Influence of communication on reactions to "unconditionally cooperative" behavior in a prisoner's dilemma game.

Dorothy Sejwacz

University of Massachusetts Amherst

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INFLUENCE OF COMMUNICATION ON REACTIONS TO 
"UNCONDITIONALLY COOPERATIVE" BEHAVIOR 
IN A PRISONER'S DILEMMA GAME

Thesis - for Master's Degree Presented

By

Dorothy Sejwacz

Submitted to the Graduate School of the University of Massachusetts in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

August 1974

Major Subject: Psychology
INFLUENCE OF COMMUNICATION ON REACTIONS TO "UNCONDITIONALLY COOPERATIVE" BEHAVIOR IN A PRISONER'S DILEMMA GAME

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Approved as to style and content by:

J. William Dorris, Chairman of Committee

Alice H. Bagly, Member

Arnold D. Well, Member

Richard T. Louttit, Department Head, Psychology

August, 1974
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1. Payoff matrix used in "decision-making" task
INTRODUCTION

The purpose of the research presented here was to investigate the effects of communication upon reactions to "unconditionally cooperative" behavior in an experimental mixed-motive conflict situation. Mixed-motive conflict refers to a situation involving at least two persons where each person is motivated both to cooperate and to compete with the other(s). If one person always cooperates, his behavior is defined as "unconditionally cooperative". Previous research has not fully related communication variables to unconditional cooperation. The failure to consider communication variables may help explain why unconditional cooperation is typically not reciprocated in laboratory bargaining research (cf. Nemeth, 1970; Dorris, 1972).

The studies reviewed here have used a Prisoner's Dilemma Game (PDG), or a conceptually similar task, to create a conflict based upon the subject's motivation to maximize his monetary earnings and his dependence upon the other subject's choices in achieving this goal. The task is designed such that each person has two possible choices (A and B). The following payoffs are associated with their joint decisions:

1) If both choose A, then they split the maximum joint payoff.

2) If both choose B, then they split the minimum joint payoff.
payoff.

3) If A and B are chosen, the person choosing A gets the smallest possible payoff, while the person choosing B gets the largest possible payoff.

Choosing "A" is described as a "cooperative" choice because it is essential to achieving the highest joint payoff; choosing "B" can reflect several intentions, depending upon what choice is expected from the other person. If the other person is expected to consistently choose A regardless of the subject's choices, the other person's behavior is described as "unconditionally cooperative". If under these conditions the subject chooses B, this choice is described as "exploitative".

Existing laboratory research on "unconditional cooperation" has generally not allowed any communication between the subjects and found that there is little reciprocity of unconditional cooperation (e.g., Bixenstine, Potash & Wilson, 1963; Lave, 1965; Shure & Meeker, 1967; Solomon, 1960; Swingle & Gillis, 1968; Whitworth & Lucker, 1969). Only two studies have dealt with the role of communication affecting reaction to "unconditional cooperation". One study which allowed communication found a reduction in exploitation of the "unconditional cooperator" after he communicated the reasons for his unconditional cooperation (Shure, Meeker & Hansford, 1965). Dorris (1972) also found that unconditional cooperation was reciprocated when it was
accompanied by a communication which emphasized the moral norms relevant to the subject's behavior and appealed for help on the basis of legitimate need. Although subjects responded more cooperatively following a moral appeal than a neutral one, it is unclear exactly which aspects of the moral appeal were responsible for the increase in reciprocal cooperation.

Research on the effect of communication in bargaining studies not involving "unconditional cooperation" has consistently shown that cooperation increases when subjects are allowed to communicate. However, communication has not been well conceptualized in these studies. Early studies (e.g., Deutsch, 1958) which used only written communications consistently found that the more information (about the intentions and expectations of the communicator) that the message contained, the greater the cooperation on the part of the subject. More recently Wichman (1970) varied the availability of nonverbal cues and found that there was more cooperation when subjects were allowed to see each other than when they were not. However, in Wichman's study the anonymity of the subject was confounded with nonverbal communication. Subjects in the visual condition may have cooperated due to concerns about their "public image" while subjects who could not see each other may have felt less pressure to be cooperative (cf. Marlowe, Gergen & Doob, 1966).

Aside from Wichman's study and some earlier unpublished research by Dorris (1968) the distinction between verbal and
nonverbal communication has not been considered in relation to mixed-motive conflict resolution. The importance of this distinction is suggested by research done in other contexts. Watzlawick, Beavin and Jackson (1967, p. 66) distinguished two types of communication, "digital" and "analogic". Digital communication refers to the verbal content of a message which may be either written or spoken. Analogic communication includes virtually all nonverbal communication. Watzlawick et al argue that "whenever the relationship between people is the central issue of communication, digital language is almost meaningless" (p. 63). Similarly, Mehrabian and Ferris' (1967) research on the importance of various communication "channels" in expressing affect found that over 90% of affect was communicated by two nonverbal channels, facial expression and voice tone. Mehrabian and Reed (1968) also present evidence that communication accuracy is directly related to the availability of normally used channels of communication. Taken together, these studies suggest the need to consider nonverbal communication channels as well as content channels in the context of bargaining, and especially in relation to communicating the intentions behind "unconditional cooperation".

Communication between the two persons in the conflict situation fulfills several functions. It makes explicit the intentions of the communicator. Furthermore, since both the situation and the relationship between the two
persons are ambiguous, communication helps to clarify the appropriate behavioral norms and define the relationship.

Nemeth (1970) argues that, without communication, subjects do not interpret "unconditional cooperation" by their partner as stemming from cooperative intent; instead they see this behavior as being indicative of confusion or even deceptive strategy. She reviews several studies of helping behavior which indicate that "reciprocity of benefits occurs only when the original benefit is seen as intentional and altruistically based" (p. 304). Thus, "one would expect reciprocity of cooperation in bargaining games...when the partner is seen as intentionally benefiting the subject" (p. 304).

Another effect that communication may have on the subject is to clarify the relationship between the "unconditional cooperator" and the subject. In most bargaining studies this relationship is unspecified since the two participants are "randomly assigned" to conditions and have no prior or anticipated future relationship. Several bargaining studies have shown that cooperation is greater between subjects having a friendly relationship than none at all or a hostile one (e.g., McClintock & McNeel, 1967; Swingle & Gillis, 1968). Anticipating future contact also influences reactions to "unconditional cooperation" (Marlowe, Gergen & Doob, 1966).

Communication may also serve to clarify behavioral norms
in an ambiguous situation. Alexander and Weil (1969) re-
view a number of PDG experiments and conclude that the
"official rules of the game are highly ambiguous and that
the circumstances of play are likely to prompt subjects to
look for 'experimental' norms as guides to action" (p. 122).
To the extent that the experimental instructions do not set
normative expectations for the player's behavior, communi-
cations from the "unconditional cooperator" may be very in-
fluential in determining what sort of behavior is appro-
priate in the situation. Dorris (1972) found evidence that
subjects who interpreted an "unconditionally cooperative"
coin seller as making "moral norms" salient in evaluating
the coin buyer's behavior are more cooperative in return.
In many studies experimental instructions make "individual-
istic sets" (i.e., subjects are instructed to try and earn
as many points for themselves as they can) highly salient,
and "self-concern" is emphasized to the extent of making the
"norm of reciprocity" (which the "unconditional cooperator"
is trying to evoke) less salient. Hence, "unconditional
cooperation" may appear to be a deceptive strategy or an
inappropriate attempt to evoke guilt (cf. Nemeth, 1970,

The present experiment was designed to study reac-
tions to an "unconditional cooperator" as a function of
the communications associated with the behavior. The study
was designed to investigate the effects of variations
in both the content of the message and the manner in which it is communicated on the recipient's behavior in a PDG.

