# THE EFFECT OF ADULT MODEL RELATIONSHIPS ON CHILDREN'S PLAY AND TASK IMITATION

DISSERTATION

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# CHAPTER I

## GENERAL PERSPECTIVES OF THE STUDY

The focus of this research is on imitative behavior. As young children seem to acquire huge numbers of behavior patterns through the copying of others, and as little formal attention has been specifically devoted to learning-by-imitation, this seems an important problem for investigation. The general purpose of this study is the exploration of relationships between imitation and some of the personal and social factors that may serve as its antecedents. The basic experimental design uses adult males as leaders or models who perform certain defined behaviors; the imitation of these behaviors by the young boys who serve as subjects is the major dependent variable.

Several lines of theoretical work converge in this research. The major framework used is that of Rotter's Social Learning Theory (1954). The theory itself provides the conceptual model for the design and discussion of the study; the previous experimental work generated from Social Learning Theory served as a major source of the hypotheses.

Earlier investigations of imitation have characteristically centered on only one aspect of the problem or one class of variables and its relationship to imitative behavior. For example, imitation is seen by the psychoanalytic theories as one end product of the process of identification. In this view the interpersonal relationship between the imitator and the person imitated is the crucial element; the response and its goal or outcome are virtually ignored. On the other hand, Miller and Dollard (1941) view an imitative response as no different in principle from any other conditioned response; if it is followed by reinforcement it will be strengthened.

More recently, the behavior theory approaches of Mowrer (1960) and Bandura (1963) have focused attention on the characteristics of the person imitated. Mowrer's interest is similar to that of psychoanalysis while his explanation revolves around the model's secondary reinforcement properties and thus remains closest to classical learning theory. Bandura has collected a great deal of evidence on the social aspects involved in imitation. While he has put forth a contiguity theory of acquisition, no formal theory has been offered to encompass his many empirical results.

It is the aim of this research to extend the study of imitation in the direction indicated by Bandura's work, but to bring a greater number of variables into

consideration and to employ an established theoretical framework in the experimental design. As such, this study represents an initial attempt to integrate both personality measures and socio-situational predictors in a single investigation of imitative learning.

According to Rotter, efficient prediction of a given response depends on a knowledge of both the situation in which the response is to occur and the characteristics of the responder which might influence the occurrence of the response. Social Learning Theory (SLT) divides the personal characteristics into two major classes of variables. Motivational factors constitute the first class of personal determinants; the reinforcement that results from an individual's behavior has a certain value for that individual. Phrased alternatively, individuals have needs for certain kinds of reinforcements.

The second class of personal variables that guide behavior is labeled expectancies; these are subjectively-held probabilities that specific behaviors will lead to specific reinforcements. The term "freedom of movement" is often used to describe a set of related expectancies. Both the freedom of movement and the need-value structure associated with a certain behavior must be known in order to predict its occurrence. If prestige has a high value for a person, he might perform many behaviors in order to achieve it. The specific behavior that he will select

however is the one which he deems most probable to result in his acquiring that prestige in that situation.

In the case of imitation, there are several possible reinforcements that the imitator might gain. The present research centers on two of these--approval from the person imitated and success on a task. In the experiment itself, the subject's need for approval is estimated by using a form of the Marlowe-Crowne Social Desirability Scale (1960). Two estimates of his general expectancy for success are also obtained.

In addition to personal needs and expectancies, an individual's behavior is influenced by the situation in which it occurs. Using an SLT framework, situations can be classified in terms of the potential reinforcements they offer. That is, situational cues are interpreted by a person in terms of his past experiences in similar situations.

Two types of situational cues can be separated for purposes of analysis. The first type consists of the more objective cues that have rather definite shared meanings for all individuals in a culture; a church sanctuary could be one behavioral environment as opposed to a birthday party or a machine shop. The second type consists of the social or interpersonal cues provided by the behavior of other persons; a harsh school teacher elicits different behavior than an opposite-sex peer or a younger sibling.

The present study utilizes two experimental phases which can be construed as two somewhat different "objective" situations. The first is a free-play period during which the subject is told to do anything he wishes. The second is a task.

The experimental procedure also represents an attempt to define or control the social or interpersonal cues available to the subject. This is done by having the adults serving as models go through a series of discrete, noticeable behaviors in both the play and task situations. While the play and task situations are clearly different, both are relatively unfamiliar to the subjects. The behavior of other persons would thus be an important source of cues to the subject's own behavior. This is, in fact, the basis of imitation under analysis here.

Even in unfamiliar situations, however, other people are not imitated or followed indiscriminately. It is assumed that imitation occurs, as any social behavior, only when it leads to some goal. One such goal could be approval from the person imitated. If person-to-be-imitated acts in a critical, rejecting way the subject may expect less approval from him than he would expect from a leader who acts in a more rewarding, positive way. To investigate this hypothesized relationship between imitation and personality characteristics of the person imitated, three different roles were enacted by the models

in the experiment. These roles, described in detail later, were labeled rewarding, critical, and neutral.

Another goal that might be gained through imitative behavior is the acquisition of a new skill. In this case, the ability or competence of the person imitated would be an important cue for the potential imitator. The present study investigates this source of interpersonal cues by varying the model's competence in the task situation. For one half of the subjects, the model is highly successful on the task; for the other half the model achieves very low scores.

The variables investigated by the study can be summarized as follows: the "subject" variables consisted of age, score on a measure of approval needs, and two estimates of generalized expectancy for success; the use of a task-game and a play period constituted the variations in situational structure; the social or interpersonal variables provided by the behavior of other persons consisted of first, the series of noticeable acts performed by the models; secondly, the enactment of the three roles by the models; and finally, the competence or incompetence of the models' task performance. The major dependent variables were the subjects' imitative behaviors in the play period and during the task; secondary dependent variables were the changes in expectancy generated by the experiment and the subjects' choice of an

immediate or a delayed reward at the close of the experiment.

As indicated in the above discussion, one major objective here is to determine what effect, if any, each of these personal and situational factors has on the occurrence of imitative behavior in this experiment. Do subjects with low approval motivation show low imitation rates? Are competent models imitated more frequently than incompetent ones?

A more important objective than investigating the effect of single predictors is studying these predictors in combination--in studying the interactions between and among them.

A primary tenet of the personality theory underlying this investigation is that the unit of psychological study is always the interaction between a person and his meaningful environment. Even perfect understanding of a person's past experience (hence his "personality") would not enable prediction of his next behavior without knowledge of his present situation. Similarly, complete knowledge of the behavioral environment alone would be insufficient for theoretical or actual prediction. A "dependent" person is not always dependent; a "threatening" situation does not affect everyone in the same way.

The antecedents of imitation selected for this investigation could interact in a huge number of ways.

The goal here is not to study all the possible influences of the variables involved. Instead, hypothesized relationships between a combination of independent variables and a dependent variable are only those relationships which have been suggested by previous empirical or theoretical work.

Prior investigations using the terminology of SLT have shown, for example, that behavioral predictions based on a combination of need-value and freedom of movement are more efficient than predictions based on either variate alone. Similarly, situational categorization, when added to a personality measure, improves its descriptive or prescriptive power.

One such combined prediction or simple interaction hypothesized in the present study is the relationship between approval motivation and freedom of movement. It is predicted that subjects with a positive discrepancy, with approval needs relatively higher than generalized expectancies, will show higher variances in imitation rates than subjects with negative discrepancies. The other combinations of predictive variables are discussed in Chapter III.

The experimental procedure used here represents a type of "first step" attempt at a comprehensive study of imitation. As previous work on imitation has concentrated largely on a single predictor or class of variables, the empirical groundwork for the hypotheses offered is far

from firm. The study is almost wholly exploratory in nature. The hypotheses are put forth not as clear deductions from an oft-tested rationale but rather as tentative inferences drawn from loosely related sources.

## Synopsis of Experimental Procedures

The experiment to be described provided a method of assessing imitative behavior in both a "free-play" and "skill-task" situation. Personality measures of expectancy and need for approval were obtained to permit study of their interrelationships with the situational variates and the other behaviors elicited by the experiment. The subjects were ninety boys from six and one-half to ten and one-half years of age. Three male adults acted as models, each adult serving as a model for thirty subjects.

The children were studied individually. First, after a brief conversation between each boy and the experimenter, a measure of the boy's need for approval (CSD) was obtained using a tape-recorded questionnaire. Then the boy was shown one of the easier Porteus mazes and asked first to guess how well he would do in comparison with other boys and then asked to complete the maze. His estimate of his performance was used as an initial expectancy measure ($GE_1$).

The boy was subsequently introduced to an adult model and the experimenter left the room for three minutes.

During this "acquaintance" period the model enacted the role of either a critical, rewarding, or neutral person while conversing with the boy.

When the experimenter came back into the room the model began the "play" period by throwing rubber-tipped darts at some unusual targets and carrying out other noticeable behaviors. The boy was then observed for three minutes and his imitative or non-imitative play behaviors were recorded.

The "task" period started when the model showed Rotter's vertical level-of-aspiration board (1961) to the boy and said the purpose was to "see how steady you are." A second expectancy statement ($GE_2$) was elicited and the model and the boy "tried their skill" on the board. At this point another experimental "treatment" was introduced by controlling the model's scores on the board. For half of the subjects the model achieved very low scores and, for the other half, very high scores. This was done to establish the model as either competent or incompetent at the task. The model displayed some noticeable behaviors during the task, and the boy's subsequent imitation of them was recorded.

At the close of the experiment the model offered the boy a choice of either a small or a large "Tootsie-Roll." He explained that the boy could take the small one "now" or, as the model had only one big one left, could

wait and get a big one in three or four days. The boy's choice of either the small, immediate reward or the larger, delayed reward was then recorded.

The same procedure was followed for each subject with the exception that one-third of the subjects were initially exposed to "rewarding" models, one-third to "critical" models, and the remainder to "neutral" models. A summary of the experimental procedures is given in Table 1.

TABLE 1

SUMMARY OF THE EXPERIMENTAL DESIGN

| Experimental Groups | Step 1<br>Obtain CSD Score and $GE_1$ Estimate | Step 2<br>Role Treatment | Step 3<br>Observation of Play Behavior | Step 4<br>Obtain $GE_2$ Estimate | Step 5<br>Task Treatment | Step 6<br>Observation of Task Behavior |
|---|---|---|---|---|---|---|
| I (N=15) | Step 1 | Model enacts positive role | Step 3 | Step 4 | Model competent | Step 6 |
| II (N=15) | Step 1 | Model enacts positive role | Step 3 | Step 4 | Model incompetent | Step 6 |
| III (N=15) | Step 1 | Model enacts neutral role | Step 3 | Step 4 | Model competent | Step 6 |
| IV (N=15) | Step 1 | Model enacts neutral role | Step 3 | Step 4 | Model incompetent | Step 6 |
| V (N=15) | Step 1 | Model enacts critical role | Step 3 | Step 4 | Model competent | Step 6 |
| VI (N=15) | Step 1 | Model enacts critical role | Step 3 | Step 4 | Model incompetent | Step 6 |

# CHAPTER II

## THEORETICAL BACKGROUND OF IMITATION

The plan of this chapter is to present, in summary form, the leading theories of imitative behavior. The purpose of the chapter is to convey a general idea of the explanatory concepts that have been proposed. The following chapter, which describes the development of the present research, gives a more detailed review of the experimental literature.

### Psychoanalytic Theories

Psychoanalytic theorists have assuredly provided the major impetus to the study of imitation through their extensions of Freud's concept of identification. Paradoxically, many provocative empirical studies of imitation have emerged as "psychoanalytic" studies yet extensions of the theory are far from systematic or internally consistent.

Imitation is usually viewed as the end-product of the process called identification, the same process which produces the super-ego. In explaining this process Freud originally likened it to oral cannibalism:

> External restrictions are introjected. . . . and the superego threatens the ego just as the parents

> did before. The basis of the process is what we call identification, that one ego becomes like another, one which results in the first ego behaving itself in some respects in the same way as the second; it imitates it, and as it were takes it into itself (1933, p. 89).

Freud did not clarify the kinds of imitation he meant, although it seems that he refers to "intrapsychic" rather than behavioral imitation. In his later discussions of identification, however, Freud spoke frequently of children imitating the behaviors of their parents. Apparently, identification and imitation were always based on child-parent relationships.

In one extension of this concept, Whiting and Child (1953) see social conformity and imitation as the result of love-oriented parental techniques. When parents withhold love, the child substitutes self-love. This self-love is obtained when the child imitates the evaluative responses of the parents toward himself and consequently avoids guilt or negative self evaluation by social conformity. The nature of a person's conforming responses in later life thus depends upon his parents' value systems. The possibility of more immediate, situationally determined rewards or punishments is not discussed by these authors.

The partial failure of identification or "poor super ego development" has also been readily proposed as an explanation for imitation. Persons who are immature and

dependent (Kagen & Mussen, 1956) have also been found more imitative than less dependent persons.

In yet another context, Anna Freud (1946) spoke briefly of identification with an aggressor as a source of imitative behavior. She mentions only that such imitation is defensive in nature; the imitator assimilates or changes into the dreaded person or object and copies its behavior. In a related statement, Sanford (1955) defines identification as "imitating in fantasy or reality" the behavior of other persons who threaten one's self-esteem. This concept, which seems the logical antithesis of the super-ego concepts reviewed above, has received much attention but little investigation. Bandura and Huston (1961) did find that aggression, in contrast to other behaviors, was readily imitated by children regardless of their previous relationship to the adult models. Explanation of this finding can be attempted either on the basis of identification-with-the-aggressor or on the basis of a situational-cue hypothesis.

The viewpoints cited demonstrate the diversity of psychoanalytic concepts of imitation. Perhaps the only generalization that can be offered is that investigators holding this orientation see imitation as the result of internal or personality determinants--usually described as identifications. The antecedents of identifications are found in parental value systems and not in

recent interpersonal relationships or in environmental rewards.

General Learning Theory Approaches

Imitation was given its first systematic consideration as a learned behavior by Miller and Dollard in their 1941 publication of Social Learning and Imitation. For these theorists, the learning of an imitative response follows the same principles as that of any response which is cue-elicited and then strengthened by reinforcement; the only distinction that separates imitation from other responses is that the cue for the response lies in the behavior of another person.

The characteristic features of imitative learning described by Miller and Dollard emphasize determinants very different than those proposed by the Freudians. Where the psychoanalytic theorists stressed the intra-individual determinants, Dollard and Miller have worked almost entirely with external stimuli and reinforcements.

The prestige of the leader or model (pp. 165-182), his age, his social status, his intelligence, and his technical skill (pp. 185-202) have each received theoretical attention in Miller and Dollard's formulation. They postulate an acquired drive to match or copy behaviors of prestigeful, intelligent persons. Non-imitation, or divergence, leads the behaving person to

anticipation of punishment when he perceives the difference between his own and the "desirable" behavior.

Miller and Dollard, in this same book, demonstrate how certain behaviors can become desirable and how the "drive to imitate" can be acquired through secondary reinforcement and generalization. They begin by demonstrating how albino rats can be taught to imitate each other's choices in a T maze (p. 101) by being reinforced for following leaders. They then showed that this learned imitation would generalize from old to new leaders in the same situation (p. 114), from hunger to thirst drives (p. 116), and from the T maze to a stepping platform (p. 118).

These theorists then conducted a series of experiments to test the applicability of these principles to children. When a piece of candy was hidden in one of two boxes, children could be taught either to imitate or non-imitate a leader's choice through the use of a candy reward for imitation or non-imitation (p. 217). Miller and Dollard also showed that these imitative "habits" would generalize to new situations (p. 131).

Following the demonstration that imitative habits could be learned, Miller and Dollard showed that children would copy a leader's behavior in a choice-situation if the leader had received reward. This also would generalize to new situations and was interpreted (p. 175) as

demonstrating the role of the leader's prestige in inducing imitation.

These experiments, and others reported by Miller and Dollard, follow the discrimination-training model so prevalent in behavioral research with animals. It can, nevertheless, be cogently argued that human social behavior is not closely related to the place learning of a discrimination problem. Both trial-and-error conditions and primary reinforcement are usually absent in social situations. Mowrer has commented (1950) that this paradigm requires a person to perform a matching response before being rewarded for it--yet the explanation for matching is based on the reinforcement.

Mowrer's own theory of imitation (1950, 1960) is more closely related to concepts of classical, as opposed to instrumental, conditioning. His reasoning is rather complex. In first learning to imitate, a person tries to copy these responses of others (models) which have been associated with positive reinforcement. If, for example, Person A's behaviors were associated with Person B's satisfactions--much as a nurturant mother's behaviors are associated with a child's reinforcements--the stimulus consequences of A's behaviors acquire secondary reinforcement value for B. Therefore B tries to re-create these stimulus consequences for himself and finds imitation autistically rewarding. B's response reproduces the

satisfying stimulus. Thus the initial learning of an imitative response is essentially a sensory event.

Once learned, an imitative response may receive external reinforcement. When this happens, the response becomes instrumental and begins to resemble other habits.

For Mowrer, all learning involves the association of satisfactory or unsatisfactory consequences or experiences with the response-produced stimuli. The essential difference between imitation and habit formation is in the source of the sensory image that mediates the acquisition. In habit learning the learner supplies his own model of hope-arousing, response-correlated stimuli; in imitative learning the original model is the behavior of another. In both cases, the learner seeks to repeat (imitate) those images or stimuli that are associated with satisfaction (1960, pp. 99-113).

At present, Mowrer's support of this new conceptualization is mainly anecdotal. He cites repeated examples from his now-famous bird-training experiments to show that birds learn to talk (imitate) by reproducing sounds they have heard in pleasant contexts. The bird acquires the "habit" of talking, not by trial-and-error, but by listening. Similarly, parents teach children to talk by talking to them, not by rewarding them for successive approximations.

