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A SOCIAL-COGNITIVE ANALYSIS OF THE CAUSAL ATTRIBUTIONS MADE BY CHILDREN AND ADULTS AS A FUNCTION OF OUTCOME AND ACTOR-OBSERVER STATUS

by

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Abstract

A SOCIAL-COGNITIVE ANALYSIS OF THE CAUSAL ATTRIBUTIONS MADE BY CHILDREN AND ADULTS AS A FUNCTION OF OUTCOME AND ACTOR-OBSERVER STATUS

by

Harriet Sandra Mosatche

Adviser: Professor Sam J. Korn

The present study was designed to test for developmental changes in the type of causal attributions made as a function of success or failure in an achievement-oriented task, and one's role as an actor or observer of a same-age and same-sex actor in a film.

Subjects (144 females of three age groups: 5-6 year old, 9-10 year old, and college age) were asked to respond to two attribution measures, one open-ended and the other highly structured. Two structured questioning techniques were used, one for adults, and a simpler one for children. While the open-ended and structured measures showed a moderately high, positive relationship for the adult sample, the correlations between the two types of measures were generally low for the samples of children.

The open-ended results indicated that when subjects

succeeded or when they observed another's success, they were likely to make internal attributions, consistent with an ego-enhancement mechanism, whereas when the task ended in failure, attributions were likely to be external, consistent with an ego-protective mode of explanation. However, the college students were likely to take a greater amount of personal responsibility for failure than were the two groups of children, possibly due to a self-denigrating, antidefensive bias in women.

The actor-situational and observer-dispositional tendencies (suggested by Jones and Nisbett, 1971) were found only for the youngest age group under conditions of failure, perhaps due to the ego-involvement of actors in the task outcome, and the non-ego-involvement, lack of role-taking skills, and/or lack of relevant socialized responses in the young observers.

Internal attributions for success were shown to be different in children and adults. The former generally gave effort explanations, while the latter were likely to make attributions of ability. It is suggested that these attributions are differentially ego-enhancing at different developmental levels. The pattern of luck explanations was also analyzed. Luck attributions were given almost exclusively by adults in the success condi-

tions. Possible interpretations of that finding include the unexpectedness of success, the ambiguity of the task, and the perception of luck as a dispositional, rather than a situational variable.

Data were also presented and analyzed with regard to the developmental changes in the pattern of "I Don't Know" responses, causal versus non-causal answers, and dispositional attributions.

Thus, success or failure as well as the developmental level were demonstrated to affect the specific explanations given in response to one's own and another's performance. Implications for future research were also discussed.

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Chapter I Introduction

The nature of children's causal explanations of their own and another's behavior has not been widely explored, either theoretically or empirically. It is suggested that attribution theory may provide an appropriate framework for analyzing developmental changes in concepts of causality involving self and other. The attribution process is concerned with answering questions about the causes of one's own behavior and the behavior of others. Attribution theory derives largely from Heider's (1958) notion of "naive" causal analysis of behavior which suggests that individuals are motivated to make attributions in order to explain present and past events and to predict and possibly control future behaviors. The particular attributions that are made have significant consequences for subsequent thoughts, feelings, and behaviors of the attributor. Theoretical and empirical work by Heider and others have generally focused on the adult. The present study investigates the causal explanations made by both children and adults using an attribution theory framework. In a general way, with regard tc both theoretical concepts and empirical findings, it is an attempt to integrate social and developmental psychologies in the manner suggested by Hartup (1976). Relevant social-cognitive developmental concepts are utilized in the formulation of hypotheses regarding the attributions made by the different age groups studied. Shantz (1975)

supports the usefulness of the adult attribution model in the study of social cognition in children by asserting that adulthood is the end state of development and furthermore that "how we conceptualize the adult feeds backward in time to how we conceptualize the child and adolescent" (p.2). Shantz specifically used the research on moral judgments to illustrate the viability of an attribution approach in providing us with a more meaningful model of children's social understanding. The present study further explicates developmental social cognition by exploring causal attributions made under conditions of success and failure outcomes, and when one is engaged in a task, i.e., is the actor, or is observing another's behavior.

Attribution in Adults

Previous investigations of adult attributions have been conducted according to two major theoretical positions, one based upon information processing and availability and the other based upon motivational considerations. The former suggests that one's role as an actor or observer is critical in the attribution process, while the latter suggests that one's ego-involvement in the task and its outcome is of primary significance.

Actor-Observer Differences

Building upon Heider's theory, Jones and Nisbett (1971) have proposed that when actors attempt to explain their own behavior, they tend to focus on situational (external,

environmental) causes. Observers, on the other hand, are more likely to perceive dispositional (internal, personal) factors as being the cause of the actor's behavior. According to Jones and Nisbett, this actor-observer divergence in perception is due largely to information processing and availability differences. With regard to the former, actors attend to what is most salient to them, situational cues, whereas observers focus on the actor's behavior, which is the most salient part of the environment to them. The second major source of the divergence is the differential knowledge possessed by the actor and the observer. Actors have information about their intentions, feelings, and relevant past history. Observers, on the other hand, are likely to base their attributions on present behavior, and are usually ignorant of past events involving the actor. A number of studies provide supportive evidence for the Jones and Nisbett hypothesis. For example, Jones, Rock, Shaver, Goethals, and Ward (1968) reported that subjects made ability (dispositional) attributions when they were observing another's ascending and descending intellectual performance. However, when subjects' own performances were involved, attributions to the situation (fluctuations in task difficulty) were said to account for their behavior.

A series of studies by Nisbett, Caputo, Legant, and Marecek (1973) provide further evidence for the validity of the actor-observer dichotomy hypothesis. In one study, actors and observers were asked to rate the likelihood

that the actor would volunteer to perform a second social service action after the actor had or had not previously agreed to volunteer for a university activity. Observers assumed that actors who had volunteered a first time would be likely to volunteer a second time, whereas actors did not base their ratings on whether or not they had previously volunteered. This pattern of data suggests that observers infer dispositions from observing another's behavior, while actors make situational attributions. In another study reported by Nisbett et al. (1973), subjects were asked to explain their own and their best friend's choices of college major and girlfriend. When describing either choice of a major or choice of a girlfriend, subjects were more likely to cite dispositional reasons for their best friend's behavior than for their own.

A study by Storms (1973) also supports the Jones and Nisbett proposal. Actors gave greater weight to situational factors than did observers. However, when actors saw a videotape taken from a different perspective, enabling them to view themselves, thus becoming observers of their own behavior, they attributed relatively more to their dispositions than did observers who viewed a videotape replicating the actor's visual perspective. Thus, the findings suggest that information availability and processing differences for actors and observers are responsible for the actor-situational and observer-dispositional bias

proposed by Jones and Nisbett.

Ego-Involvement and Attribution

Although informational differences are cited as the major sources of the actor-observer divergence, Jones and Nisbett (1971) and Storms (1973) do mention the possible relevance of motivational explanations, such as maintenance of self-esteem. Coopersmith (1967) defines self-esteem as a personal judgment of worthiness that is expressed in the attitudes individuals hold toward themselves. Sternberg (1976) proposed that individuals make causal attributions that will enhance or protect their self-esteem, by taking credit for success and attributing failure to external factors. Her findings indicated that success resulted in dispositional attributions, while failure resulted in situational attributions, particularly for actors and observers similar to the actors. However, dissimilar observers, who were therefore lacking in ego-involvement, were more likely to make dispositional attributions regardless of outcome. Thus, valence of outcome and involvement of subject determined whether self-esteem maintenance or perceptual salience would provide the impetus for the formulation of an attribution.

Experimental support for self-esteem explanations is also suggested by Beckman (1970) who found that teachers attributed causality for a student's performance to themselves when the student succeeded (ego-enhancement), but

attributed responsibility to external causes when the student failed (ego-protection). Observers (lacking in ego-involvement) who were given information about student performance in story form did not differentially attribute according to outcome. A study by Streufert and Streufert (1969) also found that exposure to failure resulted in situational blame, while success resulted in internal causal attributions. More recently, Langer and Roth (1975) reported that subjects anticipated greater success and rated themselves as better at the task as actors than when observing another. In addition, Miller (1976) reported that individuals engaged in more ego-enhancing or ego-defensive attributions in success or failure conditions, respectively, when there was relatively high involvement in the task than when ego-involvement was at a low level. Thus, it is evident that in order to adequately test information processing-availability and ego-involvement explanations of causal attribution, success and failure outcomes must be manipulated experimentally.

Consistency

Another experimental manipulation that provides relevant data about ego-involvement and actor-observer status involves using a between and within subjects design. After playing the initial role of either actor or observer (between-design), subjects participate in the opposite position (within-design). The degree of congruence between the attributions given in the two roles could be

related to the strength of the need to maintain consistency between causal attributions about self and other, similar to the need posited by Festinger (1957), Osgood and Tannenbaum (1955) and others.

A Developmental Perspective

The previous discussion suggests that as adults, we make attributions in order to explain, predict, and control our environment and/or in order to maintain a favorable self-concept. It becomes a significant developmental problem to explore the nature of children's attributions and to explain how and why they differ from those made by adults. The present study involves children of 5-6 and 9-10 years of age, because it is hypothesized that the most important developmental changes in the areas of interest occur within that age range. There are changes in the type of causal responding available to younger and older children. Also, the self-concept is gradually evolving during this period and self-evaluation is becoming a significant process. Thus, success and failure are becoming meaningful experiences to be incorporated into one's self-concept and self-esteem. In addition, the child is becoming more aware of the feelings and cognitions of others and is increasingly socialized with regard to "appropriate" explanations of the behaviors of others.

Descriptive versus Causal Explanations

One relevant variable that may be involved in children's

attributions is the changing form of causal explanations between the ages of 5 and 10 years. Whiteman (1967, 1970) has reported data from a number of studies concerned with psychological causality or the "cognition of intentions and feelings as behavioral causes" (1970, p.339). Whiteman's methodology involved interviewing children with respect to their understanding of a stimulus child's motivation in seven stories, each illustrating a different mechanism of adjustment (e.g., displacement, repression). He found a significant relation between age and scores on a Motivation Index (representing level of understanding of psychological causality) for children between 5 and 11 years. The younger children were more likely to respond in a descriptive or inaccurate causal way, whereas older children were able to fully grasp all of the elements of the story and demonstrated an understanding of underlying adjustment motives. A study by Gollin (1958) also found that older children scored significantly higher in their ability to infer motives of a boy depicted in a silent film, whereas younger children had difficulty advancing beyond a behavioral description. Furthermore, Peevers and Secord (1973) reported that older children were more likely than younger children to give explanations (e.g., "She's a snob because she's trying to hide something about herself.") when asked to tell what each of four individuals were like. Thus, in the

present study, it is hypothesized that causal explanations will increase and descriptive responses will decrease with age.

Self-Concept

Previously discussed research, using adult subjects, has suggested that we tend to make attributions that bolster or defend our self-esteem (i.e., dispositional attributions for success and situational attributions for failure). However, consequences can only be relevant for self-esteem if the self-concept is well-developed. Cooley's (1902) notion of the "looking-glass" self involves the formation of the self-evaluation by imagining how another individual involved in some interaction views him/her, and then internalizing that reflected judgment as some form of pride or disappointment in oneself. Mead (1934) suggested that one's self-concept and one's esteem toward that self-concept is based upon developing the ability, through the process of social experience, to look at oneself from another's perspective. Ultimately, behaviors derived from the awareness of the self are produced. The reactions by others to this awareness, manifested in behavior, elicit further modifications of the self-concept and the cycle continues. According to Piaget (1954) the ability to view things as others do is not present until the concrete operational stage. Therefore, the ability to view oneself as others do, which is a

significant part of the development of the self-concept, should not be achieved until the concrete operational period.

Furthermore, according to many personality theorists (e.g., Murray, 1938) self-concept is rooted in a system of hierarchical needs. Early on, James (1890) suggested that ideally we would like to be successful in all things, "but the thing is simply impossible so the seeker of his truest, strongest, deepest self must review the list carefully, and pick out the one on which to stake his salvation...so our self-feeling in this world depends entirely on what we back ourselves to be or do" (pp.309-310). The motivational hierarchy that James, Murray, and others refer to becomes a significant basis for self-evaluation. Achievement need is the type of motivation relevant to the present study's emphasis on success and failure in a task. According to Erikson (1963), the child passes through eight critical stages of development, each period having its own specific crisis related to one's ego identity or self-concept. The important crisis of stage four, which takes place from about the age of five to the onset of puberty, is of industry versus inferiority. Systematic instruction, inside and outside of school, becomes particularly important. Family and school achievement experiences, during the years between 5 and 10 would inculcate the relevance of

achievement striving to one's self-concept. Thus, it is reasonable to hypothesize that ego-involved causal attributions regarding performance on a task with a positive or negative outcome will increase with age as the self-concept becomes more stabilized and the achievement striving becomes more relevant.

