would be altered. In both the P0.5 and the P0.0 conditions the consequences of the re-pairing and the role-reversal contingencies were explained to the subjects, i.e., that given the constraint of role-reversal for all subjects after the first round, where re-pairing occurred a given subject would necessarily be switched into a signalling pair with someone who was in the opposite role from his during the previous round.

As soon as the final instruction tape containing the probability instructions had been broadcast, the "first" round of 20 trials was begun. Subjects were advised when to signal their choices by an instruction tape which "paced" the signalling procedure. In all conditions, the subjects were, in fact, paired with a preprogrammed electrical accomplice of the experimenter rather than with a real subject. On all 20 trials, the accomplice — who was always in the Non-Controller position — was programmed to choose cooperatively rather than individualistically.

The "first" round lasted approximately 25 minutes. Following completion of the twentieth trial, an instruction tape informed the subjects that the first round had ended. A second questionnaire was then administered. As each subject completed the questionnaire, he was debriefed, paid and
escorted from the laboratory.

RESULTS

MANIPULATION CHECKS

Cohesion

The first questionnaire, which was administered after the cohesion but prior to the probability of future interaction manipulation, provides some indication of how strongly the cohesion manipulation affected the subjects. Subjects were asked to rate "the general feelings of the 4 people in your group toward one another" on a variety of 7-point rating scales: cooperative-competitive, close-distant, friendly-hostile, important-unimportant, trusting-suspicious. They were also asked to rate their "preference for face-to-face interaction as compared to being in the cubicles," their "ability to concentrate," and their "present anxiety." Statistical analysis revealed that the cohesion manipulation produced only marginally statistically significant differences on a few variables. The subjects in the low as compared to the high cohesion groups rated their groups as more competitive ($\alpha < .08$) and more distant ($\alpha < .07$); they also rated them-

<table>
<thead>
<tr>
<th>Table 1: Number of Subjects Indicating that Their Second Round Partner Would Be the &quot;Same&quot; (S) or &quot;Different&quot; (D) or that They Were &quot;Uncertain&quot; (U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probability of Having Same Partner</td>
</tr>
<tr>
<td>1.0</td>
</tr>
<tr>
<td>Low Cohesion</td>
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<tr>
<td>High Cohesion</td>
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</tbody>
</table>

* The correct response is starred, other responses indicate lack of understanding or acceptance of the probability instructions.
less inhibition the greater power inherent in their roles as Controller. It should, however, be noted that these effects, although statistically significant, are weak. The subjects in all conditions mainly felt rather cooperative toward their partners and the sense of dominance over one's partner in the zero probability of future interaction condition was slight.

The subjects in the low as compared to the high cohesion groups felt that their Round 1 partners would rate the relationship as less cooperative \((a < .02)\) and as less pleasure-oriented \((a < .06)\). Again these results are weak but in line with the differences that one would expect the cohesion variable to create.

**BEHAVIORAL MEASURES**

**Individualistic Choices**

Given the fact that the subjects always received a cooperative choice from their pair-mate (the electrical accomplice of the experimenter), it would seem that the rational choice of the subjects on all trials would have been cooperative. Although 89 of the 120 subjects did follow this rational path, the 39 who did not were not distributed equally among the experimental conditions: twenty were in the low and eleven in the high cohesion condition. If we focus on those subjects who made more than 10 percent of their choices as individualistic choices (i.e., more than two such choices in the 20 trials), we probably will eliminate all subjects who were

<table>
<thead>
<tr>
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<th>Probability of Future Interaction With Same Partner</th>
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<tbody>
<tr>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>Low Cohesion</td>
<td>1</td>
</tr>
<tr>
<td>High Cohesion</td>
<td>1</td>
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</table>

*There were 20 subjects in each cell of the Table.*
selves as being more anxious ($\alpha < .06$), less able to concentrate ($\alpha < .10$) and having less preference for face-to-face interaction ($\alpha < .09$). On rating scales measuring "hostility," "suspiciousness," and "importance of the relationship" no statistically significant differences were obtained. These results suggest that our cohesion manipulation did not have as strong effects as we had intended. Nevertheless, as we discuss other measures of key dependent variables, it will be apparent that it had some important effects on our subjects' behavior. It should be noted that the mean ratings on such scales as "cooperative-competitive," "friendly-hostile," "trusting-suspicious" in all conditions were very much toward cooperation, friendliness, and trusting.