There seems to be a great deal of common sense validity to Mowrer's concepts of imitative acquisition.

People do, after all, seem to learn by watching others. The theory is an intricate one to validate more formally, however, and evidence for accepting or rejecting Mowrer's mediational constructs will be difficult to accumulate. The main testable hypothesis put forth by this explanation is that people who have been paired with positive reinforcement should be imitated more readily than people paired with negative reinforcement. Several tests of this hypothesis, of which the present study is one, have been made.

Both of the learning approaches reviewed above have concentrated their theoretical evidence on either fractional or "laboratory-type" responses. This sort of evidence is the foundation for much of present learning theory, still it is difficult to generalize from place-discrimination responses or even the word-learning of Mowrer to meaningful social behavior. Many personality theorists (Asch, 1959, p. 374; Rotter, 1954) argue convincingly that a comprehensive theory of social learning should attempt to explain more complex, molar behaviors. Such a theory would not be required to reduce its explanations to the molecular level.

The predominant champion of this molar approach to imitation is Albert Bandura. He views modeling as a vital source of social behavior, a source that can be studied as a meaningful unit. More specifically, he sees modeling as

a major vehicle of social reinforcement, a process for inducing behavior change that is more effective than simple conditioning.

Bandura has conducted several interesting experiments to support his contention that a molar approach in general and a focus on imitation in particular are preferable to other explanations of social behavior. In his latest paper (Bandura & McDonald, 1963), he challenges one aspect of Piaget's developmental theory--the assertion that objectivity and subjectivity in moral judgments represent two age-specific developmental stages. In Bandura's view such stages may indeed occur, but they would result from changes in social reinforcements rather than from a predetermined progression. His results revealed that models could produce rapid and lasting shifts in moral orientation, a direct challenge to Piaget's concepts. The findings also demonstrated that modeling cues were superior to verbal reinforcers and, more importantly, that modeling alone was as effective a technique as was a combination of modeling and verbal reinforcement.

Modeling has been used by Bandura as an experimental technique for testing other theoretical views. By using imitation as the operational referent of identification, Bandura, Ross, and Ross (1962) compared the status-envy theory of identification (Whiting, 1959), the social-power theory (Mussen & Distler, 1959; Maccoby, 1959), and

Mowrer's secondary reinforcement concepts (1960). The experimental design used two models--one who dispensed reinforcements and one who received them. In a second experimental condition the subject received the rewards and the former consumer-model was ignored. Tests of subsequent imitation clearly supported the social-power theory and the authors concluded that no support for the defensive interpretation of identification proposed by the psychoanalytic theorists could be found. A comparison of the first and second experimental conditions (child vs. adult as recipient of rewards) showed no support for the secondary reinforcement theory of Mowrer. This finding could have been confounded by the children's sympathy for the ignored model.

In other recent work, Bandura and his colleagues demonstrated that models readily induce aggression merely by displaying aggressive responses (Bandura & Huston, 1961), and that films of these same model behaviors induce as much aggression as the use of live models (Bandura, Ross & Ross, 1963). (This latter finding was sufficiently dramatic to be reported in Look magazine, October 22, 1963.)

In a study as yet unpublished, Bandura, Hatton, and Revelle show clearly that the frustration reactions of children can be readily "shaped" into aggressive, dependent, or withdrawing patterns by appropriate models.

Furthermore, these patterns were found to endure in the models' subsequent absence.

Thus far in his work Bandura has provided good evidence that imitation can be a meaningful way to describe social learning. He has also substantiated his claim that explanations of social behavior based on modeling can be more effective than explanations based on developmental stages or molecular conditioning paradigms. He has even advanced a rudimentary theory of social learning (Bandura, 1962) in which he suggests that response acquisition is based on sensory contiguity alone. Other persons, or models, can serve as direct "sources of patterns of behavior." Reinforcement is seen by Bandura as a performance-related variable; it influences response selection rather than response acquisition. The function of reinforcement is mainly that of augmenting or reducing the observation required for learning.

In describing imitation as a process of response acquisition based on observation, Bandura does not reject Mowrer's idea that the imitator is administering secondary reinforcement to himself. He seems, instead, to obviate the necessity for this added inference.

Bandura has also pointed out that observation or contiguity alone is not a sufficient explanation for the occurrence of imitative or other social learning. Such factors as motivation, reinforcement,

characteristics can't be ignored. People do not imitate everyone they observe. Bandura has studied these attributes of the physical situation, the person imitated, and the imitator himself. As yet, he has not proposed a conceptual framework that would tie his concepts of acquisition to these personal and situational influences.

In seeking to understand a unit of social behavior, the precise method by which the mechanics of that behavior were learned is less important than the understanding of the conditions of its occurrence. This is perhaps the major reason Rotter's SLT, a performance theory, was chosen as the framework for the present research. There is no disagreement between Bandura's views and Rotter's SLT. The two are in fact complementary; the difference between them is one of emphasis. Bandura has centered his theoretical attention on acquisition. The focus of Rotter's theory is on performance or response selection. Thus Rotter provides a framework for investigating the motivational and situational variables that facilitate or channel the occurrence of imitation. Bandura's work on these variables forms much of the empirical foundation for the present study.

## Social Learning Theory View of Imitation

The many advantages of employing Rotter's theory to guide an investigation of imitation have been alluded to in

the introductory chapter. It is a molar theory. It emphasizes meaningful units of behavior and avoids the fractionation and artificiality of the more formal, molecular approaches. Its methodology requires an investigator to focus on the interaction between organism and environment--thereby avoiding both the vagueness of the ontogenetic approaches and the oversimplifications and poor generality associated with naive empirical approaches.

Perhaps the most troublesome facet of the theories reviewed above is the variability and imprecision in their definitions of imitation or imitative behavior. This vagueness about the meaning of the word itself may, in fact, be the very reason that none of the theories have attained explanatory utility. Even Bandura, in contrast to his usual rigor, uses "imitation" sometimes as a behavior, sometimes as an explanation for social acts, and sometimes as a kind or type of learning process. Precise operational definitions have been provided by other experimentalists, but these are of little help outside the laboratory.

The aim of the next few paragraphs is to use the viewpoint of SLT in developing and clarifying a useful definition of imitation. Following this definition the general method of studying imitation derived from SLT will be outlined.

Psychology in general assumes that the usual purpose in defining a term is to aid further understanding or evaluation of the concept or behavior defined. Definitions are relevant to their purposes. Here the purpose of definition is to aid in the understanding of imitation as a social behavior. In defining a behavior, the question SLT asks is not whether a particular response can be learned or precisely how this learning takes place. Instead, the important issue is when and where this response will be performed. What factors influence a person to select an imitative response? For instance, an imitative response could involve running, or laughing, or playing the piano. The interest of SLT is not in how the movements that make up these responses were acquired initially. The question for SLT is the discovery of the factors which influence a person to select one of these behaviors in a particular situation.

In SLT terms, the word "imitative" refers neither to a specific kind of acquisition process nor to a particular type of behavior. It is a descriptive term applied to the "selection strategy" used by an individual. As such, it is a classification or label applied to behaviors, not on the basis of their physical attributes, but on the basis of the conditions under which the behavior is selected. A behavior is imitative if it follows and matches the behavior of another person and

wouldn't have occurred without being preceded by this other person's behavior.

The use of the term "match" does not refer to the physical attributes of the behavior, but to its goal. SLT terms are intended to describe purposeful social actions and not the mechanics of these actions. Whether a person throws a dart underhand or overhand might be important in a theory of skill learning, depending upon the purpose of a specific experiment, but a social learning theory might focus on when and at what he threw the dart.

Obviously there is no flawless method of determining whether a given behavior is imitative merely by looking at the behavior. Fortunately this is not the problem in research on imitation. Imitation in the present study will refer to the subjects' matching of discrete behaviors performed by models in the subjects' presence, behaviors that are unlikely to be performed without demonstration by the model.

In the investigation to be described models perform easily observable behaviors such as throwing toy parachutes in the air and pulling cords with their thumbs. These behaviors were classed as "imitative" when performed by subjects only after a control sample had shown the behaviors were not likely to occur in the same situation without prior demonstration by the models. The

interest of the investigation, corresponding to the SLT viewpoint, is not in how the subjects learned to throw parachutes and pull cords nor how this behavior is transmitted from the model to the child. The interest is in explaining or predicting whether or not the child will select the imitative response.

# CHAPTER III

## DEVELOPMENT OF THE EXPERIMENTAL HYPOTHESES

The major concepts of Rotter's Social Learning Theory were outlined in the introductory chapter. These concepts are summarized in the formula:

$$BP = f\ (E\ \&\ RV)_S$$

which can be read thus: The potential for a given behavior to occur is a function of the expectancy that a given reinforcement will follow that behavior and of the value of that reinforcement in a given situation.

For research purposes, the formula is often given a broader meaning. The term "BP," for example, is used to describe the probability of occurrence of a set of functionally related behaviors (Rotter, 1954). The potential occurrences of imitative behaviors will be the corresponding dependent variable in this formulation. The "RV" term, or reinforcement value, can be viewed from the standpoint of individual needs; one way of estimating the value of a reinforcement for a given individual is to obtain an estimate of that person's need to achieve that reinforcement. The "E" term, or expectancy construct is employed to describe the subjectively

held probability that a certain need can be met (or reinforcement attained) by a given behavior.

It is assumed by SLT that both E's and RV's are influenced by past experience and by the situation in which the individual finds himself. Therefore, this study of imitative behavior utilizes both personality (E & RV) and situational predictors and their interactions.

Personality Measures

One goal of this research was to select and investigate a measure of a need-value system that might be highly related to imitation. The motivational variable selected was the need for social approval; the measure for this construct was the Social Desirability Scale developed by Crowne and Marlowe (1960) in their work on approval needs.

In their early inquiries into this concept, Marlowe and Crowne found that people who gave socially desirable responses to personality questionnaires seemed motivated by a need for social approval (nApp). After refinement of their social desirability (SD) scale, validation of the approval construct has proceeded at a rapid pace. Particular emphasis has been placed on the way in which this motivational variable manifests itself outside of test-taking situations. Crowne (1961) and Strickland and Crowne (1962) found that high nApp college students yield to group pressures readily. Marlowe (1962) showed that

similar students are more responsive to verbal conditioning techniques, and Horton, Marlowe, and Crowne (1963) found positive relationships between approval needs and the use of culturally stereotyped words on an association test. This work has led to the characterization of the person with high approval motivation as one who is conforming, compliant, and conventional. Imitative behavior may also fit within this characterization.

In further explanation of this characteristic personality pattern, hypotheses that the high nApp individual is maximally sensitive to other's behavior and is characterized by vulnerable self esteem have been verified for college subjects. A detailed review of this and other investigations of the approval measure is given in Crowne and Marlowe (1963).

In contrast to the clear cut relationships found using collegiate subjects, the behavioral correlates of approval motivation in children have been much harder to identify. A verbal conditioning paradigm employed by Epstein (1961) revealed an inverse relationship between need for approval and responsiveness to conditioning procedures. While this result appears to contradict theoretical prediction, it may have been affected by the sex of the experimenter and can't be properly evaluated.

Another preliminary investigation of approval motivation in children has been conducted by the Crandall

research group at Fels Institute. They developed (Crandall, Crandall & Katkovsky, 1963) two forms of the SD scale for children (one administered orally, one in written form for older children) using the technique developed by Crowne and Marlowe (1960) and tested over 300 subjects. They found that good reliability could be achieved even with elementary school children, that girls achieved significantly higher scores than boys, and that the SD scores were inversely related to intelligence test scores.

To test the predictive utility of the children's SD scale, these investigators studied its relationship with several social behaviors which seemed logically related to approval motivation. They found a positive relationship between the scale scores and boys' imitation of their peers. A rather surprising negative relationship was found between boys' scores on the scale and behaviors classed as "approval seeking from adults." Negative relationships were also found with boys' achievement behaviors and with girls' aggressive behaviors.

Taken as a whole, the results of the above study lend little support to the contention that scores on the children's SD scale are valid indicators of a unitary motivational system oriented toward seeking social approval. Further research is imperative, however, before any such conclusion is made. The apparent tendency for approval-

oriented boys to avoid dependent behaviors toward adults and yet match the play of peers poses a puzzling question. The present study, in relating SD scores with imitation of adults, should help decide the question of whether the imitation as a behavior or the person imitated is more closely related to this measure of need for approval.

At this time there has been too little empirical work to decide the question of whether need for approval will be as efficient an explanatory construct for children's behavior as it has been for adult behavior. The studies reviewed here, including those using adult subjects, have shown close associations between a person's SD score and his approval orientation toward age peers. Whether this association holds for child-adult relationships is a very open question.

The characterization of the high nApp person as conforming, socially sensitive, and suggestible leads to the conclusion that such a person would be quite likely to imitate others in an unfamiliar situation. The findings that imitation is related to dependent behaviors (Kagen & Mussen, 1956) and to low self esteem (Gelfand, 1961; Lesser & Abelsen, 1959) would tend to support this reasoning. This research will evaluate this hypothesis by testing the relationship between nApp scores and imitation in a free play situation. A positive correlation is expected.

Although the Crandall and Epstein studies mentioned previously cast some doubt on this prediction, the theoretical groundwork of the approval construct and the mass of empirical work with adult subjects give it strong support.

In previous experiments with nApp, the subject has typically been faced with a choice between conforming or culturally approved responses and more independent, conspicuous responses. Seldom has he been given the chance to "opt out"--to make an avoidant response or none at all. In one study that did consider avoidant behavior (Strickland & Crowne, 1963) approval-oriented people terminated psychotherapy earlier than did those with low nApp. That is, they chose to avoid interpersonal threat when there was an alternative.

The present study also presents such an alternative in the play situation. The child can choose between imitative play, non-imitative play, or he can merely abstain from play activity and thereby "opt out." As both conformity and defensive avoidance seem to describe the approval-oriented person, subjects with high nApp would be expected to show either high imitation rates or very low play activity in general. Therefore, in addition to the prediction of a positive correlation between nApp scores and imitation, it is predicted that nApp scores will be inversely related to the measures of total play

activity. Because this second prediction lacks firm empirical support, it is put forth as a tentative hypothesis.

Neither of these hypothesized relationships between approval motivation and imitation would be expected in a more structured situation. The Level-of-Aspiration task used in this investigation provides more structure than the play situation in that it provides a pre-established goal for the subject. It seems reasonable that the subjects' need to reach this goal, to succeed on the task, would assume greater relevance than the need for social approval. Therefore, no relationship between nApp and imitation on the task is predicted.

According to SLT, predictions from a measured need to a behavior are more accurate when the "E" term, the subjectively-held expectancy that one's needs will be met, is taken into account. The problem of measuring specific expectancies for given responses in given situations is virtually insurmountable but, as Rotter has pointed out, a measure of generalized expectancy will often suit experimental purposes. Such a measure is employed in this research.

The "absolute" level of any expectation is of less significance than its level relative to the value of the reinforcements with which it is associated. That is, high expectancies of reaching a goal would not alone lead an

individual to seek that goal if its value to him was near zero. For research purposes, knowledge that an individual's expectancies are at a certain level is less useful than the knowledge that his expectancies for a given behavior are lower than or higher than the needs related to that behavior. In other words, the discrepancy between the levels of RV and E for a behavior should be a better predictor of its occurrence than either measure alone.

Recently Barthel (1963) showed this discrepancy measure to be an efficient predictor of rigidity in goal setting and of social defensiveness. In a study more closely related to the topic of imitation, Newman (1955) found that discrepancies between the desirability of a goal and the expectancy of reaching that goal were closely related to the choice of "imaginative role taking" as a goal-substitute.

In the experimental situations of the present study, subjects with high needs for approval and low generalized expectancies were expected to follow one of two main behavior patterns. Either they would avoid the situation or they would very cautiously follow the model's behaviors--[illegible] behaviors were the major cues available. In the [illegible], this would result in either high imitation [illegible] because of low activity. Therefore it [illegible] subjects with positive NV-GE discrepancy

scores would show greater variance in play imitation rates than subjects with negative discrepancies.

Because no relationship between nApp and task imitation is hypothesized, and no measure of the NV for task success was employed, the above prediction cannot be made for the task situation. However, expectancy alone might easily prove a good predictor of task imitation. The task situation gives the subject little chance to avoid responding and again the models' behaviors are the major cues provided. Subjects with low task expectancies can be expected to show higher imitation of the models than subjects with higher expectancies.

Expectancy Changes as a Dependent Variable

The experimental design uses two separate estimates of generalized expectancy. One purpose of obtaining the second estimate was to attempt better prediction of the task behaviors. This second estimate also serves as a dependent variable in the study. It is an indicator of both the success of the model role enactments and of the task instructions.

If the attempt to establish the play period and the task period as two different "situations" in the experiment was successful, the subjects' expectancy estimates should decrease between their initial level and the task estimate. This decrease is therefore put forth as a formal

hypothesis to be checked by the data. If the predicted decrease does occur, it should be related to the model role enactments. That is, subjects exposed to the rewarding models should show smaller decrements in expectancy levels. Lastly, it was predicted that nApp would be inversely related to the magnitude of this decrease. If vulnerable self esteem and defensiveness do characterize the approval-oriented subject, and if unrealistically high expectancy estimates indicate defensive goal setting, then subjects with the higher nApp scores might be expected to maintain higher expectancy levels in spite of the task instructions.

Model Behaviors

Following the lead provided by Mowrer's and Bandura's work an attempt was made to study three different interpersonal relationships between the models and subjects. Before the play period, subjects were exposed to rewarding, critical, or neutral models who enacted these roles during an acquaintance period.

