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Altering Attributions: the Effects of Situational Variables on the Directionality of Attributions.

John Peter Daniels
Louisiana State University and Agricultural & Mechanical College

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ON THE DIRECTIONALITY OF ATTRIBUTIONS

A DISSERTATION

Submitted to the Psychology Faculty of
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Doctor of Philosophy

in
The Department of Psychology

by
John P. Daniels
B.A., Iona College, 1965
M.A., Long Island University, 1967
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ABSTRACT

The present research was conducted in order to investigate the influence of role (actor/observer) and three situational variables on the attribution process. One hundred twenty male subjects were run in pairs and served as both actor and observer of the experimental task which was answering 30 spatial visualization problems. Two console panels were employed for the actor to make his responses to the problems and to provide pre-programmed feedback to both the actor and observer as to whether or not the actor had responded correctly.

The results indicated that when subjects are involved in novel situations, whether they are performing the unfamiliar task or observing another perform it, their attributions are significantly influenced by a primacy effect for feedback of success. It was also found that when subjects willingly involve themselves in situations which they know beforehand may result in negative outcomes and feel that their actions are capable of directly influencing the outcome, they will accept responsibility for such negative outcomes rather than making external attributions to explain such occurrences. The final major finding was that the self interest of observers was capable of exerting a significant influence upon the directionality (external/internal) of their attributions.
The relevance of these findings to the divergent attribution hypothesis and other attribution research were discussed and potential applications of the major findings of the present study to training situations were explored.
INTRODUCTION

In general, theories of attribution deal with the processes whereby people ascribe intentions, traits, feelings, and characteristics to other persons in their social environment. Attribution theories also attempt to account for the way in which people formulate causal interpretations of the events which occur in their environment. Heider (1958) has suggested that the attribution process entails one's interpretation of events as "...being caused by particular parts of the relatively stable environment." Kanhouse and Hanson (1972) have indicated that the attribution process serves to further the individual's need to make sense of the world around him. A person thus makes both causal and descriptive inferences to accomplish this aim.

The attribution of traits may serve not only to describe the people with whom one interacts but also to explain their behavior. Attribution is thus a self serving process performed in order to understand the contents of our environment. The process itself involves an analysis of causality by means of which one decides which effects are to be attributed to which of several potential causal factors available. Kelly (1967, 1971, 1972) has suggested that the attribution process involves one's application of his knowledge of causal relations among
persons and events in order to exercise control over his environment.

Jones and Nisbett (1972) have examined the attribution process from the perspective of both the actor, the person performing the task, and the observer, the person witnessing the behavior. These authors have noted a widespread tendency for the attributions of actors to differ considerably from those of observers. Jones and Nisbett (1972) have suggested that "...there is a pervasive tendency for actors to attribute their actions to situational requirements whereas observers tend to attribute the same actions to stable personal dispositions" (p. 80). A number of experimental studies have been cited by Jones and Nisbett in support of their position.

Because of the methodology employed, the study reported by Jones, Rock, Shaver, Goethals, and Ward (1968) is of crucial importance to the present experiment. A series of six experiments was conducted in order to study the effects of varying feedback patterns of success and failure on attributions of intellectual ability. In each experiment, the same series of extremely difficult test items were employed as a supposed measure of intelligence. In the first four experiments subjects were informed that they had correctly answered 10 randomly distributed items and that a stimulus person (SP), whose performance they had observed, had correctly answered 15 of the 30 test
items in a pattern wherein: a) correct responses were randomly distributed among the 30 items; b) correct responses were concentrated primarily in the first portion of the test; or c) correct responses were concentrated towards the end of the test. In the fifth experiment only the ascending and descending patterns of correct responses were utilized. It was found that observer subjects in the descending success conditions rated their SPs as more intelligent than SPs in the two other conditions. The observers also predicted that SPs in the descending condition would perform better on a future similar test and favorably distorted recall of the descending SPs performance on the test (Jones, et al., 1968).

In the sixth experiment a subject and an SP simultaneously solved the test items and received feedback after each response. However the patterns were reversed so that the accomplice (SP) attained a random pattern of ten correct responses, whereas the subject learned that he had answered 15 of the 30 items in a random, ascending, or descending pattern of responses. A second series of items was then administered and subjects recorded their answers to each item plus a prediction of whether their partner would respond to the item correctly (Jones, et al., 1968).

The ascending success subjects predicted better performance for themselves on the second series than either
the random or descending feedback subjects. In all conditions subjects were able to accurately remember their patterns of success and failure on the first test without distortion and could also accurately recall their partner's response patterns. It was also found that subjects did not re-evaluate their own intelligence as a result of their performance on the first test although ascending subjects made self attributions of higher motivation levels than did descending subjects. Despite the fact that the experimental instructions emphasized that all items were of equal difficulty, ascending subjects reported that the items in the latter portion of the series were of less difficulty than those in the initial position and descending subjects felt that item difficulty varied in the reverse direction. Thus when subjects were focusing on their own actions there was a greater tendency to ascribe performance fluctuation to changes in item difficulty than when subjects were observing the actions of another person in the earlier experiments (Jones, et al., 1968).

Jones and Nisbett (1972) have also cited studies wherein: a) subjects were presented with written descriptions of actions performed by other persons and asked to make causal attributions with respect to those behaviors (McArthur, 1970; 1972); b) subjects attributed causality for positions advocated by others in essays
(Jones and Harris, 1967; Nisbett and Caputo, 1971); and c) actors and observers made causal attributions for the actor's behavior (Nisbett, Legant, and Marecek, 1971). According to Jones and Nisbett (1972), these studies have supported the position that actors tend to ascribe the causes of their behavior to external situational factors whereas observers attribute that same behavior to internal dispositions on the part of the actor.

An experiment conducted by Storms (1973) was of importance with respect to actor/observer differences in attribution because in addition to supporting the Jones and Nisbett (1972) position, it identified a method of upsetting the basic directionality of actor/observer attributions. The effects of altering visual perspectives by means of videotape replays of actors and observers was investigated. Two actor subjects engaged in a brief "get acquainted" conversation which was witnessed by two observer subjects, then both actors and observers made causal attributions about the actor's behavior during the conversation. Visual orientation was manipulated by replaying videotapes of the behavior before the subjects completed the attribution questionnaires. When subjects either saw no videotape replay or saw one that merely repeated their original visual orientation, the actors tended to make situational attributions. The observers, on the other hand, made primarily internal dispositional
attributions to the actors to explain the behavior witnessed. Actors who watched a videotape replay which focused on their own behavior were less situational and more dispositional in their attributions of their behavior. Observers who viewed a video tape of the other participant with whom the actors had conversed attributed the actors' behavior more to situational external factors than to internal dispositional factors of the actor. Thus a reversal of actors' and observers' visual perspectives via video tape feedback resulted in a reversal in the directionality of their respective attributions (Storms, 1973).

These findings were interpreted as support for the Jones and Nisbett (1972) position and it was suggested that a major reason for this attributional orientation is the different visual perspectives of the actors and observers regarding the behavior under consideration.

Results reported by Symder and Jones (1974) have identified yet another method of upsetting the directionality of the actor/observer attribution processes, namely, increasing the salience of the situational constraints on the observed behavior. A series of five experiments was conducted in which subjects made attitude attributions based on opinion statements of others which had been written under high constraints. In the first experiment subjects wrote pro-marijuana or pro-Castro essays. Half
the subjects were given arguments that could be included in their essays and half received no such "priming". Upon completion of the essays, subjects who had written pro-Castro essays read pro-marijuana essays and vice versa. Subjects were informed of whether the essay they were to read had been "primed" or not. Regardless of whether the essays were identified as "primed" or not primed, subjects attributed attitudes to the writer which were consistent with those expressed in the essay. In the second experiment, instead of both writing and reading the essays, subjects merely read them although they were still informed of the primed or unprimed character of the essays. The results were identical to those of the first experiment.

The third experiment (Synder and Jones, 1974) was conducted to investigate the possibility that being assigned to write an essay on one topic doesn't alert the writer to the constraints on someone assigned to write on another topic. In this experiment all subjects wrote and read pro-Castro essays. In addition to the dependent measures employed in the earlier experiments, the subjects were also asked to indicate whether the essay writer was allowed to choose or was assigned the topic. The results indicated that although the subjects had been assigned the same essay topic as the target person, they still attributed attitudes consistent with those in the essays
to the target persons.

In the fourth experiment (Synder and Jones, 1974) subjects both wrote and read pro and con essays about the legalization of abortion. All subjects were assigned the positions advocated in the essays. For both groups of subjects, run in separate rooms, half were assigned a pro-legalization position and half an antilegalization position. Essays were then exchanged between rooms, each subject receiving and reading an essay advocating the same position that his essay had supported. The instructions, which indicated the writer's lack of choice in selecting the position advocated, were attached to easy essay. As in the earlier experiments, subjects attributed attitudes to the writers that were consistent with the position advocated in the essays.

In the final experiment, subjects were not only assigned the position to be advocated, pro- or anti-free federal medical care, but also were instructed to incorporate specific arguments into their essays. In addition, one group of subjects was allowed to chose which side, pro or con, of the issue to support. Each subject read an essay written by another subject whose essay assignment was the same as the reader's. All readers were informed of the exact conditions under which the essays had been written. The results indicated that as the constraints on the actor's behavior became more
salient, e.g. the reader was informed that the writer had no choice in selecting the position advocated and was required to use specific arguments in writing the essay, their impact on the actor becomes recognized by the observer as a casual factor influencing the behavior. In terms of the Jones and Nisbett (1972) position, the increased emphasis on the situational factors caused the observers to shift from attributing behavior to internal dispositions of the actor to perceiving the external situational factors as responsible for the behavior.

A study by Worchel and Andreoli (1974) reported findings that were contrary to the Jones and Nisbett (1972) position. Their study investigated the influence of a norm of reciprocity on the attribution process. The norm of reciprocity was elicited during the initial interaction between the subject and a confederate. While waiting for a second subject (actually a confederate) to arrive the subject was requested to alphabetize a stack of answer sheets. In the friendly condition, the confederate arrived and offered assistance. In the unfriendly condition, the confederate did not offer to help and stated, "Boy, that's a dumb thing to do. They can get some people to do anything in these experiments."

Locus of causality was manipulated by having the experimenter tell the subject that the other subject's (confederate's) behavior (helped/did not help) had been
predicted by a personality test which she had taken at the beginning of the experiment. In this manner, the experimenter emphasized that the reasons for the confederate's behavior were internal and not a result of situational factors (forced attribution condition). In the free-attribution condition no reference to behavioral predictions based on personality tests was made.