The subjects were confronted with a series of "unconditionally cooperative" choices from the other person (confederate) in a PDG. The confederate always responded cooperatively (response A, Figure 1) regardless of what the subject did. The payoff matrix was designed so as to favor exploitation of the "unconditionally cooperative" choices, especially given that the subject's motivation for participating in the experiment (which was to earn money) also favored exploitation. However, the subject still had to decide what behaviors were appropriate for achieving her monetary goals in relation to the other person. That is, official rules regarding appropriate behavior were ambiguous and subjects had to develop their own set of rules (Alexander & Well, 1969). In this regard both the verbal and nonverbal content of the "unconditional cooperator's" messages were expected to influence the subject's perception of what behaviors were appropriate in achieving her goal of earning money. The interpretation the subject made of the confederate's "unconditional behavior" and any communication which accompanied it was expected to influence her behavioral choices.

----------------------
*Insert Figure 1 about here*
Figure 1

Payoff matrix used in "decision-making" task.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>Other person</td>
<td>Other person</td>
</tr>
<tr>
<td>Person</td>
<td>gets 5¢</td>
<td>gets 0¢</td>
</tr>
<tr>
<td></td>
<td>I get 5¢</td>
<td>I get 9¢</td>
</tr>
<tr>
<td></td>
<td>9¢</td>
<td>0¢</td>
</tr>
<tr>
<td></td>
<td>0¢</td>
<td>1¢</td>
</tr>
<tr>
<td></td>
<td>1¢</td>
<td>1¢</td>
</tr>
</tbody>
</table>

I Choose
There were four experimental conditions and a control condition. The control condition was designed to approximate the no communication conditions used in earlier research on "unconditional cooperation". In it there was no communication of any kind between the subject and the confederate. Thus, the subject's behavior was assumed to be largely determined by her incentive to earn money, and by her interpretation of the "unconditional cooperator's" behavior which was expected to emphasize confusion, stupidity or lack of concern (cf. Solomon, 1960). Level of cooperative responding by the subject was expected to be lowest in the control condition (e.g., Bixenstine, Potash & Wilson, 1963).

The four experimental conditions were arranged in a 2 X 2 factorial design involving two different message contents (content) crossed with two methods of communication (mode). The content of communication was either a cooperative appeal (appeal condition) or a neutral statement (neutral condition) (see Method section) and the mode of communicating was either written or spoken. The modes of communication differed only that the spoken communication contained several sets of nonverbal cues (tone of voice, facial expressions) which were lacking in the written communication. An attempt was made to hold anonymity of subjects constant across all five conditions.
The effect of the content of the communication was hypothesized to be as follows: More reciprocal cooperation was expected to occur following a cooperative appeal than either a neutral statement or no communication regardless of whether or not nonverbal cues were available. This prediction was based on Deutsch's (1958) findings and those of the two studies of unconditional cooperation by Shure et al (1965) and Dorris (1972). It was expected that after receiving a cooperative appeal the subject would perceive the situation as one in which reciprocity norms were relevant and would perceive the other subject as having benevolent intentions behind her actions (cf. Nemeth, 1970). Whether or not there would be a difference between the neutral and no communication (control) condition would depend upon what effect the neutral statement had on the subject. If the contact and relationship implicit in such a statement increased the familiarity or sense of common fate between the subject and the "unconditional cooperator", more cooperation was expected in neutral than no communication condition (e.g., Swingle & Gillis, 1963). If the neutral statement made the subject feel inappropriately pressured or guilty then the same amount or less cooperation than in the no communication conditions was expected (cf. Shure et al, 1965).

Mode of communicating was expected to have effects due to the differential accessibility of nonverbal cues.
Differences between the written and spoken message were expected since nonverbal cues were available only in the spoken message. Having these cues available was expected to 1) increase the number of information channels available to the subject in her attempts to understand the "unconditional cooperator's" message by making facial expressions, gestures and tone of voice available for interpretation of meaning of the message (Mehrabian & Reed, 1968); 2) communicate whatever affect the "unconditional cooperator" felt toward the subject (Mehrabian & Ferris, 1967); and 3) communicate information about how the "unconditional cooperator" was defining the relationship between herself and the subject (Watzlawick et al., 1967).

The confederates who gave the spoken messages were trained so that the content of their message was consistent with their nonverbal communication. Research reported elsewhere (Dorris, Kahn & Shippee, 1974) found that it was possible to train confederates to consistently communicate their intentions to be either honest or deceptive by subtle variations in their voice and facial expressions while delivering a message which was virtually identical in content to the cooperative appeal being used in this study. In the present study subjects were trained to communicate their intentions to be honest. Thus, in the spoken-appeal condition the subject received redundant messages through different channels which should increase understanding of the message (Mehrabian & Reed, 1968). It was predicted that subjects would respond
more cooperatively in the spoken appeal condition than in the written appeal condition. In the spoken neutral condition the subject's behavior would largely depend on the effect that the nonverbal communication in addition to the content of the communication had on her. It was predicted that if the nonverbal cues increase liking, friendliness or concern for the other person (as measured by the post-questionnaire), there would be more cooperation in the spoken neutral than in the written neutral condition. However, if the nonverbal communication did not have such an effect, there would be no difference between the spoken neutral and written neutral conditions.

METHOD

Subjects

Sixty-four subjects were used in this study. Potential subjects were randomly selected from the female, freshmen, nonpsychology majors in the University of Massachusetts student telephone directory. Almost all persons contacted agreed to participate, except when prevented from doing so by scheduling difficulties. The data from four subjects had to be discarded for the following reasons: Misunderstanding instructions (3); evidencing suspicions about the study (1). Only female subjects were used since females have been found to be more competitive than males in the PDG (e.g., Guyer, 1963). Also, it was expected that non-
psychology majors would be less aware of norms operating in an experimental situation than psychology majors. All subjects were telephoned and asked to participate in an experiment on "decision-making" and were told that they would be paid a dollar at the beginning of the experiment and up to $2.80 total depending upon their "decisions". It was hoped that the opportunity to earn money would induce subjects to be more competitive during the experiment.

Procedure and Instructions

In order to test our hypotheses regarding relations between communication and level of cooperative behavior it was necessary to create an experimental situation in which 1) the unconditionally cooperative behavior of the confederate would be reciprocated minimally without communication, and 2) the communication could have an effect on the subject's level of reciprocity of cooperative behavior. Since it was found in pretesting using male psychology majors that the base rate of cooperation was close to 100%, various procedures were adopted in the experiment to induce greater competition from the subjects.

Upon arrival at the laboratory, each subject was taken to the experimental room by the experimenter and seated at a table facing the confederate who was presented as the first subject to arrive. The experimenter asked the subject and the confederate for their names and majors, and recorded this information. This was done to minimize
feelings of anonymity on the subject's part. Both the subject and confederate had a console in front of them (see Figure 1). This automated apparatus was used to signal the beginning of each trial and to give immediate feedback to the subjects. The subject and confederate each had a typed copy of the first part of the instructions which included the structure and rules of the "decision-making" task (actually the PDG) to follow while the experimenter read them aloud.

In order to avoid making game norms salient in the experiment, it was introduced as a "decision-making" task and no reference was made to the word "game" by the experimenter or in the questionnaires. Subjects were given an individualistic orientation since Deutsch (1958) has found that communication had an effect only when instructions created an individualistic set. This was done by telling subjects that "the purpose is to earn as much money for yourself as you can". (For complete instructions, see Appendix A).