A strict secondary reinforcement point of view, such as held by Mowrer, would predict decreasing imitation of the models in the order: rewarding role, neutral role, critical role. The psychoanalytically oriented theories, with their concepts of "defensive identification" would predict that the critical role would elicit higher imitation than the neutral role. This latter prediction

is consistent with the hypothesis that would be derived from SLT concepts, although the underlying reasoning is a bit different.

In SLT terms, the models' role behaviors act as cues to aid the subject in categorizing the situation. If the model's role-playing skills are high, subjects in the rewarding-role group will be reinforced by the models' acceptance and interest in their opinions. The new, relatively unstructured situation changes to one in which approval reinforcements are available, and the expectancy of receiving these reinforcements is raised.

The critical model, by contrast, has shown the subject that he is the kind of person who makes negative evaluations. His criticisms will probably raise the subjects' expectancies for negative reinforcement. During the play period the likelihood that these subjects will show much independent activity is not high. Instead they will probably show either very low total activity or close copying of the critical model.

Both the above conditions are expected to result in high imitation rates, with the reward condition showing the higher of the two. The neutral role, on the other hand, triggers neither higher expectancy for success nor higher expectancy for failure or punishment. The situation remains less structured and all expectancies are low. When this happens, Rotter predicts that behavior selection

will be mainly a function of generalization (1947, p. 208). The subject has been told that this is a play room; he has watched the model carry out a variety of behaviors; and no particular expectancies for negative reinforcement have been evoked. Thus, the subject will probably engage in a variety of play behaviors, not confining himself to imitative play because there would seem no particular advantage to imitation.

The experimental hypothesis that summarizes the above is that imitation of the rewarding models will be highest, of the critical models, intermediate, and of the neutral models, lowest. Two additional, tentative predictions were also made. The critical role will elicit less play activity, and it will elicit greater variance in imitation rate than either of the other roles.

Bandura and Huston (1961), as mentioned, showed that rewarding models were more frequently imitated than models who ignored the children in their experiment. No other empirical tests of these hypotheses, to the author's knowledge, have been made. Similarly, the role of a "critical" model or one who establishes himself as a "negative reinforcer" has not been utilized in previous investigation.

The superiority of the rewarding adult as a model for imitation is expected to be maintained in the task situation as well. The generalization studies cited from

Miller and Dollard and the fact that the task immediately follows the play period in the experimental design both lend support to this hypothesis. The critical role is expected to generate the least (rather than an intermediate level) task imitation of the three roles. This latter prediction is made because of an expected relationship between the task competence of the models and their role behaviors which is discussed below.

Before the question of the competence of the models is considered, it seems advisable to consider the question of why the role of the rewarding models is expected to generalize to the task situation when no such hypothesis was stated for the subjects' approval motivation. The explanation is based more on common-sense inferences than on established theory. In the first place, the task instructions are designed to evoke a specific "achievement" set; therefore the subjects' needs to do well on the task are expected to overshadow their more general needs for social approval. Secondly, temporal proximity of the task and play periods and the plain fact that the models are the same models would tend to promote maximum generality of the role effects. Thirdly, in the exploratory study from Fels Institute (Crandall, Crandall, & Rabson, 1963), young boys who gave few socially desirable responses were found to be achievement oriented in their play behaviors. They spent more time alone on tasks and

engaged in more independent achievement efforts than those with high CSD scores. While these findings require further study, they do suggest indirect support for the hypothesis that competent models will elicit higher imitation from all subjects. That is, the achievement orientation of these subjects with low approval needs may direct their attention to the behavior of the competent model.

The competence or incompetence of the models on the Level-of-Aspiration task is the final predictor to be introduced. Miller and Dollard (1941) have held that models with high prestige are better sources of copying behavior than low prestige models. Bandura's test of the social-power theory of identification also supports this finding.

Innovative and idiosyncratic behaviors of leaders have been studied in a simulated leadership situation by Hollander (1961) who found that the competence of the leader led to acceptance of his authority and behavior. In addition, Mausner has repeatedly shown that models displaying competence on a skill task (1954a, 1954b) generate high imitation.

The prestige or competence of the models in the above experiments was usually established in one way--the models either possessed or received the reinforcements provided by the experimental situation. Miller and Dollard,

for example, established their models' prestige by turning them into successful locators of candy rewards. Imitation of such models is on a slightly different basis than imitation based on the interpersonal relationship between the model and child. In these success-oriented paradigms, the model is seen as the recipient of tangible rewards. The subjects' imitation of him would be partially governed by the desirability of these rewards.

The task instructions define the goal or "reward" of the task situation as achieving a high score on the Level-of-Aspiration (LOA) board. Therefore it is hypothesized that subjects will show higher imitation of those models who display their competence by achieving high scores on this task.

The interpersonal bases of imitation (model roles) and the task success (model competence) give two possible foundations for predicting imitative behaviors. Maximum prediction should be attained when these two variables are combined. The maximum prediction in the present research would contrast imitation of the rewarding models who are also competent with imitation of the critical models who are also incompetent; the hypothesis for this prediction would state that the maximum difference in task imitation rates would be found between subjects in the reward-competent group and subjects in the critical-incompetent group.

Because the task situation provides more structure than the play situation, subjects should feel more free to avoid copying the critical model. If the above prediction is an accurate one, this should be especially true of critical models who are also incompetent. This reasoning is the basis of the reversal, mentioned earlier, that is expected in the relative efficiency of the neutral and critical roles.

The subjects' preference for immediate or delayed reward is the final dependent variable in the experimental design. This measure was included, not because of any relationship it might have to imitation, but because it could support the validity of the other experimental variables.

For instance, the person with high nApp has been characterized as a person who adheres to conventional cultural stereotypes. One of the most firmly entrenched stereotypes of American middle-class culture is that a bigger reward in the future is preferable to a smaller reward now. This leads to the hypothesis that high nApp subjects will show greater preference for the delayed reward. If this hypothesis holds for these young subjects, the validity of the approval measure will be strengthened.

The preference for delayed vs. immediate reward has been related to interpersonal variables by Mahrer (1956) and by Mischel (1958, 1961). Both investigators concluded

that choice of delayed reward was related to the individual's trust that the promised reward would or could be delivered. This reasoning leads to two additional hypotheses for the present study; subjects in the rewarding-model group and subjects in the competent-model condition will prefer the larger, delayed reward.

General Evaluation of Hypotheses

It is expected that the socio-situational variables of model role and model competence will be more efficient predictors of imitation in this design than will the personality variables. There are several lines of reasoning which support this expectation.

Personality variables in general seem to function better in explanation of adult behavior than they do in theories of children's behavior. This may be partially based on measurement difficulties; children's personality tests usually show less reliability and validity than tests for adults. Also, we assume that adult character structures or "personalities" are more stable than those of children. That is, adult behaviors are more likely to be under "internal stimulus control" while children's behaviors are more flexible and thus less predictable.

These general problems of explaining behavior in children on the basis of individual differences are unfortunately magnified in the present experimental design.

Both the measures of approval needs and expectancies are relatively new techniques and their internal consistency has not been previously established. Consequently, both these measures lack validation as empirical referents of their respective constructs as well. The ambiguity of interpretation found in the earlier results with the children's approval measure exemplifies this difficulty.

# CHAPTER IV

## EXPERIMENTAL DESIGN

An overview of the procedures used in this research was given at the end of Chapter I. The aim of this chapter is to present the experimental design in greater detail. A roughly chronological narrative is used in order to convey both the operational definitions of the variables and the manner in which they were handled experimentally.

### Physical Facilities and Equipment

The study was conducted at a city recreation center where all of the experimental equipment was housed in a large room (see Figure 1). In one corner of the room, to subject's immediate left as he entered, a tape recorder was placed on the end of a long table. At the beginning of the experiment, the subject and the observer sat down at this table and a recorded form of the need-for-approval scale was administered after a brief introductory conversation. Then the subject was shown a Porteus maze, was asked for his first expectancy estimate and then asked to complete the maze before being introduced to the model. Both the experimenter and the model sat at this table later during the play observation.

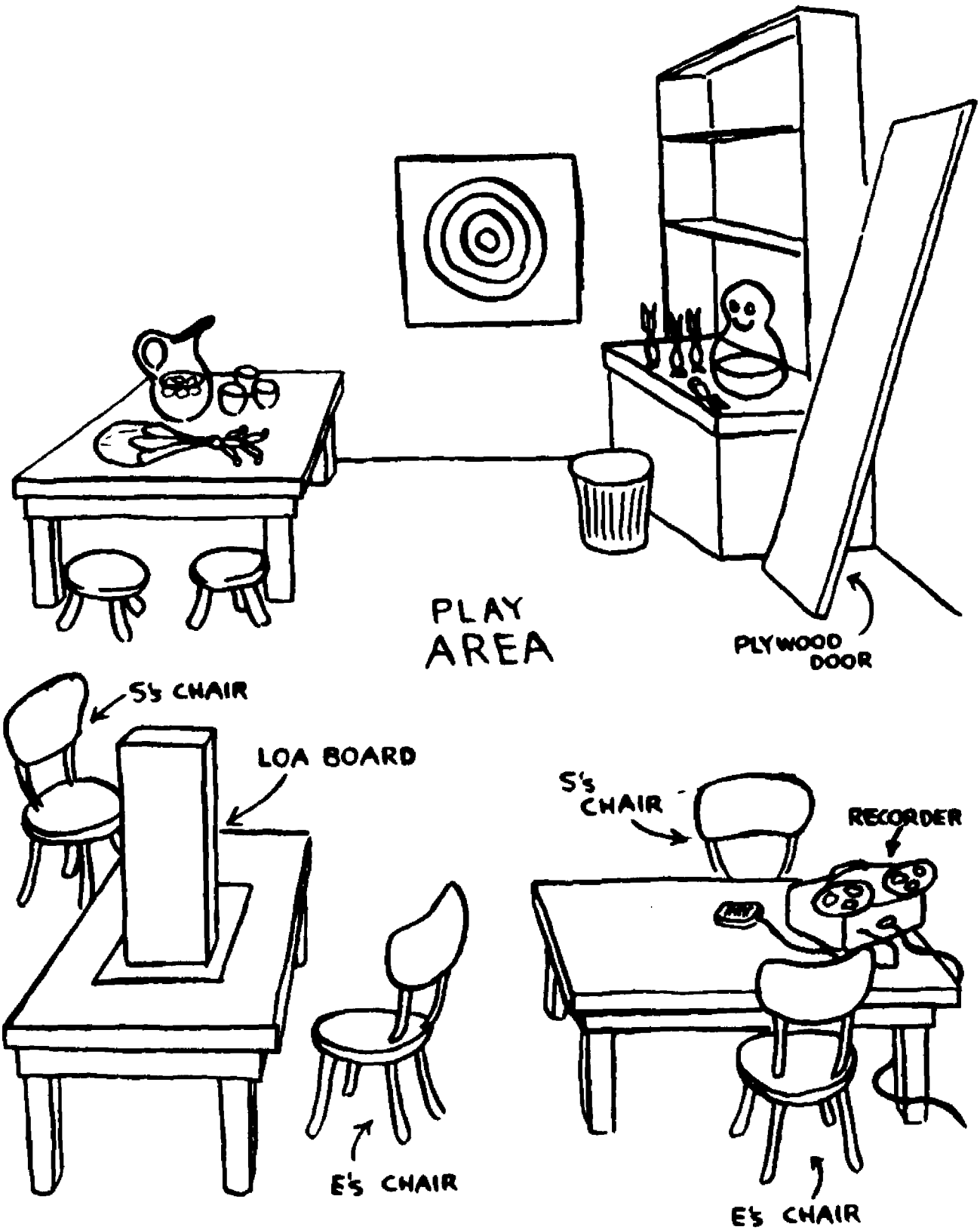



FIGURE 1. Floor plan of experimental room.

The "play" area was located opposite the table just described. It was bordered on one side by a second long table, much the worse for wear. A toy parachute, a water pitcher and paper cups were at one end of this table. Two stools were placed at the other end where the model and subject sat during their initial conversation. A dart target 30" in diameter was hung on the wall at the end of the table. Opposite the table stood a large waist-high cabinet with shelves above it and, adjacent to the cabinet, a plywood door was leaning against the wall. The door served as one dart target for the model; another was an inflated plastic doll placed on the second shelf. A large wastebasket placed in front of the cabinet served as still another target for the model.

The vertical LOA board which was the task apparatus occupied a third corner of the room. This apparatus is described elsewhere by Rotter, Liverant, and Crowne (1961) who developed it from the original model used by Sky (1950). It consists of a slotted vertical board with a small platform that can be raised or lowered along the board by means of a string pulley. A steel marble is placed on the platform and the object of the "task" is to pull the string carefully and thereby lift the steel ball along the vertical board (see Figure 2). A scale from 0 to 100 in units of 10 is clearly marked along this vertical plane. A hidden electromagnet holds the marble on the platform

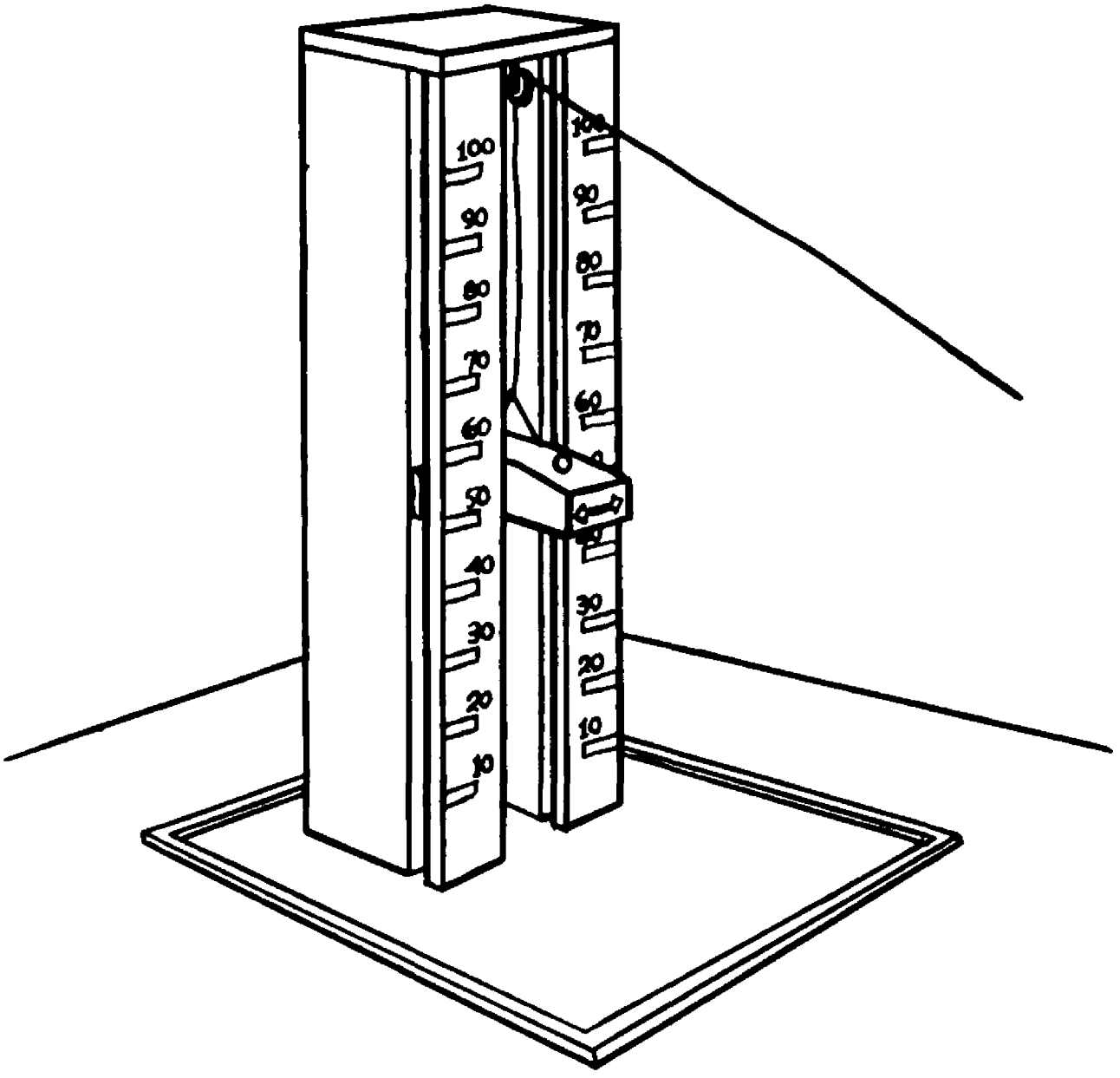



FIGURE 2. Vertical Level of Aspiration Board.

and can, when a concealed switch is pressed, cause the ball to "fall" off at any point along the scale. This electromagnet permits control of scores without the player's knowledge.

The apparatus stood on a transparent plastic floor mat. At the end of this mat, three feet in front of the apparatus, five red dots were painted about five inches apart. One dot served as a "toe-mark" for the model and thus as the guide in scoring imitative responses.

The experimenter sat directly beside the apparatus, ostensibly to record scores but actually to control the magnet mechanism and to record imitation. A second chair was placed about three feet to the side of the apparatus. This chair was used alternately by the model and the subject; when one was trying his skill, the other "had to" sit on the chair. Actually the use of this chair standardized the view of the model for all subjects and prevented them from seeing the control mechanism.

## Personnel

Adult Models (Ms). Three young adult males served as models during the experiment. Each of the adults acted as M for one third (30) of the total (90) subjects. The roles enacted by the Ms and the specific behaviors they displayed in the play and task situations will be discussed in the corresponding sections following.