Stimulus Salience

Jones and Nisbett (1971) suggest that the saliency of different aspects of the environment facilitates situational attributions for the actor and dispositional attributions for the observer. The focus on the perceptually salient is related to the concept of centration (Piaget, 1950), an important characteristic of the preoperational child. Thus, if adults tend to focus unidimensionally, this likelihood should be even more pronounced in young children. However, what may be salient to the adult may not be salient to the child. Furthermore, there may be significant differences between those aspects of a problem attended to by children of different cognitive levels and interests. Previously described research suggests that broad dispositional characteristics of the actor are used as causal explanations by the adult observer. These kinds of causal attributions are probably beyond the conceptual understanding of the younger children (5-6 years old). Thus, they, too, may focus on aspects of the actor, but irrelevant aspects, such as hair color,

manner of sitting, etc. That is, they will probably make irrelevant, personal attributions rather than relevant, underlying dispositional attributions. The 5-6 year old actor also centers on the dominant aspect of the situation. For her, this is probably task outcome. Thus, it is hypothesized that in the present study, the young actors will explain their performance on a task by simply describing features of their successful or failing performance.

The concept of unidimensional focusing is also relevant to the within-subjects part of the present study. When the young child is required to make a second attribution (e.g., first as an actor, then as an observer) she tends to consider only her present role and does not take into account her previous causal reasoning. Therefore, the young child's attributions should be less consistent than those made by the older child and the adult.

Ego-Involvement, Egocentrism, and Actor-Observer Status

It has previously been hypothesized that ego-involved causal attributions will increase with age, and that ego-involvement is more relevant in the actor than in the observer condition. It is further suggested that ego-involvement will be more apparent in older observers than in younger observers, because of the former's greater ability to view the situation from the perspective of another. Thus, the observer may role play and show

some defensive causal attributions. Sternberg (1976) reported that adult observers who were similar to the actor causally attributed similarly, making dispositional attributions following success and situational attributions following failure. In the present study, it is assumed that observers will perceive themselves as similar to the actor with regard to age and sex. It is hypothesized that the older children will tend to respond like adult subjects, but the younger observer children, being cognitively incapable of viewing the situation from the actor's point of view, will not make attributions mediated by ego-involvement.

Summary of Hypotheses

In general, it is hypothesized that Jones and Nisbett's proposal of actor-observer differences based upon information processing and availability will not be found for the two older groups of subjects because there is a clear positive or negative outcome in the present study which is of overriding importance. An actor-observer dichotomy is expected in the responses of the younger children because of the hypothesized relative lack of ego-involvement in task outcome at that age.

The following specific hypotheses are suggested based on the theoretical notions and empirical data discussed:

1. Causal explanations will show an increase and descriptive responses a decrease with age. As children become cognitively more capable, they can go beyond a description of behavior and consequences, and can begin to search for, understand, and cite causal reasons for actions (e.g., "She wasn't trying very hard.").

2. Ego-involved causal attributions made by the actor will increase with age. It will become increasingly more important to one's self-concept to view success as internally caused (dispositional) and failure as externally caused (situational).

3. Ego-involved causal attributions will be more likely to occur in older than in younger observers because of the former's greater ability to be nonego-centric and to put herself in (role play) the actor's position.

4. Because of their tendency to center on the dominant aspect of the situation, 5-6 year old actors will make attributions concerning the outcome (task performance), while 5-6 year old observers will focus on irrelevant descriptive aspects of the actor in both success and failure conditions.

5. The 9-10 year old actor will tend to focus on situational variables under conditions of failure because of some remaining centration and because of some amount of ego-involvement in the task. Under conditions of

success, the actor will tend to attribute dispositionally because such an attribution is ego-enhancing. In the failure condition, the 9-10 year old observer will attribute situationally because of her relatively non-egocentric perception of the actor's positions in the success condition, the 9-10 year old observer will tend to make dispositional attributions about the actor because the latter is most salient, the observer of this age is capable of inferring underlying causes of behavior (Whiteman, 1967, 1970; Peevers and Secord, 1973), and is relatively nonegocentric. However, the degree of situational and dispositional attributions for the failure and success conditions, respectively, will be somewhat lower than the figures for adult observer subjects, because of further role-playing development and general socialization between the age of 10 and adulthood.

6. The degree of consistency between attributions about self and other (when the same subject is both actor and observer) should increase with age. The need to give logical, consistent causal explanations in a social setting (reasons are provided to the experimenter) should become more relevant as individuals become aware of the illogical nature of divergent causal perceptions of the same behavior engaged in by two similar individuals (self and other) in the same setting. Decentration allows one to focus on all significant aspects of the situation simultaneously.

Chapter II Method

General Design

In Part I of the experiment, half of the subjects of three age groups participated directly in an achievement-type task (actor condition) and half viewed a film of a same-age, same-sex actor (observer condition). Task outcome was manipulated so that half of the subjects were in a success condition and half were in a failure condition. Subjects were questioned about task performance using two measures: one open-ended followed by a structured technique. In Part II, roles were reversed so that actors became observers and vice versa. The valence of task outcome was consistent in the two parts of the study for half of the subjects and different for the other half. The open-ended and structured measures for Part II were identical to the ones employed in Part I. Figure 1 depicts the various conditions of the study.

Subjects

One hundred forty-four subjects, 48 in each of the following groups were individually tested: 5-6 year olds, 9-10 year olds, and college age. The mean age of the younger children was 5 years 11 months, and the mean age of the older children was 9 years 11 months. The children were from two schools: Hunter College Elementary School and St. Matthias School, both of

AGE GROUPS: 5-6 Years, 9-10 Years, Adult

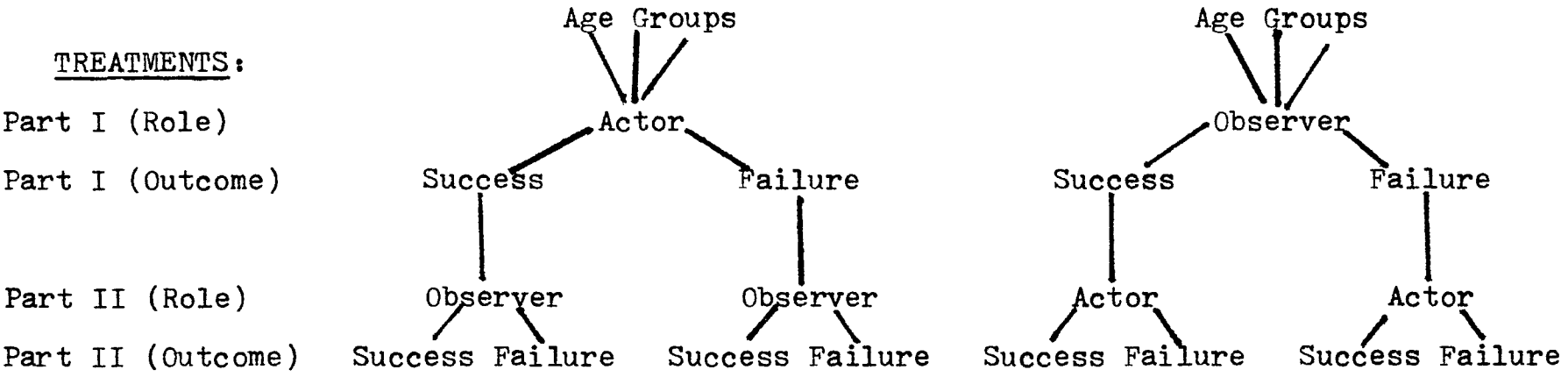


Figure 1. General Experimental Design

New York City. The adults were undergraduates at Hunter College, City University of New York.

Material

Test Apparatus

The test apparatus was a wooden box, 43.2 cm wide x 30.5 cm long, with a height of 11.5 cm in front and 28.0 cm in back. The top of the box was raised from the back so that the stimulus sheet of paper on top could be easily seen by the subject. A 0.5 cm shelf prevented the paper from slipping off the raised top. There was a black opaque curtained opening (28.5 cm x 9.5 cm) in the box facing the subject, and the back was completely open to allow the experimenter to place and remove the stimulus papers. Photographs of the apparatus are presented in Appendix I.

Stimulus Paper

The stimulus paper was 21.5 cm x 28.5 cm mimeographed with 9 irregularly placed circles, each with a diameter of 2.0 cm. A copy of this stimulus is presented in Appendix II. A black felt-tip marking pen was used by the subject to make dots in the circles. A single dot (not in a circle) was marked on each of the two stimulus papers shown to each subject. A stimulus sheet with 7 of the 9 marked dots correctly placed inside the circles was used for the success condition. A

stimulus sheet with all of the 9 marked dots incorrectly placed outside the circles was used for the failure condition.

Film

Two films (one of a female child, one of a female adult) depicted a subject (with her back to the camera) in the actor condition. After the instructions have been given to the "subject" on film, and she begins the task by putting her hand inside the box, the film sequence ends.

Procedure

Subjects were randomly assigned to one of the following four conditions: actor-success, actor-failure, observer-success, observer-failure.

Actor Condition

After the subject was seated at a table (on top of which was the box apparatus), across from the experimenter, she was told: "I'm going to ask you to do something. Then I'll ask you some questions about it. I can't give you too much information now, but I'll explain everything when you're all done." The subject was then shown two identical stimulus papers and was given the following instructions by the experimenter: "These are sheets of paper with the same pattern of circles on them. I will place one up here and one inside the box." The

experimenter placed one paper on top of the box and one inside. "Using this pen, put a dot in each circle on the paper inside the curtain. You will not be able to look inside the box to see what you are doing, but you can look at this sheet (experimenter pointed to the top sheet) to help you. I will place the marker which you are holding in your hand on the dot already made so you will know where you are starting. Do you have any questions? You may take as much time as you need. Begin and be sure to tell me when you're finished." When the subject announced that she was done, the experimenter removed from the back of the box, not the actual work sheet used by the subject, but a success or failure sheet, depending upon the condition to which the subject had been assigned. The experimenter then showed the subject the stimulus sheet and told her: "OK, this is what you did. How many dots are in the circles? How many dots are outside of the circles?" These questions were utilized in order to facilitate attention to the number correct or incorrect, and hence assured the saliency of success or failure to the subject. The following question was then asked: "Why did you do so well?" for success subjects or "Why did you do so poorly?" for failure subjects. When the subjects completed their spontaneous explanations, the following probe questions were used: "Tell me more about why you did so well (poorly)." and "Can you tell me any-

thing else?" These probes were used because Berzonsky (1970) reported that probes often resulted in higher level responses to physical causality questions.

Observer Condition

After the subject was seated, the experimenter told her that she would see a short film of a girl named Jane, who was the same age as she was (or a college student, named Jane, in the adult condition), and would be asked some questions about it. At the end of the film, the experimenter showed the subject either a stimulus success or failure paper, according to which condition she had been assigned and was told: "OK, this is what Jane did." The same questions that were used for actor subjects were asked of observer subjects with the change in wording from "you" to "she" or "Jane."

Practical considerations, particularly with regard to the 5-6 year old subjects, suggested the use of a filmed rather than a live actor in the observer condition. The necessity for attention to and noninterference with the actor and the situation precluded the use of a non-filmed actor. In addition, a certain amount of control was gained (i.e., the observer condition was always the same) with a film sequence and the actor could behave unself-consciously without the presence of another child observing her actions. Empirical support for a filmed sequence is provided by Storms (1973) who

reported that the attributions made by actors and observers who viewed videotapes from their original perspectives were quite similar to the attributions made by actors and observers in a no-videotape condition. It was the subject's role as either actor or observer that determined attribution.

Structured Questioning

At the conclusion of the open-ended questions, a structured measure was used in order to collect additional quantitative data about causal attributions and to determine the degree of relationship between the two measures. In addition, much of the research in the attribution area employs structured rather than open-ended questioning. Therefore, some degree of continuity would be provided between previous research and the present study by using a structured measure. However, the open-ended technique still appears to retain the advantages of being equally applicable to all age groups and being less influenced by possible experimenter suggestion. Because of the lack of understanding of percentages in the children of the age range studied, two different structured measures were used, one for the college age sample, and the other for the children.

