GENERALIZATION OF EXPECTANCIES AS 
A FUNCTION OF NEED-RELATEDNESS

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CHAPTER I

INTRODUCTION

A theory of behavior is indispensable to the social scientist in his effort to understand and predict human behavior. The scientist must abstract from his numerous observations in such a way that his abstractions will have some relationship to observations not yet made.

Although the adoption of any particular theory of behavior is apt to result in selective research and experimentation, it must be pointed out that research is necessarily selective. Adopting an explicit theory merely insures that the biases in what the experimenter chooses to observe have been formulated and verbalized. If by the nature of the ways in which we think and communicate with others and the demands of the scientific method, abstraction and thus theory is unavoidable, a theory which is explicitly formulated seems highly preferable to one which is left implicit.

An explicit theory of behavior has several advantages. Primary among these advantages is that the con-
structs of the theory may be operationally and systematically defined so that they have constant and predictable relationships among themselves. The constructs of such a theory may be tested and crystallized, or else reformulated. Other advantages accrue in that experimentation may be carried out in a planned way such that the individual investigator may profit directly from the work of his predecessors, in the way in which he sets up his problem and in the context in which he will interpret his result.

Social learning theory is the explicit framework within which this study was formulated and carried out. This theory, with its particular set of constructs, represents an attempt to integrate a highly experimental and operational approach to human behavior with the sort of observations and predictions which are the special problems of the clinical psychologist. That is to say, social learning theory is a set of constructs at one level of description and from a consistent orientation aimed at measuring, testing, and ultimately predicting the interaction of the individual with his meaningful environment.

Social learning theory explicitly recognizes the nature of constructs. The theory emphasizes the relation of constructs to the methodology of theory construction. A construct is a way of abstracting events which is dependent
upon the point of view and purpose of the observer as well as the "real" event. Evaluation of the goodness of a construct must be pragmatic, in terms of its usefulness for a defined purpose, because we have no available check on its degree of correspondence to the "reality" from which it was abstracted.

Social learning theory defines its locus of interest as learned behavior and is hence primarily concerned with the conditions under which behavior is modified and changed. The individual's present behavior must be understood in the light of his past experiences. Social learning theory defines its method as historical. Attempts to order the history of an individual must include some construct or constructs describing the phenomena of generalization. Obviously the potential for experience of any one individual is limited in scope and in order to account for much which is learned it is necessary to posit some process like generalization. Also since logically the same situation is never duplicated, particularly in life situations, generalization is a central concept for a clinically useful learning theory.

For purposes of this study and the theoretical discussion presented here, we are defining generalization as a
change in a response to a situation in terms of experience derived from a previous situation which is not the same, and could not arbitrarily be classified as the same by a majority of observers. This study sets up hypotheses regarding the bases of similarity between situations where generalizations in behavior occur. Knowledge of the dimensions along which generalizations occur gives us a potential way of accounting for the continuity and organization of individual behavior.

The present research is an attempt to test some hypotheses concerning the dimensions along which generalization occurs and the conditions which determine the extent to which it occurs. Specifically, this study attempts to test the social learning hypothesis that generalization can occur on the basis of common directionality of behavior. Further hypotheses regarding the conditions which are related to degree of generalization will also be examined. The methodology used, which is derived from earlier level of aspiration studies, has been shown in a previous study by Jessor (22) to provide a fruitful approach to this kind of problem.
CHAPTER II

THE BACKGROUND OF THE PROBLEM

Discussion in this chapter will take the following form of presentation: (1) a discussion of the concepts of generalization and expectancy; (2) a review of the previous literature relevant to these concepts and the manner in which they have been used in this research; (3) a formulation in social learning theory terms of the problem of this investigation; (4) a summary of related previous research; and (5) a statement in general and in null form of the specific hypotheses tested.

THE CONCEPT OF GENERALIZATION

Traditionally, the concept of generalization has been divided into stimulus generalization and response generalization. The former is defined by Hilgard and Marquis (15) as the process whereby "when an organism has learned to give a conditioned response to a particular stimulus it can be shown that other similar stimuli will also elicit the response even though these other stimuli have not been used in the conditioning experiment." Response generalization has been most definitively handled by Wickens (48) and
is perhaps best defined as the process whereby a new response equivalent to the original CR is now made to the CS in an altered experimental situation.