Experimenter (E). The author served as E and as the observer throughout the experimental situation. A second observer was used for a sample of sixteen Ss to check the reliability of the behavioral observations.

Subjects (Ss). Ninety boys who ranged in age from six and one-half to ten and one-half years participated as Ss. The average age of the Ss was 8.4 years. The boys were selected, one at a time, from the playground at the recreation center. After his age was ascertained, a prospective subject would be asked if he would like to "come upstairs and help us try out some new games." Only four boys refused to participate because "they didn't want to." About ten others didn't participate because they either had to leave the playground within the next half-hour or were required by their parents to remain outside "in sight." After a boy had agreed to participate, he was told, "We want to ask you some questions and talk with you a little while about the things you like to do. Then you'll have a couple minutes to play by yourself if you want to and then we have a new kind of game we're trying out." This explanation was given during the walk from the playground to the experimental room.

In several cases, a boy selected as a subject was with a friend on the playground. When this happened and the second boy was also an eligible subject, he would be

tested immediately after the first boy to prevent communication between them.

In general, there seemed to be no crucial problems with communication about the experiment among the subjects. When questioned, those Ss who knew anything at all about the study knew only that, "There's a tape recorder that asks easy questions" or, "Something about a ball that you lift with a string." These Ss were not discarded from the experimental group.

## Initial Instructions

The general description of the experiment was repeated in more detail after the S was seated at the table. E gestured toward the model and said:

> That's Mr. _____. You'll meet him in a few minutes and you two can talk for a little while. Now I'd better explain what we do up here. We do four things: First, we have some questions here on this tape recorder. They aren't hard questions at all--they just ask you about things you do every day. Then we have this little puzzle game here. (Points at maze.) They're fun; you've probably seen them before. After that you can talk with Mr. _____ for a couple minutes and then there's (points) that new game I was telling you about. We do that last.

## Personality Measures

Need for approval. If the subject had no questions after the above explanation, the tape-recorded measure of need for approval was then introduced as follows:

> Now let's do the tape questions. There's a woman's voice on the tape and when she asks you

> a question you just answer her right out loud. If you don't hear a question, just let me know and we'll stop the tape and go back. All right?

The Ss' answers were recorded verbatim by E. A copy of the record form, which was used for all scores and observations, is given in Appendix E.

The questions used on the recorded questionnaire are listed in Appendix A. There has been, as yet, no "established" SD scale for children. Crandall and Epstein each employed a separate experimental form in their studies reviewed in Chapter III. The content of the scale employed in this study (hereafter called the CSD scale) was taken largely from the Crandall scale; the items, however, follow the question form used by Epstein. While the Crandall scale contained 48 items, this CSD measure uses only 25. Preliminary testing indicated that children younger than 8 become inattentive when a longer scale is used. The items dropped to bring the total down to 25 were those which showed the lowest discriminatory power during the pretesting.

Generalized Expectancy. On completion of the CSD recording, estimates of each S's expectancy for success on the Porteus maze were obtained. The procedure used was that developed by Crandall (1963). First the maze was explained:

> This is the puzzle game I mentioned earlier. What you do is take your pencil and start here (points) and see if you can come out here (points) without going down any of the wrong alleys.

Then E temporarily covered the maze with a sheet of paper containing 50 stick-figures arranged vertically (see Appendix B) and said:

> Before we do the puzzle, I'd like you to do one thing for me. We've played this game with lots of boys and we wanted to put them all in order on a long list. Only all the names wouldn't fit so we made one of these little stick-figures (sketches stick-man) for each boy. Now this boy here (points to top) would be the very best player, and this boy (points) would be the second best--and then all the way down in order (gestures) until this boy (points to bottom) is the very poorest player and this one is next to the poorest and so on.
>
> Now, (hands pencil to S) I'd like you to guess which boy you're going to be like on this game; just draw a circle around the one you really think you're going to be.

This technique yields expectancy estimates ranging from 1 to 50. The Crandall procedure then doubles each estimate to obtain the more conventional "probability" values. Crandall's methods were followed here, except that 2 was subtracted from each final value for ease in machine computation. Therefore, the GE scores listed in Appendix G range from 0 to 98.

A second expectancy estimate was later obtained from each S after the LOA board had been explained to him but before he had taken his first trial. The instructions were modified as follows:

> Before we start can I get another guess from you about how good you're going to be on this game? Here's another one of these sheets. Remember this is the best boy here at the top and the poorest one down here--all these boys are in order according

> to how good they were. This time, just draw a circle around the boy you think you'll be like on this game.

Porteus Maze. Each S completed a Year VIII Porteus Maze (see Appendix C) immediately after he had made his first expectancy estimate. This particular maze was chosen because pretesting had shown it to be quite easy for boys in this age group. The maze was not scored as its sole purpose was to elicit the estimate of generalized expectancy. All Ss were told by E that they had done well on the "puzzle."

## Experimental Treatments

Role Enactments by Adult Models. When a subject had completed the maze-puzzle, he was then introduced to the male adult who served as the model. At this point, E left the room on the pretext of "going across the hall to see the ceramics teacher for just two or three minutes." The "acquaintance" period, signalled by E's leaving the room, lasted exactly three minutes. During this acquaintance period, M enacted one of three roles--rewarding, critical, or neutral--as he engaged S in conversation. Each M enacted each role for 10 of his 30 Ss--that is, for 1/9 of the total N of 90. Thus 30 Ss were exposed to each of the three roles and each M played each role an equal number of times. To reduce sources of bias to a minimum the roles were enacted while E was out of the room and

each role was selected by M without E's knowledge from a card of random numbers.

Although rigid standardization of the roles would have been impossible, the content of the acquaintance conversations and the manner in which the Ms enacted each of the three roles was closely controlled. For example, M would ask each S about his favorite sport and then make an approving, critical, or neutral (self-referent) comment according to his role. The acquaintance conversations covered 5 content areas for all Ss: the recently completed maze, favorite sport, vocational aspirations, the city of Columbus, and "best" make of automobile.

In the rewarding condition, M would first praise the boy's maze performance and then elicit his opinion in each of the content areas. In addition to being generally friendly, the M would express approval of the boy's choices, reinforcing his opinions and indicating interest in what the S had to say.

The critical role required M to initiate the conversation by finding some minor flaw in the maze performance. Following this M would question the child's opinions in the content areas or find some criticism of his choices.

Because of the potential potency of negative reinforcement with young children, no personal criticism of the boys or their behavior was made. The single exception to this was the comment on the maze. The intent of this

role was to convey the impression that M was a "disapproving" person while avoiding the impression that the S himself was being criticized. If baseball was S's favorite sport, M would complain that he didn't like to stand around so much. If S liked Cadillacs, M would criticize their gasoline mileage. Frequently, this role seemed to elicit negative self-evaluations from the Ss but these were never initiated by M.

A valid neutral role is probably unattainable in any interpersonal situation. The aim here was for M to avoid both rewarding and critical comments or gestures. To accomplish this, M reacted to S's comments on the content areas by making only self-referent statements. He carried on a kind of monologue, telling S which sport he played in grade school, where he lived in Columbus and so forth.

A more detailed description of the rewarding, critical, and neutral conditions is given in Appendix D, which is a copy of the written instructions given to each M.

Play Behaviors of Models. E re-entered the room after the acquaintance period and explained that she would be busy for a few more minutes. At this point M carried out the following sequence of behaviors:

1) Picked up the stool on which he was sitting and placed it upside-down on the play table.

2-5) Took a set of rubber darts from the cabinet top and threw one at the board beside the cabinet. He stuck another on his forehead, threw a third at the plastic doll, and tossed the fourth basketball-style into the waste-basket.

6) Collected the darts and arranged them in a cross-like design atop the cabinet.

7) Tossed the toy parachute in the air.

8) Took a drink of ice-water from the pitcher on the table.

While he was concluding this sequence, M explained that there was something he had to do also. He reiterated that this was a play room and that S could use the short time to do anything he wished. M then crossed the room and sat at the table with his back to S while E recorded S's play behavior for a three-minute period.

Task Behaviors of Models. At the end of the play time, both M and E arose and went over to the LOA apparatus with M saying they were "ready now." M explained the apparatus to S as follows:

> This is the new game we told you about. It's a game to see how steady you can be. This little ball goes on the platform and then you pull this string to see how high you can get the platform before the ball rolls off. It's more difficult than it looks because that ball rolls off pretty easy and you have to be very steady and careful.

E interrupted M at this point, obtained the second GE estimate from S, and then asked if M would mind taking his turns first as he had "done this before."

Both M and S took four trials on the task. M took the first two, S took two and then they alternated again. On each of his trials M took a few seconds to "get Set" and conspicuously carried out the following:

1) Held the cord with only one hand
2) Looped the cord over his thumb
3) Held his other arm fully extended at shoulder height
4) Placed his toe at the red dot on the floor mat which was furthest to the left of the apparatus
5) Used a very wide stance
6) Held his feet stationary

Imitation or non-imitation of each of the six behaviors was recorded for each of S's trials. These particular behaviors were selected because boys would be unlikely to use any of them in the absence of a model. The characteristic way boys approached the task in a pilot sample with no model present was to hold the cord in both hands and walk gingerly backward while pulling the string in a hand-over-hand fashion.

Model Competence. The scores achieved by M were manipulated to convey the impression that he was either

very good or quite poor on the LOA task. For 50% of the Ss a high-competence condition was employed with M scoring 80, 90 and then 90, 80 on his four trials. The low-competence condition was conveyed by M scores of 20, 30 and then 30, 20. Model competence or incompetence was randomly assigned and M had no knowledge of which condition was to be used until his first trial.

All Ss were given scores of 40, 50 and then 40, 100.

Dependent Variables

Play Behaviors. Each discriminable act of the S, whether imitative or non-imitative, was recorded during the three-minute play observation. The amount of time that each S waited before engaging in any play behavior was also noted. Both the number of different acts or units of behavior the S displayed and the number of times he repeated each act were recorded. These observations resulted in five play scores for each subject. These scores were:

1. Activity Level--the total number of discriminable acts.
2. Imitative Units--the number of the eight different M behaviors imitated by S.
3. Imitative Acts--the total number of imitative acts. This was obtained by adding

together all the repetitions of each different imitative act.

4. Imitation Ratio--the ratio, expressed as a percentage, of Imitative Acts to Activity Level.

5. Delay--this score was recorded as either a "0," signifying that S began to play as soon as the model indicated he could, or a "+," signifying that S either waited at least 15 seconds before playing or didn't play at all.

Task Expectancy Statement. The second estimate of generalized expectancy, elicited before the task, was evaluated as both a predictor of task imitation and an indicator of the model situational characteristics. In the latter context, the difference between the initial and task expectancy estimates ($GE_1 - GE_2$) was the actual dependent variable.

Task Imitation. The number of imitative behaviors displayed by S on all of the four trials was recorded as the indicator of task imitation. The possible range of scores on this variable was 0 to 24.

Reward Preference. When the S was offered either a small Tootsie Roll today or a large one on _____day, his choice was recorded as a preference for either an "immediate" or a "delayed" reward.

The raw scores for all Ss are listed in Appendix G.

In summary, the variables employed in the experimental design can be listed as follows:

PREDICTOR VARIABLES

Personality Measures

1. Need for Approval (CSD)
2. Initial expectancy estimate ($GE_1$)
3. Task expectancy estimate ($GE_2$)

Experimental Treatments

4. Model enactments of rewarding, critical, and neutral roles (30 Ss in each condition)
5. Model play behaviors (identical for all Ss)
6. Model task behaviors (identical for all Ss)
7. Model competence or incompetence on task (45 Ss in each condition)

DEPENDENT VARIABLES

Play Behaviors

1. Activity Level
2. Imitation Units
3. Imitative Acts
4. Imitation Ratio
5. Delay

Expectancy Changes

6. Difference between initial and task expectancy ($GE_2 - GE_1$)

Task Behaviors

7. Task Imitation
8. Reward Preference

In analyzing the results, the three sets of dependent variables were treated as three separate problems. Problem 1 consisted of the play behaviors and employed CSD, $GE_1$, the discrepancy between these two measures, and the model role enactments as independent variables. Problem 2 evaluated CSD and the model roles as predictors of the shifts in expectancy scores. Problem 3 consisted of the task behaviors and evaluated all of the personality measures plus the role enactments and task competence of the models as independent variables.

# CHAPTER V

## STATEMENT OF HYPOTHESES

The theoretical rationale of this research and the anticipated empirical relationships were discussed in Chapter III. Following the description of the experimental procedures in the preceding chapter, a more precise formulation of the experimental hypotheses is warranted.

This chapter is organized in three major sections which correspond to the three experimental phases. The first section states the hypotheses concerning behavior in the play situation. The second section covers the comparisons between the initial and the task expectancy estimates. The third section concerns both imitative behavior on the task and the subjects' reward preferences at the close of the experiment. The following chapter, which presents the results of testing these hypotheses, utilizes a similar plan of organization.

The experimental hypotheses are designated by numerals only--Hypothesis 1, Hypothesis 3, etc. In addition to these hypotheses some tentative guesses are included. These "low level" guesses are hunches or predictions that should be evaluated by the study but that

lack either the theoretical or experimental groundwork to be put forth as formal hypotheses. These guesses are designated by the letter "t" added to the hypothesis number, i.e., 2t, 4t, etc. Within each section the hypotheses relating measures of individual differences to the dependent variables are listed first. The hypotheses pertinent to the situational variables and to combinations of these predictors are then listed.

Play Situation

HYPOTHESIS 1: There will be a positive correlation between nApp scores and play imitation scores.

HYPOTHESIS 2t: There will be a negative correlation between nApp scores and the measures of total play activity.

HYPOTHESIS 3: When nApp and $GE_1$ are combined, Ss with positive discrepancy scores (NV higher than GE) will show greater variance in imitation than Ss with negative discrepancies.

HYPOTHESIS 4t: Ss exposed to the critical Ms will show less total play activity and a greater number of delay scores than other Ss. The neutral and rewarding roles will elicit respectively higher activity scores.

HYPOTHESIS 5: Ss exposed to the rewarding models will show the highest play imitation scores. Intermediate play imitation levels will be shown by Ss in the critical-role group while the neutral role will generate the lowest imitation.

HYPOTHESIS 6t: The critical role will elicit the greatest variance in imitation rate.

Expectancy Changes

HYPOTHESIS 7: The mean of the task expectancy estimates ($GE_2$) will be lower than the mean of the initial expectancy estimates ($GE_1$).

HYPOTHESIS 8t: An inverse relationship will be found between nApp and decreases in GE.

HYPOTHESIS 9: The decreases in expectancy will be smallest for Ss exposed to the rewarding M.

Task Situation and Reward Preferences

HYPOTHESIS 10t: There will be a negative correlation between task expectancy ($GE_2$) and task imitation scores.

HYPOTHESIS 11: Imitation rates will be highest for Ss exposed to the rewarding model role, intermediate for those exposed to the neutral models, and lowest for those in the critical-model group.

HYPOTHESIS 12: Imitation rates will be higher for Ss in the competent-model condition than for Ss in the incompetent-model condition.

HYPOTHESIS 13: The greatest difference in imitation rates will be between Ss exposed to the competent-rewarding models and Ss exposed to the critical-incompetent models.

HYPOTHESIS 14: The delayed reward will be chosen more often by Ss with high nApp scores than by Ss with low nApp scores.

HYPOTHESIS 15: The delayed reward will be chosen more often by Ss in the rewarding model condition than by Ss in the other two role conditions.

HYPOTHESIS 16: The delayed reward will be chosen more often by Ss exposed to the

competent models than by Ss exposed to the incompetent models.

General Results

The situational variates will be better predictors of imitation than will the measures of individual differences.

# CHAPTER VI

# RESULTS

## Overview

In the preceding chapter the experimental design was subdivided into three separate problems or sets of dependent variables: the play situation, the expectancy changes, and the task situation. These same subdivisions were maintained in the statistical analyses of the data. The variables for each problem are those listed at the end of Chapter IV with one addition: a three-fold variable corresponding to the models themselves, designated A, B, C for convenience, was introduced into each problem. The purpose of adding this variable was to control for (or discover) differences in the dependent variables that might be due to the models' "personalities" or physical characteristics--and that might or might not affect the roles they enacted.

Before undertaking tests of the individual hypotheses, an analysis of covariance based on multiple regression equations was completed for each of the dependent variables in the design. A brief summary of these analyses is given, along with the multiple correlation

coefficients, in Appendix F. Only one of the multiple regression analyses, that for predicting task imitation, reached statistical significance.

This finding injects a note of caution into the tests of the individual hypotheses which follow. It implies that, for the play situation and expectancy changes, no independent variable or combination of variables--when optimally weighted--generates an accurate prediction of a dependent variable. Therefore simple analyses of variance or "t" tests within the set of variables for either problem can be subject to error. However, this is an exploratory study intended to guide future research, and the generation of predictive regression equations was not its intent. Thus, the findings presented in this chapter should be interpreted in this heuristic frame of reference, and the fact that precise conclusions are unwarranted should be remembered.

The major plan of statistical attack used was to compute correlations between the measures of individual differences and the dependent variables and to complete standard analyses of variance for the modeling effects. Where indicated by a specific hypothesis, "t" tests are used.

Within each section the dependent variables are considered first, then descriptions of the independent variables and tests of the experimental hypotheses

are presented. Detailed discussion of the results follows in Chapter VII.

## Inter-observer Reliability

Before proceeding to the three main sections of this chapter, the reliability of the observations that served as criteria should be considered. The performance of 16 Ss was recorded by a second observer, in addition to E. Table 2 presents the correlations between the observer's and E's behavioral observations for each of the dependent variables. As these coefficients all indicate close agreement ($p < .001$), it can be safely assumed the criterion measures were reliable.