Instructions for College-Age Group. The experimenter gave the following instructions to the college students:

"How somebody does on this problem is probably due to some combination of the following four factors: being good at problems like this (not being good at problems like this), trying hard (not trying hard enough), being lucky (being unlucky), problem being easy (problem being hard)." The terms in parentheses refer to those used in the failure condition. A sheet of paper with each of the relevant variables printed on it was shown to the subject. The order of the presentation of the factors was randomly varied. "Indicate for your performance the relative importance of each factor, by putting a percentage next to each variable. The percentages can be any number from 0% to 100%. All four must add up to a total of 100%." The word "Jane's" was substituted for "your" in the observer condition.

Instructions for Children. Subjects were asked to rate the importance of each variable separately, in the following way: The subject was shown three pictures of a child with arms outstretched - completely, moderately, or slightly, and a fourth one with arms at her sides (similar to the procedure employed by Smith, 1975). They were asked to "point to the picture that shows how important being good at games like this (not being good at games like this) was for what you just did: very, very important (experimenter pointed to the picture with arms completely outstretched), pretty

important (moderately outstretched), a little important (slightly outstretched), or not important at all (arms at side)." These terms and the pointing by the experimenter were then repeated in the opposite direction in order to deal with the young child's tendency to choose the last alternative stated (Mischel, Zeiss, and Zeiss, 1974). This procedure was repeated for each of the other three variables. The order of the presentation of the variables was randomly assigned to the subjects.

Opposite Role Condition

After the subjects answered the structured questions, they were required to participate in the opposite role condition (i.e., actors became observers and observers became actors). Half of the subjects in each role were placed in the success condition and half in the failure condition. Therefore, half were asked to make attributions about outcomes that were congruent in both phases of the experiment (e.g., actor-success, observer-success) and half made attributions about outcomes that were divergent (e.g., observer-failure, actor-success). The dependent measures were the same as those used in the first part of the study.

At the conclusion of the experiment, each subject was debriefed, particularly with regard to the success and failure conditions, and assured of her excellent performance on the task.

Scoring of Open-ended Questions

Responses were coded into one of the following categories: Ability (A), e.g., "She's smart;" Effort (E), e.g., "I didn't try hard enough;" Luck (L), e.g., "She was just lucky;" Task Difficulty (TD), e.g., "This is an impossible problem;" Miscellaneous (M), when responses were irrelevant or uninterpretable, e.g., "She closed her eyes tight;" I Don't Know (IDK), when subject failed to respond, or more likely said: "I don't know" in response to the attribution question; Descriptive (D) when responses described performance rather than being causal explanations, e.g., "There are seven dots in the circles;" and Miscellaneous Internal (I), when responses were evidently internal, but were not considered to be clearly A or E attributions, e.g., "I was nervous."

The scorer reliability technique used in the present study required coding of each protocol by at least two scorers. In the seven instances of interscorer disagreement or uncertainty, two additional scorers coded the responses, and the consensus category was then used for further analyses.

Pilot research had indicated that many subjects gave more than one attribution (e.g., "I didn't sit correctly and I guess I should have studied the top sheet more. Perhaps I should have taken more time.").

Therefore, each part of the total response was separately coded. The percentage of each category in comparison with the total number of responses was then recorded. For example, if a subject gave a total of four responses, two of which were coded as A, one as E, and one as TD, the respective percentages would be 50% A, 25% E, 25% TD, and 0% for the other categories. In addition, if A, E, and I are considered to be Internal responses, and L and TD are considered to be External responses (Weiner, Frieze, Kukla, Reed, Rest, and Rosenbaum, 1971) the %Score for the Internal category would be 75 while the %Score for the External category would be 25.

Chapter III Results

Types of Analyses for Open-ended Responses: Data Alternatives

The %Score, already described, provides a data model, to which analysis of variance can be applied. However, the %Scores do not tell us all there is to know about differences among the responses of the groups tested. Thus, data analysis based upon comparison of the relative number of subjects in each group who gave different types of responses would be helpful. For that purpose, various Chi-square and Fisher exact probability tests (depending upon the expected frequency in each cell, Siegel, 1956) were conducted involving Number-of-Subjects data. When total frequencies in the four cells of a 2 x 2 chi-square contingency table were greater than 40, the chi-square formula corrected for continuity (Yates correction) was employed (Siegel, 1956). The first attribution given by each subject provides another perspective regarding the attribution process. The First Response may be viewed as the predominant, spontaneous explanation of a given event, and chi-square and Fisher probability tests can be applied. Thus, in all, three different types of data analyses were utilized.

Order Effects

In order to determine whether there were significant

differences between the open-ended responses of subjects in the first and second parts of the study (e.g., actor-success in Part I compared to actor-success in Part II), t tests were computed comparing the External %Scores. Results indicated that when the outcome was the same in both parts (e.g., subject observes another person fail and then as an actor fails at the task herself), significant differences were not demonstrated. However, when the outcome in Part II differed from that in Part I (e.g., actor succeeds at the task and then observes another fail), significant differences were observed in some cases (if a failure followed a success). These analyses can be found in Appendix III.

Further support for different-outcome order effects was indicated by the computation of chi-square or Fisher exact probability tests comparing the number of subjects who gave External and Internal attributions in Part I and Part II. When the outcome was different in Part II (but only when failure followed success), the results indicated that $\chi^2 = 6.26$, $p < .02$, and $\chi^2 = 6.47$, $p < .02$, for the 5-6 and 9-10 year old age groups, respectively. There was no significant difference between the proportion of adult subjects giving Internal and External responses for Parts I and II for both the same and different outcome comparisons. None of the comparisons of Part I and same outcome Part II reached statistical significance.

Chi-square and Fisher exact probability tests were also computed to compare the frequency of First Responses that were External and Internal in Part I, Part II-same outcome, and Part II-different outcome. When success was followed by a failure, $\chi^2 = 5.12$, $p < .05$ and $\chi^2 = 10.12$, $p < .01$ for the 5-6 and 9-10 year age groups, respectively. Although college student data showed a similar trend, statistical significance was not obtained. None of the comparisons involving Part I and Part II same-outcome was statistically significant. Therefore, in further analyses the responses of Part I and Part II-same outcome were pooled, thereby increasing the n by 50% in each condition, resulting, for statistical purposes, in a total of 216 subjects (18 subjects x 12 groups).

Developmental Changes in Internal Responses

A 3 x 2 x 2 (age by status by outcome) analysis of variance revealed a significant main effect for age (F (2, 204) = 4.754, $p < .01$) when open-ended Internal attribution was the dependent variable. Table 1 presents the ANOVA data with Internal attribution as the dependent variable and Figure 2 depicts the mean internal attributions for each condition. With increasing age, a larger proportion of one's attributions in response to the task were Internal. The number of subjects who gave Internal responses also increased from 33 (out of a total

TABLE 1

ANALYSIS OF VARIANCE OF INTERNAL ATTRIBUTIONS
(OPEN-ENDED %SCORES)

Source	df	MS	F
Age	2	6171.180	4.754**
Outcome	1	61678.238	47.518***
Status	1	6315.852	4.866*
Age x Outcome	2	2059.670	1.587
Age x Status	2	1123.560	0.866
Outcome x Status	1	3329.185	2.565
Age x Outcome x Status	2	67.977	0.052

*$p < .05$
**$p < .01$
***$p < .001$

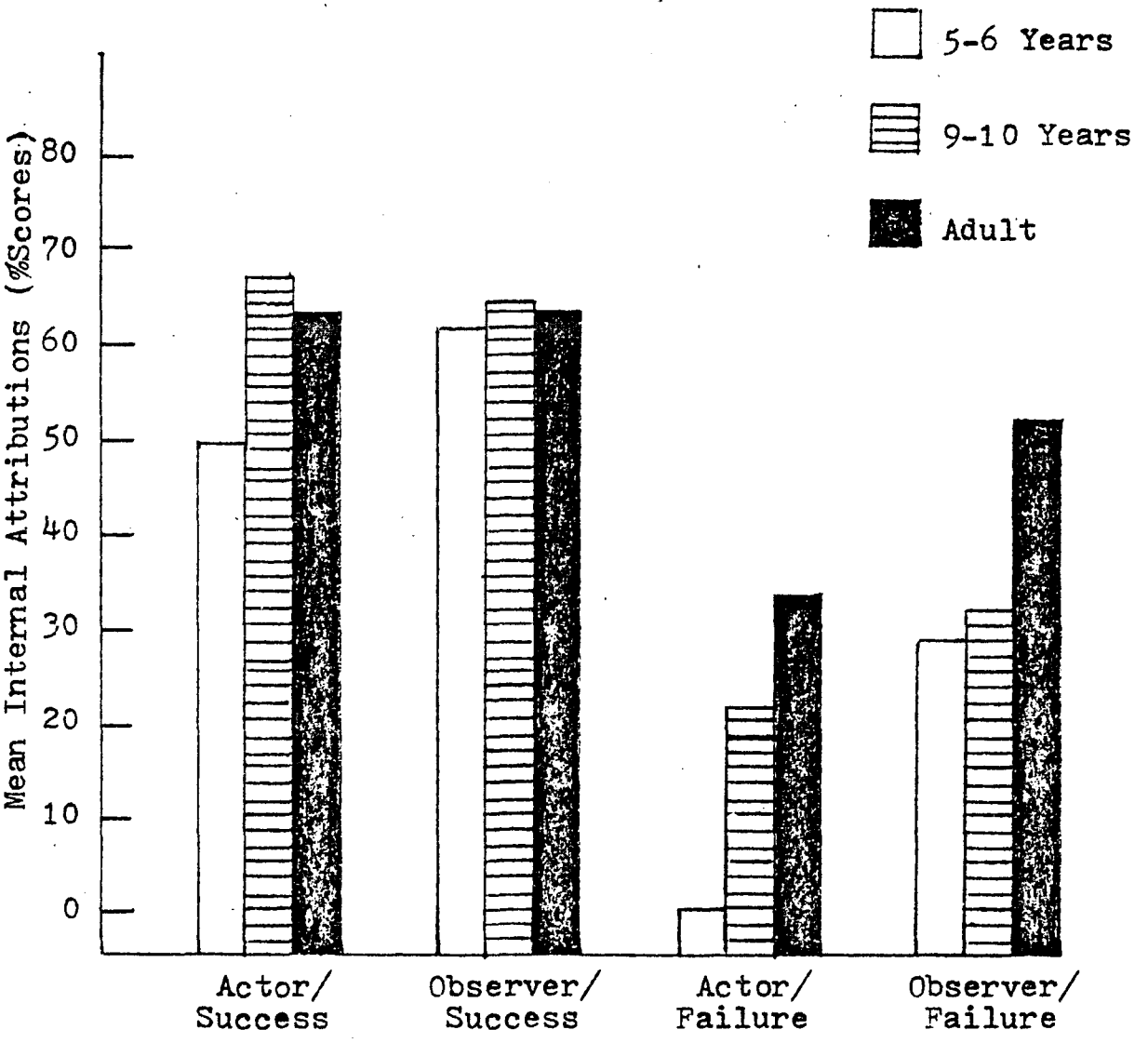


Figure 2. Mean Internal Attributions (%Scores)

of 72 subjects) for the 5-6 year olds, to 47 for the 9-10 year olds, to 56 for the adults. Thus, as subjects increased in age, there was an increase in the percentage of subjects who perceived themselves or others as responsible for task performance.