After being instructed, the subject and confederate engaged in four practice trials with predetermined choices that demonstrated the four possible outcomes contingent on their choices. The subject and confederate next completed a questionnaire testing their comprehension which was immediately scored by the experimenter. On the few occasions that errors occurred, the experimenter reviewed the relevant parts of the instructions.
In order to increase competition, following the four practice trials, the subject and confederate were each given one dollar and told that they would keep this money plus whatever amount they earned during the experiment. Since it was important that subjects attend to the confederate's communication, it was necessary to create some uncertainty as to how, in fact, the confederate would behave when she claimed that she would be unconditionally cooperative. This was done by telling subjects that they would receive feedback of the results only on some of the trials.

The subject was then asked to indicate on a prequestionnaire how she perceived a typical other would behave in the situation she was about to engage in. The responses were measured on fourteen bipolar adjective. Each bipolar adjective was based on a 1-7 point scale.

Subjects were then told that three different communication situations were being studied and these situations were described as follows:

(a) The two persons would not be allowed to communicate with each other about anything.

(b) The two persons would be allowed to communicate with each other about anything except about the experiment.

(c) The two persons would be allowed to communicate about anything including the experiment.

They were further told that the experimenter would decide randomly which situation they were in by picking a card out of a bag. At this point subjects were told the following:
I should remind you that people use these opportunities to communicate for various purposes. You ought to keep in mind that the message which you get may say one thing about what the other person is planning to do, and the person may, in fact, be planning to do something else. Of course, people have also sent messages which were accurate descriptions of what they were planning to do. You simply have to decide for yourself what the other person is communicating.

The reason for these instructions was again to increase subjects' attention to the message if they received one. By randomly picking a card out of an envelope, the experimenter determined which condition the two persons were in and explained it to them. In the spoken conditions the experimenter first asked the confederate if she would like to say anything. At this point, the confederate presented her communication to the subject (see below). The subject was then given an opportunity to speak. The confederate was unaware of the experimental condition prior to this point. Following this, the actual 20 trials of the PDG began.

A signal light lit up indicating to the subject the beginning of each trial. The subject's task was to press a switch either to the left (labeled A) or to the right (labeled B) in order to indicate her choice for each trial. A payoff matrix showing the consequences of making the choice was printed above the switch. After each choice a light came on in the appropriate quadrant of the matrix, indicating to the subject what choices she and the confederate had made. Subjects did not receive feedback on
trials 1, 3, 8, 11, 13, 17, 18, and 20, and a light did not light up following their decisions on the above trials. In order to maintain the subject's awareness of her earnings and concern about losing money, on each trial the subject recorded her earnings as well as a cumulative total. On trials in which she did not receive feedback she guessed how much she earned on that particular trial. After completing the 20 trials, the subject and confederate were asked to complete the post-questionnaire.

Upon completion of the experiment the subject was thoroughly debriefed and paid according to the amount she earned during the experiment.

Experimental Conditions

Content of communication. In the appeal conditions subjects were told that they could communicate about anything including the experiment. The experimenter then indicated that each person could make one statement and asked the confederate to go first. The confederate made the following appeal:

Look...the best thing for us to do is to cooperate. The way this is set up, we both have to choose A every time to do well. You know that if we try to outguess each other to get more money by trying to get nine cents, we'll probably wind up with one cent each. So I'm going to rely on your cooperation and I'm going to choose A every time. I'd like you to do the same. I think that's the fairest way for both of us.

In the neutral conditions, subjects were told that they could communicate about anything except the experiment.
The experimenter then indicated that each person could make one statement and asked the confederate to go first. The confederate made the following statement:

Since you want me to talk (glancing to the experimenter)...I really don't know what to talk about since we can't talk about the experiment...but since we can't talk about the experiment (turning to the subject)...what do you think of this stupid building? The way it's set up you really have to know where you're going. It was a real hassle trying to find this room, and when I took the elevator it took me down before going up. (turning to the experimenter again) Well...geez...that's about all I have to say.

Mode of communication. In the spoken conditions subjects were told that they could communicate verbally and the confederate made her comments while looking at the subject. The confederates were trained similarly to confederates in Dorris, Kahn, and Shippee's (1974) study so that when the appeal was spoken, the attitude conveyed by their nonverbal gestures was consistent with the content of the appeal, indicating intentions to be honest. Following the communications, a curtain was drawn between the subject and confederate for the remainder of the experiment. This was done in order to eliminate any further communication and to keep the rest of the experiment identical for all conditions.

In the written condition subjects were told that they could only communicate through written notes and the curtain was drawn between the subject and confederate prior to their writing of the notes.
In the control condition subjects were told that they could not communicate among themselves in any way and the curtain was drawn for the remainder of the experiment. Thus, all five conditions were identical following the communication.

Postquestionnaire

The postquestionnaire contained various items measuring the subject's perceptions of the confederate, herself, the confederate's behavior, her own behavior, and her reactions to the task she had engaged in. All the questions in the postquestionnaire were based on a 7-point scale. Some of the questions were hypothesized to measure the same thing. Thus, on the basis of their face validity and the inter-item correlations, questions were summed together to form eight sets with each group being treated as a single dependent variable. An alpha coefficient was obtained for each group of questions (Guilford, 1954). The following is a brief description of what the questions in each group measured, the questions included in the group, and the alpha coefficient (all the questions are given in Appendix 3):

1. **Other responsible.** To what extent the subjects perceived that the other person's behavior was responsible for the subject's behavior. (Questions 1(a), 1(b), 2(a), 2(g) and 13(a).
   \[ \alpha = .72 \].

2. **Pressed by other.** To what extent the sub-
ject felt pressured by the confederate. (Questions 2(b), 2(f), 3(h) and 12(h). $\alpha = .56$).

3. **Own mutually-profitable concern.** The extent to which the subject perceived herself as being concerned with obtaining mutually-profitable decisions. (Questions 11(c), 11(e), 11(h), 11(i), 11(m), 12(b), 12(d), 12(e), 12(f) and 12(g). $\gamma = .92$).

4. **Other's mutually-profitable concern.** The extent to which the subject perceived the confederate as being concerned with obtaining mutually-profitable decisions. (Questions 2(c), 2(e), 2(h), 2(i), 2(m), 3(b), 3(e), 3(f) and 3(g). $\alpha = .82$).

5. **Self rational vs. irrational.** To what extent the subject perceived her own behavior as rational vs. irrational. (Questions 11(d), 11(j), and 12(i). $\alpha = .60$).

6. **Other rational vs. irrational.** To what extent the subject perceived the confederate's behavior as rational vs. irrational. (Questions 2(d), 2(j) and 3(i). $\alpha = .67$).

7. **Liking for other.** To what extent the subject liked the confederate. (Questions 2(n), 7, 8 and 10. $\alpha = .58$).
8. **Satisfaction.** The subject's satisfaction with the outcome and her own behavior. (Questions 5, 6 and 11(1). \( \alpha = .50 \)).

The items that were not in any one of the above mentioned groups were analyzed individually.

**RESULTS**

**Analysis of Results**

Analyses were performed such that the error term for each dependent measure would be based on all available data as suggested by Hornbeck (1973) and Himmelfarb (1973). Therefore, for each dependent measure a one-way analysis of variance on all five conditions (four experimental conditions plus the control condition) was first performed.