Probability of Future Interaction

The second questionnaire, which was administered after the first round of 20 trials, asked the subjects to indicate with whom they would be playing in the second round: "the same person as in Round 1," "a different person from Round 1," or "uncertain-perhaps the same person, perhaps a different person." The results (see Table 1) indicate that not all of the subjects understood and accepted the probability manipulation as we intended. This introduces some "noise" in our experiment which will weaken the effect of this variable.

SUBJECT'S ATTITUDES TOWARD PARTNER IN FIRST ROUND

The subject in all conditions were, unbeknownst to themselves, paired with an electrical stooge who chose "cooperatively" on every trial. Variations among conditions in the subjects' impressions of their partner in the first round must therefore reflect the effects of the experimental manipulations and/or the subjects' behavior toward their partner. Statistical analyses of the data indicate that as the probability of future interaction with the same partner decreases the subject felt less cooperative toward ($\alpha < .05$) and more dominant over ($\alpha < .06$) the "person" with whom he presumably interacted in the first round. These data suggest that the expectation of switching partners led to weaker cooperative bonds between the subjects and their partners and enabled the subjects to experience with
Difference Between Subject's and Other Player's Outcomes

We employed two measures of the difference in outcomes, a raw score and a transformed score. Table 4a presents the results based upon the raw score and Table 4b those based upon the transformed score. The results are essentially the same. There is clear evidence that the subjects are less altruistic in the low as compared to the high cohesion condition ($\alpha < .03$, $\alpha < .02$) and that the subjects are less altruistic as they become more certain that they will not be playing with the same partner in the second round ($\alpha < .03$, $\alpha < .03$). There is, however, no evidence to suggest that

* The difference scores were transformed in the following way: If the difference between self minus other was greater than minus 60, it was given a value of "1"; if the difference was between minus 60 and plus 60, it was given a value of "2"; and if it were greater than plus 60, it was given a value of "3". These three values represent three strategies that can be ordered in degree of altruism: (1) "favoring other", (2) "favoring equality", and (3) "favoring self".

### Table 4a: Mean Differences Between Earnings of the Subject and of His Partner at End of First Round

<table>
<thead>
<tr>
<th>Probability of Future Interaction With Same Partner</th>
<th>1.0</th>
<th>0.5</th>
<th>0.0</th>
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<tr>
<td>Low Cohesion</td>
<td>46.5</td>
<td>93.4</td>
<td>96.8</td>
</tr>
<tr>
<td>High Cohesion</td>
<td>-8.8</td>
<td>-3.5</td>
<td>60.1</td>
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</table>

### Table 4b: Mean of Transformed Difference Scores

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<thead>
<tr>
<th>Probability of Future Interaction With Same Partner</th>
<th>1.0</th>
<th>0.5</th>
<th>0.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Cohesion</td>
<td>2.25</td>
<td>2.45</td>
<td>2.50</td>
</tr>
<tr>
<td>High Cohesion</td>
<td>1.90</td>
<td>2.05</td>
<td>2.25</td>
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</table>
simply experimenting with the individualistic choice. Table 2 presents the results for these subjects. These data suggest that, if the individualistic choice can be considered an irrational-defensive choice, then the subjects in the low as compared to the high cohesion condition were more likely to act defensively, especially if they also believed that they would be switching partners in the second round.