Actor-Observer Differences; Internal-External Responses

Jones and Nisbett (1971) suggested that actors tend to make situational attributions, while observers tend to explain the outcome of an event by describing internal (dispositional) attributes of the actor. The ANOVA data for %Scores of Internal attributions presented in Table 1 reveals a significant main effect for role (F (1, 204) = 4.866, $p < .05$). Observers were more likely to make Internal attributions than were actors. The corresponding ANOVA for %Scores of External attributions, Table 2, does not reveal a significant main effect for actor-observer status. However, the interaction between age and status almost reached standard levels of statistical significance (F (2,204) = 2.918, $p < .06$. Figure 3, which depicts the mean External attributions and Table 3, which presents a summary of means and standard deviations, indicate that the youngest age group gave a mean of 42% External responses as actors, but only 25% when they were observers. The same pattern was not manifested in the older children and adults. Chi-square tests comparing

TABLE 2

ANALYSIS OF VARIANCE OF EXTERNAL ATTRIBUTIONS
(OPEN-ENDED %SCORES)

Source	df	MS	F
Age	2	1917.868	1.415
Outcome	1	65173.629	48.097***
Status	1	640.667	0.473
Age x Outcome	2	6418.086	4.736**
Age x Status	2	3953.623	2.918
Outcome x Status	1	1768.167	1.305
Age x Outcome x Status	2	2373.172	1.751

**$p < .01$
***$p < .001$

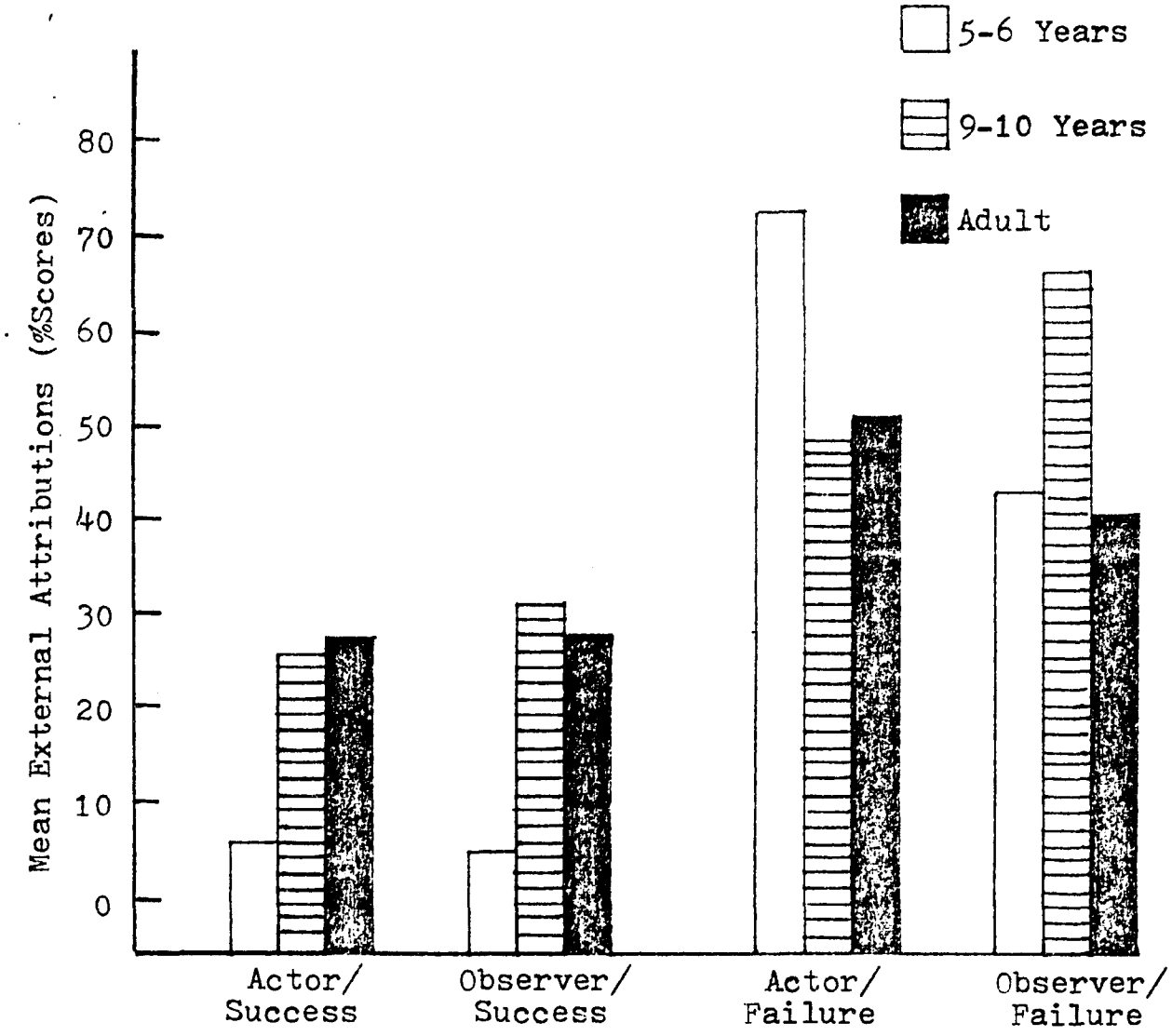


Figure 3. Mean External Attributions (%Scores)

TABLE 3

SUMMARY OF MEANS AND STANDARD DEVIATIONS UNDER CONDITIONS OF SUCCESS (S) AND FAILURE (F)

		5-6 Years				9-10 Years				Adult			
		Actor		Observer		Actor		Observer		Actor		Observer	
		S	F	S	F	S	F	S	F	S	F	S	F
ABILITY:	MEAN	21.3	0.0	25.9	1.4	19.0	12.2	20.4	7.4	54.1	29.3	57.9	38.1
	SD	34.7	0.0	40.1	5.9	28.6	22.1	34.1	17.4	37.6	29.0	41.1	34.1
EFFORT:	MEAN	28.2	0.0	36.1	27.8	47.3	5.6	44.4	20.4	9.4	2.8	6.0	8.9
	SD	34.2	0.0	44.7	39.2	41.3	17.2	42.4	29.5	21.1	11.9	14.5	20.5
LUCK:	MEAN	0.0	0.0	5.6	0.0	1.9	0.0	0.0	0.0	23.8	1.9	14.8	0.0
	SD	0.0	0.0	23.6	0.0	7.8	0.0	0.0	0.0	29.7	7.8	27.9	0.0
TASK DIF-	MEAN	6.0	78.7	0.0	44.4	24.4	49.4	32.4	67.6	3.7	45.7	13.9	41.6
FICULTY:	SD	18.9	38.7	0.0	48.2	31.1	40.9	40.2	40.2	10.8	37.3	27.6	40.9
DESCRIP-	MEAN	13.9	7.4	7.4	8.3	0.0	2.6	2.8	0.0	4.2	9.3	5.6	4.8
TIVE:	SD	33.5	24.4	24.4	19.2	0.0	19.3	16.8	0.0	12.9	19.1	16.2	12.7
IDK:	MEAN	30.6	13.9	25.0	15.3	7.4	22.4	0.0	1.9	4.8	3.7	1.9	0.9
	SD	42.5	33.5	35.4	33.4	15.1	22.1	0.0	7.8	11.4	10.8	7.8	3.9
INTERNAL:	MEAN	49.5	0.0	62.0	29.2	66.3	20.6	64.8	30.6	63.5	33.9	63.9	50.7
	SD	42.6	0.0	40.3	40.5	38.3	25.9	39.6	39.3	32.6	29.6	40.9	38.0
EXTERNAL:	MEAN	6.0	78.7	5.6	44.4	26.3	49.4	32.4	67.6	27.5	53.1	28.7	41.6
	SD	18.9	36.7	23.6	48.2	32.6	40.9	40.2	40.2	30.7	39.1	37.4	40.9

the proportion of individuals who gave External and Internal responses as actors and observers approached significance for the 5-6 year olds ($\chi^2 = 3.67$, $p < .10$). The trend was in the direction suggested by the Jones and Nisbett model. Chi-square tests for the 9-10 year olds and adults were clearly not significant. Table 4 summarizes the relevant contingency tables. Thus, the only support for the Jones and Nisbett hypothesis occurred at the youngest age level, as hypothesized in the introduction.

Success-Failure, Actor-Observer; Internal-External Responses

The data were also looked at to determine the significance of success and failure outcomes in the attribution process. Table 1, which presents the analysis of variance data for Internal attributions, reveals that a successful performance was significantly more likely to result in Internal explanations than was a failure outcome (F (1,204) = 47.518 $p < .001$). Likewise, a separate ANOVA for External attributions (Table 2) demonstrated a significant main effect for outcome (F (1, 204) = 48.097, $p < .001$). External attributions were more likely to be given in response to a failure than to a success event. An interaction between age and outcome was also demonstrated in Table 2 (F (2, 204) = 4.736, $p < .01$). Figure 3 and Table 3 (Summary of means) show that, with increasing age, responses were less likely to be External for Failure.

TABLE 4

NUMBER-OF-SUBJECTS COMPARISONS OF EXTERNAL AND INTERNAL RESPONSES AS ACTORS AND OBSERVERS

	5-6 Years		9-10 Years		Adults	
	Ext.	Int.	Ext.	Int.	Ext.	Int.
Actor	18	12	21	24	24	28
Observer	10	21	23	23	20	28
	$\chi^2=3.67$		$\chi^2=.01$		$\chi^2=.06$	

Thus, there seems to be a developmental tendency to take responsibility for behavior, including one's failures, although people at each age are less likely to take responsibility for failure than for success. However, the youngest age group rarely gave External explanations for success while the older children and adults did so more frequently.

Chi-square comparisons of the proportion of Internal and External responses under conditions of success and failure (presented in Table 5) revealed significant differences for the children, but not for the adults ($\chi^2 = 24.59$, $p < .001$, and $\chi^2 = 6.83$, $p < .01$ for the 5-6 and 9-10 year olds, respectively). The First Response data (presented in Table 6) showed significant differences for success and failure at each of the three age levels. Subjects were likely to first give External explanations for failure and Internal explanations for success ($\chi^2 = 22.73$, $p < .001$, $\chi^2 = 15.33$, $p < .001$, $\chi^2 = 7.76$, $p < .01$ for 5-6 year olds, 9-10 year olds, and adults, respectively).

Specific comparisons of subjects who succeeded and failed (actors) and subjects who observed others succeed and fail are also revealing. Table 7 summarizes the Number-of-Subjects comparisons and Table 8 summarizes the First Response data. Both types of analyses were significant for the youngest age group. That is, both

TABLE 5

NUMBER-OF-SUBJECTS COMPARISONS OF EXTERNAL AND INTERNAL RESPONSES UNDER CONDITIONS OF SUCCESS AND FAILURE

	5-6 Years		9-10 Years		Adults	
	Ext.	Int.	Ext.	Int.	Ext.	Int.
Success	3	26	16	31	19	30
Failure	24	7	18	16	25	26
	$\chi^2=24.59$***		$\chi^2=6.83$**		$\chi^2=.69$	

**$p<.01$
***$p<.001$

TABLE 6

FIRST RESPONSE COMPARISONS OF EXTERNAL AND INTERNAL RESPONSES UNDER CONDITIONS OF SUCCESS AND FAILURE

	5-6 Years		9-10 Years		Adults	
	Ext.	Int.	Ext.	Int.	Ext.	Int.
Success	1	17	7	25	9	23
Failure	21	4	20	6	20	10
	$\chi^2=22.73$***		$\chi^2=15.33$***		$\chi^2=7.76$**	

**$p<.01$
***$p<.001$

TABLE 7

NUMBER-OF-SUBJECTS COMPARISONS OF EXTERNAL AND INTERNAL RESPONSES AS ACTORS AND OBSERVERS UNDER CONDITIONS OF SUCCESS AND FAILURE

ACTOR

	5-6 Years		9-10 Years		Adults	
	Ext.	Int.	Ext.	Int.	Ext.	Int.
Success	2	12	8	16	10	16
Failure	15	0	13	8	14	12
	$\chi^2=21.93$***		$\chi^2=2.62$		$\chi^2=.70$	

OBSERVER

	5-6 Years		9-10 Years		Adults	
	Ext.	Int.	Ext.	Int.	Ext.	Int.
Success	1	14	8	15	9	14
Failure	9	7	15	8	11	14
	$\chi^2=8.71$**		$\chi^2=3.13$		$\chi^2=.01$	

**$p<.01$
***$p<.001$

TABLE 8

FIRST RESPONSE COMPARISONS OF EXTERNAL AND INTERNAL RESPONSES AS ACTORS AND OBSERVERS UNDER CONDITIONS OF SUCCESS AND FAILURE

	ACTOR					
	5-6 Years		9-10 Years		Adults	
	Ext.	Int.	Ext.	Int.	Ext.	Int.
Success	0	9	3	9	2	13
Failure	14	0	3	1	11	4
	Fisher test***				χ^2=11.00***	

	OBSERVER					
	5-6 Years		9-10 Years		Adults	
	Ext.	Int.	Ext.	Int.	Ext.	Int.
Success	1	8	4	13	7	10
Failure	7	4	13	5	9	6
	Fisher test*		χ^2=8.30**		χ^2=1.13	

*p<.05
**p<.01
***p<.001

5-6 year old actors and observers were very likely to give Internal attributions for success and External attributions for failure. The same pattern of data was shown for 9-10 year old observers using First Response data. Similar trends which failed to reach significance were demonstrated for 9-10 year old actors (for both First Response and Number-of-Subjects comparisons) and 9-10 year old Number-of-Subjects observer comparisons. For college students, the only significant comparison of success and failure occurred for the First Response of actors ($\chi^2 = 11.00$, $p < .001$). Trends, similar to the ones demonstrated by the 9-10 year olds, were not shown by the adult subjects.