The findings (Worchel and Andreoli, 1974) were contrary to predictions based on the Jones and Nisbett (1972) position. Subjects in the free attribution condition ascribed causality for the confederate's behavior to situational factors and not to internal dispositions of the actor. This direction of causal attributions was more pronounced when future interaction with the confederate was anticipated.

In this experiment subjects in all conditions experienced the reciprocity invoking manipulation. It is plausible that the norm of reciprocity influenced the subjects to diverge from the usual mode of attribution, i.e. that proposed by Jones and Nisbett (1972), in order to serve their own self interest by not placing constraints on any future interactions with the other person. Thus, the findings (Worchel and Andreoli, 1974) may be interpreted not as having refuted the hypothesis of Jones and Nisbett (1972) with respect to actor versus observer attributions, but rather as having identified a variable,
the reciprocity norm, which had the effect of altering the attribution process.

Several other studies have reported results which suggest that self interest exercises an effect on the attribution process employed by subjects to explain their behavior. In an investigation dealing with attributions of responsibility for particular outcomes (Harvey and Harris, 1975), subjects were designated "decision makers" and were requested to select one of two experimental tasks to be performed by another subject at a later time. The "decision makers" were given only ambiguous information describing the two tasks but were afforded either a difficult or an easy opportunity to obtain clarification of the precise nature of the tasks. The situation was one in which a student (confederate) who was unfamiliar with the tasks was supposedly substituting for the regular experimenter. The student substitute indicated that although he was unable to clarify the highly technical written descriptions of the tasks which the subject received the regular experimenter would be able to do so. In the easy opportunity condition, the subject was told that the experimenter was in another room in the building. In the difficult opportunity condition he was described as being in another building across campus. The confederate told the subjects that he would wait for them if they wanted to go and get clarification from the
experimenter. After making the decision without seeking additional information, the regular experimenter entered the room and provided explicit information about the task which the subject had selected. Half the subjects were led to believe that the task was very pleasant and the other half learned that it was very unpleasant.

Subjects who learned that their decision would lead to pleasant consequences for another person attributed greater responsibility for the outcome to themselves than did subjects who were informed that the consequences would be unpleasant. It was found that in the unpleasant consequence conditions subjects who had received an easy opportunity to gain additional information attributed less responsibility to themselves than did subjects who were offered the difficult opportunity. It was suggested that attribution of responsibility is made in a manner consistent with the self interest of the attributor (Harvey and Harris, 1975). Similar findings with respect to the influence of self interest on attributions of responsibility have been reported in a number of recent studies (Johnson, Feigenbaum, and Weiby, 1964; Beckman, 1970; Harvey, Harris, and Barnes, 1975).

However, not all the research reported dealing with the influence of self interest on attributions of responsibility has yielded consistent results. Ross, Bierbrauer, and Dolly (1974) conducted an experiment in
which professional teachers and college students instructed an 11 year old boy (a confederate) in spelling. The subjects were separated from the confederate by a one way mirror. Subjects were informed via worksheets that the pupil had either done exceptionally well or had done very poorly. The subject's teaching performance and its apparent outcome (success/failure) were witnessed by observers. Contrary to earlier findings (Johnson, Feigenbaum, and Weiby, 1964; Beckman, 1970), instructors rated their own efforts and abilities as less important than those of the student in the success condition and as more important in the failure condition. This direction of attribution was more pronounced among the professional teachers than among the undergraduate subjects. Comparison of attributions made by instructors and observers were not statistically significant. Observers also saw the instructor as more responsible for failure than for success. None of the subject groups (observers, professional teachers, non-professionals) attributed responsibility for failure to the student nor did any group of subjects attribute responsibility for success to the instructor.

Another variable which may influence the attribution process is the operation of "chance" or "luck" in determining the outcomes of one's behavior. In an investigation of observer's and actor's reactions to the
actor's receipt of chance outcomes subjects were informed
that the experiment would consist of two five minute
periods during which the actors would be required to make
constructions with a magnetic play kit (Apsler and
Friedman, 1975). The first period was conducted without
positive or negative consequences. Upon conclusion of
the first period, the experimenter took a photograph of
the construction supposedly to be judged later by another
group of subjects and then informed the actor that she
had been assigned to the reward/no reward condition. The
reward consisted of an extra hour of credit whereas the
punishment was no extra credit. Actors and observers
received instructions that were intentionally ambiguous
in describing the method of assigning subjects to the
reward/no reward conditions. Upon assignment of the
reward both actors and observers who had witnessed the
actors' performances and heard the condition to which she
was assigned, completed the questionnaires that served
as the dependent measures.

Observers rated the rewarded actors' performances
significantly higher than the non-rewarded actors' per-
formances. The rewarded actors were also seen as more
"good" than were the non-rewarded actors. The outcome
manipulation was also found to affect the actors' ratings
of their own performances. Rewarded actors rated their
performances higher than did non-rewarded actors. In
addition, non-rewarded actors did not attribute their outcomes to chance any more than rewarded recipients did (Apsler and Friedman, 1975). These findings were contrary to the position advocated by Jones and Nisbett (1972) concerning attribution differences between actors and observers insofar as there was no evidence that actors attributed the outcome to situational factors or that observers attributed it to the actors.

These findings (Apsler and Friedman, 1975) however, may be interpreted as support for the position that the divergent attributions of actors and observers advocated by Jones and Nisbett (1972) are capable of being altered by manipulating the consequences of the behavior under consideration. Both actors and observers were informed that the actor, after having performed the task for five minutes, had been assigned to either a reward or no reward condition. This was the final bit of information communicated to both observers and actors before they completed the questionnaire which served as the dependent measure. Under such conditions, both actors and observers rated the actor's task performance more positively when she was rewarded than when no reward was received. This finding was interpreted as supporting Lerner's "just world" hypothesis which, in essence, maintains that people get what they deserve and deserve what they get. Lerner (1965) found that randomly assigned rewards influence
observers' perceptions of another's performance in such a manner that the performance of rewarded workers was seen as superior to that of unrewarded workers.

In addition, the prediction that actors would tend to attribute the assignment of reward/no reward to external factors whereas observers would attribute the assignment to the actors' performances was not supported. Instead, it was found that 20% of both observers and actors indicated that the basis for assignment of the reward/no reward condition was the actor's performance whereas 62% of the observers and 47% of the actors believed that the assignment was randomly determined (Apsler and Friedman, 1975). Such results suggest that increasing the saliency of the consequences of one's behavior exerts an influence on the attribution processes employed by both actors and observers with respect to the performance of that behavior.

In summary, the preponderance of the research evidence to date indicates that the Jones and Nisbett (1972) position is essentially correct with respect to the basic modes of attribution employed by actors and observers. The research further suggests that the actor/observer attribution processes may be altered by increasing the salience of particular aspects of the behavioral situation. Studies which reported results contrary to the Jones and Nisbett (1972) position (Worchel and Andreoli, 1974; Apsler and Friedman, 1975; and Ross, Bierbrauer,
and Polly, 1974) may be interpreted as having identified factors which are capable of "upsetting" the basic directionality of actor/observer attributions.

The vast majority of the experimental situations employed to investigate the Jones and Nisbett (1972) hypothesis did not assess the respective attributions of subjects in both actor and observer roles. Instead, these studies focused on attributions of subjects who served as actors or as observers. In addition a number of the studies reported used observers who based their attributions on written descriptions of another's actions rather than on actual observations of the behavior.

The present experiment was conducted in order to provide a more accurate assessment of the influence of role on the attribution process. This was accomplished by collecting attribution data from each subject functioning in both actor and observer roles involving the same behavioral situation. This was done in order to test the Jones and Nisbett (1972) hypothesis that the directionality of attributions is a function of the role of the attributor. Such a procedure enabled the potency of the effect of role upon the attribution processes of individual subjects, functioning as both actors and observers, to be ascertained more clearly than in any previous research. An additional purpose of the experiment was to identify further the effects of a number of situational factors
on the actor/observer divergent attribution hypothesis (Jones and Nisbett, 1972). Another purpose of the study was to replicate the earlier findings of Jones, et al., 1968.

The present research investigated the effects of role, reward, feedback of correct responses, and future consequences on the attribution process. The seven dependent variables that assessed the attribution process were responsibility for reward allocations, ability, motivation, liking for the other subject, performance, task difficulty, and expected future performance.

At the outset of the experiment an ambiguous situation was created wherein both subjects participated in determining the amount of research credit they received for performing the task. This enabled the reward variable to be experimentally manipulated. Subjects were then required to solve a number of spatial problems presented via a slide projector. Each subject served as both actor and observer. This constituted the role variable manipulation. Responses were made by pushing the appropriate buttons on a specially designed console panel which provided immediate feedback as to the correctness of the responses to both actor and observer.

Two patterns of success feedback were employed. In the ascending pattern the majority of correct responses were concentrated in the latter portion of the problems.
In the descending pattern the correct responses clustered primarily in the initial half of the problems. Future consequences were manipulated by either informing the subjects that they would be given the opportunity to work as a team in solving similar problems at a future date in competition with other teams for a large financial reward or by informing them that they would both merely be required to perform the task with no mention of any future interaction. A control condition was also employed wherein consequences and reward were held constant.

Upon completion of the task both actors and observers filled out a questionnaire dealing with the seven dependent variables used to assess the attribution process. Subjects recall of the actor's performance and predictions of his future performance on a similar task were also ascertained.

A number of hypotheses regarding the effect of the particular variables upon the attribution processes were tested:

I. Role

Based on the theoretical position of Jones and Nisbett (1972) and the experimental results reported by Jones and Harris (1967) it was hypothesized that:

A. In situations wherein reward and future interactions are not manipulated actors would tend to make external attributions to explain their
behavior whereas observers would tend to explain that same behavior by making internal disposi­
tional attributions to the actor.

B. When situational factors such as high reward are combined with ascending feedback patterns of success, attributions of actors will be more internal than when such situational factors are not manipulated.

C. Role, i.e. actor/observer, will exert a more profound influence on the attribution processes of subjects than will their immediate past experience. Thus:

1. First and second order actors should demonstrate similar attributions in the same experimental conditions.

2. First and second order observers should demonstrate similar attributions under the same experimental conditions.

II. Situational Factors

A. Reward Outcomes:

1. Based upon results reported by Johnson, Feigenbaum, and Weiby (1964), Beckman (1970), and Harris and Harvey (1975), it was hypothe­sized that when both subjects interact in producing an outcome (high/low reward) attributions of responsibility will be
governed by self interest. Positive (high reward) outcomes will be attributed primarily to oneself by both subjects whereas negative (low reward) outcomes will be attributed to the other person.

2. Based upon the theoretical position of Lerner (1965) and the experimental results reported by Apsler and Friedman (1975), it was hypothesized that both actors and observers would make more positive attributions (other than for responsibility) under high reward conditions.