The original observations of stimulus or sensory generalization came from Pavlov's laboratory. These were treated by him under the concept of "irradiation." Hull (19) in his summary of the work on primary stimulus generalization distinguishes between irradiation as the "progressive spread of effect of stimulation extending over only a few minutes" and the concept of stimulus generalization as he uses it which is the potentiality of response evocation which seems to be relatively enduring in time and not dependent on recent stimulation. Hull has retained the observed phenomenon, while rejecting Pavlov's physiological explanation of it.

A study by Anrep, reported by Hull (19), and a similar study by Bass and Hull (1) utilizing human subjects, found a gradient of generalization for cutaneous stimulation based on the spatial distribution of points on the skin. The widely discussed study by Hovland (16) used a GSR measure of response to auditory intensity, auditory frequency, and cutaneous vibration intensity. Stimulus differences were recorded in terms of just noticeable differences. Hovland reports a concave gradient of generalization which has been
challenged by other investigators. Littman (27) replicated Hovland's experiment and although he confirmed the phenomenon of generalization, he failed to obtain the specific function reported by Hovland. His results more nearly indicated a straight line function. Razran (37) in a recent review of the literature has pointed out that Hovland's conclusion regarding the form of the gradient is not borne out by his data. Specifically, the differences between adjacent generalization stimuli were not statistically reliable. Razran presents the view that generalization in human beings occurs along a sort of crude similarity-dissimilarity scale. He feels that human beings, once conditioned, when confronted with a new stimulus in some way related to the previous conditioned stimulus, rate or categorize the new stimulus.

The precise form of the generalization gradient need not be of concern here. What is of interest is the dimensions of stimulus similarity selected by these investigators for study. The gradient obtained by Hovland is described by Hull (19) as "a monotonic decreasing function of the magnitude of the differences between the conditioned stimulus and the unconditioned stimuli." Examination of the nature of these differences reveals that they are based upon physical dimensions of similarity. From Razran's dis-
cussion of his "categorizing-rating" CR gradient it is not entirely clear on the bases of what dimensions of stimulus similarity the individual operates. We might infer from Razran's research (36) on semantic conditioning that similarity of meaning is the dimension involved, rather than physical similarity. Cofer and Foley (4) likewise working in the area of mediated or semantic generalization propose dimensions based on the pre-experimental learnings and conditionings of the individual. It appears that so far there has been little agreement regarding how to conceptualize the significant dimensions along which generalizations occur.

Hull has presented the view that generalization occurs as an innate reaction to physical similarity. Lashley and Wade (23) has taken the contrary position that "the dimensions of a stimulus series are determined by comparison of two or more stimuli and do not exist for the organism until established by differential training ... a stimulus dimension ... arises as a result of attention to and comparison of two objects ... The dimension itself is created by or is a function of the organism and only secondarily, if at all, a property of the physically defineable character of the stimuli." Lashley and Wade say in essence that the significant dimensions along which generalizations occur are
learned. This view which readily applies to dimensions of physical similarity, even more obviously applies the kind of generalization posited by this study. If generalization occurs along dimensions of common directionality in behavior, these dimensions are certainly learned unless one would be willing to assume that there are innate connections between certain goals and relatively complex instrumental behaviors. It is suggested that need-related generalization as a phenomenon is in better agreement with Lashley and Wade's treatment of generalization.

In a previous study Crandall (5) noted that neither stimulus generalization or response generalization as ordinarily described seemed to fit the case in which he was interested. He suggested the use of an alternate term, generalization of effects. Jessor (22) in his formulation of a similar problem has pointed out that need-related generalization as described by social learning theory is essentially a special case of what has been described elsewhere in the literature as mediated generalization. Cofer and Foley (4) have pointed out that for mediated generalization to occur "stimuli need be similar only insofar as they have been previously conditioned to the same (or similar) response."