Ego-involvement attribution theory also suggests that it is important ot compare the explanations of actors and observers under the same outcome conditions. The younger children who failed did not give Internal explanations of that outcome, but when they observed another child's failure, they were likely to give Internal responses ($\chi^2 = 8.48$, $p < .01$). A significant difference was not indicated for 5-6 year olds actors and observers in the success condition, nor was significance achieved for either success or failure events for the other age groups.

Specific Attributions

Ability and Effort Comparisons

Separate 3 x 2 x 2 (age by outcome by status) analyses of variance were computed for %Scores of Ability and Effort attributions (presented in Tables 9 and 10, respectively). Both analyses found significant main effects for age (F (2, 204) = 20.975, $p<.001$ for Ability and F (2, 204) = 10.920, $p<.001$ for Effort) and outcome (F (1, 204) = 21.493, $p<.001$ for Ability and F (1, 204) = 18.224, $p<.001$ for Effort). Examination of Figure 4 indicates that the two groups of children were more likely to make Effort attributions than was the adult group, while the opposite was the case with Ability as the attribution. In addition, both Ability and Effort attributions were more likely to be given when task outcome was success rather than failure. A third main effect of actor-observer status was also significant with Effort as the relevant response (F (1, 204) = 3.858, $p<.05$). This was largely accounted for by the greater percentage of Effort responses given when observers made attributions about another's failure. Thus, the two way interaction between outcome and role was significant (F (1, 204) = 4.169, $p<.05$). Chi-square comparisons of Ability and Effort attributions by age level are shown in Table 11. Results indicated that the proportion of Ability and Effort attributions in the two groups of

TABLE 9

ANALYSIS OF VARIANCE OF ABILITY ATTRIBUTIONS
(OPEN-ENDED %SCORES)

Source	df	MS	F
Age	2	21550.813	20.975***
Outcome	1	22082.664	21.493***
Status	1	1048.963	1.021
Age x Outcome	2	1625.097	1.582
Age x Status	2	529.449	0.515
Outcome x Status	1	362.963	0.353
Age x Outcome x Status	2	428.973	0.418

***$p < .001$

TABLE 10

ANALYSIS OF VARIANCE OF EFFORT ATTRIBUTIONS
(OPEN-ENDED %SCORES)

Source	df	MS	F
Age	2	9670.254	10.920***
Outcome	1	16137.445	18.224***
Status	1	3416.116	3.858*
Age x Outcome	2	4340.918	4.902**
Age x Status	2	1101.029	1.243
Outcome x Status	1	3691.893	4.169*
Age x Outcome x Status	2	189.587	0.214

*$p < .05$
**$p < .01$
***$p < .001$

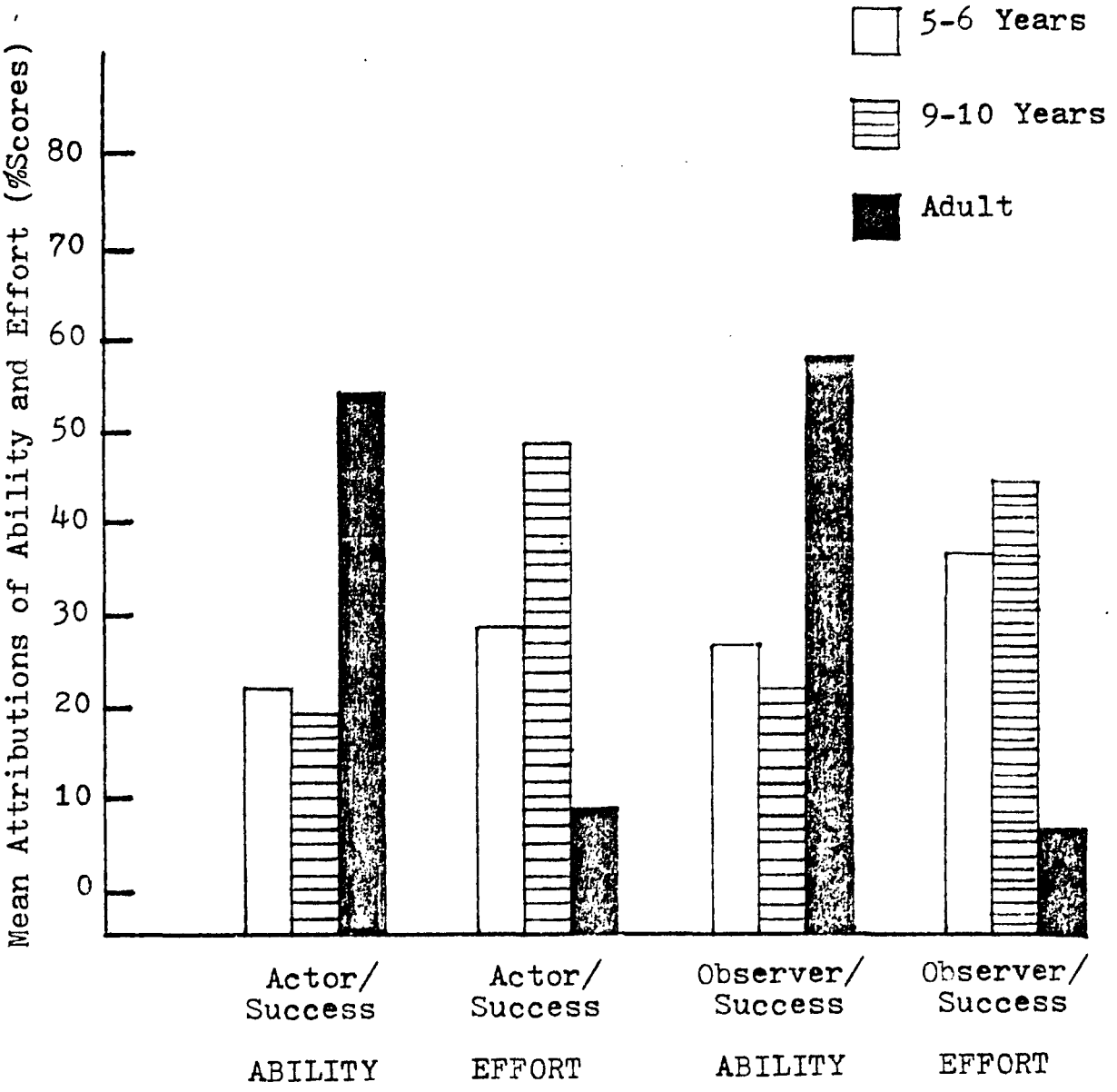


Figure 4. Mean Attributions of Ability and Effort (%Scores)

TABLE 11

NUMBER-OF-SUBJECTS COMPARISONS OF ABILITY AND EFFORT RESPONSES AS ACTORS AND OBSERVERS UNDER CONDITIONS OF SUCCESS

	ACTOR		OBSERVER	
	Ability	Effort	Ability	Effort
5-6 Years	6	9	6	8
9-10 Years	7	12	6	11
	$\chi^2=.04$		$\chi^2=.19$	
	Ability	Effort	Ability	Effort
5-6 Years	6	9	6	8
Adult	14	4	13	3
	$\chi^2=4.89*$		$\chi^2=4.74*$	
	Ability	Effort	Ability	Effort
9-10 Years	7	12	6	11
Adult	14	4	13	3
	$\chi^2=6.31*$		$\chi^2=7.13**$	

*$p<.05$
**$p<.01$

children did not differ, while the children differed significantly from the adults. Both actor-success and observer-success children gave significantly more Effort attributions than did their adult counterparts, while the opposite pattern emerged for Ability attributions, i.e., adults made significantly more Ability than Effort attributions (χ^2 = 4.89, $p<.05$ and χ^2 = 4.74, $p<.05$ for 5-6 year olds/adult actor-success and observer-success comparisons, respectively; and χ^2 = 6.31, $p<.05$ and χ^2 = 7.13, $p<.01$ for 9-10 year olds/adult actor-success and observer-success comparisons, respectively).

Luck

A 3 x 2 x 2 (age by outcome by status) analysis of variance was computed with Luck as the dependent variable (presented in Table 12). Significant main effects were obtained for age and outcome (F (2, 204) = 10.442, $p<.001$ and F (1, 204) = 14.974, $p<.001$, respectively). The two way interaction between age and outcome was also statistically significant (F (2, 204) = 8.475, $p<.001$). In contrast to the hypothesized relationship between failure and luck (as an External attribution), the results indicated that Luck was given almost exclusively by adult subjects under conditions of success (both actor and observer).

TABLE 12

ANALYSIS OF VARIANCE OF LUCK ATTRIBUTIONS
(OPEN-ENDED %SCORES)

Source	df	MS	F
Age	2	2035.311	10.442***
Outcome	1	2918.685	14.974***
Status	1	75.852	0.389
Age x Outcome	2	1651.837	8.475***
Age x Status	2	303.144	1.555
Outcome x Status	1	17.796	0.091
Age x Outcome x Status	2	183.670	0.942

***$p < .001$

I Don't Know

A separate 3 x 2 x 2 analysis of variance was computed with "I Don't Know" (IDK) as the dependent variable (presented in Table 13) because of an apparently interesting pattern that was observed from looking at the raw data. Main effects for age and status were significant (F (2, 204) = 12.192, $p<.001$ and F (1, 204) = 4.015, $p<.05$, respectively) and a two way interaction between age and outcome also achieved statistical significance (F (2, 204) = 3.965, $p<.05$). Examination of Figure 5 indicates that the youngest age group was likely to give IDK responses under conditions of success (for both self and another), while the 9-10 year olds largely gave IDK responses as failing actors. Few IDK responses were given by adult subjects. The raw data indicate that twice as many 5-6 year olds gave IDK responses when the outcome was success as when the outcome was failure. In contrast, almost three times as many 9-10 year olds said IDK when confronted with failure as compared to success ($\chi^2 = 5.60$, $p<.05$). A comparison of actor-failure and observer-failure conditions in the 9-10 year age group is particularly interesting. Only one subject gave an IDK response when someone else failed, but in the actor-failure treatment, 10 gave IDK responses.

TABLE 13

ANALYSIS OF VARIANCE OF IDK RESPONSES
(OPEN-ENDED %SCORES)

Source	df	MS	F
Age	2	6481.789	12.192***
Outcome	1	202.227	0.380
Status	1	2134.449	4.015*
Age x Outcome	2	2108.088	3.965*
Age x Status	2	794.116	1.494
Outcome x Status	1	53.005	0.100
Age x Outcome x Status	2	468.893	0.882