B. Feedback of Success: Based on the theoretical position of Jones and Nisbett (1972) and the experimental results reported by Jones, et al. (1968) it was hypothesized that:

1. An ascending pattern of success would be perceived by observers as indicative of lower ability and poorer performance on the part of the actor than similar attributions made by observers witnessing a descending pattern of successes.

2. This pattern of attributions would be reversed when actors are reflecting upon their own behavior.
C. Future Consequences: Based on the findings of Worchel and Andreoli (1974) it was hypothesized that the prospect of future interaction for the purpose of gaining a large financial reward would influence observers' attributions in accordance with self interest. Thus they would emphasize situational factors in making causal attributions to explain the actor's behavior when that behavior was perceived as poor and emphasize internal factors when the actor's performance was perceived positively.
METHOD

Subjects

Subjects were 120 male undergraduates enrolled in an introductory psychology course at Louisiana State University who volunteered to participate in the experiment for additional course credit. All subjects were run in pairs by a male experimenter.

Apparatus

A slide projector was used to present 30 spatial problems to the subject. Each problem consisted of an array of three spatial stimulus arrangements, in which the relationship among components was systematically varied from one arrangement to the next, and four spatial arrangements, lettered A through D, from which the subject selected the one that would correctly complete the sequence. The problems were constructed in such a manner that there was no obviously correct solution to any of them. A total of 60 such slides, subdivided into two 30 item presentations, was employed. The slides were presented automatically at a constant exposure time of 20 seconds.

Two specially designed console panels were utilized for the actor to select his answers and to provide feedback of the correctness of the response to both actors and observers. The actor console consisted of a row of
six alternate red and green lights which horizontally spanned the face of the console. A row of toggle switches, numbered one through 30, corresponding to the problems, was located three and one half inches directly below the row of lights. A second row of four buttons, lettered A through D, was located three and one quarter inches below, and centered on, the row of 30 numbered toggle switches. Operation of the actor console involved flipping the numbered switch, corresponding to the stimulus presented, and simultaneously depressing the lettered button indicating the answer selected. Depressing the buttons in this fashion illuminated either the red or the green lights for the particular problem to which the subject was responding. Illumination of a red light indicated that the response was incorrect whereas a green light meant that the correct response had been made. Once pressure was removed from the buttons, the light immediately extinguished. The actor console was designed so that by means of a gang switch the illumination pattern of red and green lights could be programmed. Two such programs, both consisting of fifteen green and fifteen red illuminations, were employed. In the ascending program green light illuminations were concentrated primarily in the latter half of the 30 responses, whereas this pattern was reversed in the descending program.
The observer console differed from the actor console in that it contained no response buttons although the rows of feedback lights were identical to those on the actor console. The two consoles were wired so that a feedback light which was illuminated on the actor console was simultaneously lit on the observer console. When the light extinguished on the actor console it also extinguished on the observer console. In this manner both actor and observer simultaneously received feedback as to the correctness of the actor's responses.

The experimental apparatus also included a canister containing six ping pong balls each marked with the number "three" or "one" which was used to determine the subject's reward for participating in the experiment. A wooden partition was also employed to screen actors from observers during the conduct of the experiment. The slides were projected on a 4' by 6' screen.
The two consoles were mounted on tables separated by the partition so that both subjects, when seated at the tables, were facing the screen. The problems were presented on the screen via a slide projector located midway between the tables. Thus subjects were situated such that both viewed the problems and their respective console panels although, because of the partition, neither subject could see the other.

Two questionnaires were utilized to assess the effects of the environmental manipulations on the subjects' attribution processes. The only difference between the two questionnaires was that one contained two items which assessed the degree of responsibility for the reward outcome which subjects attributed to themselves and to the other person. This questionnaire was completed by subjects in the reward conditions. The other questionnaire did not contain any items concerning responsibility for reward and was completed by subjects in the standard reward conditions. Except for this difference, the two questionnaires were identical insofar as they assessed the subjects' attributions of ability, performance, luck, effort, problem difficulty, and attractiveness of the other subject (see Appendix A).

Procedure

All experimental sessions were conducted by a male experimenter. In the initial phase of the experiment,
subjects were informed that the study was being conducted under a grant from the University to study the psychological ramifications of men working in close proximity at intellectually demanding tasks. Subjects were also shown two examples of the type of problems which comprised the experimental task. They were told that they would be required to solve 30 such problems, which would be presented via a slide projector, selected from a larger battery of similar problems which had been designed to measure abstract reasoning and intellectual ability of people at the very highest levels of intelligence. They were also informed that they should not be surprised if they failed to get a large number of correct answers since the test was specifically constructed to discriminate at the highest levels of intelligence in the population.

The E explained that each subject would have the opportunity to solve the problems and to act as an observer. The observer's function was described as requiring that the subject "pay attention to what's going on".

After the subjects had been familiarized with the operation of the consoles and the nature of the experimental task, the E requested one of them to flip a coin to determine which of the two would perform the task first. The E informed this subject that if the coin came
up heads he would go first, if tails, the other subject would go first. The subject selected to flip the coin was determined by his position relative to the E. A table of random numbers was employed to determine which subject, left or right, would be requested to toss the coin. When the first actor had been identified in this manner, the E then stated that since A had determined who was to attempt the task first, B would draw to determine the reward. The drawing was made from a cannister containing six ping pong balls, each marked with a "one" or a "three". Subjects were told that they would receive either one or three points for performing the experiment depending upon which number they drew.

Subjects in the future interaction condition were then informed that the cost of the experiment was $100.00 less than the amount received in the grant from the University. Since all the money had to be spent the E had decided to allow the subjects the opportunity, at a later date, to work as a team in solving another set of problems, similar to those to be used in the present experimental session, in a competition with other teams of subjects who had participated in the experiment. The team that solved the most problems in this future competition would receive the $100.00 to divide between them.

Prior to the actual performance of the experimental task the E programmed the consoles so that the responses
of the subject who served as the first actor would yield an ascending or descending pattern of correct answers and that of the second actor would result in the opposite pattern.

Subjects in the control condition were informed that, in accordance with departmental regulations, they would receive three points for participating in the experiment. Thus these subjects did not draw to determine the reward although the E did allow them to decide who would serve as the first actor by having one of them toss a coin in the same manner as the other subjects. No mention of any future competition for the left over $100.00 was made to the control subjects.

All subjects, in both control and experimental conditions, were informed that once the experiment began there was to be no communication between them until the experiment was completed.

Upon completion of the above briefing, subjects were given the opportunity to ask for clarification of any aspects of the experiment about which they were uncertain. When the E was satisfied that the subjects understood what was required of them they were seated before their respective actor/observer consoles facing the screen upon which the experimental problems were to be presented. After reminding the actor to answer each problem and activating the slide projector which automatically
presented them the E then stood in the background while the subject solved the problems.

When the time required for the presentation of the 30 problems had elapsed, the E returned and escorted the subjects to two separate rooms where they completed the questionnaires which served as the dependent measures. The E told each subject to answer each question and that their responses would remain anonymous.

When the subjects had completed the questionnaires they switched roles so that the person who had been the actor now served as the observer and vice-versa. Once the dependent measures were collected for the second run the E informed the subjects that the experiment was over. They were then thanked for their cooperation and told that a group debriefing for all subjects would take place at a later date in order to inform them of the findings.

**Experimental Design**

A multivariate analysis was initially conducted to allow a number of ad hoc comparisons to be examined by use of individual analyses of variance. The effects of the four variables upon the attribution process were then further analyzed using a 2(role-actor or observer) by 2 (future interaction/no future interaction) by 2 feedback patterns of correct responses- ascending or descending) by 3 (reward, high, low, standard) factorial design. Specific orthogonal comparisons and Duncan's Multiple
Range tests were then made to test the hypotheses.
RESULTS

A total of 11 dependent variables were analyzed in order to investigate the experimental hypotheses. These dependent variables assessed the subjects' attributions of: 1) responsibility for reward outcomes (See Appendix A, items 1 and 5), 2) attractiveness of the other subject (See Appendix A, item 3), 3) ability (See Appendix A, item 7), 4) effort (See Appendix A, item 11), 5) problem difficulty (See Appendix A, items 8 and 9), 6) performance (See Appendix A, items 2 and 6), and 7) the influence of luck on performance (See Appendix A, items 4 and 10).

A multivariate analysis of variance was performed to determine if there were any overall significant treatment effects on the subjects' attribution processes. This analysis, using the Hotelling-Lawley's Trace criteria, indicated an overall main effect for: Future Interaction, $F(11 \text{ and } 132) = 2.66$, $p=.004$, Feedback $F(11 \text{ and } 132)=8.33$, $p=.001$, and Reward, $F(11 \text{ and } 132)=2.73$, $p=.004$. An overall interaction by Reward effect, $F(11 \text{ and } 132)=2.56$, $p=.006$ and Time by Role effect, $F(11 \text{ and } 132)=1.94$, $p=.039$ were also found. Based on the results of the MANOVA, univariate analyses were conducted to determine the influence of the various experimental treatments on the dependent measures.
The hypothesis (Ia) that, in situations wherein reward was not manipulated and subjects were not told that they would be working together on a similar task in the future, actors would tend to make external attributions to explain their behavior whereas observers would tend to explain that same behavior by making internal dispositional attributions to the actor was not supported. Specific Duncan's Multiple Range comparisons for each of the nine dependent measures presented in Table 1 between actors and observers serving in their roles for the first time under identical future interaction and reward conditions relevant to this hypothesis, i.e. standard reward-no future interaction, indicated no statistically significant differences between actors and observers in terms of the externality-internality of their attributions.