TABLE 2

INTER-OBSERVER RELIABILITY COEFFICIENTS FOR BEHAVIORAL OBSERVATIONS

| | Activity Level | Imit. Units | Imit. Acts | Delay | Task Imit. | Reward Choice |
|---|---|---|---|---|---|---|
| r = | .97 | 1.00 | .98 | 1.00 | .99 | 1.00 |

## Play Situation

**Dependent Variables.** In the play situation, it will be recalled, the play responses of each S were recorded after he had engaged in conversation with a rewarding, neutral, or critical M and after he had observed M make

the eight play responses. These play observations constituted five dependent variables:

1) Activity Level score based on the total number of discrete play responses.
2) Imitative Units score based on the number of the eight possible imitative responses S did perform.
3) Imitative Acts score based on the total number of responses classed as imitative.
4) Imitation Ratio based on the percentage of total acts which were imitative. (Ratio of No. 3 above to No. 1)
5) Delay Score (dichotomous) based on whether S waited 15 seconds or longer before beginning to play.

The preliminary analyses of the dependent variables are summarized in Tables 3 and 4. The first question to be asked is whether this phase of the experiment worked. That is, did the play behavior of the models induce imitative responses and was there enough variability in these responses to permit analysis? The answer to the first part of this question is clearly affirmative. In a control sample of 30 Ss using the same play materials with no model present, only one response occurred that would have been classed as "imitative." By contrast, the first 30 Ss in the present study performed a total of 307 "imitative"

responses. This gives good assurance that imitation was indeed induced by the experimental manipulation.

TABLE 3

SUMMARY OF MEASURES DURING PLAY SITUATION

| Dependent Variable | N | Sum | Range | M | SD |
|---|---|---|---|---|---|
| Activity Level | 90 | 1573 | 0 - 37 | 17.48 | 9.49 |
| Imitation Units | 90 | 126 | 0 - 5 | 1.40 | 1.18 |
| Imitative Acts | 90 | 950 | 0 - 37 | 10.56 | 10.31 |
| Imitation Ratio | 90 | 4903 | 0 - 100 | 54.48 | 44.77 |
| Delay | 90 | 15* | + or - | | |

*indicates "+" scores

The figures in Table 3 show that the question of adequate variability can also be answered affirmatively for the Activity Level, Imitative Acts, and, therefore, Imitation Ratio scores. The distribution of Imitation Ratio scores, with its large standard deviation, indicates that both "very high" and "very low" imitation scores are well represented. The scores for Play Units, which indicate how many of the eight imitative acts were performed by the Ss, don't show enough variability to permit further consideration. This is particularly true when the statistical cautions mentioned earlier are considered. While the possible range of this variable was 0 to 8, the actual

range was 0 to 5, and 85 per cent of the Ss had scores of 2 or less. A S's Imitative Unit score would at best be only a gross indicator of his tendency to imitate the model. With the restricted range found, its utility would be near zero. Therefore, these scores were eliminated from further analyses.

TABLE 4

INTERCORRELATIONS AMONG MEASURES OF PLAY BEHAVIOR*

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Activity Level | 1.00 | .34 | .57 | .27 | -.73 |
| 2. Imitative Units | | 1.00 | .53 | .61 | -.38 |
| 3. Imitative Acts | | | 1.00 | .83 | -.40 |
| 4. Imitation Ratio | | | | 1.00 | -.30 |
| 5. Delay** | | | | | 1.00 |

*$p < .05$ for all coefficients
**Dichotomous measure with n = 15 and n = 75

The Delay score was positive for only 15 subjects. The only hypothesis relevant to the Delay measure was Hypothesis 4t which predicted that Ss exposed to the critical M would be less likely to play than other Ss. Although the finding that 7 of the 15 Ss with positive Delay scores is in the predicted direction, little confidence can be placed in this result due to the small N. This

same skepticism applies to the intercorrelations involving Delay in Table 4.

The scores for Imitative Acts and Imitation Ratio are the two major dependent variables for the play situation. Because the Imitation Ratio score is based on the ratio of Imitative Acts to total play responses (Activity Level) these two dependent variables are closely correlated. In fact the coefficient of .83 exceeds the reliability of many common paper-and-pencil tests. Because of this high correlation, and because neither of these measures seems logically or psychologically superior as a measure of imitation, both are used as criteria or "operational definitions" in the tests of the hypotheses. The Activity Level scores were included in the above tables mainly for purposes of comparison and to provide a basis for further testing of Hypothesis 4t.

## Measures of Individual Differences

Three measures of individual differences and two "treatment" classifications or situational variables were employed in testing the hypotheses for imitation in the play situation. The individual differences measures were the CSD score for nApp, the initial or $GE_1$ estimate of generalized expectancy, and the CSD-$GE_1$ discrepancy score. Their means and standard deviations are listed in Table 5.

Standard-score units were employed for the CSD-$GE_1$ discrepancy measure.

TABLE 5

MEANS AND STANDARD DEVIATIONS OF INDIVIDUAL DIFFERENCES MEASURES

| | N | M | Range | SD |
|---|---|---|---|---|
| nApp (CSD scale) | 90 | 14.71 | 2 - 25 | 5.39 |
| $GE_1$ | 90 | 77.29 | 0 - 98 | 21.04 |
| nApp-$GE_1$ Discrepancy | 90 | -.05 | -3.4 -+4.0 | 1.25 |

A summary of the correlations found between the three measures of individual differences and the measures of play activity is presented in Table 6. These figures clarify and support the inference drawn from the original regression analysis--specifically, that no confidence can be placed in Hypothesis 1, which predicted a positive correlation between nApp scores and play imitation. The other directional prediction in this analysis was Hypothesis 2t which predicted a negative correlation between nApp scores and total play. Although the resulting coefficient of -.227 did reach the .05 level, this result has to be viewed with some skepticism. First of all, this result "just" exceeds .205, which is the minimal correlation that is acceptable at the .05 level. Secondly, the

regression coefficient indicates that, when corrections are made for correlations of nApp with the other predictors, the "corrected" values do not result in a significant prediction of the Activity Level scores.

TABLE 6

RELATIONSHIPS OF INDIVIDUAL-DIFFERENCES MEASURES TO PLAY IMITATION SCORES

| | Correlation Coefficient | Regression Coefficient | t* | p* |
|---|---|---|---|---|
| **Imitative Acts** | | | | |
| nApp | -.106 | -.123 | -.052 | ns |
| $GE_1$ | .034 | .002 | .003 | ns |
| nApp-$GE_1$ | -.103 | .106 | .085 | ns |
| **Imitation Ratio** | | | | |
| nApp | .007 | .868 | .086 | ns |
| $GE_1$ | .090 | -.102 | -.039 | ns |
| nApp-$GE_1$ | -.077 | .188 | -.036 | ns |
| **Activity Level** | | | | |
| nApp | -.227** | 1.546 | .711 | ns |
| $GE_1$ | .044 | -.602 | 1.074 | ns |
| nApp-$GE_1$* | -.201 | .947 | .829 | ns |

*tests partial correlation
**$p < .05$

Hypothesis 3 predicted heterogeneous variances in the play imitation measures; it asserted that Ss whose nApp scores were higher than their GE estimates would show greater variance in imitation rate than Ss with

negative discrepancy scores. To test this hypothesis, the two predictor variables were converted to standard scores. Ss with "positive" discrepancy scores constituted the group with approval motivation higher than generalized expectancy. Counter to expectation, the variances for Imitative Acts did differ somewhat, but in the opposite of the direction predicted. The two variances for the Imitation Ratio measure were almost identical. Table 7 presents the standard deviations from which these comparisons can be made and indicates that Hypothesis 3 was not supported.

TABLE 7

MEANS AND STANDARD DEVIATIONS OF PLAY IMITATION FOR GROUPS WITH POSITIVE AND NEGATIVE $nApp\text{-}GE_1$ DISCREPANCY SCORES

| | Positive Group | | | Negative Group | | |
|---|---|---|---|---|---|---|
| | N | M | SD | N | M | SD |
| Imitative Acts | 46 | 9.13 | 8.88 | 44 | 12.34 | 11.22 |
| Imitation Ratio | 46 | 52.59 | 45.26 | 44 | 56.45 | 43.64 |

Situational Variables. Hypothesis 4t has already been mentioned during the discussion of the Delay measure. This tentative hypothesis predicted that the Activity Level scores for Ss in the critical role group would be lower than for the other two groups. The data in Table 8 show that the mean Activity Level scores correspond to the

prediction, but the differences among them are not sufficiently large to lend confidence to the hypothesis.

TABLE 8

MEANS AND STANDARD DEVIATIONS OF ACTIVITY LEVEL SCORES FOR ROLE GROUPS

| Rewarding | | | Neutral | | | Critical | | |
|---|---|---|---|---|---|---|---|---|
| N | M | SD | N | M | SD | N | M | SD |
| 30 | 19.23 | 8.04 | 30 | 17.23 | 10.36 | 30 | 15.96 | 9.50 |

Disregarding the magnitude of the differences, the probability of predicting the correct order of any three variables is 1 in 6 or .167. This could be considered the significance level for Hypothesis 4t.

The effect of the model roles on play imitation was the subject of Hypothesis 5. The prediction was that the rewarding role would generate the highest imitation rate, followed by the critical and neutral roles, respectively. Two analyses of variance, one for Imitative Acts and one for Imitation Ratio scores, were computed to check this hypothesis. The data are presented in Tables 9 and 10. The low values of the F ratios indicate that no support for Hypothesis 5 was found. The means for each group, given by Table 11, do show a trend in the predicted direction.

TABLE 9

ANALYSIS OF VARIANCE FOR IMITATIVE ACTS

| Source | df | Sum Sq. | Mean Sq. | F | p |
|---|---|---|---|---|---|
| Model Roles (R) | 2 | 98.42 | 49.21 | $<1$ | ns |
| Models (M) | 2 | 181.04 | 90.52 | $<1$ | ns |
| RM | 4 | 341.24 | 85.31 | $<1$ | ns |
| Within | 81 | 8837.53 | 109.10 | | |
| Total | 89 | 9458.23 | | | |

TABLE 10

ANALYSIS OF VARIANCE FOR IMITATION RATIO

| Source | df | Sum Sq. | Mean Sq. | F | p |
|---|---|---|---|---|---|
| Model Roles (R) | 2 | 2036.40 | 1018.20 | $<1$ | ns |
| Models (M) | 2 | 281.09 | 140.54 | $<1$ | ns |
| RM | 4 | 14154.91 | 3538.73 | 1.77 | ns |
| Within | 81 | 161892.10 | 1998.67 | | |
| Total | 89 | 178364.50 | | | |

The final hypothesis for play imitation was No. 6, which predicted that the critical role would generate the greatest variance in imitation scores. Inspection of Table 11 shows that, while the critical role did result in the largest variances, the differences in variance among the three groups are so small as to be negligible. The hypothesis cannot be accepted.

TABLE 11

MEANS AND STANDARD DEVIATIONS OF PLAY IMITATION FOR MODEL ROLE GROUPS

| | Reward | | Neutral | | Critical | | Total | |
|---|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | M | SD | M | SD |
| Imitative Acts | 11.97 | 10.49 | 9.47 | 9.48 | 10.23 | 10.57 | 10.55 | 10.30 |
| Imitation Ratio | 58.23 | 44.50 | 47.77 | 44.04 | 57.43 | 44.86 | 54.47 | 44.76 |

It is apparent that neither of the hypotheses predicting differences in variance is tenable. Similarly, the hypotheses predicting directional differences among means failed to receive statistical support, although all of the differences found were in the predicted direction.

## Changes in Expectancy Estimates

Dependent Variables. Hypothesis 7 predicted a decrease would occur from the initial expectancy estimates

to the task expectancy estimates. Table 12 shows that this decrease did occur and is highly significant.

TABLE 12

EXPECTANCY SHIFTS

| | M | SD | p |
|---|---|---|---|
| Initial ($GE_1$) | 77.29 | 21.04 | |
| Task ($GE_2$) | 65.61 | 25.87 | |
| Difference ($GE_2$ - $GE_1$) | -11.68 | 21.92 | <.001 |

Measures of Individual Differences. Hypothesis 8t reflected an expectation that Ss with higher approval needs would show smaller expectancy decreases than Ss with lower approval needs: it predicted an inverse relationship between CSD and the magnitude of the GE decreases. The correlational data are given in Table 13. The correlation of .03 found, in addition to the partial correlation attributable to the CSD scores, gives no indication of the predicted relationship. As expected from the regression analysis, this hypothesis received no support.

Situational Variables. In order to examine more closely the effects of the model roles and the models themselves on the $GE_2$-$GE_1$ differences, an analysis of variance was done. Table 14 summarizes this analysis and

Table 15 gives the means of the GE differences for the 30 Ss in each role group and again for each individual model.

TABLE 13

RELATIONSHIP OF nApp TO EXPECTANCY SHIFTS

| Correlation Coefficient | Regression Coefficient | t* | p* |
|---|---|---|---|
| .031 | .016 | .036 | ns |

*Tests partial correlation

TABLE 14

ANALYSIS OF VARIANCE FOR EXPECTANCY CHANGES

| Source | df | Sum Sq. | Mean Sq. | F | p |
|---|---|---|---|---|---|
| Model Roles (R) | 2 | 1674.59 | 837.29 | 1.74 | ns |
| Models (M) | 2 | 107.27 | 53.63 | <1 | ns |
| RM | 4 | 1891.74 | 472.93 | <1 | ns |
| Within | 81 | 39083.33 | 482.51 | | |
| Total | 89 | 42756.90 | | | |

The analysis indicates, again as anticipated from the multiple regressions, that no "main" effect can be

attributed to either the models themselves or the roles they played. Visual inspection of Table 15 shows, however, that the GE decrease for the reward group appears much less than for the other two groups,--a specific effect predicted in Hypothesis 9. A "t" test for this difference would not be valid, thus Dixon and Massey's criteria (1950, p. 145) for testing an extreme mean were applied. The value of $r_{10}$, the statistic used in tests of extreme mean, was .989. As a value of >.988 is significant at the .01 level, confidence can be placed in this result in spite of the negative results of the overall analysis. Therefore Hypothesis 9 is supported.

TABLE 15

MEAN DIFFERENCES BETWEEN INITIAL EXPECTANCIES ($GE_1$) AND TASK EXPECTANCIES ($GE_2$) FOR ROLES AND MODELS[1]

| Role Group | N | M | Model | N | M |
|---|---|---|---|---|---|
| Rewarding | 30 | - 5.53 | A | 30 | -11.20 |
| Neutral | 30 | -14.73 | B | 30 | -13.13 |
| Critical | 30 | -14.63 | C | 30 | -10.57 |

In summary, the predicted decreases in the GE measures between the initial estimates and the task estimates were found and were highly significant. Scores on the nApp measure were unrelated to this decrease, as was

the "error" attributable to the models themselves. Ss exposed to the rewarding models showed a smaller decrease in expectancy than Ss in the other two role groups.

## Task Imitation and Reward Preference

Dependent Variables. Again the initial question to be asked is whether the task situation did generate imitation rates of sufficient variability. The control sample of 30 Ss, who attempted the LOA task with no model present, performed a total of 8 responses that would have been classed as "imitative" had they occurred during the experiment. The first 30 Ss during the experiment proper performed a total of 302 such imitative responses. Comparison of these figures indicates that imitation quite certainly did occur as a result of the experimental procedures. The possible distribution of imitation scores ranged from 0 to 24, and at least one score did occur at every point within this range. This finding, when considered along with figures in Table 16, indicates that there is sufficient variability for testing the hypotheses of task imitation.

The second dependent variable, preference for delayed or immediate reward, turned out to be an unsatisfactory measure and was discarded before the statistical analyses were done. This became obvious during the experiment when the boys volunteered reasons for their

choices such as "going to be out of town next week" or "I just had a big lunch." The smaller reward seemed to be chosen most often by boys who were either infrequent visitors to the playground or very hungry; almost all the boys who chose the delayed reward would have been viewed as playground habitueés. Because of these sources of error, Hypotheses 14, 15, and 16 were not tested. (For future reference it might be noted that the results were in the predicted directions, but the differences were not dramatic.)

TABLE 16

SUMMARY OF MEASURES DURING TASK SITUATION

| Dependent Variable | N | Sum | Range | M | SD |
|---|---|---|---|---|---|
| Task Imitation | 90 | 910 | 0-24 | 10.11 | 5.59 |
| Reward Preference | 90 | 47* | + or - | | |

*indicates "+" scores

Measures of Individual Differences. Descriptions of the measures of individual differences have already been given in Tables 5 and 12. Table 17 summarizes the relationships of the relevant personality measures to task imitation. Figures for all four of the relevant individual measures are given although only one tentative hypothesis,

number 10t, was put forth to be tested. This hypothesis predicted a negative correlation between the task expectancy ($GE_2$) estimates and task imitation. The obtained correlation of -.08 indicates slight but insufficient support, and Hypothesis 10t can not be accepted.

TABLE 17

RELATIONSHIPS OF INDIVIDUAL DIFFERENCES MEASURES TO TASK IMITATION SCORES

| | Correlation Coefficient | Regression Coefficient | t* | p* |
|---|---|---|---|---|
| nApp | -.019 | 1.376 | 1.26 | ns |
| $GE_2$ | -.083 | - .235 | -1.068 | ns |
| nApp--$GE_2$ | .033 | - .486 | - .870 | ns |
| $GE_2$--$GE_1$ | -.052 | - .006 | - .156 | ns |

*tests partial correlation

Situation Variables. The hypotheses which related the situational or "treatment" effects to task imitation were first subjected to a three-way analysis of variance. Table 18 summarizes the results of this analysis and shows a relatively marked "main" effect for model roles and an effect of marginal significance for model competence. These data indicate support, at the level of confidence noted, for Hypotheses 11 and 12. An interaction, also

of borderline statistical significance, was found between model roles and the models themselves.