Then a 2 X 2 analysis of variance was performed on the four experimental conditions using the error term from the one-way analysis of variance. If the results for the one-way analysis of variance were significant for any one of the dependent measures, a Dunnett's test was performed to test for significant differences between the control group and each of the experimental groups.

Effects due to experimenters or confederates were also analyzed. Since analyzing for both experimenter effects and confederate effects in one analysis would make the number of subjects per cell too small, effects for experimenters were analyzed in a 2 X 2 X 2 analysis of variance and
effects for confederates were analyzed separately in a 4 X 2 X 2 analysis of variance. Again, the error terms used were based on all the data.

Prequestionnaire

Following the instructions but prior to the communication from the confederate, subjects and confederates were asked to complete a prequestionnaire. The object of the prequestionnaire was to obtain the subject's perception of the task she was about to engage in. No differences were expected between experimental conditions since the prequestionnaire was completed prior to any experimental manipulations. However, when a 2 X 2 analysis of variance was performed there was a significant main effect for content of communication on the bipolar adjective irrational-rational \( (F(1,55) = 5.7, p < .025) \). Subjects in the appeal conditions expected a typical other to behave more rationally \( (X = 5.96) \) than subjects in the neutral conditions \( (X = 5.04) \). Also, there were two significant interactions between Content of Communication and Mode of Communication on the bipolar adjectives, passive-active \( (F(1,55) = 7.02, p < .025) \) and weak-strong \( (F(1,55) = 12.57, p < .001) \).

Listed in order of extremity from the midpoint, on the average, subjects expected the typical other to behave rationally \( (X = 5.50) \), friendly \( (X = 5.32) \), actively \( (X = 5.23) \), competitively \( (X = 5.23) \), strongly \( (X = 5.20) \), wisely \( (X = 4.90) \), honestly \( (X = 4.65) \), trustworthily \( (X = 4.65) \),
successfully ($\bar{X} = 4.65$), changeably ($\bar{X} = 4.63$), morally ($\bar{X} = 4.60$), and coercively ($\bar{X} = 4.53$). 3

**Number of Cooperative Moves**

Subjects participated in 20 trials of a PDG. Choice A was considered a cooperative response while choice B was considered an exploitative response. The main dependent measure was the number of cooperative responses during the 20 trials.

A 2 X 2 analysis of variance revealed that there was a significant main effect for content of communication ($F(1,55) = 6.35, p < .025$). As predicted, subjects cooperated more following a cooperative appeal than following a neutral statement (Table 1). In addition, there was a significant interaction between Content and Mode of Communication ($F(1,55) = 4.63, p < .05$). A simple effects test showed that the difference between the appeal and neutral conditions was only significant when the communication was spoken ($F(1,55) = 10.92, p < .005$).

---

Insert Table 1 about here

---

It was further predicted that subjects would cooperate more in both the spoken and written-appeal conditions than in the control condition. A Dunnett's test was performed to determine whether any of the experimental groups differed significantly from the control group. The spoken-
Table 1

Mean number of cooperative choices as a function of content and mode of communication\textsuperscript{a}

<table>
<thead>
<tr>
<th>Content of Communication</th>
<th>Neutral Statement</th>
<th>Cooperative Appeal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written</td>
<td>15.2</td>
<td>15.8</td>
</tr>
<tr>
<td>Control</td>
<td>13.0</td>
<td>12.0</td>
</tr>
<tr>
<td>Spoken</td>
<td>10.8</td>
<td>18.3</td>
</tr>
</tbody>
</table>

\textsuperscript{a} There were 12 subjects in each cell.
appeal group was the only one that differed significantly from the control group \( (d(5,55) = 2.78, p \leq .05) \) in the predicted direction.

Within the appeal conditions the spoken-appeal was expected to elicit greater cooperation than the written-appeal. Although the difference between the two appeal conditions was in the predicted direction, it was not significant \( (F(1,55) = 1.31) \).

Within the neutral conditions a simple effects test revealed that there was a marginally significant difference such that subjects in the spoken-neutral condition cooperated less than subjects in the written-neutral condition \( (F(1,55) = 3.73, .05 < p \leq .10) \).

Analyses were performed to test for any effects on the number of cooperative moves due to the four confederates and/or the two experimenters. There were no significant effects due to confederates on this dependent measure. However, there was a significant interaction between Content of Communication and Experimenter \( (F(1,50) = 4.24, p \leq .05) \). Although both experimenters obtained more cooperation in the appeal conditions than in the neutral conditions, simple effects tests revealed that this difference was only significant for experimenter 1 \( (F(1,50) = 8.22, p \leq .01) \).

Since subjects in the appeal conditions indicated on the prequestionnaire that they expected the typical other to behave more rationally than subjects in the neutral
conditions, the main effect for content obtained on the number of cooperative moves could have been simply due to a sampling error. To test whether there was any support for this argument an additional analysis was performed. A median split was performed on subjects in the appeal conditions on the basis of their rational-irrational scores on the prequestionnaire. The results of a t-test indicate that there was no significant difference between the two groups created by the median split on the number of cooperative moves \( t(22) = .40, \text{n.s.} \). Thus, the explanation that the significant main effect of content on the number of cooperative moves was due to sampling error was not supported.

Postquestionnaire

The results from the postquestionnaire are summarized in Table 2. It was predicted that subjects in the appeal conditions would think that they were better able to determine the confederate's intentions, that these intentions were more benevolent, and that the confederate was less confused than would subjects in either the neutral or control conditions. Within the appeal conditions it was predicted that the confederate's intentions would be clearer to the subject in the spoken-appeal condition than in the written-appeal condition.

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Insert Table 2 about here
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Table 2
Means of Scores and Results of Analysis of Variance from the Postquestionnaire

<table>
<thead>
<tr>
<th>Dependent Measure</th>
<th>Experimental Conditions</th>
<th>Analysis of Variance Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
<td>Neutral Statement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Written</td>
</tr>
<tr>
<td>Other responsible</td>
<td>4.20</td>
<td>4.71</td>
</tr>
<tr>
<td>Pressured by other</td>
<td>2.10</td>
<td>2.58</td>
</tr>
<tr>
<td>Own mutually profitable concern</td>
<td>4.95</td>
<td>5.05</td>
</tr>
<tr>
<td>Other's mutually profitable concern</td>
<td>5.25</td>
<td>5.33</td>
</tr>
<tr>
<td>Self irrational</td>
<td>2.58</td>
<td>2.66</td>
</tr>
<tr>
<td>Other irrational</td>
<td>2.06</td>
<td>2.66</td>
</tr>
</tbody>
</table>

continued on next page
Table 2 continued

<table>
<thead>
<tr>
<th>Dependent Measure</th>
<th>Experimental Conditions</th>
<th>Analysis of Variance Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
<td>Neutral Statement Written</td>
</tr>
<tr>
<td>Liking for other</td>
<td>4.75</td>
<td>5.37</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>5.58</td>
<td>5.66</td>
</tr>
<tr>
<td>Clarity of</td>
<td>4.59</td>
<td>5.17</td>
</tr>
<tr>
<td>Intentions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other's behavior</td>
<td>2.08</td>
<td>2.00</td>
</tr>
<tr>
<td>Confused</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feeling</td>
<td>4.25</td>
<td>3.42</td>
</tr>
<tr>
<td>anonymous</td>
<td></td>
<td></td>
</tr>
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</tbody>
</table>

a All means based on a 1-7 scale where the larger the score the more of the particular dependent measure.

b Different from control group with .05 ≤ p ≤ .10.

c Different from control group with p ≤ .05.

d Both means combined different from control group with .05 ≤ p ≤ .10.
On the question of how well the subject thought she could determine the confederate's intentions, there was a main effect for content of communication as predicted. Subjects in the appeal conditions perceived that they could determine the confederate's intentions better than subjects in the neutral conditions. Both the spoken-appeal \((d(5,55) = 2.50, p \leq .05)\) and the written-appeal \((d(5,55) = 2.62, p \leq .05)\) conditions also differed significantly from the control condition. As predicted, subjects in both of the appeal conditions perceived that they could determine the confederates' intentions better than subjects in the control condition. There were no significant differences between the spoken-appeal group and the written-appeal group.