*$p < .05$
***$p < .001$

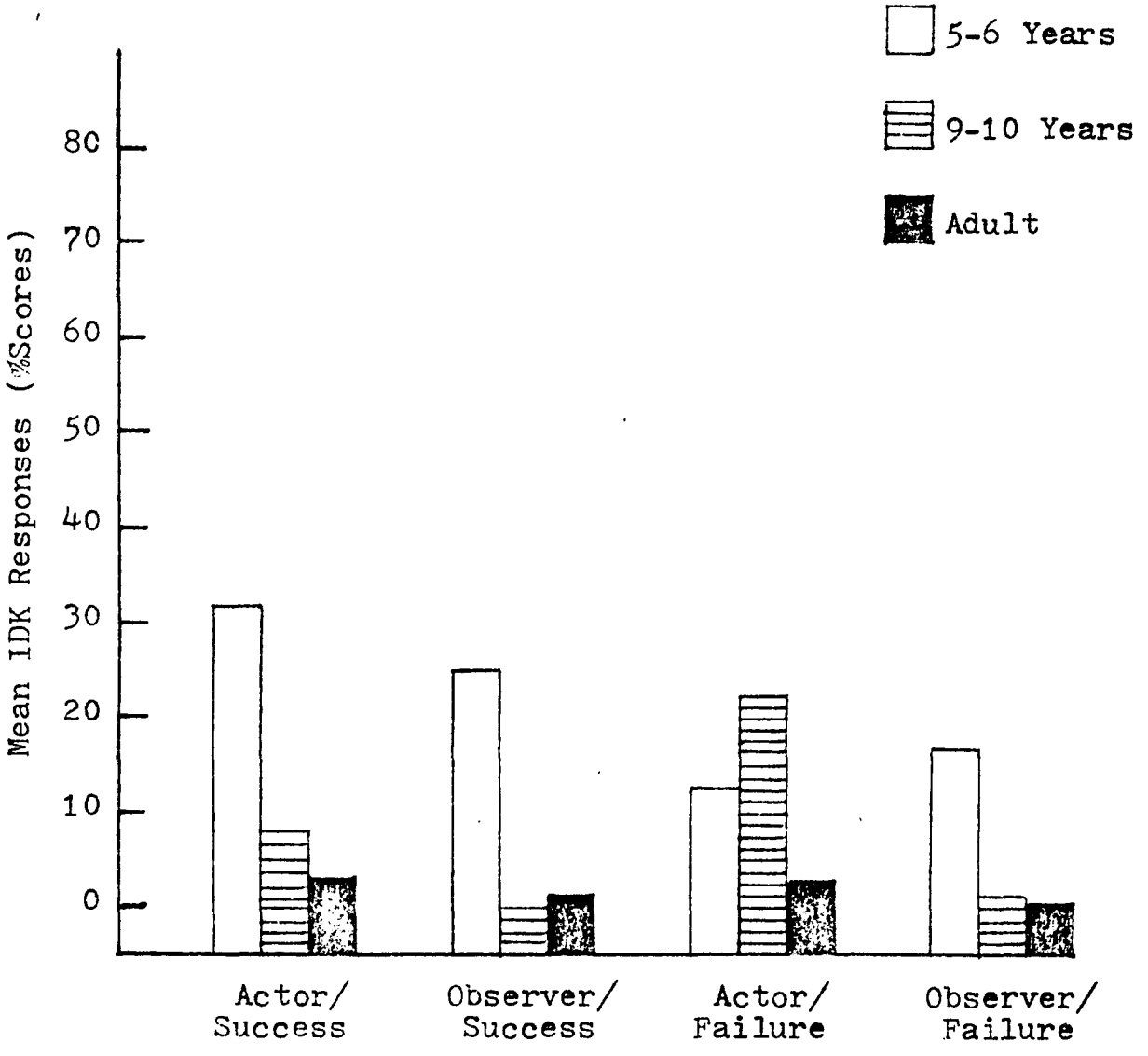


Figure 5. Mean IDK Responses (%Scores)

Intra-individual Consistency

Consistency of attribution response between Parts I and II for individual subjects was examined by the computation of chi-squares. Table 14 presents the separate contingency tables by age level. Results indicated that although all three age groups tended to give a different response when the outcome in Part II differed from the outcome in Part I (particularly in the two older age groups), statistical significance was not obtained. When the outcomes in Part I and II were the same, subjects were about equally likely to make same and different attributions.

A second analysis of intra-individual consistency utilized responses coded into only three rather than eight categories. The three categories were Internal, External, and Non-Causal. Separate chi-square analyses, computed for each of the three age levels are shown in Table 15. A significant difference between the proportion of same and different attributions for same and different outcomes was found for the 9-10 year olds ($\chi^2 = 4.08$, $p < .05$). Comparisons of the other two age groups were not statistically significant.

Comparison of Structured and Open-ended Data

Adults

Pearson product-moment correlations between open-ended and structured Internal and External attributions

TABLE 14

SUMMARY OF FIRST RESPONSE INTRA-SUBJECT COMPARISONS OF PART I AND PART II (8 CATEGORIES)

		5-6 Years		9-10 Years		Adults	
		Attributions		Attributions		Attributions	
		Same	Diff.	Same	Diff.	Same	Diff.
Outcome	Same	13	11	12	12	10	14
	Diff.	10	14	5	19	6	18
		$\chi^2 = .33$		$\chi^2 = 3.28$		$\chi^2 = .84$	

TABLE 15

SUMMARY OF FIRST RESPONSE INTRA-SUBJECT COMPARISONS OF PART I AND PART II (3 CATEGORIES)

		5-6 Years Attributions		9-10 Years Attributions		Adults Attributions	
		Same	Diff.	Same	Diff.	Same	Diff.
Outcome	Same	14	10	16	8	11	13
	Diff.	10	14	8	16	9	15
		$\chi^2 = .75$		$\chi^2 = 4.08^*$		$\chi^2 = .09$	

*$p < .05$

were computed separately for each treatment (i.e., actor-success, actor-failure, observer-success, observer-failure). Table 16 summarizes the correlations between the open-ended responses (in the form of %Scores) and structured responses (percentage figures assigned to Ability, Effort, Luck, and Task Difficulty attributions by each adult subject). All *rs* were significant at $p < .01$ level and ranged from +.53 to +.72.

Two 2 x 2 (outcome by status) analyses of variance were computed for the structured percentage scores with Internal and External attributions as the dependent variables. Tables 17 and 18 present ANOVA tables for Internal and External responses, respectively. The main effect for outcome was significant in both ANOVAs (F (1, 68) = 5.301, $p < .05$ for Internal attributions and F (1, 68) = 5.554, $p < .05$ for External attributions), thereby replicating the findings for the open-ended data.

Children

The structured data for children were in the form of individual ratings (which ranged from 1 to 4) for each of the four attributions (Ability, Effort, Luck, and Task Difficulty). The open-ended data were in the form of relative percentages among the attributions (%Scores). Therefore, in order to compare the two types of data, both were converted to intraindividual

TABLE 16

CORRELATIONS BETWEEN OPEN-ENDED AND STRUCTURED DATA FOR ADULTS (df=35)

	Success		Failure	
	Internal	External	Internal	External
Actor	+.54**	+.58**	+.54**	+.53**
Observer	+.69**	+.72**	+.55**	+.56**

**$p < .01$

TABLE 17

ANALYSIS OF VARIANCE OF INTERNAL ATTRIBUTIONS IN ADULTS (STRUCTURED)

Source	df	MS	F
Outcome	1	3120.500	5.301*
Status	1	648.000	1.101
Outcome x Status	1	18.000	0.031

*$p < .05$

TABLE 18

ANALYSIS OF VARIANCE OF EXTERNAL ATTRIBUTIONS IN ADULTS (STRUCUTRED)

Source	df	MS	F
Outcome	1	3253.555	5.554*
Status	1	709.389	1.211
Outcome x Status	1	9.389	0.016

*$p < .05$

ranks. For example, if a child responded with a rating of 1 for Ability, 2 for Effort, 2 for Luck, and 4 for Task Difficulty, the respective ranks would be 1, 2.5, 2.5, and 4. Similarly, %Scores of 33.3, 66.7, 0, and 0 would be converted to ranks of 3, 4, 1.5, and 1.5, respectively. Table 19 summarizes the resulting Pearson product-moment correlation coefficients for Internal and External responses. The rs for the 5-6 year age group ranged from -.18 to +.42, while the rs for the older children ranged from -.31 to +.68. Seven of the 16 correlations were significant, but the coefficients were relatively low, compared to the adult data. In addition, a number of specific (e.g., External attributions in the observer-success condition) correlation coefficients were negative, although not significantly so.

Descriptive Versus Causal Responses

It had been hypothesized that causal explanations would increase with age and that descriptive responses would decrease with age. The mean percentage results, however, revealed no significant developmental changes in the giving of descriptive responses. At all age levels, few descriptive responses were given, but the 9-10 year olds gave the smallest absolute number of descriptive answers. When descriptive responses were combined with

TABLE 19

CORRELATIONS BETWEEN OPEN-ENDED AND STRUCTURED DATA FOR CHILDREN (df=35)

	SUCCESS			
	Internal		External	
	5-6 Years	9-10 Years	5-6 Years	9-10 Years
Actor	+.07	+.36*	+.06	-.14
Observer	+.39*	+.27	-.14	-.31

	FAILURE			
	Internal		External	
	5-6 Years	9-10 Years	5-6 Years	9-10 Years
Actor	-.18	-.01	+.42**	+.68**
Observer	+.25	+.51**	+.37*	+.59**

*$p < .05$
**$p < .01$

other non-causal answers, chi-squares indicated a significant difference in the frequency proportion of causal and non-causal answers between the youngest and two oldest age groups ($\chi^2 = 6.06$, $p < .05$ for the 5-6 year olds/9-10 year olds comparison and $\chi^2 = 5.18$, $p < .05$ for the 5-6 year olds/adult comparison.

Summary of Results

1. The proportion of Internal responses showed an increase with increasing age, particularly in the failure conditions.

2. At all age levels, causal attributions for success were likely to be internal, while attributions for failure were likely to be External.

3. The only significant actor-observer difference was found in the failure condition for the younger children.

4. Under conditions of success, children were likely to make attributions of Effort, while adults were likely to make attributions of A-bility.

5. Luck attributions were given almost exclusively by adults in the success conditions.

6. The younger children gave IDK responses in the success conditions, while the older children gave such responses as failing actors. Adults rarely gave IDK responses.

7. Of the three age groups tested, the 9-10 year

olds were most likely to make the same type of attribution when the outcomes in Part I and Part II were consistent, and make different attributions when the outcome in the two parts differed.

8. The structured and open-ended data were relatively highly correlated for adults, while the correlational data for children generally showed inconsistency.

9. Older children and adults were significantly more likely to respond in a causal (rather than non-causal) way than were the younger children.

Chapter IV Discussion

The study was designed to test for developmental changes in the types of attributions made as a function of the valence of an event (success or failure) and one's role in that event (as a direct participant or as an observer).

A social-cognitive developmental model of ego-involvement appears to best explain the obtained results. The valence of an event was shown to affect the type of attribution given in an achievement-oriented task. That is, when subjects succeeded or observed others succeed, they were likely to make internal attributions, consistent with an ego-enhancement mechanism, whereas when the task ended in failure, attributions were likely to be external, consistent with an ego-protective mode of explanation.

Developmental changes were apparent in the presence or absence of actor-observer differences, and were also shown in the specific types of internal and external attributions given as causal explanations.

Methodological Considerations

Before discussing the theoretical implications of the findings in detail, it should be noted that the subjects in all three age groups evidently approached

the task with a serious attitude. At no point during the experiment did any of the participants question the validity of the stimulus sheet "performance" shown to them. Thus, the manipulation of success and failure appeared to have been credible to the subjects.

Another methodological issue is the relationship between and comparison of the responses to the open-ended and structured attribution questions. Although open-ended questions are not frequently employed in the attribution research literature (probably because of the necessity of recording, transcribing, and coding responses), the procedure seems to be a valuable one, because the obtained answers are spontaneous and not affected by experimenter suggestion. The open-ended responses may yield detailed information that can not be derived from the structured dependent variable. When they are asked to rate the importance of four specific factors, subjects are not permitted to give a response other than those provided by the experimenter. In addition, a specific attribution may be rated as high by different age groups, but different aspects of the variable may underlie the response. For example, a young child might cite a broad dispositional attribute while an older child or adult might discuss highly specific abilities.

The correlations between the open-ended and structured

%Scores of Internal and External attributions were all significantly positive and moderately high for adult subjects. However, the correlations between the ratings and %Scores, while sometimes significant, were generally low (sometimes negative) for both groups of children.

Observations during structured questioning appeared to indicate that the 5-6 year olds particularly had difficulty in understanding the appropriate and discriminating use of a rating scale. A particular rating might indicate different things to different children. That is, a rating of "very, very important" (4) might be used whenever a variable seemed to be of some importance, regardless of the degree of importance. Others might be inclined to avoid extreme ratings (1 - "not important at all" or 4 - "very, very important") and rate all factors as a 2 ("a little important") or 3 ("pretty important"). Still others might feel it necessary to give each a different rating (perhaps doing it randomly), while other children might be prone to give every variable the same rating. All of these ways of approaching the problem may invalidate the obtained data because they indicate response biases.

Other research (e.g., Beckman, 1970) has also revealed that responses to open-ended and structured attribution questions are not always consistent. Perhaps, providing fixed alternatives to subjects forces them to give responses and make choices that they spontaneously would

not have thought of and given. A subject may not have perceived the importance of particular variables, but when asked to show the relative importance of them by giving a rating or percentage figure to each, subjects may feel obliged to state that each has some importance. Orne's (1962) discussion of demand characteristics in experimentation may be quite relevant. He suggested that subjects will play the role that they perceive is expected of them in an attempt to support the experimenter's hypotheses and research purposes. In responding to the structured attribution question, subjects may believe that the experimenter wants them to show some importance for each attribution variable, and thus ratings of 1 ("not important at all") or percentages of 0 are quite infrequent.