TABLE 18

ANALYSIS OF VARIANCE FOR TASK IMITATION SCORES

| Source | df | Sum Sq. | Mean Sq. | F | p |
|---|---|---|---|---|---|
| Model Competence (C) | 1 | 94.04 | 94.04 | 3.44 | .05<.10 |
| Model Roles (R) | 2 | 180.56 | 90.28 | 3.30 | <.05 |
| Models (M) | 2 | 43.49 | 21.74 | < 1 | ns |
| CR | 2 | 105.66 | 52.83 | 1.93 | ns |
| CM | 2 | 24.29 | 12.14 | < 1 | ns |
| RM | 4 | 260.05 | 65.12 | 2.38 | .05<.10 |
| CRM | 4 | 102.01 | 25.50 | < 1 | ns |
| Within | 72 | 1968.80 | 27.34 | | |
| Total | 89 | 2778.89 | | | |

A more detailed breakdown of the task imitation scores, showing the role and competence groups, is presented in Table 19. The group totals show that the ordinal predictions of Hypotheses 11 and 12 were accurate. The value of "t" for the difference in imitation scores between Ss exposed to the rewarding-competent model roles and those exposed to the critical-incompetent models

exceeds the .05 level and thus supports Hypothesis 13. In fact, inspection of the table shows that this difference accounts for most of the total variance.

TABLE 19

COMPARISON OF TASK IMITATION SCORES FOR ROLE GROUPS AND COMPETENCE GROUPS

| | Reward | | Neutral | | Critical | | Totals | |
|---|---|---|---|---|---|---|---|---|
| | Sum | M | Sum | M | Sum | M | Sum | M |
| Competent | 182 | 12.13 | 159 | 10.60 | 160 | 10.67 | 501 | 11.13 |
| Incompetent | 163 | 10.87 | 161 | 10.73 | 85 | 5.67 | 409 | 9.09 |
| Totals | 345 | 11.50 | 320 | 10.67 | 245 | 8.17 | 910 | 10.11 |

This clearly supports the theoretical assertion that knowledge of both the competence of the model and his previous relationship with the child can permit better prediction than knowledge of either variate alone.

The "main" effect attributable to the models themselves is negligible, although the possibility of interaction between models and roles should be noted. This finding is difficult to interpret, but it seems reasonable to assume that the different role-playing skills of the models could easily produce an interaction.

## Summary of Results

The three major sets of dependent variables--the play imitation measures, the changes between initial and task expectancies, and the task imitation measures--were first subjected to a multiple regression analysis. The resulting regression equations gave values below the accepted levels of significance for the first two problems. The multiple correlation coefficient for the task imitation measure was acceptable at a level of confidence between 90 and 95 per cent.

After noting the cautions of interpretation these regression equations implied, analyses of the individual variables and tests of the hypotheses were made. One dependent variable, the unit measure of play imitation, was eliminated because of insufficient variability. A second variable, the measure of reward preference, was eliminated because it was heavily influenced by non-experimental factors.

In general, the measures of approval needs and generalized expectancies prove unrelated to the dependent variables. The roles played by the models and the competence of the models were found to show the predicted relationships to task, but not to play, imitation. The roles enacted also showed the expected relationship to expectancy decrease.

# CHAPTER VII

# DISCUSSION

The trend of the data presented lends itself to two generalizations. First, the measures of approval motivation, generalized expectancy, and the combinations of these two measures showed virtually no meaningful relationship to imitative behavior in this research. Secondly, experimental manipulations of the models' behaviors were unrelated to play imitation but showed the predicted relationships to task imitation. The purpose of this chapter will be to consider the first generalization as a question: what are the implications of the negative findings? The second section of the chapter will discuss the situational influences on imitation in terms of the theories presented earlier. The future utility of these results is covered in the concluding section of the chapter.

## Personality Measures

CSD Scale. When empirical investigations designed to test a more abstract conceptualization fail to produce the expected data, a serious question arises. Were the

concepts improperly drawn? Or are the concepts valid but the empirical operations inadequate to test them accurately?

In the present research suspicion falls first upon the actual techniques. In the case of approval motivation, the support for the theoretical concept seems quite strong. There have been many dozens of investigations which have provided concrete referents for the construct. While it is true that imitation and approval needs have not been directly compared, the approval construct has been related to a host of behaviors that are closely related to imitation. Conformity, suggestibility, and depcndency behaviors are only a few of these.

Until recently little work has been done to tie this explanatory construct to behavioral referents in children. As it is unlikely the construct itself would be inapplicable to children, it seems reasonable to look at the CSD scale, the operational referent for approval motivation.

Because there is no well-established SD scale for children, the questionnaire used in this study has no demonstrated validity. It closely paralleled a children's social desirability measure developed by Crandall, Crandall and Katkovsky (1963) which in turn has been the only questionnaire measure of children's nApp subjected to any extensive empirical work. As noted in Chapter II,

Crandall found boys' CSD scores to be negatively correlated with approval-seeking from adults yet positively correlated with imitation of peers. She also found a negative correlation between CSD scores and achievement orientations and concluded that the motivational factors underlying boys' socially desirable responses were very hard to explain. The Crandall finding that Ss with high CSD scores did imitate peers but did not seek approval from adults was one of the main reasons for including the approval measure in the present investigation. Our finding of "no relationship" between CSD scores and imitation of adults coincides with the Crandall interpretation that the questionnaire is not indicative of a general desire to seek approval from adults.

A more basic way of determining the utility of the CSD scale is to look at its internal consistency. In the Fels Institute research (Crandall, Crandall, and Rabson, 1963) the split-half reliability of the 47-item questionnaire was .79, corrected to .88 by the Spearman-Brown formula, for a sample of elementary school children. In the preliminary work for this study, a sample of 18 boys yielded a corrected reliability coefficient of .83 on the revised 25-item scale. In the present research, the comparable coefficient was only .69, casting some doubt on the consistency of the questionnaire. It might be that the situation in which the tape recording was used had an

adverse effect upon its reliability. The previous coefficients reported were obtained for data collected in school settings. The recreation-center atmosphere of the present study could easily have induced this lowered reliability.

Still another way of evaluating the CSD measure is to check its stability across age groups. In this research a correlation of -.51 ($p<.001$) between the CSD scores and age was found. Apparently a significant number of the boys' CSD responses can be accounted for by age alone or age-related variables. As age was not related to imitative behavior either theoretically or empirically in the present research, this correlation helps account for the predictive errors. Whether age affects style of responding to a taped questionnaire or is meaningfully related to approval motivation itself is a question for future study.

There were basically two reasons for including the CSD scale in this study of imitation. One was the possibility of extending or clarifying the construct validity of the approval measure; the other was studying the relationship of approval motivation to imitation. These two purposes cannot be clearly separated, and because salient questions about the reliability and validity of the measuring instrument have been raised, neither

purpose can be satisfactorily carried out by further examination of the results.

The possibility exists that improvements in the scale would not remedy its validity. Perhaps approval motivation in children is not parallel to that of adults and the unitary construct is not an efficient one. A new CSD scale, no matter how improved, would not be a useful investigative tool if the concept underlying the scale needs serious revision. Perhaps approval-seeking from peers needs separate consideration, and perhaps children and adults differ more than anticipated. These questions will have to await further research and are beyond the scope of the present investigation.

Expectancy Estimates. The purpose of obtaining estimates of freedom of movement in this study was again twofold. One function of the GE estimates, which will be discussed later, was to serve as indicators of the success of the role enactments and of the "set" created by the task instructions. The other major function was to provide a measure of the discrepancy between approval needs and the S's overall level of expectancy in the experimental situations.

The results showed that the nApp-GE discrepancy measure was not related to imitative behavior. The most obvious explanation for this could be the questionable utility of the CSD measure of need strength. There is

an additional possibility that the GE estimate itself was not optimal.

Accurate prediction from SLT demands that a realistic and not a hopeful estimate of expectancy be obtained. The possibility that this problem, as discussed by Rotter (1954, p. 196), might have occurred in the present study was brought out by some post-experimental conversations with the Ss. When asked why he had circled the top figure on the expectancy sheet, one boy affably told us, "I'm always the best player unless something goes wrong." Other conversations pointed to the probability that boys this young have great difficulty separating what they want to happen from what they expect to happen.

As the results indicated, the Ss exposed to the rewarding models showed smaller decreases in GE levels between the initial and task estimates. This finding doesn't really clarify the above problem unfortunately. This same result would have been hypothesized whether the estimates were mainly realistic or mainly hopeful. The fact that the GE estimates did drop for all Ss merely indicates that the task instructions were successful.

The main conclusion that can be drawn is that the two personality variables employed, and the combination of them which resulted in the nApp-GE discrepancy scores, did not show the hypothesized relationships to imitative

behavior in either a task or a play situation. Detailed examination of the results of the study and of the operational referents for the two variables appears to point to the measuring techniques rather than the conceptualizations of the variables as inaccurate. The fact that other measures of approval motivation and of generalized expectancy have often been good predictors of behaviors known to be related closely to imitation supports this contention that the scales, rather than the constructs, were inadequate.

If this conclusion is warranted, and the measuring techniques are deficient, then the failure of the hypotheses is inconclusive. It would be quite unwise to reject the predictions made when there is evidence the predictions were not satisfactorily tested. Some additional implications of this conclusion are detailed in the fourth section of this chapter.

Situational Factors

The general experimental techniques resulted in a high rate of imitation in both the play situation and on the LOA task. The failure of the personality measures to show relationships to individual differences in imitation rates has been discussed. The enactments of rewarding, neutral, and critical roles by adult models and the competence of these models seemed to affect imitation in a

task situation. In a play situation, when competence of the models was not assessed, the three roles showed no significant effect. (Statistical cautions would make replication a necessity before the positive findings are accepted.)

The main problem that arises is the question of why the model roles "worked" as predicted in the task situation but not in the play situation. That is, why were rewarding models imitated frequently on a task but not during play? The data on the expectancy changes, which showed that Ss exposed to rewarding models lowered their expectancies less often than other Ss attests to the success of the role playing. Why weren't differences in play imitation found?

There are three probable answers to this problem. The most obvious one is that the model was directly with the S at the time of the $GE_2$ estimate and during the task. Yet he was sitting at a table with his back turned while S's play behavior was observed. Perhaps his "absence" lowered the likelihood of his being imitated. Because the play and task behaviors can't be directly compared, the only answer to this possibility is a replication of the study with a control for the model's absence.

The character of the play responses themselves may provide another answer to the question of differential role effects. The high number of responses and the few

Delay scores indicate that the play situation was apparently enjoyed by most of the Ss. It is quite possible that the novelty value or intrinsic attractiveness of the type of play responses studied was more important than the effect of the models' roles.

The models' behaviors could also have provided situational cues in the form of sanctions. Children are usually asked to abstain from throwing darts at objects other than targets; yet here was an adult tossing them at a doll, into a wastebasket, etc. Quite possibly the fun of carrying out these novel, sometimes prohibited behaviors overshadowed the effect created by the model's behavior toward the child.

A third possible explanation for the failure of the rewarding models to generate the highest play imitation arose during the conduct of the experiment. We noticed that a different kind of competence appeared to be influencing the Ss. For example, occasionally one of the models would miss or almost miss when he aimed a dart at the doll or the wastebasket. It became apparent that these responses were imitated more often than the usual on-target throws. Also one of the three models was less "athletic" in appearance than the other two and seemed a bit uncomfortable while throwing the darts. Yet the imitative response to this model (if only dart-throwing is considered) was consistently higher than that

of the other two, regardless of the role he enacted. A simplistic concept of identification would be seriously challenged by these observations. The best interpretation of these experimental findings seems to lie in the competition involved. There seemed to be a tendency for the Ss to imitate the less successful response. Again, a repeat study would clarify this issue.

Because there was a tendency for the competent models to be imitated in the task situation, the sort of "reverse" competence effect found in the play situation requires further study. The most obvious difference between the two situations is that the S's response was defined on the task; he was actually required to try and lift the ball up the scale. In play he was more free to follow the model's chosen targets or to select his own. It could be that competence conveys a kind of "threat." When a person is to perform the same response (seek the same goal) as a competent model, he will imitate. When the choice of behavior is left open, he may select a goal that maximizes his chances of success. Thus, if the model's play responses were inadvertently unsuccessful, imitation of these responses was high because of the small risk of failure.

The competitive atmosphere that pervades a recreation center could have accentuated this entrance of

competition into a "free-play" situation. In any case this competition can be easily tested.

In summary, perhaps the combined effect of these factors--the model's absence from the immediate situation, the attractiveness of the play responses, and the competitive goals of the subjects--was sufficiently potent to obviate the influence the model's role behaviors might have produced. The observations noted serve to reiterate that "either-or" classifications of behavior must take the individual's own goals or expectations into account.

The rewarding model role did show the predicted effect on expectancy changes and task behavior. The critical and neutral roles did not result in the predicted differences, except when the critical model was also incompetent. The results were in the expected directions, with the critical role generating less play activity, more play imitation, and less task imitation than the neutral role, but the differences were small. Here the main reason is probably that so much caution was employed in enacting the critical role that its effect was minimized. If the trend of this data was magnified in future research, this result would provide a challenge for Mowrer's secondary reinforcement concepts. With the present data, this challenge is purely speculative.

The fact that role behaviors had a significant effect on task behavior and appeared at least as influential

as model competence deserves additional inquiry. The most obvious implication of this finding is again the reiteration that subjective categorization of a situation must never be overlooked. As predicted, the interpersonal aspects of the situation had as much relevance as its competitive aspects. The experimental establishment of a task-like situation may be a successful manipulation and still not obviate the influence of other motives.

A much sharper contrast between the rewarding and critical roles appeared when competence groupings were also taken into account. Ss exposed to the rewarding models who were also competent showed much higher imitation on the task than Ss exposed to the incompetent-critical models. In fact these two extreme groups accounted for almost all the obtained variation; scores for the other four groups were practically identical.

Here are two clearly separable motivational influences, previous interpersonal reward or non-reward and task success or failure, which seem to have an additive effect on imitative behavior. This finding is most marked in the Ss exposed to the model who behaved in a critical way. Evidently the tendency to non-imitate this critical model was greatly augmented when he was also unsuccessful.

Kagan (1958) has postulated two major goals for the process of identification: mastery and love. He sees the purpose of imitative behavior as the seeking of these

goals through perceived behavioral similarity between the child and the model. Kagan also predicts that imitation should be most influenced by these individual goals when the model and child are in direct contact. The results discussed above lend support to Kagan's concepts.

Intra-individual Consistency

Excepting approval motivation and generalized expectancy, no other individual or personality variables and their relationships to imitation were investigated in this research. Possibly there are, however, personal characteristics or traits that lead some children to be more imitative than others. Possibly some children select imitation more often than other children and this tendency to imitate is separable from the immediate socio-situational factors.

If there is a trait of imitativeness or a personal characteristic closely related to imitative behavior, individuals should be somewhat consistent in their choice of imitation or non-imitation. To determine whether or not this consistency could be found in our subjects, the correlations between task and play imitation listed in Table 20 were computed.

Among the six sub-groups of Ss there are some rather high and some markedly low correlations. The small

number of Ss (15) in each group and the lack of a consistent pattern of relationships make these sub-group correlations almost impossible to interpret. There is definitely a low but significant correlation for the total group.

TABLE 20

CORRELATIONS BETWEEN TASK AND PLAY IMITATION SCORES FOR SUB-GROUPS AND TOTAL GROUP

| Group | Imitative Acts | Imitative Ratio | Group | Imitative Acts | Imitative Ratio |
|---|---|---|---|---|---|
| Rew-Comp. | .12 | .06 | Rew-Incomp. | .54* | .36* |
| Neut-Comp. | .37* | .40* | Neut-Incomp. | .37* | .31* |
| Crit-Comp. | .42* | .07 | Crit-Incomp. | .22* | .14 |
| | | | Total Subjects | .31* | .21* |

*p =< .05

These data indicate that some intra-individual consistency, some tendency toward imitativeness, can be found. The technique of personality assessment used in the present study were unfortunately not sensitive to this "trait." The variability of the sub-group correlations serves to re-emphasize an important tenet of SLT: the interaction between situational and personal characteristics is a superior unit of analysis to either the external or internal characteristics alone.

## Suggestions for Further Research

Undoubtedly the most pervasive variable in this research was the one that couldn't be systematically varied or studied--the recreation center itself. So much of psychological research is carried out in academic settings that the problem of using experimental techniques in less restrictive settings doesn't arise often. In this case, it seemed that the active, competitive atmosphere of the center's program probably did affect the results--particularly the personality measures and the free play situation.

Before the results of the play imitation data are accepted, it might be advisable to study imitation in a free play situation where less emphasis is placed on skill and competition. It might also be better to collect the expectancy estimates, which tend to create a competitive "set," at a different location or time from the behavioral observations. Also, a different technique of obtaining expectancies might produce more realistic estimates. Perhaps a technique involving risk for overestimation, such as that suggested by Castenada (1952), might be best for younger children.

The other serious limitation of the present study appears to be the questionable role of the nApp measure. Until further validation of a CSD scale is carried out, it will be impossible to adequately test the theoretical

relationship of approval motivation to imitative behavior. In carrying out this refinement of the approval measure, it will be necessary to either reduce the correlation of the scale with age, provide different scales for different age groups, or include consideration of age and its ramifications in the definition of the construct.