To follow Jessor's formulation a little further,
two given situations may be considered to be in a broad sense stimuli. If the individual has learned that both these situations lead to the same goal or outcome, these situations or stimuli may be thought of as similar by mediation. We would say that mediation occurs in this case by means of the goal or common directionality in behavior. According to social learning theory, there are functional relationships among behaviors and goals. That is, some behaviors because they lead to similar outcomes may be said to be functionally related. From this relatedness of behaviors, the construct which we call need is abstracted. It is hypothesized by the theory that positive or negative reinforcement of a particular behavior not only directly affects the probable future occurrence of that behavior, but also the occurrence of the group of behaviors which are functionally related to the one reinforced. Thus degree of generalization varies with degree of need relatedness, i.e., commonness of directionality.

This study attempts to test the hypothesis of need-related generalization in one specific way. There are other feasible approaches to the problem, some of which will be discussed in a later chapter. The prototype of this particular test draws heavily on the previous work in semantic
generalization. If behaviors are functionally related in terms of common goals, then it seems likely that for highly verbal adults (a college population) one of the most available cues to functionality would be that situations or behaviors bearing the same labels should be related to the same common goals. Utilizing the previous learning of these individuals that using the same word to describe the outcome of two behaviors means that they have common directionality, this study attempts to predict generalization on the basis of common verbal labels. To a large extent the adequacy of the test used in this study for the hypothesis we seek to test depends upon the above assumption about verbal behavior and its relationship to functionality of behavior, as actually derived from the experiential history of the individual.

In this study, then, the dimension along which generalization will occur is defined as being need-relatedness of behavior, which is a result of learning.

**THE CONCEPT OF EXPECTANCY**

Since the measure of behavior which will be used to test the hypotheses of generalization is a measure of expectancy as defined in social learning theory, we shall attempt to give briefly a background of this concept.
The use of the concept of expectancy is one of the primary differences between cognitive learning theorists, as represented by Tolman, Brunswik, etc., and the more "mechanistically" inclined theorists, as represented by Hull. Although the observation is constant that behavior changes following the fulfillment of a "goal," the question remains which set of intervening variables can predict the observed changes most accurately.

The response learning theories contend that the occurrence of a satisfying state of affairs, usually a reduction of tissue need, or a situation which has been conditioned to reduction of primary need, directly strengthens the tendency of a given response to occur to a given stimulus. Many criticisms have been leveled at reinforcement explanations of learning. According to Hilgard (14) the equation of reinforcement with need reduction has never been convincingly demonstrated and still remains a hypothesis. Work by Tolman and his associates in the area of latent learning casts considerable doubt on the adequacy of need reduction alone to explain learning.

Personality theorists have long emphasized the inadequacy of primary need reduction, even with the additional concept of secondary reinforcement, to explain complex so-
cial behavior in human beings. It is doubtful whether very many instances of human behavior at the level of complexity which is the concern of the clinician and personality theorist can be explained in terms of need reduction without doing logical violence to the data. However, some modifications and extensions of Hull's system along the lines of personality theory have appeared. Outstanding among these is the work of Mowrer (32) and of Dollard and Miller (7). While stimulating, these theories have been restricted to the use of the concept of anxiety as motive for behavior. Anxiety, while possessing many of the referents of a physiological tension, lacks ease of measurement as an internal state, different from other internal tensions.

Other criticisms leveled at "law of effect" explanations of learning point out the so-called circularity of the principle. The evocation of effect to explain change in behavior is said to be circular since "satisfaction" is not defined independently of the change which it is said to explain, i.e., that learning occurs after some states of affairs and not after others.

Researches in the area of latent learning and the area of learning after punishment also are difficult to encompass in law of effect learning. Still another criticism
sometimes made is that the effects act backward on the re-
response, so-called retroaction.

Hull (17) in his theory, has dealt with some of these
 criticisms. He accepts the distinction between acquisition
and performance in his concepts of habit strength and effec-
tive reaction potential, although motivation is necessary
for both processes. The effects of punishment upon learning
are handled under the concept of tension reduction, i.e.,
all tension is a state of discomfort and escape from tension
provides the positive reinforcement which strengthens the
response. The criticism of retroaction has been handled by
positing a stimulus trace which persists in the nervous sy-
stem for a short period of time and enables integration of
stimulus and response-effects.