**Give Choices**

The number of "give" choices that a subject made during the 20 trials provides a crude measure of the degree of altruism of his behavior. Table 3 presents the mean number of altruistic choices per condition. It is evident that our subjects, over-all, were not very altruistic; considerably fewer than half of the choices were to "give" to the other player. Nevertheless, with higher group cohesion, there are more "give" choices; and as the probability of future interaction with the same partner increases, there are

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<tbody>
<tr>
<td></td>
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</tr>
<tr>
<td>Low Cohesion</td>
<td>6.10</td>
</tr>
<tr>
<td>High Cohesion</td>
<td>9.30</td>
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</table>

also more "give" choices. However, within each condition, there is a considerable variability of subject behavior which works against obtaining statistically significant differences. This variability reflects the fact that the subjects for the most part employed one or another strategy to determine their choices over the series of 20 trials rather than making separate, independent decisions on each trial. The measures described below are more responsive to the strategic aspect of the subjects' choices.
the other on one trial and then "get" 12 cents for themselves; of these 16
subjects, 10 were in the high cohesion conditions. In an alternating pat-
ttern, at the end of the first round of 20 trials, the subject would have
"given" 180 cents to the other and "gotten" 120 cents for himself. Thirty-
one subjects displayed an "equalizing" pattern in which they "gave" on 8
trials and "got" on 12 trials, with the end result that the subject and
the other each had 144 cents at the end of the 20 trials. Of the 31 sub-
jects using the "equalizing" pattern, nineteen were in the high cohesion
conditions.

Table 5b, which describes the results for various patterns of "get"
behavior indicates that "get" patterns occurred in the low cohesion condi-
tions 34 times but only 17 times in the high cohesion conditions. "Give"
patterns (see Table 5c), on the other hand, occurred relatively more fre-
quently in the high as compared to the low cohesion conditions (8 as com-
pared with 4 times). Overall, it is evident that our subjects preferred to

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<th>Probability of Future Interaction With Same Partner</th>
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<th>0.5</th>
<th>0.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Cohesion</td>
<td>2(2)</td>
<td>0(0)</td>
<td>0(0)</td>
</tr>
<tr>
<td>High Cohesion</td>
<td>2(1)</td>
<td>3(0)</td>
<td>1(1)</td>
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"equalize" or "alternate" to "getting" and preferred "getting" to "giving."
Nevertheless, as Table 5d indicates, "cooperative" patterns of behavior
("equalizing," "alternating," or "giving") were clearly predominant over
"selfish" ("getting") patterns. Moreover, the balance favoring cooperative

* The first number refers to "all give" choices, the second to "mostly
give" choices (i.e., more than 12 such choices out of 20 trials).
our high cohesion manipulation was sufficiently strong to produce the interaction effect that we predicted.

**Patterns of Behavior**

Although Table 4b is an attempt to capture quantitatively some of the qualitative aspects of our subjects' choices, it does not distinguish among some of the behavior patterns exhibited by our subjects. Tables 5a, 5b, 5c, and 5d present a further analysis of different patterns of behavior as they appeared in the various experimental conditions. Sixteen subjects displayed an alternating pattern of behavior in which they would "give" 18 cents to

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<tbody>
<tr>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>Low Cohesion</td>
<td>3(3)</td>
</tr>
<tr>
<td>High Cohesion</td>
<td>6(5)</td>
</tr>
</tbody>
</table>

**Table 5b: Number of Subjects Displaying Various Patterns of "Get" Behavior: All "Get" Choices, (Mostly "Get" Choices), A Combination of "Individualistic" and "Get" Choices**

<table>
<thead>
<tr>
<th></th>
<th>Probability of Future Interaction With Same Partner</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>Low Cohesion</td>
<td>6(3)1</td>
</tr>
<tr>
<td>High Cohesion</td>
<td>3(1)0</td>
</tr>
</tbody>
</table>

* Frequencies of equalizing pattern are in parentheses. In an equalizing pattern, the subject made 12 "get choices," where he rewarded himself with 12 cents, and 8 "give choices," where he rewarded the other with 18 cents.

+ The first number in each cell refers to "all Get choices," the second to "mostly Get choices" (more than 14 out of 20 such possible choices), and the third to a combination of "individualistic" and "get" choices.
over selfish patterns was much higher in the high cohesion conditions and was encouraged by the knowledge that one would be playing with the same partner in the second round.