As predicted, on the measure of "other's mutually-profitable concern" there was a significant main effect for content of communication such that subjects in the cooperative-appeal condition saw the confederate as being more concerned with reaching mutually-profitable decisions than subjects in the neutral conditions. Although a Dunnett's test revealed that within the appeal conditions neither the spoken nor the written condition differed significantly from the control condition, when the two appeal conditions were combined and a preplanned comparison was carried out, there was a marginally significant difference in the predicted direction between the appeal conditions and the control condition \((F(1,55) = 3.49, .05 \leq p \leq .10)\).
Summarizing, it appears that subjects in the appeal conditions did, in fact, perceive the confederate as being more concerned with mutually profitable decisions than subjects in the neutral or control conditions.

On the item measuring to what extent the subject perceived the confederate's behavior as confused there was a main effect for content of communication, as predicted. A planned comparison test between the control and the two appeal conditions revealed a marginally significant effect ($F(1,55) = 3.96, .05 < p < .10$) in the predicted direction. Thus, subjects in the appeal condition perceived the confederate's behavior as less confused than subjects in the neutral or control conditions. There was no significant difference between the spoken-appeal and written-appeal conditions.

There was a marginally significant main effect for content of communication on the measure of the subjects' perceptions of the other person as being rational vs. irrational. Subjects perceived the confederate as being more rational in the appeal conditions as compared to the neutral condition. However, there was a significant Confederate X Content of Communication interaction ($F(3,40) = 2.87, p < .05$). Simple effects tests revealed that only for two of the four confederates ($F(1,40) = 14.98, p < .001$; $F(1,40) = 36.71, p < .001$) was there a significant difference on the above measure between the appeal and neutral conditions.
It was expected that the neutral statement (in comparison to the control group) might either be perceived as an inappropriate attempt to coerce the subject or it might increase liking of the confederate. If this latter effect occurred, it was expected to be greater in the spoken than written-neutral condition due to the availability of nonverbal cues to express feelings. On the measure of "pressured by other" a main effect was obtained for content of communication. Subjects in the cooperative appeal condition felt more pressured than subjects in the neutral conditions. Furthermore, there were no differences between the control condition and any one of the experimental conditions on the above measure. No significant effects were obtained for either the measure of "liking for other" or for the measure of "satisfaction". Similarly, no significant effects were obtained on any of the items included in the two measures when the items were analyzed individually. This lack of significant difference between the neutral and control conditions is expected since no differences in cooperation were found between the neutral and control conditions.

There were several questions on the postquestionnaire dealing with the subject's perception of her own behavior. No predictions were made on these items.

On the measure "other responsible" there was a significant main effect for content of communication. Subjects
in the cooperative appeal condition perceived that the confederate was more responsible for their behavior than subjects in the neutral condition. Both the spoken-appeal condition \((d(5,55) = 2.84, p \leq .05)\) and the written-appeal condition \((d(5,55) = 2.97, p \leq .05)\) differed significantly from the control condition. Subjects in the appeal conditions perceived that the confederate was more responsible for their behavior than subjects in the control condition.

On the measure of "own mutually-profitable concern" there was a marginal main effect for content of communication. Subjects in the neutral conditions perceived themselves as being less concerned than subjects in the appeal conditions with obtaining mutually-profitable decisions. The spoken-appeal condition was marginally different from the control condition \((d(5,55) = 1.75, .05 \leq p \leq .10)\). Subjects in the spoken-appeal condition correctly perceived themselves as being more concerned with mutual profits than subjects in the control condition.

It was also predicted that subjects would not feel anonymous in the experiment and no differences were expected across conditions. The subject was asked on the postquestionnaire how likely it was that the confederate would recognize her the next day if she saw her on campus. The response was based on a 1-7 scale ranging from very likely to very unlikely. No significant effects were obtained on this dependent measure or any of the independent variables with
the mean response being 3.53. However, there was a main effect for confederate (F(3,40) = 5.03, p ≤ .005) but it did not interact with any of the independent variables.

DISCUSSION

The present study intended to induce reciprocal cooperation by manipulating clarity of intentions to be unconditionally cooperative. It was hypothesized that a subject would engage in reciprocal cooperation to the extent that the intentions of the unconditional cooperator were clear to her and she did not attribute the unconditional cooperator's behavior to confusion. Thus, it was predicted that when the unconditional cooperator presented her intentions in a written cooperative appeal or a spoken cooperative appeal prior to the start of the PDG, subjects would engage in more cooperation than following a neutral statement or no communication from the unconditional cooperator. It was also hypothesized that the availability of nonverbal cues in the spoken-appeal would further increase the clarity of intentions in comparison to the written-appeal and, in turn, increase reciprocal cooperation.

The results of the present study supported some of the above predictions on amount of reciprocal cooperation. Subjects cooperated more in the appeal conditions than the neutral conditions. However, only subjects in the spoken-appeal condition engaged in more cooperation than subjects in the control condition. Although the spoken-appeal did
not elicit significantly more reciprocal cooperation than the written-appeal, it is likely that this difference was attenuated by a ceiling effect within the spoken-appeal condition which had a mean level of 18.3 cooperative responses on 20 trials. There was a marginally significant difference in cooperation between the written-neutral and spoken-neutral conditions. Subjects cooperated less in the spoken-neutral as compared to the written-neutral condition. This may have been due to the confederate's perception of the situation in the spoken-neutral condition which may have influenced her behavior and, in turn, affected the subject's perception of the confederate. Confederates in the spoken-neutral condition felt awkward delivering the statement and often expressed this awkwardness to the experimenter following the experiment. However, they did not feel this awkwardness in any of the other conditions. Therefore, it is very likely that the confederate may have communicated this awkwardness to the subject through nonverbal cues in the spoken-neutral condition. Examining the means of the relevant individual items in the postquestionnaire for the neutral conditions indicates how the subjects perceived the confederate in the spoken-neutral condition relative to the written-neutral condition, although these differences were not statistically significant. The subjects perceived the confederate as more confused ($\bar{X}_{\text{spoken}} = 2.42$, $\bar{X}_{\text{written}} = 2.00$), as caring less about what happened ($\bar{X}_{\text{spoken}} = 4.58$, $\bar{X}_{\text{written}} = 4.70$), and as less confused ($\bar{X}_{\text{spoken}} = 2.16$, $\bar{X}_{\text{written}} = 2.32$).
$\bar{X}_{\text{written}} = 5.50$), as less rational ($\bar{X}_{\text{spoken}} = 1.83$, $\bar{X}_{\text{written}} = 2.42$), and as making her intentions less clear ($\bar{X}_{\text{spoken}} = 4.83$, $\bar{X}_{\text{written}} = 5.17$) in the spoken-neutral than the written-neutral condition.