As a further test of the externality-internality of actor/observer attributions a chi square analysis of the subjects' perception of problem difficulty fluctuation (See Appendix A, item 8) was conducted in order to determine whether any of the experimental manipulations resulted in changes in the subjects' attributions of the difficulty level of the problems. A significant chi square for feedback ($X^2=54.35, p=.001$) indicated that subjects, regardless of role, made attributions of problem difficulty fluctuation based upon feedback. Ascending subjects perceived the first half of the
### TABLE 1

**MEAN ATTRIBUTION SCORES OF FIRST ORDER ACTORS AND OBSERVERS**  
**FOR THE STANDARD REWARD-NO FUTURE INTERACTION CONDITION**

<table>
<thead>
<tr>
<th>dependent measures</th>
<th>actors</th>
<th>observers</th>
</tr>
</thead>
<tbody>
<tr>
<td>number correct</td>
<td>14.13</td>
<td>14.62</td>
</tr>
<tr>
<td>liking for other subject</td>
<td>4.58</td>
<td>4.78</td>
</tr>
<tr>
<td>lucky guesses</td>
<td>4.92</td>
<td>5.88</td>
</tr>
<tr>
<td>expected number correct</td>
<td>17.06</td>
<td>16.13</td>
</tr>
<tr>
<td>ability</td>
<td>4.43</td>
<td>4.63</td>
</tr>
<tr>
<td>difficulty of first half</td>
<td>6.67</td>
<td>6.75</td>
</tr>
<tr>
<td>difficulty of second half</td>
<td>6.82</td>
<td>6.87</td>
</tr>
<tr>
<td>unlucky guesses</td>
<td>7.85</td>
<td>8.83</td>
</tr>
<tr>
<td>effort</td>
<td>86.16</td>
<td>87.25</td>
</tr>
</tbody>
</table>
problems as most difficult while descending subjects considered the second portion of the problems most difficult. The data for this analysis is presented in Table 2. A significant feedback by future consequences chi square ($X^2 = 61.77, p = .0001$) indicated that the effect of feedback on perception of problem difficulty exerted itself regardless of whether or not subjects anticipated future interaction (See Figure 1). The feedback by reward chi square ($X^2 = 65.69, p = .0001$) and the feedback by role chi square ($X^2 = 66.99, p = .0001$) indicated that regardless of role or reward received for performing the experiment, subjects who received an ascending pattern of feedback perceived the first portion of the problems as more difficult than the second portion while those who received descending feedback perceived problem difficulty in a reverse fashion (See Figures 2 and 3). Of the twelve chi square analyses performed only those involving feedback were significant in terms of altering the subjects' perceptions of problem difficulty. Thus, the determining influence upon attributions of problem difficulty was the feedback pattern which subjects, regardless of role, received.

The hypothesis (Ib) that when situational factors such as high reward are combined with ascending feedback patterns of success, attributions of actors will be more internal than when such situational factors are not
TABLE 2

FREQUENCY OF ASCENDING AND DESCENDING SUBJECTS' ATTRIBUTIONS OF PROBLEM DIFFICULTY

<table>
<thead>
<tr>
<th>attributions of difficulty</th>
<th>ascending feedback</th>
<th>descending feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>most difficult problems were located in first half</td>
<td>52</td>
<td>12</td>
</tr>
<tr>
<td>all problems were of equal difficulty</td>
<td>23</td>
<td>21</td>
</tr>
<tr>
<td>most difficult problems were located in second half</td>
<td>15</td>
<td>60</td>
</tr>
</tbody>
</table>
Problem Difficulty

Fig. 1. Feedback x future interaction chi square for perception of problem difficulty.

1 = most difficult problems were located in first half
3 = all problems were of equal difficulty
5 = most difficult problems were located in second half

NFI = no future interaction
FI = future interaction
ds = descending feedback
as = ascending feedback
Fig. 2. Feedback x reward chi square for perception of problem difficulty.

1 = most difficult problems were located in first half
3 = all problems were of equal difficulty
5 = most difficult problems were located in second half
As = ascending feedback
Ds = descending feedback
LO = low reward
St = standard reward
Hi = high reward
Fig. 3. Feedback x role chi square for perception of problem difficulty.

1 = most difficult problems were located in first half
3 = all problems were of equal difficulty
5 = most difficult problems were located in second half

As = ascending feedback
Ds = descending feedback
Act = actor
Obs = observer
manipulated, was not supported. The mean attribution scores of actors in these conditions are presented in Table 3. Orthogonal comparisons for each of the nine dependent measures shown in Table 3 between attributions made by actors in high and standard reward conditions under ascending feedback and no future interaction yielded no significance for any of the dependent measures.

The hypothesis (Hc) that first and second order actors and first and second order observers should demonstrate similar attributions under the same experimental conditions was only partially supported. Order, i.e. whether a subject was in a particular role first or second was identified as exerting a main effect on attributions of performance, i.e. how many problems the subject was perceived to have solved correctly (See Appendix A, item 2). Thus first order subjects (X=14.38) tended to make attributions of poorer performance than did second order subjects (X=15.66), F(1,106)=6.70, p=.05. A significant order by role interaction, F(1,106)=8.12, p=.01, was also obtained for attributions of how well the subject would perform if he were given another attempt at a different set of similar problems (see Figure 4). An orthogonal comparison between observers indicated that the first order observers expected the actors to solve fewer problems currently on a future attempt (See Appendix A, item 6) than did second order observers, F(1, 106)=9.94,
TABLE 3

ACTOR'S MEAN ATTRIBUTION SCORES UNDER HIGH AND STANDARD REWARD FOR ASCENDING FEEDBACK AND NO FUTURE INTERACTION

<table>
<thead>
<tr>
<th>dependent measures</th>
<th>reward</th>
<th>standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>number correct</td>
<td>12.4</td>
<td>13.8</td>
</tr>
<tr>
<td>liking for other subject</td>
<td>4.7</td>
<td>4.6</td>
</tr>
<tr>
<td>lucky guesses</td>
<td>3.9</td>
<td>4.9</td>
</tr>
<tr>
<td>expected number correct</td>
<td>15.2</td>
<td>16.6</td>
</tr>
<tr>
<td>ability</td>
<td>4.7</td>
<td>4.1</td>
</tr>
<tr>
<td>difficulty of first half</td>
<td>7.1</td>
<td>7.0</td>
</tr>
<tr>
<td>difficulty of second half</td>
<td>5.4</td>
<td>6.8</td>
</tr>
<tr>
<td>unlucky guesses</td>
<td>10.4</td>
<td>7.9</td>
</tr>
<tr>
<td>effort expended</td>
<td>86.5</td>
<td>84.5</td>
</tr>
</tbody>
</table>
Fig. 4. Time x role interaction for expected future performance.
p=.01. Aside from these exceptions, all other dependent measures employed in the study indicated no influence of order on the subjects' attribution processes.

The hypothesis (IIa) that when both subjects interact in producing an outcome (high/low) reward, responsibility for positive outcomes, i.e. high reward, will be attributed primarily to oneself by both subjects whereas negative, low reward, outcomes will be attributed to the other person was not confirmed. Contrary to expectation, subjects did not differ significantly in their responsibility attributions as a function of reward on either of the two dependent measures (See Appendix A, items 1 and 5) used to assess attributions of responsibility for reward outcomes. Mean attribution scores of subjects in high and low reward conditions for responsibility for reward outcomes are presented in Table 4.

Although the hypothesis concerning responsibility attributions for reward outcomes did not contain any prediction regarding the effects of future interaction on the subjects' attributions of responsibility, a significant main effect $F(1,72)=5.20$, $p=.05$, was obtained for the influence of future interaction on attributions of responsibility for reward outcome than when no future interaction was anticipated. A pronounced trend was also observed in the data for subjects to attribute more responsibility to themselves when a low reward was received in the no future interaction condition and to
TABLE 4

MEAN ATTRIBUTIONS OF RESPONSIBILITY TO SELF AND OTHERS FOR REWARD OUTCOME

<table>
<thead>
<tr>
<th>attributions of responsibility</th>
<th>Reward</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
</tr>
<tr>
<td>to self</td>
<td>42.75</td>
</tr>
<tr>
<td>to other subject</td>
<td>45.13</td>
</tr>
</tbody>
</table>
attribute more responsibility to the other subject when a high reward was received in the future interaction condition (See Table 5). It was also found that attribution of responsibility for reward outcomes to the other subject (See Appendix A, item 5) was positively correlated ($p=.01$) with his expected performance on a future attempt at the task (See Appendix A, item 6). That is, the more the other subject was seen as responsible for the reward outcome, the better he was expected to do in a future performance of the task.

The hypothesis (IIa2) that both actors and observers would make more positive attributions, other than for responsibility, under high reward conditions was partially supported. It was expected that high reward subjects would make attributions of more ability, more effort, better performance, and better future performance than would subjects who received a low reward. Mean attribution scores relevant to this hypothesis are presented in Table 6. Main effects for reward were obtained for attributions of performance (See Appendix A, item 2) $F(2,108)=4.73$, $p=.05$, ability (See Appendix A, item 7) $F(2,108)=3.40$, $p=.05$, good luck, (See Appendix A, item 4) $F(2,108)=7.37$, $p=.01$, and unlucky guesses (See Appendix A, item 10) $F(2,108)=3.86$, $p=.05$. Thus subjects, regardless of role, made attributions of better performance, higher ability, more good luck, and more unlucky guesses when
TABLE 5

MEAN ATTRIBUTIONS OF RESPONSIBILITY TO SELF AND OTHERS
FOR REWARD OUTCOME BY SUBJECTS IN FUTURE INTERACTION
AND NO FUTURE INTERACTION CONDITIONS

<table>
<thead>
<tr>
<th>attributions of responsibility</th>
<th>no future interaction</th>
<th>future interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>high reward</td>
<td>low reward</td>
</tr>
<tr>
<td>to self</td>
<td>40.50</td>
<td>57.00</td>
</tr>
<tr>
<td>to other subject</td>
<td>37.75</td>
<td>32.88</td>
</tr>
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</table>
TABLE 6

MEAN ATTRIBUTION SCORES OF SUBJECTS UNDER HIGH AND LOW REWARD CONDITIONS

<table>
<thead>
<tr>
<th>dependent measures</th>
<th>high</th>
<th>Reward</th>
<th>low</th>
</tr>
</thead>
<tbody>
<tr>
<td>number correct</td>
<td>15.26</td>
<td></td>
<td>14.15</td>
</tr>
<tr>
<td>liking for other subject</td>
<td>4.80</td>
<td></td>
<td>4.63</td>
</tr>
<tr>
<td>lucky guesses</td>
<td>5.84</td>
<td></td>
<td>4.33</td>
</tr>
<tr>
<td>expected number correct</td>
<td>17.53</td>
<td></td>
<td>16.80</td>
</tr>
<tr>
<td>ability</td>
<td>4.70</td>
<td></td>
<td>4.43</td>
</tr>
<tr>
<td>difficulty of first half</td>
<td>6.74</td>
<td></td>
<td>6.75</td>
</tr>
<tr>
<td>difficulty of second half</td>
<td>6.78</td>
<td></td>
<td>6.63</td>
</tr>
<tr>
<td>unlucky guesses</td>
<td>9.16</td>
<td></td>
<td>7.28</td>
</tr>
<tr>
<td>effort expended</td>
<td>87.81</td>
<td></td>
<td>87.81</td>
</tr>
</tbody>
</table>
they participated under high reward than when they did so under low reward conditions. Although, contrary to expectation, no main effect for reward on effort expended was obtained, a significant interaction was found between reward and future interaction $F(2,108)=3.48$, $p=.05$ (See Figure 5). Thus when subjects, regardless of role, received a low reward they made attributions of greater effort, $F(1,108)=11.51$, $p=.01$, when they expected to be working together as a team competing on a similar task for a large financial reward in the future than when they did not have this expectation of future interaction. A significant reward by future consequences interaction, $F(2,108)=4.26$, $p=.05$, was also obtained for attributions of unlucky guesses (See Figure 6). An orthogonal comparison indicated that subjects, regardless of role, who did not anticipate future interaction made attributions of significantly fewer unlucky guesses under low reward than they did under high reward conditions, $F(1,108)=13.49$, $p=.001$. On the other hand, subjects who expected future interaction did not differ in terms of their attributions of unlucky guesses as a function of reward.