Better behavioral referents of the approval construct are also needed for children. Will the scale responses continue to be related to peer imitation but not to imitation of adults? If so, what is the explanation for this finding? If the scale is negatively related to achievement behavior, how does competence of peers affect imitation of them or conformity to their behaviors?

In deciding the implications of the relationships found between model behaviors and imitation of these models, the first requirement would be replication. It should again be stressed that even the clear results for the task situation reach only "borderline" significance when rigid statistical criteria are applied. Only repetition of the design can decide whether the roles played by models does have a marked influence on imitation of these models.

One logical follow-up study to this research would require concomitant variation of the presence or absence of the model and the situational categorization under

similar role conditions. Was the lack of relationship between the model roles and play behaviors a function of the play situation and instructions or of the model's absence from the immediate situation? Will the task-related behaviors of a rewarding model be imitated if his skill on the task is unknown? Will a competent rewarding model be highly imitated if he's not present?

Better control for or evaluation of the novelty value of certain responses would also be an improvement in a future design. The high imitation rates in the play situations could easily have been more influenced by the relative attractiveness of the responses than by the characteristics of the models. If replication and follow-up work supported the tentative generalizations drawn about the importance of the model's characteristics, some first steps could be taken toward developing a social learning theory of imitation.

This need for an adequate theory stands out as the biggest hurdle to further study of imitation. Empirical findings are beginning to accumulate rapidly, but explanations to tie them together have not been proposed. Bandura's and Mowrer's views are undoubtedly acceptable as general theories of acquisition, but not for understanding selection strategies of given individuals or for explaining imitative choices when contradictory situational

influences (such as loving but unsuccessful models) are present.

An adequate explanation of such imitative behavior has at least two requirements: it must provide a conceptual scheme and a methodology for exploring an individual's past history; and it must provide a way of categorizing present influences upon that individual. In short, it must describe the mutual influence of the organism's motivational-behavioral characteristics and the resources provided by his social and physical environment.

To say that no such theory exists is an understatement. Most of the existing explanations either slight one half of the person-situation interaction or are too specific and limited to provide useful generalizations. This is true not only of theories of imitation but also of any of the widely held views of human behavior. Perhaps a theory of this quality for imitative learning will have to await parallel developments of explanations for other classes of behavior.

There are several less presumptious avenues to follow that are both important and practicable at the present time. The first would be a more adequate test of a SLT formulation of imitation. The theory itself didn't receive adequate test in this study because of the doubtful utility of the operational measures. Because it is one of very few existing social learning theories that

are broad enough to encompass the wide empirical findings and still provide a methodology for empirical work, the theory deserves a more precise test than this one.

Further work wouldn't necessarily have to await clarification of the approval measure. The role of other motivational variables, such as achievement needs and other regulatory styles, badly needs investigation. The evidence found of a "trait" of imitativeness accentuates this need. Work on imitative learning might do well to take cognizance of the differences between enduring personality characteristics and specific sets or orienting habits. One such avenue would be dependent upon use of a more precise measure of generalized expectancy and would then focus on the difference between generalized expectancy and specific situational expectancies.

Another need of would-be theorists of imitative behavior is a better way of classifying or talking about situational influences. There are studies of the "status" of models, their "social power," their "attractiveness." There is, quite simply, no theoretical schema for organizing these concepts or describing properties of situations. The outlook in this study, following a suggestion from Rotter, was that both the physical and social characteristics of "environments" might be classified according to the potential reinforcements they offer. This general formulation proved very helpful in the present

study and resulted in a meaningful interpretation of the results. What is needed now is a more precise method for assigning these categorizations and then further empirical tests. For example, the failure of this study to predict play imitation might have been avoided if our classification of "play" had been more refined or if the Ss' "situational sets" had been more accurately assessed.

Purely behavioral relationships constitute another subject in need of study, but one that may have to await the improvements mentioned above. What is the relationship of imitation to dependency behavior or to physical skills or social conformity? Do people develop skills in imitation that are related to their ability to predict others' behavior? What is the relationship of imitation to creativity?

Almost every time some meaningful unit of social behavior is taught by one person to another, the process could be described as "imitative." Then again, imitation may not be a useful descriptive vehicle. The answer will have to await the investigations outlined above. It is the author's personal opinion that, if new research on imitation progresses as rapidly as it has in the last five years, theories of social behavior will be vastly improved. The "imitative" process looks as if it could prove to be a far superior vehicle for meaningful analysis of human behavior than concepts such as super-ego identification or molecular S-R connections.

# CHAPTER VIII

## SUMMARY

The major problem investigated was the relationship of imitative behavior to two personality variables and three socio-situational variables. The personality variables studied were: (1) the approval needs of the subjects, and (2) their generalized expectancies for success. The effect of the discrepancy between these measures was also evaluated. The socio-situational variables consisted of: (1) the categorization of the experimental situations as a play situation and a task, (2) the enactment of rewarding, neutral, or critical roles by the adult models, and (3) the high or low competence of the adult models on the task. Two subsidiary problems were also investigated: (1) the shifts in the subjects' generalized expectancies from their initial level to a pre-task level, and (2) the subjects' preference for a small, immediate or a larger, delayed reward at the close of the experiment. The latter problem was abandoned during the study because of the subjects' reward preferences were found to be heavily influenced by such

extraneous factors as vacation dates and parental restrictions.

Imitation was comceptualized in the study as the label for a "selection strategy" employed by an individual, as opposed to a "process of response learning" or a description of a behavior based on the conditions of its original acquisition. It was viewed as one, but not the only, behavioral referent of the process called identification. Imitative behavior was defined, for purposes of the research, as the essential copying of the unusual, discrete responses performed by a model in the subjects' presence. The main question asked was, "Under what conditions will subjects select an imitative response?"

It was hypothesized that the subjects' approval motivation, as measured by a children's social desirability scale, would be positively related to their imitation in a play situation, negatively related to their imitation in a play situation, negatively related to their total play activity, and unrelated to their task imitation. It was also hypothesized that subjects whose approval motivation was higher than their generalized expectancy for success would show the greater variance in imitation in the play situation. An additional, tentative hypothesis predicted that a negative correlation would be

found between the subjects' pre-task estimates of expectancy and their imitation on the task.

All of the above hypotheses predict relationships between individual differences or personality measures and imitation scores; none of them proved tenable except the approval-motivation, activity-level hypothesis. The small, but significant, inverse relationship found ($r = -.227$) between approval scores and total activity has to be viewed with some skepticism for reasons explained in the text. As the empirical groundwork and theoretical justification for the rest of the hypotheses seemed adequate, it was inferred that the inadequacies lay in the measurement of the personality variables. Relatively new measuring techniques were employed for both the approval and the expectancy variates. It was suggested that evaluation of these techniques be extended before the theoretical concepts are questioned.

Prior to the play and task situations, each subject was introduced to an adult model who enacted either a rewarding, neutral, or critical role in his initial acquaintance with the child. It was hypothesized that the highest imitation rates during the play sequence would be elicited by the rewarding role. The critical and neutral roles were predicted to generate lower play-imitation rates respectively. The hypothesized effect of the three roles on task imitation differed in that the critical role was

expected to replace the neutral role as the elicitor of the lowest imitation. Also, for the play behaviors, the critical role was expected to generate the greatest variance in imitation rates and the lowest play activity scores.

The directional prediction of the effect of the model roles on play imitation was not statistically supported, although the predicted order of rewarding, critical, neutral did occur. Differences in the means of the three groups were small. The directional prediction for the effect of the roles on task imitation was supported. The predictions of the effect of the critical role on play activity and on variance in play imitation were not supported.

The question of why the role groups showed a stronger effect in the task situation than in the play situation can't be conclusively answered by the data available. Three potential answers to this question were discussed but their acceptance or rejection must await new data. The first answer ventured was that the differences in the role effects were attributable to the immediate presence of the model during the task but not the play responses. The other two possibilities were that the novelty value of the play responses or the competitive motives of the subjects were of greater importance in the play situation than the models' characteristics.

Little research has been done that would be pertinent to the comparisons of the three roles with each other, but the efficacy of using a rewarding model has been substantiated repeatedly. Included in this substantiation would be the task data of the present study. Future evaluation of these three possible answers would clarify the basis of this discrepancy and add refinement to predictions involving model characteristics.

The variable of high or low model competence was introduced in the task situation by manipulation of the models' task scores. For one-half (45) of the subjects, 15 from each role group, the models achieved high scores. This was done to establish the models as relatively competent or incompetent. It was hypothesized that competent models would be more often imitated than incompetent models. An "interaction" hypothesis was also put forth in the prediction that the greatest difference in task imitation would be between the 15 subjects exposed to the rewarding models who were also competent and the 15 subjects exposed to the critical models who were also incompetent. The prediction of the overall competent-incompetent effect was partially supported in that its statistical test was of marginal significance. The latter, more specific prediction was strongly supported. In fact, differences between these two extreme groups accounted for most of the total variance.

In analyzing the expectancy changes that occurred between the initial and pre-task levels, three hypotheses were tested. The major hypothesis was that a significant decrease would be found. This hypothesis was strongly supported. Two additional hypotheses were put forth in an attempt to relate the decrease in GE to the subjects' approval needs and to the rewarding model role. As before, approval motivation was unrelated to the dependent variable. The Ss exposed to the rewarding model did show significantly smaller decreases than Ss in the neutral and critical groups. The basis of predicting a downward shift in GE was the task instructions given the subjects. The validity of this prediction indicates that the experimental intention of creating a "task" atmosphere was successful.

The final hypothesis was an informal expectation that the situational manipulations would be better predictors of imitation than the personality measures. As only one personality-variable hypothesis received any support, this final hypothesis proved to be accurate.

Correlations were computed between the indices of play and task imitation which gave evidence for a low but significant degree of intra-individual consistency in selecting an imitative behavior. An attempt to identify the referents for this imitative tendency and to study them

in combination with the appropriate situational characteristics was recommended.

Other suggestions for further research included a study of the relationship of achievement motivation to imitation, further investigation of the CSD measure of approval motivation, experimental control of the model's presence and absence, and study of task imitation when the model's success is unknown.

The need for improved theoretical formulations was also emphasized. More adequate methods of situational categorization and of differentiating between enduring personality characteristics and more immediate orienting sets or expectancies would be of great advantage in guiding future studies of social imitation.

# APPENDIX A

## CHILDREN'S SOCIAL DESIRABILITY QUESTIONNAIRE

## Children's Social Desirability Questionnaire

1. Do you always enjoy yourself at a party?
2. Do you tell a little lie once in a while?
3. Do you ever get mad when you have to stop in the middle of something you're doing to eat dinner?
4. Have you ever hit a boy or girl who was smaller than you?
5. Do you always feel like doing what your teachers want you to?
6. Do you ever act fresh or talk back to your mother or father?
7. Do you always finish all your homework every day?
8. Are you nice and polite to your friends when they shout at you?
9. Do you always keep your clothes neat and your room picked up?
10. Have you ever felt like you wanted to throw something or break something?
11. Sometimes do you feel like staying home from school even when you're not sick?
12. Is it ever hard for you to make friends with new children?
13. Sometimes do you let someone else get blamed when you do something wrong?
14. Do you get mad sometimes?

15. Have you ever argued with your mother when you want to do something she doesn't want you to do?
16. Are your table manners always perfect?
17. Sometimes do you wish you could just mess around instead of having to go to school?
18. Have you ever been tempted to break a rule?
19. Do you ever feel like making fun of other people?
20. Do adults always know more about everything than you do?
21. Sometimes do you forget to wash your hands before a meal?
22. Do you always want to do everything your parents ask you to do?
23. If nobody could see you, would you go into a movie without paying?
24. Do you ever say things just to make your friends think you're important?
25. Do you sometimes do things you've been told not to do?

# APPENDIX B

## EXPECTANCY ESTIMATE SHEET

Name _____

1 — 2

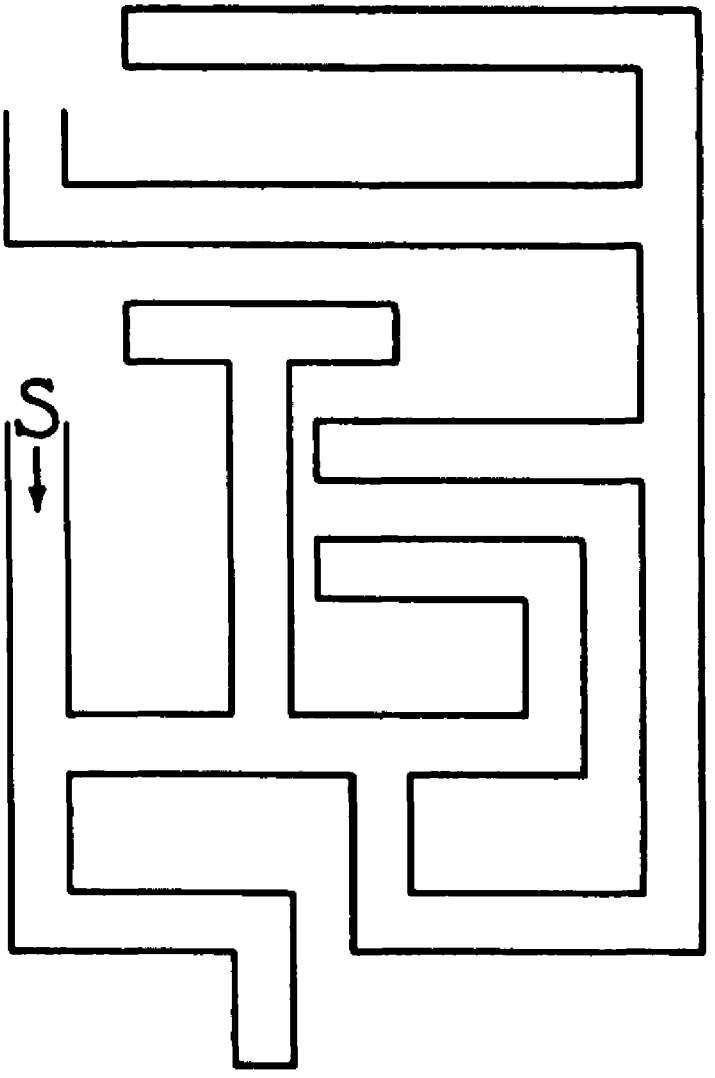
↓ THIS BOY DOES BEST



↓ THIS BOY DOES POOREST

# APPENDIX C

## PORTEUS MAZE - YEAR VIII




**PORTEUS TESTS — VINELAND REVISION** **YEAR VIII**



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# APPENDIX D

## MODELS' INSTRUCTIONS AND ROLE DESCRIPTIONS

## Models' Instruction Summary

1. CSD. Child will be brought into room by E and briefly introduced to M. The experimental procedure will be briefly explained to S and he will be given the tape-recorded CSD scale.

2. $GE_1$. The Year VIII Porteus Maze will be presented to S as a "puzzle-game" and his initial expectancy estimate elicited.

   When the S completes the maze, E will arise, introduce M, and leave the room on the pretext of "going down the hall to the ceramics room for two or three minutes." As soon as E departs and names are reiterated, M glances down at the maze sheet completed by the child. M makes a comment about the maze according to his role (see below) and then gestures toward the two stools saying, "OK, let's you and I talk for a few minutes." During the next three minutes M enacts either the Rewarding, Critical, or Neutral role as he and S talk.

3. Model Roles. M selects the role to be played from the random list provided at the beginning of the experiment. The first conversational topic for all roles is the recently-completed maze. Secondly, the child's birthplace, and hence the city of Columbus, is discussed with M commenting as indicated. Then the conversation continues covering the S's favorite sports, cars, and future vocational aspirations. All 5 content areas--maze, Columbus, sports, automobiles, and vocations--must be discussed with each S.

   A. For the Neutral role, the M begins by asking the child if he liked or what he thought of the maze puzzle and then M proceeds to say that he used to do a lot of puzzles like that when he was a child, and he also played other games, etc. This same format is followed throughout, with M asking S about the topic area and then going on to tell where he (M) was born, where he lives in Columbus, how to get there, what sports he likes, what kind of car he has or wants, what he does for a living--all in a kind of monologue. If S does interrupt, M listens briefly and tries to avoid either approval or disapproval, then goes on with self-description.

   The essence of the Neutral role is that M avoids establishing himself as either an approving or a

hostile person. He simply talks pleasantly but monotonously about himself, and the conversation resembles "parallel talk" rather than friendly or threatening interaction.

B. For the Rewarding role, M seeks to establish himself as a friendly person who likes the S and who quite definitely approves of him and of his opinions. He praises S's performance on the maze and proceeds through the other content areas, "reinforcing" S's comments and facilitating friendly talk.

The essence of the Rewarding role is that M establish himself as a person who is likeable, nonjudgmental, and has positive feelings for Ss. He is interested in what S has to say, likes him, and enjoys being with him.

C. For the Critical role, M begins by commenting on some minor flaw in S's maze drawing--it could have been done a little neater, faster, or with straighter lines, etc. This is the only direct criticism of S to be made. However, M spends the rest of the acquaintance time establishing himself as a rather unpleasant, verbally hostile person who is likely to react to children by emphasizing mistakes more than by emphasizing accomplishments. He disagrees with S's opinions on the content areas and is generally critical--of Columbus, of Thunderbirds or whatever, of baseball, etc.

The essence of this role is that M becomes an aggressive person who questions S's opinions and displays a generally negative attitude; he can find something wrong with anything. However, the concentration is on M's personality and not on direct criticism of S in any personal way. For example, if S likes baseball M might reply that he doesn't like to stand still all that time in the sun; he does not say that S is wrong or deprecate his abilities. This role may elicit negative self-evaluations from the Ss. This is to be expected but M should not initiate these directly nor reinforce them.

The end of the role enactment is signaled by E re-entering the room. From this point, M's behavior is standard for all Ss.