Causal versus Non-Causal Responses

The use of open-ended questioning in the present study permitted the investigation of possible developmental trends in causal responding that may not have been possible with only structured measures. (Thus, subjects could give causal explanations, e.g., "I tried hard." or non-causal responses, e.g., "There are seven dots in the circles."). The results did not demonstrate the hypothesized developmental trend of a decrease in the proportion of descriptive responses with increasing age. When 5-6

year olds gave responses (other than IDK or M) to the major attribution question, they did so, usually in a causal way. It is suggested that the high intelligence level of the younger group may have enabled them to make causal inferences about the outcomes of behavior. Perhaps, a group of "average" 5-6 year olds or a group of 4 year olds would have shown a greater proportion of descriptive responding. The one, perhaps minor, developmental difference that did appear was that when descriptive responses were given by the two older groups of subjects, those answers were always in the context of causal explanations. However, four of the 5-6 year olds gave descriptive answers as their complete response.

A second analysis compared the proportion of subjects who gave causal and non-causal responses at the different developmental levels. Significant differences were then revealed between the younger children and the two older age groups tested. Many of these non-causal responses were IDKs; some were miscellaneous, irrelevant responses. Thus, it appears that when some of the younger children could not give a causal explanation of the outcome of an event (particularly success) they chose not to respond. Perhaps they understood that a "Why?" question called for more than a description of performance, but they could not make the appropriate inference to arrive at an adequate explanation.

Developmental Changes in Internal Attributions

Another developmental trend was demonstrated with regard to dispositional, internal attributions. The results revealed a significant increase in dispositional responding with age. Thus, there appears to be a developmental tendency to accept responsibility for the outcome of events, both positive and negative. This finding supports research in the area of locus of control. For example, Crandall, Katkovsky, and Crandall (1965) reported increasing internality in the area of achievement-related locus of control from third grade through high school. Peevers and Secord (1973) also suggest greater use of dispositional concepts with increasing age.

Social-Cognitive, Ego-Involvement Theory.

Other developmental changes may be viewed from a social-cognitive, ego-involvement framework, as suggested earlier. Jones and Nisbett (1971) hypothesized that different attributions will be made depending upon one's role. They suggest that actors perceive situational factors as being most relevant, while observers stress dispositional characteristics of the actor. This hypothesis received support only in the 5-6 year old age group under conditions of failure. When the outcome was success, 5-6 year olds predominantly gave internal attributions, regardless of whether they were actors or observers. Since the actor-situation and observer-

disposition tendency did not hold in both the success and failure conditions, the information processing/availability model (Jones and Nisbett) does not seem to be an adequate explanation of the attribution process in the youngest age group. One possible explanation of the actor-observer discrepancy revealed in the negative outcome (failure) condition is that of ego-involvement. When failing in a task themselves, none of the children perceived themselves as personally responsible, whereas when they saw another child fail in a task, about half of the children perceived the other child as playing some role in her failure. In addition, the 5-6 year old children may not have developed a repertoire of personal attributions to explain negative events involving themselves. Their previous experience and self-knowledge does not allow them to say "I'm not smart," or "I'm not good at things like this." This lack of personal failure explanations may be especially relevant in the particular sample of this study, largely high IQ children. That the observers did give dispositional explanations while the failing actors did not, suggests an inability of the former to view themselves in the position of actors. Alternatively, it is suggested that the young observers have not been sufficiently socialized to be as "kind" about someone else's failure as they are about their own.

The preponderance of internal explanations for

success by the youngsters may be attributed to ego-enhancement, contrary to the hypothesized lack of involvement in task outcomes at this age, again probably in keeping with the experiences of the bright children tested in the present study. It would be expected that children of lower intelligence or younger age would not show the degree of ego-involvement revealed here. Falbo (1975) reported that high IQ children of kindergarten age used ability more often in explaining success than failure, while low IQ children used ability equally often in explaining success and failure. The fact that observers also made dispositional attributions might be due either to the actor being perceptually salient to the former or due to role-playing by the young observers. Perhaps, it is easier to understand and explain someone else's success, since one has had many prior successful experiences oneself. It is more difficult to explain another's failure, since one has rarely found oneself in such a position, particularly in tasks similar to the achievement-oriented one of the present study. After one has been in school for a while, subjective failure in some area becomes very relevant, either as a reality or as a possibility. The youngest age group tested had just begun school, and thus was relatively unfamiliar with failure in an achievement setting.

In general, the actor-observer comparisons for the 9-10 year olds and adults did not reveal significant differences. Thus, the hypothesis of similarity of attribution between actors and observers was confirmed for the two older age groups. This may be interpreted as evidence of role playing, observers being able to explain the behavior of an actor in the same way as the latter would. Sternberg's (1976) data suggested that adult observers who perceived the actor as being similar to themselves would, in fact, make attributions for another that were similar to the ones they had made for themselves. In the present study, the observer was similar to the actor in both age and sex, and no evidence of dissimilarity was provided to the subjects. Thus, perceiving the situation as another person would was facilitated. In addition, the present task situation was noncompetitive, unlike the conditions of other studies (e.g., Snyder, Stephan, and Rosenfield, 1976) which reported actors making attributions that were ego-enhancing and observers not doing so.

Although ego-involvement attributions were apparent in both of the two older age groups, the tendency was more pronounced in the 9-10 year olds. Regardless of actor-observer status, the 9-10 year olds were likely to attribute success to internal factors, which is consistent with ego-enhancement, and failure

to external factors, which is consistent with ego-protection. Similar success/failure differences were reported for adult subjects by Snyder et al..(1976), Stevens and Jones (1976), Streufert and Streufert (1969), Taylor and Koivumaki (1976) among others. However, other studies (e.g., Chaikin, 1971; Ross, Bierbrauer, and Polly, 1974; Stephan, 1975) did not report defensive attributions. Fontaine's (1975) study of the attributions of college students in simulated and real situations sheds some light on the discrepancy. His data suggest that logical attributions were made when the task situation was simulated, while ego-enhancing attributions were given when the task situation was real for the subjects. In the present study, the task situation was quite real for actors, who directly participated, and observers who watched a filmed model and were shown the task apparatus, stimulus sheets, and task performance of the actor.

The data for college students in the present study suggest some degree of ego-involvement in the attribution process. The mean percentage of dispositional responses was greater when task outcome was success than when it was failure. On the other hand, the mean percentage of situational attributions was greater for failure than for success. However, when the proportion of subjects who gave external and internal responses was compared under conditions of success and failure, the only significant

comparison occurred for the analysis of the first response of actors. That is, the first responses were more likely to be internal for success and external for failure. The overall frequencies for internal-external attributions were not significantly affected by the valence of the outcome. This type of finding has been reported elsewhere in the literature and may be partially related to the sex of the subjects (all female in the present investigation). For example, Mischel, Mailer, and Zeiss (1973), using locus of control scales for various age groups and both sexes, reported that adult females tended to attribute more responsibility to themselves for negative events than they attributed to either liked or disliked peers. Adult males and older children (with a mean age of 7 years 2 months) of both sexes showed the opposite pattern. In a similar vein, Feather and Simon (1975) reported that female high school students tended to see ability as a more important cause of male success than female success, while lack of ability was perceived as a more important cause of failure in females than in males.

Beckman's (1973) study found that female teachers and student teachers appeared to be making dispositional attributions for both increasing and decreasing performance, but especially for decreasing performance, of elementary school children they supposedly had taught. Beckman suggested that the participants'

willingness to attribute the child's decreasing performance to themsleves may indicate an "antidefensive" bias, an overwillingness to accept blame for poor performance.

Apparent self-denigrating tendencies were also evident in research conducted by Stephan (1975). Female undergraduate actors and observers made more situational attributions to positive than to negative behaviors. It was suggested that subjects were making attributions that were modest because of a need to give socially desirable responses.

The above studies and the present data suggest that the female adults may have a tendency to be overly modest with regard to their perceived abilities. When they have the opportunity to deny or take responsibility for their actions in an ambiguous situation (such as in the present study) they tend to accept responsibility equally for success and failure, although the result of that attribution process could be to lower self-esteem (by failing to make ego-protective or ego-enhancing attributions). The ultimate result would be a lowered self-concept. Research in the area of self-esteem (e.g., Rosenberg, 1972) has confirmed the significant difference between the sexes in their feelings of ability and self-worth in the direction suggested above.

It may be that the difference in ego-involvement

attributions between the older children and adults of the present study can be accounted for by the fact that the former have not, as of that age, been sufficiently socialized and inculcated with "appropriate" sex-role values, behaviors, and self-concept.

The pattern of luck attributions also suggests that causal explanations may be affected by one's sex. It had been hypothesized that attributions of luck would be made under conditions of failure, because to do so would be one means of avoiding personal responsibility for that negative outcome. However, the present results indicate that luck was given almost always under conditions of success. A parallel finding was reported by Deaux and Emswiller (1974) who found that when females succeeded on a perceptual task in which males were expected to do better than females, the attribution by both males and females was likely to be luck rather than ability. When males succeeded, the reverse was true (ability, not luck).

A complementary explanation is suggested by the research of Feather (1969) who reported that when subjects experienced an unexpected success (or failure) they tended to attribute their performance to good (or bad) luck. A related factor may be stability of the attribution variable. Luginbuhl, Crowe, and Kahan (1975) reported that subjects who experience success attributed significant-

ly more of their performance to unstable than to stable factors (luck being an unstable factor) while the pattern for failure was the opposite. The authors suggest that as the ambiguity of causal factors increases, luck attributions should increase accordingly. In the present study, adult subjects may have been surprised at the degree of success in what appeared to be a relatively difficult and novel task. Failure was probably more anticipated than was success.

Another possibility is suggested by Stevens and Jones (1976) who reported that subjects stressed bad luck as a factor when they consistently failed at different tasks at which others consistently succeeded. According to Kelley's theory (cited by Stevens and Jones) such an individual should make an internal attribution because of high consistency in deviation from consensus. However, subjects in the Stevens and Jones study did not make such internal attributions. They suggest the possibility that subjects view luck internally, that Weiner's treatment of luck as a definite external, unstable factor should be questioned. In the present investigation, the subjects who attributed success to luck may have been doing so as a manifestation of personal luck (i.e., "I'm a lucky person.") rather than lucky circumstances or external chance factors.

In addition, children rarely made spontaneous at-

tributions of luck, while adults were more likely to do so. A pilot study had indicated that children as young as five years have an understanding of the concept of luck. In the pilot research, children were asked to define and give examples of luck. The responses were quite appropriate and similar to those given by older children and adults. Viewing luck attributions by adults as equivalent to the "I Don't Know" responses of children may be one way of explaining the present pattern of luck responses. Luck indicates chance, unexplainable factors. Adults have been socialized to avoid admitting ignorance, to avoid saying that they lack an appropriate explanation. Therefore, when they are confronted with an event that is difficult to explain (e.g., unexpected success), they may attribute the event to luck, which is basically admitting that they can not figure out the responsible causal factors, without having to make that admission explicitly. Children, however, have not been fully socialized to avoid the appearance of ignorance that "I don't Know" implies. Therefore, many of them gave IDK responses, while only two children made attributions of luck

The data revealed that the 5-6 year olds were likely to give "I Don't Know" responses when they succeeded or observed another's successful performance, while the 9-10 year olds were likely to make such a response when,

as actors, they were confronted with their own failure. Some of the younger children may truly have been incapable of giving a response to the attribution question, while IDK for an older child probably indicated an unwillingness to respond or a motivated failure to respond.

When the 5-6 year olds failed or when they observed someone else's failure, there was a perceptually salient factor to which they could ascribe the negative outcome, namely some aspect of the task. In fact, the results revealed that explanations of task constraints were most frequently given by the young children in the failure conditions. However, when the outcome was success, there were no immediately available extrinsic factors which would explain the positive outcome. Some children, therefore, made internal attributions, which required making inferences about ability and effort. Others were probably incapable of making such inferences about themselves or others, thus accounting for the relatively large number of IDKs for success.

With regard to the 9-10 year old propensity for IDK responses in the actor-failure treatment, it is suggested that the children's achievement motivation and their expectation of success led to an immediate, defensive "withdrawal" from the situation when faced with personal failure. It may also have been difficult for them to explain failure, because their prior achieve-

ment-related experiences were largely successful. The inability to respond was not due to a lack of appropriate explanations of negative outcomes, because the 9-10 year olds were able to produce immediate attributions about another child's failure.