Table 5d: Number of Subjects Displaying Cooperative ("Equalizing" or "Alternating") or Altruistic ("Giving") Patterns Minus Number of Subjects Displaying Selfish ("Getting") Patterns*

<table>
<thead>
<tr>
<th></th>
<th>Probability of Future Interaction With Same Partner</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>Low Cohesion</td>
<td>10-10(0)</td>
</tr>
<tr>
<td>High Cohesion</td>
<td>14-4(10)</td>
</tr>
</tbody>
</table>

Intended Choices of First Trial of Second Round

In the questionnaire administered after completing the first round of play, the subjects were asked what choice they intended to make on the first trial in their second round role of Non-Controller. Table 6 presents the results. It is apparent that those in the low as compared to the high

Table 6: Number of Subjects Indicating They Would Make an Individualistic Choice on First Trial of Second Round+

<table>
<thead>
<tr>
<th></th>
<th>Probability of Future Interaction With Same Partner</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>Low Cohesion</td>
<td>6</td>
</tr>
<tr>
<td>High Cohesion</td>
<td>3</td>
</tr>
</tbody>
</table>

* The first number refers to subjects displaying "cooperative or altruistic" patterns, the second to subjects displaying "selfish" patterns of behavior, and the third number in parentheses is equal to the first minus the second.

+ Figures with an asterisk are based on 19 cases per cell, other figures are based on 20 cases per cell.
cohesion conditions were more apt to feel the need to make a defensive-individualistic rather than cooperative choice and there is a tendency for those expecting to play with a different partner to choose less cooperatively than those expecting to play with the same partner.

DISCUSSION

The execution of our experiment was flawed in two major respects: the manipulation of the cohesion variable was not so strong as we had expected and the instructions inducing our probability variable were not understood or accepted by a significant number of subjects (26 out of 120). Despite these defects which clearly work to the disadvantage of our experimental hypotheses, rather consistent results were obtained in support of the idea that cooperative-altruistic behavior as compared to selfish behavior would be greater when subjects felt stronger rather than weaker cohesive ties to the "community" of subjects of which they were temporarily members. Somewhat more equivocal support was obtained for the view that a definite, continuing link with a specific other would facilitate cooperative-altruistic exchanges among a group of subjects more than indirect linkages.

This equivocal support partly results from the noise in our data resulting from the defect in our probability instructions mentioned above. When we eliminate from our statistical analyses the subjects who apparently did not comprehend or accept our probability instructions, the support for our hypothesis about the effects of our probability manipulation is strengthened. Partly, it also appears that the subjects in the PO.5 treatment respond differently in the two cohesion conditions: in the high cohesion condition, the subjects in the PO.5 treatment respond much like those in the PI.0 treatment; in the low cohesion condition, they respond much like those in the PO.0 treatment. These latter results are in line with our interaction hypothesis.

The differences produced by our experimental manipulations are more properly labelled as differences in cooperative behavior than as differences in altruistic behavior. Few of our subjects showed a predominance of altruistic behavior. Rather than being willing to defer benefits to oneself in order to benefit another (with the hope of receiving similar benefits
later), the subjects were more disposed to show their willingness to engage in mutual cooperation by one or another form of sharing behavior—alternating or equalizing the benefits received by oneself and the other. The sharing behavior obviously did not run the risks involved in altruistic behavior. Some of the subjects, in explaining why they chose as they did, indicated that sharing was safer than giving all the time. Most of the subjects who chose to share with the other rather than to give to the other during the first round stressed the "fairness," the "cooperativeness," or the "both of us benefitting" as though the continued maintenance of some sort of equality in the relationship was a value in itself. This stress on equality and mutual benefit may, of course, only have been a facade masking the subjects' unwillingness to take the risks involved in altruistic behavior. However, other research that we have done shows that subjects, in a cooperative context, will often forego improvements in their own, personal outcomes if such gains increase the inequality in outcomes between them and their partners.

REFERENCES

Arrow, K.J. (1975):