Various studies with mixed-motive games found that cooperation in such situations is reciprocated more often when it is perceived as intentionally cooperative (Deutsch, 1958). Nemeth (1970) suggests that the failure to obtain much reciprocity in studies of unconditional cooperation by one person is due to the unconditional cooperator's intentions being unclear. When his intentions are not communicated, the unconditionally cooperative person's behavior may be interpreted as reflecting confusion, disinterest, and even deception rather than intentional cooperation.

Thus, it was hypothesized that an increase in clarity of intentions would mediate an increase in reciprocal cooperation. As measured by the postquestionnaire, subjects in the appeal conditions reported that they were better able to determine the unconditional cooperator's intentions, that the unconditional cooperator was less confused, and that the unconditional cooperator was more concerned with mutual profits than in the neutral or control condition. However, there was no significant difference on the above measures between the spoken and written appeal conditions. Thus, it appears that the nonverbal cues available in the spoken-appeal condition did not increase clarity of
intentions as compared to the written appeal. Although the spoken-appeal condition was the only one significantly different from the control on number of cooperative moves it does not appear to be due to an increase in clarity of intentions communicated through nonverbal cues.

One explanation could be that the nonverbal cues in the spoken-appeal may have made the confederate's intentions more believable. If this were the case, subjects would have cooperated more in the initial trials after the spoken-appeal than after the written-appeal. However, in later trials once subjects in the written-appeal realized that the confederate was behaving according to her stated intentions, the difference in reciprocal cooperation as well as clarity of intentions between the spoken and written-appeal conditions may have been reduced or eliminated. To test whether there was any support for this explanation, blocks of trials were included in the analysis. The number of cooperative moves over the 20 trials were divided into 4 blocks and into 2 blocks. The only significant effect was the interaction of 2 Trial Blocks X Mode of Communication X Content of Communication ($f(1,55) = 4.51$, $p < .05$). However, the means were not in the direction predicted by this explanation. Therefore, no support was found for the argument that the spoken-appeal increased the believability of the unconditional cooperator's intentions.
There are alternative explanations for the increase in cooperation in the spoken-appeal condition. It might be that the unconditional cooperator's verbalization of her intentions in the experimenter's presence, rather than her nonverbal cues per se, was responsible for the increase in cooperation.

The fact that the confederate verbalized her intentions in the presence of the experimenter and the subject in the spoken-appeal condition may have resulted in the subject perceiving the confederate as being more "publicly" committed to her intentions than in the written-appeal condition. If this were the case, subjects would have been more likely to believe that the confederate would, in fact, behave according to her stated intentions and the confederate would have been perceived as more concerned with mutual profits in the spoken-appeal as compared to the written-appeal condition. Thus, this may have accounted for the increase in reciprocal cooperation in the spoken-appeal condition. However, as stated above, the results from the blocks of trials analysis did not support the explanation that the increase in reciprocal cooperation in the spoken-appeal condition was due to greater believability of the confederate's intentions by the subject. The subjects also did not perceive the confederate as more concerned with mutual profits in the spoken-appeal vs. the written-appeal condition as measured in the postquestionnaire. Thus, there is no support
for the explanation that the increase in reciprocal cooperation in the spoken-appeal condition was due to the subject's perceiving the confederate as more "publicly" committed to her intentions in the spoken vs. the written-appeal condition.

However, the increase in reciprocal cooperation in the spoken-appeal condition may have been due to the fact that the subject felt more accountable for her behavior since the experimenter heard the confederate explicitly state her intentions only in the spoken-appeal condition. In the spoken-appeal condition it was apparent to the subjects that the experimenter was aware of the unconditional cooperator's intentions. In the written-appeal condition the unconditional cooperator's written communication was passed on to the subject by the experimenter. However, it was not made salient to the subject that the experimenter read the content of the communication. Thus, the subject may have assumed that the experimenter was unaware of the unconditional cooperator's intentions. Thus, in the spoken-appeal condition, subjects may have felt more accountable for their behavior than subjects in the written-appeal condition, given that the unconditional cooperator's intentions to be fair and to cooperate were made "public" in the spoken-appeal condition.

There is some evidence from previous studies showing that reciprocal cooperation increases when subjects perceive
that they may have to account for their behavior at some later point. For example, in Meeker and Shure's (1968) study subjects were more cooperative toward a "pacifist" if they were told that their behavior was being monitored by an observer who would interview them afterwards. Marlowe, Gergen and Doob (1966) found that the threat of removal of a subject's anonymity increased reciprocity of unconditional cooperation. Increasing the level of friendship between participants appears to have similar, though more complex, effects (Vinacki, 1969, p. 304).

Since in the spoken-appeal the unconditional cooperator verbalized her concern with being fair, subjects may have inferred that the experimenter might evaluate them on the basis of norms of reciprocity and mutual concern. Thus, they may have become more concerned with mutual profits and reciprocated with more cooperation than subjects in the other conditions. There is some support for this explanation in the postquestionnaire data. Only subjects in the spoken-appeal condition perceived themselves as being more concerned \( (0.05 < p < 0.10) \) with mutual profits than subjects in the control condition.

This explanation does not rule out the notion that clarity of intentions is necessary for increasing reciprocal cooperation. In order for the subject to feel that exploitation might be evaluated negatively, she must first perceive that the unconditionally cooperative behavior of
the other person stems from benevolent intentions and not confusion. On the other hand, it appears that clarity of intentions is not a sufficient condition to raise the level of reciprocal cooperation above that obtained in the control group. Although the unconditional cooperator's intentions in the written-appeal condition were as clear as in the spoken appeal, there was no significant difference in reciprocal cooperation between the written-appeal and control conditions.

Also, another laboratory study in which an unconditional cooperator's (pacifist) commitment to principles of nonviolence was communicated to the subject found that this was not sufficient to elicit an increase in reciprocity of cooperation. Shure et al (1965) found that although those subjects who were given information about the pacifist's principles of nonviolence (the pacifist was described as a Quaker) perceived the pacifist as significantly more moral, wiser, more peaceful, and more honest than subject who did not receive information about the pacifist, there was no difference between the two groups of subjects in terms of amount of dominating behavior by the subjects over the pacifist. However, in the above study each subject was allegedly a member of a team and his teammates urged him to dominate the pacifist. Since the teammates shared in the profits, the subject may have felt accountable to them for his behavior.
Although initially it was hypothesized that the nonverbal cues in the appeal condition would increase the clarity of intentions of the unconditional cooperator, the results on the postquestionnaire data indicate that this did not occur. This might be a function of the inappropriateness of the PDG situation for testing that hypothesis. The subjects’ certainty regarding the confederate’s intentions did not diminish in either of the appeal conditions even though feedback about the confederate’s behavior was not provided to subjects on all of the trials. Since the means in the appeal conditions on the measures of "clarity of other’s intentions" and "other's behavior confused" were extreme (see Table 2), it appears that there was little room for further clarification of intentions. Perhaps the PDG is an inappropriate context in which to test the hypothesis that nonverbal cues clarify one's behavioral intentions. In the PDG, unlike in most situations outside the laboratory, one's intentions can be stated very clearly and specifically. Further, since there are only two behavioral alternatives for each person on each trial, once the intentions are stated there is little ambiguity as to what the resultant behavior will be. In order to study the role of nonverbal cues in clarifying intentions, a situation with more behavioral alternatives might be more appropriate.
SUMMARY

This study looked at the influence of communication on reactions to "unconditionally cooperative" behavior in a PDG. Sixty female subjects participated individually in 20 trials of a PDG with an "unconditionally cooperative" partner (confederate). A 2 X 2 factorial design was employed varying the content of the communication (appeal vs. neutral statement) and mode of communication (spoken vs. written) from the confederate. Prior to the beginning of the game the confederate either communicated to the subject her intentions to cooperate, emphasizing the fairness of cooperation and asking the subject to reciprocate the cooperation (appeal conditions), or made a statement of comparable length regarding the new psychology building in which they were located (neutral conditions). The confederate either communicated verbally face-to-face with the subject (spoken conditions) or by a written note (written conditions). Also, there was a control condition in which no communication was permitted between the confederate and the subject.