The hypothesis (IIb1) that an ascending pattern of success would be perceived by observers as indicative of lower ability and poorer performance on the part of the actor than similar attributions made by observers witnessing a descending pattern of successes was supported
Fig. 5. Reward x future interaction for attributions of effort expended.

FI = future interaction

NFI = no future interaction
Fig. 6. Reward x future interaction. Attributions of the number of unlucky guesses made.

FI = future interaction
NFI = no future interaction
Orthogonal comparisons were made between attributions of observers under descending and ascending feedback conditions for all dependent variables presented in Table 7. These comparisons indicated that descending observers attributed better performance (See Appendix A, item 2), $F(1,108)=21.6$, $p=.001$, and more ability, $F(1,108)=12.27$, $p=.001$, to the actors than did ascending observers. The descending observers also expected the actors to correctly solve more problems on a future attempt (See Appendix A, item 6), $F(1,108)=10.73$, $p=.01$. No significant differences were found, however, for the observers' attributions of effort or luck as a function of feedback.

Orthogonal comparisons for the six dependent measures presented in Table 8 further indicated that when observers witnessed a descending pattern of feedback and did not expect to interact with the actor in performing a similar task at a future time, they attributed better performance, i.e. a larger number of correct responses, to the actor, $F(1,108)=4.61$, $p=.05$, than when they witnessed an ascending pattern of feedback under the same future interaction condition. None of the other five comparisons yielded significant differences between attributions of ascending and descending observers in the no future interaction condition.
TABLE 3

OBSERVERS' MEAN ATTRIBUTION SCORES UNDER
ASCENDING AND DESCENDING FEEDBACK

<table>
<thead>
<tr>
<th>Dependent measures</th>
<th>Ascending</th>
<th>Descending</th>
</tr>
</thead>
<tbody>
<tr>
<td>number correct</td>
<td>13.72</td>
<td>16.97</td>
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<tr>
<td>lucky guesses</td>
<td>5.55</td>
<td>6.08</td>
</tr>
<tr>
<td>expected number correct</td>
<td>16.08</td>
<td>18.75</td>
</tr>
<tr>
<td>ability</td>
<td>4.43</td>
<td>4.90</td>
</tr>
<tr>
<td>unlucky guesses</td>
<td>9.00</td>
<td>7.53</td>
</tr>
<tr>
<td>effort expended</td>
<td>85.67</td>
<td>89.17</td>
</tr>
<tr>
<td>dependent measures</td>
<td>feedback</td>
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<tr>
<td>number correct</td>
<td>13.50</td>
<td>15.63</td>
</tr>
<tr>
<td>lucky guesses</td>
<td>4.97</td>
<td>5.80</td>
</tr>
<tr>
<td>expected number correct</td>
<td>15.70</td>
<td>16.80</td>
</tr>
<tr>
<td>ability</td>
<td>4.40</td>
<td>4.57</td>
</tr>
<tr>
<td>unlucky guesses</td>
<td>8.90</td>
<td>8.80</td>
</tr>
<tr>
<td>effort expended</td>
<td>83.83</td>
<td>86.17</td>
</tr>
</tbody>
</table>
Since a main effect for order was obtained for performance attributions (See Appendix A, item 2), as indicated earlier, ascending observers were compared on the basis of order for each of the six reward-interaction treatment conditions using the Duncan's Multiple Range test. None of these comparisons indicated that performance attributions of observers were affected by order since no significant differences were obtained.

In order to assess the effects of the feedback manipulation on observers in the same way as had been done in the earlier Jones, et al. (1968) study, the attributions of first order observers under the control condition were also compared by means of the Duncan's Multiple Range test for each of the nine dependent variables listed in Table 9. In this pure test, observers attributed better performance to the descending actors than to the ascending actors (Diff=5.8, p=0.01) and they expected the descending actors to correctly solve more problems on a future attempt (See Appendix A, item 6), Diff=8.4, p=0.01, although they did not attribute more ability to the descending actors (See Appendix A, item 7). The means relevant to these comparisons are presented in Table 9.

The hypothesis (IIb2) that actors experiencing an ascending pattern of feedback would attribute higher ability and better performance to themselves than actors
### TABLE 9

**MEAN ATTRIBUTION SCORES OF FIRST ORDER OBSERVERS UNDER ASCENDING AND DESCENDING FEEDBACK IN THE STANDARD REWARD-NO FUTURE INTERACTION (CONTROL) CONDITION**

<table>
<thead>
<tr>
<th>dependent measures</th>
<th>feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ascending</td>
</tr>
<tr>
<td>number correct</td>
<td>13.40</td>
</tr>
<tr>
<td>liking for other subject</td>
<td>4.60</td>
</tr>
<tr>
<td>lucky guesses</td>
<td>3.90</td>
</tr>
<tr>
<td>expected number correct</td>
<td>14.40</td>
</tr>
<tr>
<td>ability</td>
<td>4.40</td>
</tr>
<tr>
<td>difficulty of first half</td>
<td>6.00</td>
</tr>
<tr>
<td>difficulty of second half</td>
<td>5.90</td>
</tr>
<tr>
<td>unlucky guesses</td>
<td>7.90</td>
</tr>
<tr>
<td>effort</td>
<td>80.00</td>
</tr>
</tbody>
</table>
experiencing a descending pattern of success was not supported. Instead, the opposite occurred such that the attributions of actors were affected by the feedback in the same fashion as were those of observers. Orthogonal comparisons were made between attributions of actors under descending patterns of feedback across all other conditions for the six dependent variables presented in Table 10. These comparisons indicated that actors witnessing descending patterns of feedback attributed a higher degree of ability (See Appendix A, item 7) to themselves than did actors who received an ascending pattern of feedback, $F(1,108)=6.42$, $p=.05$, just as the observers had done. The descending actors also favorably distorted their performance (See Appendix A, item 2), $F(1,108)=35.51$, $p=.001$, attributed more good luck (See Appendix A, item 4) to themselves, $F(1,108)=25.06$, $p=.001$, and expected to solve more problems correctly on a future attempt (See Appendix A, item 6), $F(1,108)=4.45$, $p=.05$, than did actors who received an ascending pattern of feedback.

Like the observers, actors who did not expect to interact with the other subject in solving similar problems at some future time attributed a greater number of correct responses to themselves when they experienced descending feedback, $F(1,108)=11.75$, $p=.001$, although they did not perceive themselves as having significantly
TABLE 10

ACTORS' MEANAttribution SCORES UNDER ASCENDING AND DESCENDING FEEDBACK

<table>
<thead>
<tr>
<th>dependent measures</th>
<th>ascending</th>
<th>descending</th>
</tr>
</thead>
<tbody>
<tr>
<td>number correct</td>
<td>12.60</td>
<td>16.78</td>
</tr>
<tr>
<td>lucky guesses</td>
<td>3.58</td>
<td>6.60</td>
</tr>
<tr>
<td>expected number correct</td>
<td>15.85</td>
<td>17.57</td>
</tr>
<tr>
<td>ability</td>
<td>4.23</td>
<td>4.57</td>
</tr>
<tr>
<td>unlucky guesses</td>
<td>8.77</td>
<td>7.43</td>
</tr>
<tr>
<td>effort expended</td>
<td>88.83</td>
<td>86.00</td>
</tr>
</tbody>
</table>
greater ability under this type of feedback. When such descending actors expected to interact with the other subject at some future time in solving similar problems they not only attributed better performance (See Appendix A, item 2) to themselves, $F(1,108)=25.10$, $p=.001$, but also perceived themselves as making more lucky guesses (See Appendix A, item 4), $F(1,108)=29.58$, $p=.001$, and as possessing greater ability for solving such problems, $F(1,108)=4.44$, $p=.05$ (See Table 11).

The hypothesis (IIc) that the prospect of future interaction for the purpose of gaining a large financial reward would influence observers, motivated by self interest, to emphasize situational factors in making causal attributions to explain the actors' behavior when that behavior was perceived as poor, i.e. under ascending feedback and to emphasize internal factors when the actors' performances were perceived as positive, i.e. under descending feedback, was supported (See Table 12). When observers witnessed a descending pattern of feedback and expected to interact with the actor at a future time in performing a similar task, they not only perceived his performance (See Appendix A, item 2) as significantly better, $F(1,108)=19.41$, $p=.001$, than that of ascending actors but also expected the descending actors to get significantly more problems correct on their next attempt (See Appendix A, item 6), $F(1,108)=13.47$, $p=.001$, 
TABLE 11

ACTORS' ASCENDING AND DESCENDING MEAN ATTRIBUTION SCORES
UNDER FUTURE INTERACTION AND NO FUTURE INTERACTION

<table>
<thead>
<tr>
<th>dependent measures</th>
<th>future interaction</th>
<th>no future interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ascendent</td>
<td>descend</td>
</tr>
<tr>
<td>number correct</td>
<td>12.60</td>
<td>17.57</td>
</tr>
<tr>
<td>lucky guesses</td>
<td>3.33</td>
<td>7.97</td>
</tr>
<tr>
<td>expected number correct</td>
<td>16.00</td>
<td>18.27</td>
</tr>
<tr>
<td>ability</td>
<td>4.20</td>
<td>4.60</td>
</tr>
<tr>
<td>unlucky guesses</td>
<td>9.33</td>
<td>7.67</td>
</tr>
<tr>
<td>effort expended</td>
<td>92.83</td>
<td>87.67</td>
</tr>
</tbody>
</table>
### TABLE 12

**OBSERVER'S ASCENDING AND DESCENDING MEAN ATTRIBUTION SCORES UNDER THE FUTURE INTERACTION CONDITION**

<table>
<thead>
<tr>
<th>dependent measures</th>
<th>ascending</th>
<th>descending</th>
</tr>
</thead>
<tbody>
<tr>
<td>number correct</td>
<td>13.93</td>
<td>18.30</td>
</tr>
<tr>
<td>lucky guesses</td>
<td>6.13</td>
<td>6.37</td>
</tr>
<tr>
<td>expected number correct</td>
<td>16.47</td>
<td>20.70</td>
</tr>
<tr>
<td>ability</td>
<td>4.47</td>
<td>5.23</td>
</tr>
<tr>
<td>unlucky guesses</td>
<td>9.10</td>
<td>6.27</td>
</tr>
<tr>
<td>effort expended</td>
<td>87.50</td>
<td>92.17</td>
</tr>
</tbody>
</table>
perceived them as having greater ability, $F(1,108)=16.04$, $p=.001$, and attributed significantly fewer unlucky guesses (See Appendix A, item 10), $F(1,108)=6.00$, $p=.05$. 
DISCUSSION

Three major findings emerged from the present experiment. The results indicated that when subjects are confronted with novel situations involving tasks with which they have had little or no previous experience, their attributions will be influenced by a primacy effect, regardless of whether they actually performed the task or merely observed another's performance.