Another developmental comparison that sheds light on the ego-involvement attribution process concerns the internal explanations of success. Both groups of children (but particularly the older ones) frequently made attributions of effort when the task outcome was positive, while the adults were more likely to make ability attributions when giving an internal reason for success. Perhaps, it is easier to make effort attributions because effort expenditure can be manifested in overt actions. For example, in the present investigation, the amount of time taken to complete the task, and the attention paid to the top sheet of circles vary from subject to subject. In contrast, differences in ability are quite covert, even to the experiencing (actor) individual. It probably takes a great amount of time and experience to discover and infer one's general and specific abilities. By the age of 9-10, children have not had sufficient exposure to these factors to develop a meaningful self-concept based upon ability in general, and with regard to specific abilities. Thus, when children made ability attributions, these were likely

to be broad and vague, e.g., "I'm smart" rather than specific like the ones given by adult subjects, e.g., "I'm usually good at judging distances."

Previous research suggests that an understanding of effort may be present developmentally prior to an understanding of ability. Karabenick and Heller (1976) tested first, third, and fifth graders, and college students, and reported that inferences of effort expenditure from outcome and ability information were shown before inferences of ability from outcome and effort information. In addition, Weiner and Peter (1973) found that when subjects were required to dispense reward and punishment to children depicted in achievement situations, a curvilinear relationship between the magnitude of the effect of effort and the age of the subjects (who ranged between 4 and 18 years) was revealed. The difference between the reward given for effort and punishment given for lack of effort reached a peak among the 10-12 year olds and declined thereafter. These findings support the present results suggesting that children perceive effort as an important causative factor in achievement task outcomes, while adults view effort as being less significant. Weiner and Peter also suggest that comprehension of the compensatory relationship between effort and ability (i.e., if high ability is present, a relatively small amount of effort is required; if low ability is present, greater effort

is needed) may not develop until the formal operational stage of cognitive development. Salili, Maehr, and Gillmore (1976) did a cross-cultural replication of the Weiner and Peter study in Iran. Subjects from 7 to 18 years of age were studied. Salili et al. reported an effort by age interaction; as children got older, effort became more important. They suggested that the discrepancy between their results and those of Weiner and Peter may be related to cultural factors. In Iran, effort, rather than outcome, is emphasized, while in the United States, one gradually learns the lesson of the insufficiency of effort.

The present data can be interpreted as indicating that 9-10 year olds attribute success to expenditure of effort because such an attribution is most ego-enhancing to them. They have been socialized by parents as well as teachers to believe that trying hard is a virtue under one's personal control, while ability is a stable characteristic over which there is little personal control. By adulthood, one realizes that trying hard is not sufficient to produce success; the presence or lack of ability is perceived as the critical factor. For example, a person with poor mathematical skills spends several hours attempting to solve an algebraic problem. After finally giving up trying without having solved the problem, the logical conclusion is that expending effort alone

does not lead to success. It was the lack of ability at the task that accounted for failure.

In addition, the suggestion of Salili et al. (1976) that cultural factors play a role in the relative emphasis on effort, ability, and/or outcome is quite relevant. During the years of middle childhood, the "norm" is to try hard regardless of the outcome ("It's not whether you win or lose that counts; it's how you play the game."). In the United States that norm is no longer perceived as "appropriate" when one is an adult. Success or failure in school, at a job, etc. are stressed as one gets older. It is no longer whether you expend effort or not, the important thing is the outcome. This adult norm is emphasized again and again. When a student writes a paper, the work itself is graded, not the amount of time or effort spent on it. A salesperson is rewarded for making the sale, not the amount of effort required to obtain it.

In terms of ego-involvement theory for adults, succeeding because one has ability should produce greater ego-enhancement than succeeding because of great expenditure of effort. As an adult, one realizes that anyone can try, and can vary effort, but people differ in the types and amounts of abilities they possess. It is recognition of one's abilities or lack of them that becomes a part of one's more stable self-concept. Thus, making attributions regarding ability should be

most effective in terms of ego-enhancement.

Summary and Conclusions

Both the outcome of the achievement-oriented task used in this study, as well as developmental level affected the specific causal attributions made by actors and observers. When the task outcome was success, subjects were likely to make internal attributions, consistent with an ego-enhancement process, whereas when the task outcome ended in failure, attributions were likely to be external, consistent with ego-defensiveness. However, the adults were likely to take a greater amount of personal responsibility for failure than were the two younger groups, possibly due to an anti-defensive bias in women.

The great degree of consistency in the two older age groups between the responses of actors and observers (in the same outcome conditions) suggests the relatively greater significance of motivational considerations than information processing.

The motivational ego-involvement approach can also be employed to explain the tendency of children to give effort explanations for success while adults make ability attributions. These attributions are probably differentially ego-enhancing at different developmental levels, which derives from the differential

understanding of effort and ability, the relative state of the self-concept, and the prevailing norms for the relevant age groups. The pattern of luck and IDK responses can also be analyzed within the developmental ego-involvement framework.

Thus, it appears that as early as 5-6 years, motivation and ego-involvement are part of the attribution process, but the specific motivated attributions change in response to changing norms, changing cognitions, and the changing content of the self-concept.

Implications for Future Research

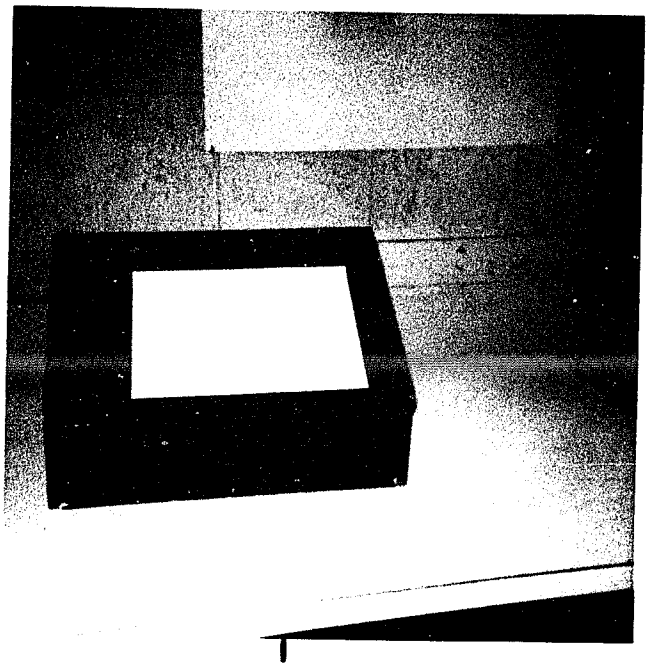
Further developmental research should be conducted with both male and female subjects in both roles (e.g., male observers of female behavior; male observers of male behavior) in order to further generalize the present findings and to help clarify the issue of social factors in the attribution process.

The attribution framework and task of this study can also be used to explore the social attitudes of different racial groups toward one another. By studying the attributions made by individuals of one racial group regarding the successful or failing performance of the members of another group, one can learn about interracial attitudes in a subtle, but meaningful way. Studies in different cultural contexts should also

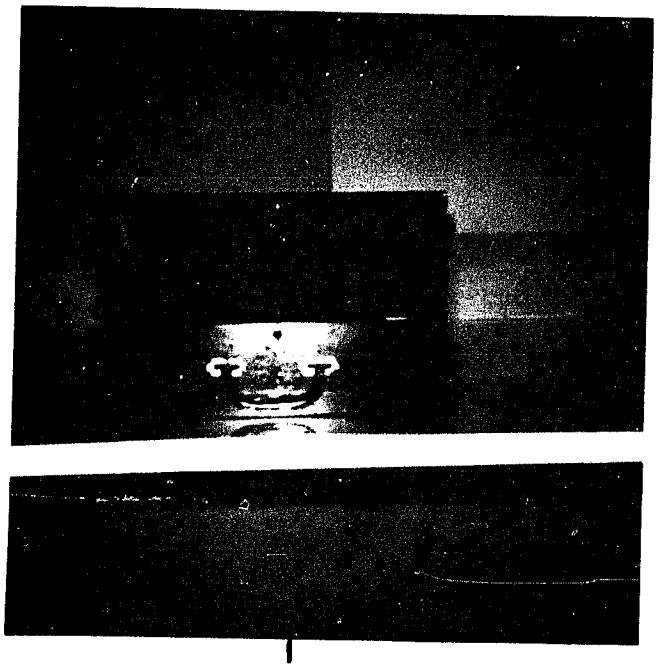
reveal significant differences in attributions dependent upon the relative values in the particular cultures investigated.

Thus, the areas of self-concept development, cross-cultural values, sex-role typing, stereotypes, social attitudes, and others can all be further explored by utilizing the theoretical approach and task discussed in the present study.

Appendix I

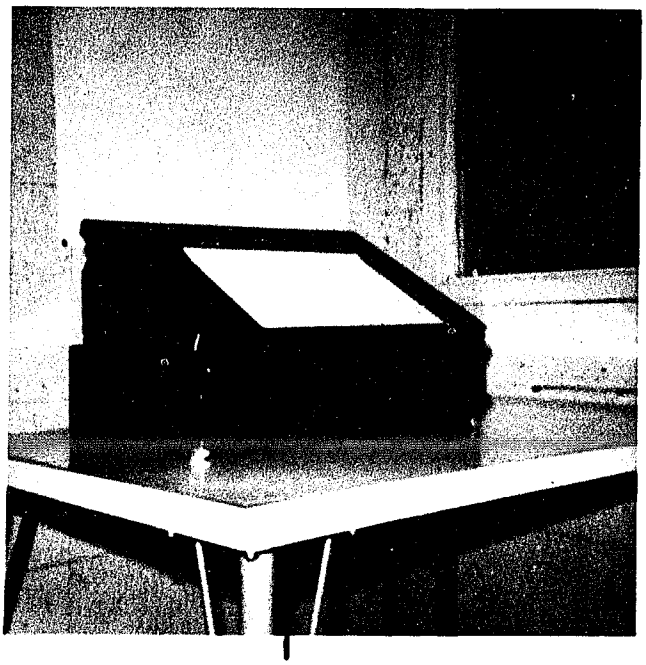


Apparatus as viewed by Actor



Apparatus as viewed by Experimenter

Appendix I



Side view of apparatus

Appendix II

APPENDIX III

T-TEST COMPARISONS OF ORDER EFFECTS FOR DIFFERENT OUTCOMES IN PART I (N=12) AND PART II (N=6) (MEAN EXTERNAL % SCORES)

5-6 Years

	Actor				Observer			
	Success		Failure		Success		Failure	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
I	9.0	22.9	80.6	38.8	0.0	0.0	50.0	47.7
II	8.3	20.4	33.3	51.6	5.6	13.6	0.0	0.0
	t=.06		t=2.18*		t=1.47		t=2.53*	

9-10 Years

	Actor				Observer			
	Success		Failure		Success		Failure	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
I	21.4	27.1	43.6	45.1	30.6	40.7	73.6	35.1
II	4.2	10.2	8.3	20.4	5.6	13.6	0.0	0.0
	t=1.49		t=1.80		t=1.45		t=5.06***	

Adult

	Actor				Observer			
	Success		Failure		Success		Failure	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
I	22.9	26.9	43.6	40.4	31.9	42.9	44.5	41.6
II	19.4	22.1	51.4	33.1	9.7	15.3	22.8	29.1
	t=.27		t=.40		t=1.21		t=1.14	

*$p < .05$
***$p < .001$

APPENDIX III

T-TEST COMPARISONS OF ORDER EFFECTS FOR CONSISTENT OUTCOMES IN PART I (N=12) AND PART II (N=6) (MEAN EXTERNAL %SCORES)

5-6 Years

	Actor				Observer			
	Success		Failure		Success		Failure	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
I	9.0	22.9	80.6	38.8	0.0	0.0	50.0	47.7
II	0.0	0.0	75.0	41.8	16.7	40.8	33.3	51.6
	t=.95		t=.28		t=1.46		t=.68	

9-10 Years

	Actor				Observer			
	Success		Failure		Success		Failure	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
I	21.4	27.1	43.6	45.1	30.5	40.7	73.7	35.1
II	36.1	42.7	61.1	31.0	36.1	42.7	55.6	50.2
	t=.90		t=.85		t=.27		t=.90	

Adult

	Actor				Observer			
	Success		Failure		Success		Failure	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
I	22.9	26.9	43.6	40.4	31.9	42.9	44.5	41.6
II	36.6	38.3	72.2	31.0	22.2	25.1	36.1	42.7
	t=.89		t=1.52		t=.51		t=.40	

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