It was hypothesized that reciprocal cooperation would increase as a function of the clarity of intentions of the confederate. The subject was expected to be more cooperative in the appeal conditions than in either the neutral or control conditions. Also, the nonverbal cues present in the spoken-appeal condition were expected to increase clarity of the confederate's message and in turn elicit
greater reciprocal cooperation than in the written-appeal condition.

On a measure of number of cooperative moves there was a significant main effect for content of communication, indicating that subjects cooperated more following an appeal than a neutral statement. Also, there was a significant Content X Mode of Communication interaction. A simple effects test showed that the difference between the appeal and neutral conditions was only significant when the communication was spoken. Only the spoken-appeal condition differed significantly from the control condition with greater reciprocal cooperation in the spoken-appeal condition than in the control condition.

Postquestionnaire data indicated that nonverbal cues did not increase the clarity of the confederate's intentions. The results were explained as probably being due to the subject's feeling more accountable for their behavior following the confederate's "public" statement of her intentions in the spoken-appeal condition.
FOOTNOTES

1. Two female experimenters were used in the present study.
2. Four female confederates were used in the present study.
3. For some of the items, the scale had to be reversed so that for all items the greater the score, the more of the particular characteristic referred to.
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APPENDIX A

Written Instructions for Experiment

This experiment is concerned with decision-making behavior in a structured situation. We want to look at what kinds of decisions are made when each of you has to make choices which affect the amount of money paid to you as well as the other person. Both of you will be making a series of these choices at the same time, without knowing how the other, at the moment, is choosing. Each pair of choices will be called a trial.

Look at the figure on your panel. This shows all the possible outcomes for a given trial. There are four possible payments for each person. The payments for each of you are determined by the combined choices of both of you. If you choose A, you will get five cents or no cents depending on what the other person does; if you choose B, you will get nine cents or one cent depending on what the other person does. If both of you choose A, you will each receive five cents. If both of you choose B, you will each get one cent. If one chooses A while the other chooses B, the one who chose B will get nine cents and the one who chose A will get no cents.

A trial will begin when the signal light in the lower left hand corner is on. When you have made your decision for a given trial, move your switch to the left if your choice is A and move your switch to the right if your choice is B. When the signal light goes off return your switch to the off position.

One of the 4 lights in the center of the panel will come on to indicate to you how much you have earned and how much the other person has earned. You are to record that on the sheet of paper you were given and add that to your total earnings. This will conclude a trial. The next trial begins when the signal light comes on again. You will participate in 20 trials.

The purpose is to earn as much money for yourself as you can. To familiarize you with all the possible outcomes of a trial we will do some practice trials now.
Oral Instructions for Practice Trials

(Any words in parenthesis were not read to the subject. These words were cues to the experimenter)

To familiarize you with all of the possible outcomes of a trial, we will do some practice trials now. Instead of you choosing what choice to pick on a given trial, during these practice trials, I will tell each of you what letter to pick. This procedure will help to familiarize yourself with all of the outcomes.

When the signal light in the lower left hand corner of your panel goes on this signifies the beginning of a trial. For this trial you (confederate) will move your switch to the left "A" and you (subject) will also move your switch to the left. When the signal light goes off, return your switch to the off position. At this point, one of the four lights making a square on your panel will go on. In this particular case your choices will result in both of you earning 5¢. This outcome is signified by the amber light. When you see the results of a trial please indicate on the sheet provided for you the amount of money you made on that particular trial. Please continue to do this for the other trials in which the outcomes are provided to you. This procedure allows you to see how much money you have made throughout the trials.

When the amber light, or any of the other 3 outcome lights goes off, a trial has ended. When the signal light reappears a new trial will begin.

Okay, I will now indicate the start of a new trial with the signal lights. Now you (confederate) switch your switch to the right "B", and you (subject) switch your switch to the left "A". Remember when the signal light goes out (put the signal light out) return your switch to the off position. The green light for you (confederate) indicates that you have made 9¢. The red light for you (subject) indicates that you have made no cents. Remember, when the outcome light goes off a trial has ended.

Okay, this is the beginning of a new trial. Again, notice the signal light. Please (confederate) switch your switch to the left "A" and you (subject) switch your switch to the right "B". Notice that the signal light is out, so return your switch to the off position. The red light for you (confederate) this time indicates that you have made 0¢ on the last trial, while the green light (subject) indicates that you have made 9¢. Again, when the outcome light goes off a trial has been completed.
Now that the signal light is on again, please (confederate) switch your switch to the right "B", while you (subject) switch your switch to the right also. The white light for you (confederate) indicates that you have made 1c, while the white light for you (subject) indicates that you also have made 1c.

This concludes the practice trials. Naturally, the same procedure, minus my verbal instructions, will be used for the actual trials.

Do you have any questions?

Each trial will be done just like the practice trials. However, I will not tell you which choice to make. Also, I will not tell you the results after every trial. So on some of the trials you will have to guess how much money you earned. On other trials one of the four lights on your panel will come on to show you the results.

Record your earnings on your sheet for each trial, as well as your total earnings to that point, by using either the results I give you or what you think you earned.

This is your dollar for coming. You will receive that plus any additional money you earn during the experiment. Calculate the additional earnings on your earnings sheet. After all the trials are finished, I will total up your exact earnings and then each of you will be paid separately.

Your purpose is to earn as much money for yourself as you can.

There are a couple of ways that people have been using to do this. One way that a number of people have used successfully is to choose B while the other person is choosing A. By doing this they were able to earn 9c each trial. This way worked well simply because the results are not announced after every many trials, and the other person could not tell that B was being chosen that often.

Another way people have used has been to choose A and hope the other person does also. Sometimes this has worked out all right, and the person has earned 5c on most of the trials. But lots of times it hasn't. The reason again is simply because the results are not announced all the time; and while one person was choosing A, the other person chose B. So instead of earning 5c, the person who chose A ended up with nothing.

Obviously, it is important to estimate the other person's intention to choose A or B before making your choice.
It may be difficult to guess the other person's intentions, but it is important to try to throughout the trials.

You might be given an opportunity to communicate about your intentions, and this may help to reduce your uncertainty about what the other person's going to choose.

But in the past we've found that people sometimes say they are planning to choose A, and then go ahead and choose B anyhow. So even if you are allowed to communicate it's really important to be sure about what the other person is up to before you decide to choose either A or B.

(Give out prequestionnaire)
Oral Instructions Prior to Communication

There are three types of situations that we are looking at in this experiment: in the first situation we do not allow the two people to communicate with each other about anything; in the second situation we allow people to communicate with each other about anything except about the experiment. In other words, in this situation the two people may not communicate about the experiment, and in the third situation we allow people to communicate about anything including the experiment.

I will determine what situation you two are going to be in randomly, by picking a number from this envelope.

I should remind you that people use these opportunities to communicate for various purposes. You ought to keep in mind that the message which you get may say one thing about what the other person is planning to do, and the person may, in fact, be planning to do something else. Of course, people have also sent messages which were accurate descriptions of what they were planning to do. You simply have to decide for yourself what the other person is communicating.