The second major finding of the present experiment was that when a person willingly engages in an activity which he knows beforehand may result in negative consequences to himself and he believes that he is capable of exerting control over the outcome, he will acknowledge responsibility for the negative outcome.

The third major finding was that self interest affects the directionality of observer's attributions. When it was in the observer's self interest to attribute the actor's performance to internal dispositional factors, i.e. when the actor received a descending pattern of feedback and the observer expected to work with him in solving similar problems in the future for a large financial reward the actor's behavior was attributed to internal factors. When it was not in the observer's self interest to attribute the actor's performance to internal characteristics, i.e. when the actor received an ascending
pattern of feedback in the future interaction condition, the observers attributed the actor's performance to external factors such as bad luck.

The first major finding of the present experiment was derived from the results obtained concerning the effects of feedback on attributions of performance and ability made by both actors and observers which indicated that a primacy effect occurred across roles. Jones, et al. (1968) reported a primacy effect for observers' attributions of performance and ability, and a recency effect for performance attributions made by actors witnessing their own behavior. It is suggested that the primacy effect obtained for actors in the present study was a function of the fact that the actors in this study, as compared to those in the earlier study, had little knowledge of their relative ability prior to performing the task. In the Jones, et al. (1968) study the observers knew that the actors had previously solved five more problems than they and the actor subjects were informed that they had solved five more problems correctly than the observer. In the present experiment such definite information was not possessed by either actors or observers. First order subjects, regardless of role, had no information regarding relative ability and performance. Second order subjects had only a vague idea based on their observations of performance, their own or the other
subject's, during the first session of problem solving. As indicated earlier, first order subjects, regardless of role, tended to make lower performance attributions than did second order subjects. This was apparently due to a combination of the information they had about the nature of the problems, i.e. they were specifically designed for the very brightest people in the population, which had a depressor effect on their initial attributions of performance, and the cueing effect of the first questionnaire which caused the second order subjects to be more accurate, and thereby higher, in their performance attributions.

Hovland has suggested that the nearer one comes to achieving primacy in the sense of the first presentation of unfamiliar material, the more apt one is to obtain primacy effects. In the present study such a situation was closely approximated with respect to the subjects' expectations of performance prior to actually attempting to solve the problems. It is likely, that due to the description of the problems, i.e. designed to assess intelligence levels of extremely bright people, and the instructions: "so don't be concerned if you don't get a large number correct", the subjects' performance expectations would be slightly pessimistic. This expectation, coupled with a lack of familiarity with problems of this type and the absence of any accurate standard of comparison for performance, resulted in a situation
wherein the subjects, regardless of role, were susceptible to a primacy effect resulting from the feedback. This is particularly so for the "ascending actor" who doesn't expect to do too well, is unfamiliar with this type of problem, and who lacks an accurate standard against which to compare his performance. Such an actor initially encounters a sequence of failures which, as the data indicates, exercises a determining influence on his attributions of performance.

Extending this line of reasoning as an explanation of the obtained primacy effect for performance attributions of ascending actors, one would expect that first order ascending actors would make lower performance attributions than second order ascending actors since the first order subjects lack even the vague standard of comparison which is available to those in the second order. A series of comparisons between first and second order ascending actors, using Duncan's Multiple Range test, indicated that such actors in the standard reward-no future interaction condition differed significantly in their attributions of performance. The same result was obtained when first and second order actors in the low reward-no future interaction condition were compared on attributions of performance. In both cases the performance attributions of first order actors were significantly lower than those of second order actors. The finding
that the low reward ascending actors were the only treatment group of ascending actors, in the no future interaction condition, other than those in the standard reward condition, to demonstrate significantly lower first order attributions of performance makes sense insofar as they not only lacked a standard of comparison, but also, as a function of low reward, had even lower performance expectations than those in the standard reward condition. All other comparisons of first and second order ascending actors under the same interaction conditions resulted in no significant differences between performance attributions, indicating that other factors, e.g. future interaction and/or high reward, were exerting "positive" influence on first order performance attributions.

Although the finding of a primacy as opposed to a recency effect for ascending actors' attributions of performance is the opposite of that obtained by Jones, et al. (1968), it is consistent with findings reported by Langer and Roth (1975). These investigators had actor and observer subjects engage in a coin tossing task and attempt to predict the results, i.e. heads or tails. Subjects either flipped the coin (actors) or watched another subject flip the coin (observers) and attempted to predict the outcome. Subjects were given the same feedback conditions, descending, ascending, or random, as had been used in the Jones, et al. (1968) study. As
in the present study, and unlike the Jones, et al. (1968) study, the subjects lacked a standard of performance comparison. Langer and Roth (1975) found that both actors and observers in the descending condition perceived themselves as better at the task, remembered more successes, and predicted better performance on future attempts. These investigators concluded that: "...a skill attribution is determined early in a sequence of outcomes. After the attribution is made, outcomes inconsistent with it are not given much weight. An early, fairly consistent pattern of successes leads to a skill attribution..." (Langer and Roth, 1975, p. 954).

The second major finding of the present experiment was based upon the total lack of support for the hypothesis that when both subjects interact in producing an outcome, responsibility for that outcome will be attributed primarily to oneself when the outcome is positive (high reward) and to the other subject when the outcome is negative (low reward). Subjects' self attributions of responsibility for outcome were not affected by the positive or negative nature of that outcome. This finding is contrary to the self interest, or "self serving" position which maintains that it is ego enhancing to see oneself as responsible for pleasant things and ego threatening to see oneself as responsible for unpleasant things. This self serving hypothesis had been supported
in a recent experiment by Harris and Harvey (1975, upon which the present hypothesis was based. These investigators had subjects decide which of two tasks, concerning which they had only ambiguous descriptive information, another person would perform at a later time. After the decision was made subjects were then given additional information about the nature of the tasks. Half the subjects were led to believe that the task was actually very pleasant while others learned that it was extremely unpleasant. Subjects in the pleasant condition attributed a high amount of responsibility for the decision to themselves whereas those in the unpleasant condition attributed a relatively low amount of responsibility to themselves.

The different methodology of the present experiment with respect to the subject's active involvement in determining the reward and his prior knowledge regarding the foreseeability of the possibility of negative consequences, i.e. getting a low reward, provides a ready explanation of the results obtained with respect to subjects' attributions of responsibility. Kelley (1967) has proposed that a person will take responsibility for negative consequences in situations where he considers himself instrumental in having brought them about. According to Brehm and Jones (1970) and Cooper (1971) a person will accept responsibility for negative consequences when he
knew of the possibility of such consequences prior to making the decision. Such conditions were fulfilled in the present experiment. The subjects had prior knowledge of the possibility of negative consequences, i.e. drawing a "one", and were instrumental in determining the reward.

An investigation of determinants of perceived control (Wortman, 1975) which employed a method of assigning attractive or unattractive consequences that was similar to the method of determining reward outcomes in the present experiment yielded results which are almost identical to those obtained in the present study. Wortman (1975) showed subjects eight consumer items which they rated for attractiveness. Subjects were then allowed to draw one of two different colored marbles from a can in order to win one of the two items, the one they had rated most attractive and the one they had rated least attractive. Subjects were informed before the drawing that if they drew a blue marble they would receive a certain item, e.g. the one they had rated most attractive, and if they drew a red marble they would get the other. In other words the subjects had prior knowledge of the possible consequences of their action. The finding of importance with respect to the present experiment is that the subjects who had this prior knowledge did not differ significantly in their attributions of responsibility as a function of the attractiveness of the outcome. As a
matter of interest, the low attractive outcome subjects tended to attribute more responsibility to themselves, although not significantly so, than did those whose actions resulted in receipt of the highly attractive outcome. These results are nearly identical to those obtained in the present experiment in which low reward subjects in the no future interaction condition tended to attribute more responsibility to themselves than did high reward subjects. The reversal of this trend under future interaction conditions suggests a motivation on the part of the subjects to make a good impression by attributing greater responsibility for the positive outcome and less responsibility for the negative outcome to the other subject whom they expect will be their partner in a future endeavor. Such a responsibility allocation in the future interaction condition is also consistent with the subject's self interest insofar as the correlation between the dependent measures of "responsibility of other for outcome" and expected future performance was highly significant in a positive direction. Thus the more subjects perceived the other person as responsible for the outcome, the better they expected him to perform at the task in the future. Needless to say, the better their partner was expected to do, the better their chances of winning the fifty dollar prize. Thus the future interaction condition employed in the present experiment may be considered to have activated a double edged self interest
motive, i.e. the desire to be perceived in a positive light and the desire to perceive the other person as one who would perform successfully when such a performance meant financial gain for the attributor.

The third major finding of the experiment was based upon the hypothesis that the prospect of future interaction for the purpose of gaining a large financial reward would influence observers to make internal attributions when they perceived the actors' performances as "good" and to emphasize external situational factors when they perceived the behavior as "poor". This hypothesis was supported. When observers who expected future interaction with the other subject for monetary gain witnessed a performance which they perceived as good, i.e. descending feedback, they favorably distorted performance, attributed more ability to the actor, and expected him to solve more problems correctly on the next attempt than when such future interaction observers witnessed a "poor" performance, i.e. ascending feedback. Thus it seems that the future interaction condition aroused observers' self interest which in turn influenced their attributions in a manner that increased their chances of winning the fifty dollars. Such a conclusion seems further warranted by the finding that observers who perceived a positive performance in the future interaction condition expected the actor to solve more problems correctly on the next
attempt than did observers who witnessed the same positive performance in the no future interaction condition.

The other aspect of this hypothesis was that when future interaction observers perceived a poor performance, i.e. ascending feedback, they would emphasize situational factors to explain that performance. This portion of the hypothesis was also supported. Observers in the future interaction condition who witnessed an actor receive an ascending pattern of feedback attributed the actor's "poor" performance to bad luck. Thus the interpretation was that the actor's performance was not due to a lack of ability, but rather to an external factor, bad luck. The observer's self interest apparently was served since the actor, the observer's future partner, was not lacking in ability at the task, he merely was unlucky on his first attempt at the task.