4. Play period. M arises, puts his stool upside-down on the table, and goes through the play sequence, ending by taking a drink of ice-water. He begins the sequence by saying "wait a minute" and comments that he likes to play around with things "like these." Upon finishing the sequence, M excuses himself by explaining he has to take a couple minutes to finish his afternoon Rec report (a common activity around the center) and tells S to "go right ahead and play around here until we get ready to do the other game." He ends with, "This is a play room and you can do anything you want with this stuff," and sits down at the table.

5. Task period. After E has observed S's play behavior, both M and E get up and go to the LOA table. M explains the board and E interrupts politely to obtain the $GE_2$ estimate and to say that M should go first because he's "done this before."

   M takes 2 trials, S takes 2, then they each take two more in sequence. After S's last trial, M tells him that he certainly did very well and offers him the candy "for helping us out." E records the task behavior and reward preference.

# APPENDIX E

## RECORD FORM FOR BEHAVIORAL OBSERVATIONS AND SCORES

_____ Subject No.

Rater _____

SCORING SUMMARY

Name _____

Age _____ 2. CSD _____ X 4= _____

GE _____ 4. CSD-GE = _____

$E_s$ _____ 6. GE-$E_s$ = _____

CSD-$E_s$ = _____ 8. M.Role ___N ___R ___Cr

9. Pl.Imit ___ ___ 10. Task Imit _____

11. Mod ___C ___I 12. Reward ___Sm ___Lg

13. _____ 14. _____

CSD

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

Total

PLAY OBSERVATION

| IMITATION | | NONIMITATION |
|---|---|---|
| 1. Chair | 5. Blackboard | Darts at Target |
| 2. Wall | 6. Design | Other(specify) |
| 3. Wastebasket | 7. Drink | |
| 4. Forehead | 8. Parachute | |

Units = 8 Total N nonimit _____ Total N Imit _____

VERTICAL ZOA (Use X or O)

| Model Behavior | T1 | T2 | T3 | T4 |
|---|---|---|---|---|
| 1. Single Hand | | | | |
| 1. Hold on string | | | | |
| 1. Other Hand Position | | | | |
| 1. Stands at side | | | | |
| 2. Stance over 3" wide | | | | |
| 3. Feet Stationary | | | | |

SCORES

| | |
|---|---|
| 1. _____ | 1. _____ |
| 2. _____ | 2. _____ |
| 3. _____ | 3. _____ |
| 4. _____ | 4. _____ |

# APPENDIX F

## MULTIPLE REGRESSION EQUATIONS

Summary of Regression Analyses

The listing below presents the multiple correlation coefficient for each of the dependent variables in the in the study. These coefficients were computed to determine, by the most precise statistical criteria available, whether significant amounts of variation in the dependent measures had been accounted for by the predictor variables chosen for investigation. The variates used in computing the regression equations were the following: For play imitation the predictors were the CSD score for nApp, the initial or $GE_1$ estimate of generalized expectancy, the nApp-$GE_1$ discrepancy score, the three model roles, the three models themselves and four first-order interactions for nApp by role, $GE_1$ by role, discrepancy score by role, and model by role; for the expectancy changes, nApp, models, roles, and the three interactions were computed; for task imitation the list included all of the above single variables plus the $GE_2$ measure, the GE decrease, the model competence grouping, and eight first-order interactions.

| DEPENDENT VARIABLE | Multiple R | $R^2$ | F | p |
|---|---|---|---|---|
| Activity Level | .427 | .182 | <1 | ns |
| Imitative Acts | .429 | .184 | <1 | ns |
| Imitation Ratio | .462 | .213 | 1.07 | ns |
| Expectancy Changes | .293 | .086 | <1 | ns |
| Task Imitation | .619 | .383 | 1.59 | .05<.10 |

Except for task imitation, none of the multiple coefficients reached significance. The low $R^2$ values argue that no reliable linear prediction of play imitation or expectancy decrease can be drawn from these independent variables. The F ratio for the task imitation equation shows borderline significance and implies that almost 40 per cent of the variance in this imitation score can be ascribed to the appropriate independent variables.

The general implication of these results is that the major statistics presented in the body of Chapter VI should be interpreted cautiously. All findings, both in support of and in refutation of the hypotheses should be checked by replication. The tests for hypotheses relevant to task imitation can be accepted with more confidence than those for the other two problems.

# APPENDIX G

## RAW DATA

## Key to Raw Data

S - Subject and Model Number

101-130 indicates Model A
201-230 indicates Model B
301-330 indicates Model C

A - Age in months

CSD - Score on Children's Social Desirability questionnaire

$GE_1$ - Initial estimate of Generalized Expectancy

$GE_2$ - Task estimate of Generalized Expectancy

MR - Model Role

R indicates "Rewarding"
N indicates "Neutral"
C indicates "Critical"

MC - Model Task Competence

C indicates "Competent"
I indicates "Incompetent"

Al - Activity Level

IU - Imitative Units

IA - Imitative Acts

IR - Imitation Ratio (IA to AL)

D - Delay Score

+ indicates S waited 15 seconds or longer before play
0 indicates S did not wait

TI - Task Imitation

RP - Reward Preference

I indicates "Immediate"
D indicates "Delayed"

| S | A | CSD | $GE_1$ | $GE_2$ | MR | MC | AL | IU | IA | IR | D | TI | HP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | 125 | 12 | 68 | 42 | R | I | 21 | 2 | 21 | 100 | 0 | 17 | I |
| 102 | 126 | 7 | 68 | 88 | C | I | 20 | 2 | 16 | 80 | 0 | 5 | D |
| 103 | 79 | 21 | 98 | 94 | C | C | 19 | 5 | 8 | 95 | 0 | 14 | I |
| 104 | 84 | 23 | 94 | 96 | N | C | 16 | 1 | 3 | 19 | 0 | 2 | I |
| 105 | 83 | 8 | 60 | 34 | C | I | 6 | 1 | 6 | 100 | 0 | 1 | D |
| 106 | 110 | 16 | 88 | 96 | N | I | 9 | 1 | 9 | 100 | 0 | 20 | D |
| 107 | 103 | 12 | 86 | 62 | N | C | 37 | 0 | 0 | 0 | 0 | 3 | D |
| 108 | 120 | 6 | 76 | 56 | R | C | 19 | 2 | 18 | 95 | 0 | 14 | I |
| 109 | 109 | 8 | 58 | 36 | R | C | 22 | 0 | 0 | 0 | 0 | 20 | I |
| 110 | 86 | 17 | 82 | 94 | R | C | 20 | 3 | 5 | 25 | 0 | 17 | D |
| 111 | 104 | 11 | 90 | 34 | N | I | 28 | 0 | 0 | 0 | 0 | 8 | D |
| 112 | 110 | 11 | 50 | 52 | C | C | 2 | 1 | 2 | 100 | + | 7 | I |
| 113 | 124 | 10 | 70 | 44 | R | I | 32 | 2 | 32 | 100 | 0 | 24 | D |
| 114 | 117 | 10 | 52 | 38 | C | I | 33 | 1 | 33 | 100 | 0 | 13 | I |
| 115 | 87 | 21 | 78 | 62 | R | I | 30 | 3 | 15 | 50 | 0 | 16 | I |
| 116 | 118 | 17 | 2 | 2 | N | C | 0 | 0 | 0 | 0 | + | 12 | D |
| 117 | 90 | 14 | 74 | 56 | R | I | 4 | 2 | 3 | 75 | + | 6 | I |
| 118 | 97 | 18 | 98 | 76 | R | I | 13 | 2 | 11 | 85 | 0 | 3 | I |
| 119 | 81 | 20 | 92 | 48 | N | C | 0 | 0 | 0 | 0 | + | 8 | I |
| 120 | 101 | 20 | 98 | 20 | C | C | 5 | 2 | 5 | 100 | + | 12 | I |
| 121 | 100 | 12 | 94 | 96 | C | C | 16 | 0 | 0 | 0 | 0 | 4 | I |
| 122 | 121 | 6 | 62 | 74 | N | I | 20 | 2 | 4 | 20 | 0 | 4 | I |
| 123 | 122 | 3 | 54 | 44 | R | C | 21 | 2 | 5 | 24 | 0 | 5 | D |
| 124 | 114 | 13 | 46 | 48 | C | I | 18 | 1 | 18 | 100 | 0 | 1 | D |
| 125 | 117 | 19 | 82 | 84 | N | C | 0 | 0 | 0 | 0 | + | 5 | D |
| 126 | 99 | 11 | 98 | 94 | N | I | 26 | 1 | 12 | 46 | 0 | 20 | I |
| 127 | 102 | 14 | 88 | 98 | R | C | 28 | 0 | 0 | 0 | 0 | 14 | D |
| 128 | 102 | 12 | 90 | 88 | C | I | 0 | 0 | 0 | 0 | + | 4 | D |
| 129 | 114 | 18 | 66 | 56 | C | C | 15 | 5 | 15 | 100 | 0 | 20 | D |
| 130 | 78 | 22 | 70 | 76 | N | I | 23 | 1 | 23 | 100 | 0 | 6 | D |

| S | A | CSD | $GE_1$ | $GE_2$ | MR | MC | AL | IU | IA | IR | D | TI | RP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 201 | 122 | 4 | 86 | 50 | N | C | 0 | 0 | 0 | 0 | + | 11 | I |
| 202 | 96 | 15 | 98 | 98 | R | I | 28 | 4 | 28 | 100 | 0 | 7 | D |
| 203 | 85 | 5 | 50 | 66 | R | C | 23 | 2 | 23 | 100 | 0 | 13 | I |
| 204 | 99 | 15 | 54 | 28 | R | I | 20 | 3 | 20 | 100 | 0 | 10 | D |
| 205 | 90 | 17 | 82 | 80 | N | C | 8 | 0 | 0 | 0 | 0 | 12 | I |
| 206 | 104 | 20 | 62 | 70 | R | C | 12 | 3 | 9 | 75 | 0 | 8 | I |
| 207 | 102 | 21 | 58 | 70 | R | C | 0 | 0 | 0 | 0 | + | 14 | D |
| 208 | 90 | 10 | 88 | 72 | C | I | 16 | 1 | 1 | 6 | 0 | 1 | D |
| 209 | 102 | 14 | 92 | 86 | N | C | 27 | 3 | 23 | 85 | 0 | 14 | D |
| 210 | 107 | 13 | 88 | 68 | R | I | 18 | 2 | 2 | 11 | 0 | 4 | I |
| 211 | 86 | 20 | 98 | 98 | C | I | 12 | 0 | 0 | 0 | 0 | 4 | I |
| 212 | 90 | 22 | 62 | 46 | C | C | 9 | 0 | 0 | 0 | 0 | 10 | I |
| 213 | 126 | 13 | 30 | 64 | R | I | 16 | 0 | 0 | 0 | 0 | 9 | I |
| 214 | 95 | 19 | 88 | 32 | N | C | 15 | 2 | 15 | 100 | 0 | 21 | I |
| 215 | 99 | 19 | 94 | 94 | N | I | 6 | 1 | 6 | 100 | 0 | 2 | I |
| 216 | 112 | 2 | 98 | 94 | C | I | 7 | 2 | 3 | 43 | 0 | 0 | D |
| 217 | 114 | 20 | 64 | 40 | R | I | 21 | 0 | 0 | 0 | 0 | 9 | I |
| 218 | 106 | 17 | 88 | 46 | C | I | 12 | 1 | 12 | 100 | + | 4 | D |
| 219 | 91 | 18 | 70 | 64 | C | I | 21 | 1 | 1 | 5 | 0 | 9 | I |
| 220 | 99 | 11 | 82 | 32 | C | C | 22 | 1 | 2 | 9 | 0 | 10 | D |
| 221 | 104 | 9 | 98 | 50 | C | C | 25 | 3 | 25 | 100 | 0 | 5 | I |
| 222 | 79 | 20 | 98 | 98 | R | C | 13 | 2 | 13 | 100 | 0 | 8 | I |
| 223 | 85 | 5 | 12 | 8 | N | I | 24 | 3 | 10 | 41 | 0 | 10 | I |
| 224 | 93 | 21 | 96 | 98 | C | C | 12 | 2 | 12 | 100 | 0 | 0 | D |
| 225 | 87 | 20 | 72 | 60 | N | I | 24 | 1 | 24 | 100 | 0 | 18 | I |
| 226 | 89 | 21 | 98 | 96 | R | C | 29 | 1 | 2 | 7 | 0 | 6 | I |
| 227 | 104 | 10 | 76 | 48 | N | I | 31 | 1 | 31 | 100 | 0 | 13 | I |
| 228 | 110 | 15 | 92 | 84 | C | C | 34 | 2 | 34 | 100 | 0 | 17 | I |
| 229 | 106 | 15 | 56 | 52 | N | I | 22 | 2 | 22 | 100 | 0 | 16 | D |
| 230 | 109 | 11 | 98 | 46 | N | C | 27 | 0 | 0 | 0 | 0 | 12 | I |

| S | A | CSD | $GE_1$ | $GE_2$ | MR | MC | AL | IU | IA | IR | D | TI | RP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 301 | 92 | 23 | 98 | 98 | N | I | 18 | 2 | 3 | 17 | 0 | 8 | I |
| 302 | 104 | 21 | 94 | 94 | N | C | 17 | 1 | 17 | 100 | 0 | 17 | D |
| 303 | 92 | 19 | 96 | 94 | R | C | 16 | 0 | 0 | 0 | 0 | 11 | D |
| 304 | 99 | 18 | 84 | 88 | R | I | 19 | 2 | 18 | 95 | 0 | 12 | D |
| 305 | 85 | 18 | 98 | 98 | R | C | 20 | 2 | 19 | 95 | 0 | 14 | D |
| 306 | 91 | 18 | 62 | 92 | R | C | 19 | 2 | 2 | 10 | 0 | 8 | D |
| 307 | 110 | 13 | 88 | 68 | N | C | 29 | 0 | 0 | 0 | 0 | 13 | D |
| 308 | 96 | 15 | 94 | 12 | N | I | 24 | 2 | 12 | 50 | 0 | 4 | D |
| 309 | 97 | 17 | 42 | 18 | N | I | 22 | 2 | 16 | 73 | 0 | 10 | D |
| 310 | 102 | 15 | 98 | 48 | R | C | 17 | 3 | 17 | 100 | 0 | 17 | D |
| 311 | 112 | 14 | 86 | 92 | R | I | 28 | 1 | 28 | 100 | 0 | 8 | I |
| 312 | 123 | 8 | 86 | 90 | N | I | 21 | 2 | 21 | 100 | 0 | 12 | D |
| 313 | 99 | 21 | 98 | 98 | N | C | 0 | 0 | 0 | 0 | + | 16 | D |
| 314 | 112 | 8 | 46 | 24 | C | I | 27 | 2 | 8 | 29 | 0 | 17 | D |
| 315 | 78 | 25 | 98 | 98 | N | I | 19 | 1 | 19 | 100 | 0 | 10 | I |
| 316 | 112 | 13 | 80 | 74 | C | C | 20 | 2 | 7 | 35 | 0 | 18 | D |
| 317 | 87 | 11 | 64 | 54 | C | C | 12 | 0 | 0 | 0 | 0 | 10 | D |
| 318 | 88 | 13 | 96 | 92 | C | I | 0 | 0 | 0 | 0 | + | 5 | I |
| 319 | 119 | 15 | 44 | 68 | R | I | 0 | 0 | 0 | 0 | + | 8 | I |
| 320 | 108 | 8 | 86 | 56 | R | C | 32 | 2 | 32 | 100 | 0 | 13 | I |
| 321 | 79 | 16 | 96 | 60 | C | C | 16 | 2 | 16 | 100 | 0 | 17 | I |
| 322 | 81 | 22 | 98 | 31 | C | I | 0 | 0 | 0 | 0 | + | 4 | I |
| 323 | 107 | 6 | 90 | 84 | R | I | 20 | 1 | 20 | 100 | 0 | 19 | I |
| 324 | 103 | 10 | 64 | 84 | C | C | 24 | 1 | 8 | 25 | 0 | 9 | I |
| 325 | 118 | 15 | 50 | 48 | C | C | 20 | 1 | 20 | 100 | 0 | 7 | D |
| 326 | 96 | 21 | 80 | 54 | N | C | 17 | 3 | 14 | 82 | 0 | 4 | I |
| 327 | 84 | 17 | 98 | 98 | R | I | 16 | 1 | 16 | 100 | 0 | 11 | I |
| 328 | 78 | 16 | 32 | 36 | N | C | 7 | 0 | 0 | 0 | + | 9 | D |
| 329 | 101 | 10 | 90 | 86 | C | I | 32 | 3 | 32 | 100 | 0 | 9 | D |
| 330 | 88 | 24 | 60 | 42 | C | I | 24 | 3 | 23 | 96 | 0 | 8 | D |

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# AUTOBIOGRAPHY

I, Barbara Anne Henker, was born in La Crosse, Wisconsin, on June 15, 1935. I received my secondary education in the public schools of La Crosse and of Sacramento, California, graduating from Sacramento Senior High School in 1952. I was granted the Bachelor of Arts degree in 1957 by the San Francisco State College and the Master of Arts degree in 1960 by the Sacramento State College. While in residence at the latter, I held a position as a Personnel Analyst for the California State Personnel Board and as a Lecturer at Sacramento State College.

During my graduate years at The Ohio State University I have held positions as a graduate assistant, research assistant and teaching assistant. I interned in 1961 at the Columbus Psychiatric Clinic and was a U. S. Public Health Service Scholar during the 1962-1963 academic year while completing the requirements for the degree Doctor of Philosophy.

I have accepted a position as Assistant Professor of Psychology at The Ohio State University.