Okay, now I'm going to pick out a number to determine which situation you two will be in (pick a number out of paper bag and pretend to read it).

Control Condition

You are in the situation where you are not to communicate with each other at all. Since it is important that the two of you do not communicate by talking, sighing or laughing or in any other way, I will draw this curtain for the remainder of the experiment.

Neutral Condition

You are in the situation where you may communicate about anything except about the experiment. I'd like to ask you, please, not to communicate about the experiment. You can, of course, communicate about anything else you'd like, but until this experiment is over I must ask you not to communicate about anything relating to this experiment.

Appeal Condition

You are in the situation where you may communicate about anything including the experiment.
Written Communication

If there is anything you want to say, please write it down on the piece of paper that I will now give to you and hand it to me to give to the other person. If you don't want to say anything, simply write that you don't want to communicate anything, and give me the sheet. I will exchange the sheets once both of you have written something down. If you're going to write anything down, make it a statement for I am only going to exchange the sheets once.

(After exchange) Since it is important that you do not communicate by sighing, laughing, or in any other way, I will draw the curtain for the remainder of the trials.

Spoken Communication

If you want to say something to the other person, please make it a statement since each of you will get only one chance to talk.

Would you like to say something? (look at confederate first.)

(After messages are spoken) Since it is important that you do not communicate by sighing, laughing, or in any other way, I will draw the curtain for the remainder of the trials.
APPENDIX B

Pre-Questionnaire

1. Describe how you would expect the typical person (other than yourself) to behave in the situation I have just described to you?

   a. Passive  1 2 3 4 5 6 7  Active
   b. Noncoersive  1 2 3 4 5 6 7  Coersive
   c. Dishonest  1 2 3 4 5 6 7  Honest
   d. Irrational  1 2 3 4 5 6 7  Rational
   e. Cooperative  1 2 3 4 5 6 7  Competitive
   f. Manipulative  1 2 3 4 5 6 7  Nonmanipulative
   g. Weak  1 2 3 4 5 6 7  Strong
   h. Moral  1 2 3 4 5 6 7  Immoral
   i. Suspicious  1 2 3 4 5 6 7  Trusting
   j. Wise  1 2 3 4 5 6 7  Foolish
   k. Stable  1 2 3 4 5 6 7  Changeable
   l. Successful  1 2 3 4 5 6 7  Unsuccessful
   m. Untrustworthy  1 2 3 4 5 6 7  Trustworthy
   n. Friendly  1 2 3 4 5 6 7  Unfriendly
Post-Questionnaire

1. Using a number from the scale below, please indicate by number the extent to which you estimate each of the following factors was responsible for your behavior.

not at all responsible 1 2 3 4 5 6 7 very responsible

a. ____ Other person's behavior: what the other person said or did during the trials or what she prevented or allowed you to do.

b. ____ Communication opportunities: The extent to which the experimental conditions facilitated communication.

c. ____ The experimenter's expectations and behavior: what the experimenter's instruction or behavior prevented or allowed you to do.

2. Describe how the other person behaved:

a. Passive 1 2 3 4 5 6 7 Active
b. Noncoersive 1 2 3 4 5 6 7 Coersive
c. Dishonest 1 2 3 4 5 6 7 Honest
d. Irrational 1 2 3 4 5 6 7 Rational
e. Cooperative 1 2 3 4 5 6 7 Competitive
f. Manipulative 1 2 3 4 5 6 7 Nonmanipulative
g. Weak 1 2 3 4 5 6 7 Strong
h. Moral 1 2 3 4 5 6 7 Immoral
i. Suspicious 1 2 3 4 5 6 7 Trusting
j. Wise 1 2 3 4 5 6 7 Foolish
k. Stable 1 2 3 4 5 6 7 Changeable
l. Successful 1 2 3 4 5 6 7 Unsuccessful
m. Untrustworthy 1 2 3 4 5 6 7 Trustworthy
n. Friendly 1 2 3 4 5 6 7 Unfriendly

3. Using the scale below, how much do you think each of the following factors influenced the other person's behavior? (Put a number in front of each factor.)

no influence at all 1 2 3 4 5 6 7 crucial moderate influence
a. ___ she was confused about what she was supposed to do.
b. ___ she was trying to trick me.
c. ___ she was trying to avoid trouble and still make some points.
d. ___ she was trying to work toward both of us receiving a fair share which is approximately the same.
e. ___ she was trying to do better than me.
f. ___ she was trying to maximize her own score.
g. ___ she was trying to help me.
h. ___ she was trying to pressure me into doing what she wanted.
i. ___ she didn't really care about what happened.

4. a. How well were you able to determine the other person's intentions?

determine
very well 1 2 3 4 5 6 7 unable to determine

5. How satisfied are you with the outcome?

very satisfied 1 2 3 4 5 6 7 very unsatisfied

6. If you were to participate in this experiment over again how likely is it that you would change your behavior?

very likely 1 2 3 4 5 6 7 very unlikely

Please specify how.

7. How satisfied were you with the relationship established between yourself and the other person?

very satisfied 1 2 3 4 5 6 7 very unsatisfied

8. How much did you like the other person?

did not like 1 2 3 4 5 6 7 liked her
her at all

9. If you were to participate in an experiment similar to this one in the future, who would you prefer as the other person?

a. The other person in the present experiment

b. A new person

How strong is your preference?

very weak 1 2 3 4 5 6 7 very strong
10. Using the scale below indicate how likely it is that you would become friends with the other person if you spent more time with her.

very likely 1 2 3 4 5 6 7 very unlikely

11. Describe how you behaved.

a. Passive 1 2 3 4 5 6 7 Active
b. Noncoersive 1 2 3 4 5 6 6 Coersive
c. Dishonest 1 2 3 4 5 6 7 Honest
d. Irrational 1 2 3 4 5 6 7 Rational
e. Cooperative 1 2 3 4 5 6 7 Competitive
f. Manipulation 1 2 3 4 5 6 7 Nonmanipulative
g. Weak 1 2 3 4 5 6 7 Strong
h. Moral 1 2 3 4 5 6 7 Immoral
i. Suspicious 1 2 3 4 5 6 7 Trusting
j. Wise 1 2 3 4 5 6 7 Foolish
k. Stable 1 2 3 4 5 6 7 Changeable
l. Successful 1 2 3 4 5 6 7 Unsuccessful
m. Untrustworthy 1 2 3 4 5 6 7 Trustworthy
n. Friendly 1 2 3 4 5 6 7 Unfriendly

12. Using the scale below, how much do you think each of the following factors influenced your own behavior?

not influence at all 1 2 3 4 5 6 7 crucial influence

a. _____ I was confused about the rules of the expt.
b. _____ I was trying to trick the other person.
c. _____ I was trying to avoid trouble and still make some points.
d. _____ I was trying to work towards both of us receiving a fair share which is approximately the same.
e. _____ I was trying to do better than the other person.
f. _____ I was trying to maximize my own score.
g. _____ I was trying to help the other person.
h. _____ I was being pressured by the other person into doing what she wanted.
i. _____ I didn't really care about what happened.

13. Using the scale below, to what extent do you think the following factors influenced the outcome?
not at all
influential 1 2 3 4 5 6 7 very influential
moderate influence

a. _____ the other person's behavior
b. _____ your own behavior

14. If the other person were to see you on campus tomorrow, how likely is it that she would recognize you?

very likely 1 2 3 4 5 6 7 very unlikely