The results of the present experiment also suggested that when their self interest was not involved, observers witnessing another person performing a task require some standard of comparison to serve as a basis for attributing ability at that task to the other person. In the absence of such a standard, observers who are requested to make attributions regarding the performer's ability at the task will tend to make moderate rather than extreme ability attributions.
This suggested interpretation was based upon the results obtained from tests of several of the experimental hypotheses. The hypothesis that under standard reward-no future interaction conditions actors would explain their behavior by external attributions whereas observers would explain this same behavior by internal dispositional attributions was not supported. This hypothesis was based upon the theoretical position of Jones and Nisbett (1972) which maintains that "...there is a pervasive tendency for actors to attribute their actions to situational factors whereas observers tend to attribute them to stable personal dispositions" (p. 80). Results consistent with this position have been reported by Jones and Harris (1967) with respect to observers attributions of essay writers' attitudes and by Jones, et al. (1968) for causal attributions of performance on a difficult intellectual task.

The standard reward-no future interaction condition of the present experiment was intended as a replication of the earlier Jones, et al. (1968) experiment insofar as the nature of the task, patterns of feedback, and subjects' anticipation of future interaction for the possibility of gaining a financial reward were essentially identical in both experiments. Jones, et al. (1968) found that observer subjects in the descending success conditions rated their actors as more intelligent than
they did actors in the ascending feedback condition. The observers also predicted that the descending actors would perform better on a future similar task and favorably distorted recall of the descending actors' performances. In their sixth experiment of the series, Jones, et al. (1968) again had a subject and a confederate simultaneously solve the problems. This time, however, the subjects learned that the accomplice had correctly solved ten of the thirty items whereas he had solved 15 items in either a random, ascending, or descending pattern of success. The subjects in this case predicted better future performance for themselves when they received an ascending as opposed to a random or descending pattern of feedback. Ascending subjects also reported that the items in the latter portion of the series were of less difficulty than those in the initial portion. Conversely, subjects who received descending feedback indicated that the latter items were more difficult than the initial ones.

Based on the findings of the Jones, et al. (1968) study it was predicted that in the present experiment comparisons of actor and observer attributions under the standard reward-no future interaction condition should yield differences in the directionality of attributions. Actors should, it was hypothesized, make external situational attributions to explain the same behavior under the same conditions. Thus comparisons were made between the
attributions of actors and those of observers in the standard reward, no future interaction condition to test this hypothesis. No significant differences were found between the attributions of actors and observers under these conditions and thus the hypothesis was not supported.

It is important to note that the results reported by Jones et al. (1968) with respect to the divergent attributions of actors and observers were based on a series of six experiments in which comparisons were never directly made between the attributions of actors and observers. Instead, the first five experiments compared observers' attributions under ascending feedback against observers' attributions under descending feedback.

When these same comparisons, i.e. observers under ascending feedback versus observers under descending feedback, were made using a Duncan's multiple Range test, in the standard reward-no future interaction condition of the present experiment, descending observers favorably distorted the actor's performance and expected that the actor would get more correct on a future attempt than did ascending observers, although they did not attribute more ability to the descending actors.

One other aspect of the Jones, et al. (1968) experiment seems worthy of mention at this point. In the first five experiments of the earlier study both subjects, one of whom was a confederate, simultaneously performed the
problem solving task, after which the observer subjects were informed that the other "subject" had solved 15 of the 30 problems correctly and that they had correctly solved only ten of the problems. Thus, a standard of comparison was established, i.e. the observer subjects believed that the other person had correctly answered five more problems, roughly 17% of the total number, than they had. The observer subjects than attributed more ability and better future performance to descending than to ascending "subjects". They also favorably distorted their recall of the number of correct responses made by descending "subjects".

As was indicated earlier, a significant main effect for order was obtained for the dependent measure "How many problems did the other subject solve correctly?" and a significant order by role interaction was found for "How many problems would you expect the other subject to answer correctly if he had the opportunity to take another test composed of similar items of comparable difficulty?" In the present experiment subjects did not simultaneously respond to the problems. Instead, one served as an observer while the other solved the problems. First order subjects therefore had no information upon which to form a personal standard of comparison as did the subjects in the Jones, et al. (1968) study. All that first order subjects knew was that the problems had been developed
for the express purpose of assessing intelligence in the highest intellectual segment of the population. Thus while the descending feedback pattern had essentially the same effect on attributions of first order observer subjects in the present experiment as it did in the Jones, et al. (1968) study, i.e. under descending feedback observers favorably distorted performance and expected the actor to perform better on a future attempt, it did not affect their attributions of ability.

Despite the fact that they favorably distorted his performance under descending feedback and expected better future performance for descending than for ascending actors, first order observers were apparently unable to interpret the meaning of the actors' scores in terms of a relative level of ability since they had no standard against which to make a comparison. Thus it is suggested that attributions of ability require some standard against which performance can be measured. According to Jones and Nisbett (1972) the observer compares the actor with other actors and judges his attributes accordingly. In the present experiment, first order observers in the standard reward-no future interaction lacked such a standard by which to assess the actor's ability.

Technically, second order observers had such a standard of comparison in the sense that they were aware of both their own performance and that of the second
order actor. However, it is logical to conclude that, by virtue of having completed the initial questionnaire, the second order observers had been cued to attend to the number of correct responses made by the second order actor. This assumption is supported by the fact that first order observers' mean attributions of the actors' performances differed by +3.2 for the descending feedback and by -2.6 for ascending feedback whereas second order observers differed by only +.2 for descending feedback and by -.6 for ascending feedback from the actual number of correct responses, which was 15 in both feedback conditions. This cueing reduced the influence of feedback patterns on attributions of performance, since second order observers attended more closely to the number of correct responses, and by virtue of the high positive correlation (p=.0001) between performance and expected future performance eradicated the difference obtained in the first order attributions.

Another finding which suggested the importance of the social comparison factor was the result obtained from testing the hypothesis that actors who received an ascending pattern of feedback would attribute higher ability and better performance to themselves than actors who received a descending pattern of success. This hypothesis was not supported. All subjects regardless of role made attributions of better performance and higher
ability under descending feedback conditions. Although the overall results indicated that feedback exerted a positive influence on attributions of ability, it is of interest that under the no future interaction conditions, actors attributed better performance to themselves under descending feedback although they did not differ in attributions of ability or expected future performance as a function of feedback. When they anticipated future interaction with the other subject for the purpose of obtaining a large financial reward, however, descending actors favorably distorted their performance, perceived themselves as making more lucky guesses, and considered themselves to have more ability at the task than did ascending actors. The fact that the descending actors made more favorable attributions under the future interaction condition appears to be a function of self interest. The more ability and good luck they possess, the better is their chance to win the money.

The suggested importance of the social comparison process was also based on the results obtained for the hypothesis that an ascending pattern of success would be perceived by observers as indicative of lower ability and poorer performance on the part of the actor than similar attributions made by observers witnessing a descending pattern of successes. This hypothesis was supported. Overall, observers witnessing a descending pattern of
feedback attributed significantly higher ability to the actor than did observers witnessing an ascending pattern of feedback. When observers witnessed a descending pattern of correct responses and did not anticipate future interaction with the actor they attributed better performance to him than when, under the same expectation of future interaction, they witnessed an ascending pattern of successes. This finding is consistent with the results reported by Jones, et al. (1968). However, this comparison yielded no significant difference in attributions of ability. The finding that under no future interaction feedback did not affect observers' attributions of ability may be explained by the observer's lack of a standard of comparison. Unlike the Jones, et al. (1968) study, observers had no exact information regarding the relationship between level of ability and number of correct responses. They only knew that the questions had been designed to test the intelligence of the brightest people in the population. Since a score could not be translated into a level of ability the most accurate attributions of ability, given the information possessed by the observers, was "about average". The fact that the mean attribution scores of ability made by observers were 4.9 under descending feedback and 4.43 under ascending feedback, where a score of four to five was "average ability", may be interpreted as support for this position.
The fact that when observers expected to interact with the actor in the future for the purpose of obtaining a financial reward they not only perceived a descending actor as having more ability, but also favorably distorted his performance, attributed fewer unlucky guesses to him, and expected him to get more problems correct on the next attempt than they did for an ascending actor can be interpreted in terms of self interest. Simply put, the "better" one's partner, the better one's chances of winning the prize money.

Two additional hypotheses were investigated in the present experiment. These predictions dealt with the influence which rewards and order would exert on the subjects' attribution processes. In each instance partial support was obtained for these hypotheses.

The hypothesis that both actors and observers would make more positive attributions, other than for responsibility, under high reward conditions was partially confirmed. High reward subjects, regardless of role, made attributions of better performance, higher ability, and more good luck than did low reward subjects. This finding was consistent with the results reported by Apsler and Friedman (1975) and Lerner (1965). The only dependent variable not affected by the reward manipulation was the subjects' ratings of "liking" for the other subject. No significant differences were obtained for this measure.
under any of the treatment conditions. This is contrary to what might be expected, based on the findings of Apsler and Friedman (1975). However, in their study observers were informed that the actors had been ambiguously assigned a high or a low reward. The reward which the observer received was not manipulated. Observers in the Apsler and Friedman (1975) study perceived the actor as less "good" under the low reward condition. In the present study, however, both actors and observers received the same rewards.

Walster (1966) has proposed that the tendency for an observer to attribute responsibility to victims of suffering is due to the reassurance the observer gains from this type of "defensive" attribution. Unless observers hold such victims responsible for their unhappy states, suggests Walster, they must face the possibility that similar occurrences could happen to them. In the present experiment it was expected that low reward subjects would be more disliked than would standard or high reward subjects. It is suggested that the reason why subjects in the low reward conditions of the present experiment were not "disliked" is that both received the low reward. In Walster's terminology, they were not in a position to make "defensive" attributions because the same "unhappy" fate had happened to them.
Partial support was also obtained for the hypothesis that order would not affect the attributions of subjects. A main effect for order, i.e. whether a subject served in a certain role first or second was obtained for attributions of performance. First order subjects tended to make lower attributions of performance than did second order subjects. It is suggested that during the first session of problem solving neither subject was paying strict attention to the number of correct responses made. Actors were involved in arriving at solutions to the problems and making responses, whereas observers were also concentrating on solving the problems, although they made no responses, since they knew that their turn would be next to use the apparatus and respond to the problems. When the first problem solving session was completed both subjects filled out the questionnaire before switching roles and beginning the second session. The questionnaire undoubtedly cued the subjects to attend to the number of problems correctly solved, thus accounting for the main effect which order had for this dependent variable. The fact that first order subjects made lower performance attributions than second order subjects may be accounted for by the information they had received about the nature of the problems. Prior to beginning the experiment, subjects were told that the problems had been developed specifically for discriminating among intelligence levels
of the brightest people in the population. They were further advised not to be concerned if they didn't get a large number of the problems correct. This information, coupled with the fact that during the first problem solving session they had not specifically attended to the number of correct responses, resulted in the lower first order performance attributions obtained.

A significant order by role interaction was obtained for attributions of expected future performance. While actors, regardless of order, expected to get about the same number of problems correct on a future attempt ($X_1=17.06$, $X_2=16.35$), second order observers expected better future performance ($X=18.7$) than did first order observers ($X=16.13$). This order effect for observers was significant at the .01 level of confidence.

The explanation for this interaction seems to lie in the nature of the tasks performed by subjects in the actor and observer roles. The actors had to attend to the problems as they were presented on the screen, formulate solutions, and respond by pressing the appropriate button. Actors also had to be sure that the correct toggle switch, corresponding to the problem on the screen, was depressed. This necessity for having the appropriate toggle switch depressed was emphasized in the pre-experimental instructions. The observers, on the other hand, were merely instructed to "watch what's
going on". They also viewed the problems on the screen and received feedback, visual and audio, via a console on their desk. As has been previously stated, all subjects made lower attributions of performance after the first session than they did after the second session. The initial completion of the questionnaire undoubtedly cued both actors and observers to attend more closely to the number of problems solved correctly. Due to the more complex nature of the actor's tasks, however, this cueing effect exercised less influence on their attention to the number of problems they solved correctly. They had too many other things to do and consequently had less confidence than the observers in recalling their actual performance.

It is suggested that the order by role interaction obtained for expected future performance is a function of the differential cueing effect described above. The better one perceives another's performance, the better he will expect the person to do on a future attempt at the same task. That this was the case in the present experiment is demonstrated by the high positive correlation \(p=.0001\) between attributions of performance and those of expected future performance. Thus second order actors, because of this lack of confidence in the accuracy of their performance recall, were more conservative in predicting their future performance. The observers, on
the other hand, having more confidence in their second order attributions of performance predicted that the actor would make more correct responses on his future attempt.

In summary, the present experiment revealed that the situational variables of reward, role, future expectations, and feedback of success were capable of altering the subjects' attribution processes in a number of ways. The results indicated the general influence of a primacy effect for feedback upon the attribution processes of both actors and observers involved in the experimental task. It was also found that when subjects willingly engage in an activity which they realize may result in a negative consequence and feel that they have been instrumental in determining this outcome they will acknowledge their responsibility for this negative consequence. The results also indicate that the attribution process was influenced by the self interest of the attributor. The externality-internality of observer subjects was affected by their self interest. Performance was attributed either to internal characteristics or to external factors as a function of the observer's self interest.

In terms of the divergent attribution hypothesis (Jones and Nisbett, 1972) the findings of the present experiment suggest that for certain types of attributions, e.g. ability at a particular task, some standard
of comparison is utilized by both actors and observers. As Jones and Nisbett (1972) have suggested, the actor compares his actions in a particular situation to his previous actions in similar situations, i.e. his relevant past history, whereas the observer compares the actions of a particular actor to those of other actors. The present experiment indicates that certain situations, as a function of their novelty, may provide no standards of social comparison upon which to base ability attributions and thereby result in the elimination of role as a factor in the attribution process. The results further suggest that certain situational variables, such as reward and self interest, affect the attribution processes of both actors and observers in a similar manner.

The findings of the present research may have some practical implications with respect to various types of educational programs. For example, the results of the present research may be applied to programs which seek to impart work skills to the underprivileged in industrial ability. In such training situations it may often be that the trainees attribute relatively low levels of ability to themselves and that this type of self attribution may act as a "self fulfilling prophecy" which seriously reduces the benefits of such training. The results obtained in the present experiment suggest that the learning tasks might be structured and presented in
a manner that results in an initial series of successes as a method of overcoming these initially negative self attributions. The results further suggest that the self interest motive of the trainees should be activated, whenever possible, in a manner whereby the participants perceive the situation as one in which it is in their best interest to succeed at the tasks. Short term incentives such as weekly team and/or individual competitions for rewards which the participants value may be an effective means of accomplishing this. The experimental results also suggest that the subjects should be allowed some control over the situation. Take as an example, a work skills training program which offers instruction in several areas, e.g. truck driver, assistant machinist, fork lift driver, and lathe operator. Upon entry to such a program the person could be informed of both the positive and negative aspects of each area of instruction, e.g. although assistant machinists earn more money, the training is longer and most people find it more difficult than the other courses of instruction. The person, having this prior knowledge of the potential negative aspects of his decision, could then be allowed to select a program. An orientation could further emphasize that the situation is one over which his actions determine the outcomes.

It is suggested that by combining the above factors of initial success, self interest, and the feelings of
control over the situation the number of people successfully completing such training programs could be substantially increased. At the present time such thinking must be termed speculation, yet it seems a promising area in which to apply our laboratory derived knowledge of factors affecting the attribution process.
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APPENDIX A

QUESTIONNAIRES
1. In terms of percentage, to what extent were you responsible for the fact that you and the other subject received the highest/lowest possible payment for participating in the experiment?

[Scale: 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%]

2. How many of the problems did you solve correctly?

[Scale: 0 5 10 15 20 25 30]

3. What is your reaction to the other subject in this experiment?

dislike very much dislike somewhat neutral somewhat like like very much

4. How many of your correct answers were the result of lucky guesses?

[Scale: 0 5 10 15 20 25 30]
5. In terms of percentage, to what extent was the other subject responsible for the fact that you and he received the highest/lowest possible payment for participating in the experiment?

| 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |

6. How many problems would you expect to answer correctly if you had the opportunity to take another test composed of similar items of comparable difficulty?

| 0 | 5 | 10 | 15 | 20 | 25 | 30 |

7. What level of ability, relative to the population of college students here at LSU, did you demonstrate in solving the abstract reasoning problems used in the experiment?

very low well somewhat average below below above average above average very high ability average average average average average average average average average ability
8. Which statement do you feel best describes the series of problems used in this study?

____ The first portion of the series contained the most difficult problems.

____ Item difficulty was arranged in the order of four difficult to one easy problem.

____ All problems were of approximately equal difficulty.

____ Item difficulty was arranged in the order of four easy to one difficult problem.

____ The second portion of the series contained the most difficult problems.

9. On a scale of one to ten, where 1=extremely easy and 10=extremely difficult, rate the level of difficulty of items: (A) 1 through 15 and (B) items 16 through 30.

(A) Items one through fifteen:

(B) Items sixteen through thirty:

10. How many of your incorrect answers were the result of unlucky guesses?
11. In terms of percentage of effort expended, how hard did you try to correctly answer the problems?
1. In terms of percentage, to what extent were you responsible for the fact that you and the other subject received the highest/lowest payment possible for participating in the experiment?

![Percentage Scale]

2. How many problems did the other subject solve correctly?

![Problem Count Scale]

3. What is your reaction to the other subject in this experiment?

![Reaction Scale]

4. How many of the other subject's correct answers were the result of lucky guesses?

![Guess Count Scale]
5. In terms of percentage, to what extent was the other subject responsible for the fact that you and he received the highest/lowest possible payment for participating in the experiment?

6. How many problems would you expect the other subject to answer correctly if he had the opportunity to take another test composed of similar items of comparable difficulty?

7. What level of ability, relative to the population of college students here at LSU, did the other subject demonstrate in solving the abstract reasoning problems used in the experiment?
8. Which statement do you feel best describes the series of problems used in this study?

___ The first portion of the series contained the most difficult problems.

___ Item difficulty was arranged in the order of four difficult to one easy problem.

___ All problems were of approximately equal difficulty.

___ Item difficulty was arranged in the order of four easy to one difficult problem.

___ The second portion of the series contained the most difficult problems.

9. On a scale of one to ten, where 1=extremely easy and 10=extremely difficult, rate the level of difficulty of items (A) one through fifteen and (B) items sixteen through thirty.

(A) Items one through fifteen:

(B) Items sixteen through thirty:
10. How many of the other subject's incorrect answers were the result of unlucky guesses?

![Bar graph with scale 0 to 30]

11. In terms of percentage of effort expended, how hard did the other subject try to correctly answer the problems?

![Bar graph with scale 0 to 100]
1. How many of the problems did you solve correctly?

2. What is your reaction to the other subject in this experiment?

3. How many of your correct answers were the result of lucky guesses?

4. How many problems would you expect to answer correctly if you had the opportunity to take another test composed of similar items of comparable difficulty?
5. What level of ability, relative to the population of college students here at LSU, did you demonstrate in solving the abstract reasoning problems used in the experiment?

very well somewhat somewhat well very low below below above above high ability average average average average average ability

6. On a scale of one to ten, where 1=extremely easy and 10=extremely difficult, rate the level of difficulty of items: (A) 1 through 15 and (B) items 16 through 30

(A) Items one through fifteen:

1 2 3 4 5 6 7 8 9 10

(B) Items sixteen through thirty:

1 2 3 4 5 6 7 8 9 10
7. Which statement do you feel best describes the series of problems used in this study?

____ The first portion of the series contained the most difficult problems.

____ Item difficulty was arranged in the order of four difficult to one easy problem.

____ All problems were of approximately equal difficulty.

____ Item difficulty was arranged in the order of four easy to one difficult problem.

____ The second portion of the series contained the most difficult problems.

8. How many of your incorrect answers were the result of unlucky guesses?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

9. In terms of percentage of effort expended, how hard did you try to solve the problems correctly?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
1. How many of the problems did the other subject solve correctly?

2. What is your reaction to the other subject in this experiment?

3. How many of the other subject's correct answers were the result of lucky guesses?

4. How many problems would you expect the other subject to answer correctly if he had the opportunity to take another test composed of similar items of comparable difficulty?
5. What level of ability, relative to the population of college students here at LSU, did the other subject demonstrate in solving the abstract reasoning problems used in the experiment?

very well somewhat somewhat well very
low below below above above high
ability average average average average average ability

6. On a scale of one to ten, where 1=extremely easy and 10=extremely difficult, rate the level of difficulty of items: (A) 1 through 15 and (B) items 16 through 30.

(A) Items one through fifteen:

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- Item difficulty was arranged in the order of four difficult to one easy problem.
- All problems were of approximately equal difficulty.
- Item difficulty was arranged in the order of four easy to one difficult problem.
- The second portion of the series contained the most difficult problems.

8. How many of the other subject's incorrect answers were the result of unlucky guesses?


9. In terms of percentage of effort expended, how hard did the other subject try to solve the problems correctly?


VITA

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Title of Thesis: Altering Attributions: The Effects of Situational Variables on the Directionality of Attributions

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