Expectancy provides another approach to the way in
which learning occurs and is frequently espoused by those
who oppose effect theories. This concept has its modern
origins in two theories of behavior, that of Tolman and that
of Lewin. These systems are characterized as "cognitive"
in nature and appear to have particular advantage in explain-
ing behavior of organisms which are capable of symbolic in-
tegrations of experience.

Tolman, et al., have rejected mechanical operation
of effect in strengthening connections between stimulus and response in their formulation of the way in which learning occurs. Instead expectancy is made the essential variable which mediates learning. Learning is characterized as the building up of cognitive patterns within the organism which reflect stimulus relationships in the environment. Learning is acquiring an expectation that an event (sign) in the environment will, by means of a behavior route, lead to a specified outcome or event (significate). The function of repetition becomes then, not the increase of a habit strength, but the increase of the probability that a given expectancy will be confirmed. (18). The operation of reward is restricted to the utilization or performance of responses.

Tolman and his co-workers have accumulated much empirical evidence to support their formulations (14). Reward-expectancy experiments of Tinklepaugh with monkeys and Elliot with rats, experiments on place learning of Tolman, Ritchie, and Kalish and Tolman and Honzik, and the various latent learning experiments while not conclusive raise many issues which seem to support an expectancy formulation of learning.

On the other hand objections have been raised to the concept of expectancy. As Guthrie and others have
pointed out (summarized by Postman in 33), expectancy theory does not explain how expectation leads to appropriate response, i.e., it is not predictive of what the organism will do as a result of the expectation. Stephens (45) in a very pointed attack on the logic of expectancy as general explanation of reinforcement points out that expectancy theory falters whenever the expectancy of the organism is at odds with its "hopes," "wishes," and "well-being." Because a valuable outcome was unexpected will not prevent recurrence of the response. Likewise if a response is followed by an "expected evil" we cannot accept that the confirmation of the expectancy increases the tendency of the response to re-occur. He says (p.104):

It is not sufficient for an outcome to confirm an expectancy. The outcome must also be valuable or acceptable. It is not necessary for an outcome to confirm an expectancy. An unexpected but valuable outcome will produce reinforcement.

The expectancy position would appear to have several serious flaws. Labels such as "anthropomorphism" have been applied to expectancy formulations. In a Symposium on psychology and the scientific method, Hull in 1941 (18) objected to such theorizing as follows (p.287):

... the trouble with such a concept as expectancy, as employed by Hilgard and Lewin, is that when we attempt to verify the hypo-
theses in which it appears we cannot tell how much expectancy to expect; neither do we know the magnitude of the reaction which the expectancy is expected to mediate.

Certainly this criticism, which says that expectancy cannot be quantified and handled predictively, is extremely telling if true. However, Meehl and MacCorquodale (30) conclude in an article regarding learning theory construction that recent research is sufficiently favorable to an expectancy approach to warrant systematic attempts at more rigorous formulation.

Examining the theoretical position of Lewin (24) we find the concept of the subjective probability of events which is a part of the life space of the individual. While the probability formulation of Tolman, particularly as elaborated by Brunswik (2) tends to emphasize objective, environmental probability, Lewin places importance upon the internal psychological probabilities of the individual. It is apparent that these two probabilities are not unrelated. Measurement of the latter is perforce in terms of the former. Lacking research to clarify the extent and nature of the relationship, we can nonetheless assume some correlation is present.

Lewin's approach to subjective probability has been quite fruitful in producing a substantial amount of
data in quantitative form regarding expectancy. Out of this experimentation, Lewin is able to answer Hull's charge of "unquantifiability." Lewin points out that from the level of aspiration studies reliable, quantitative data is available regarding expectancies, the way they are arrived at, and the way in which they are changed under conditions of "success" and "failure."

An analysis of level of aspiration researches by Lewin et al (26) appeared in 1944. This article reviewed the major researches in the area up to that time and of more importance presented a theoretical formulation for goal-setting behavior in human beings as the resultant of subjective probability and valence. A stated goal or level of aspiration was seen as the result of an interaction of the valence of stating a high goal (within the individual's perception) and his subjectively held probability that he could actually achieve that goal. Lewin's approach by utilizing valence modifies the role of expectancy or subjective probability and overcomes some of the objections to expectancy theory cited previously.

Postman (33) in his review of the literature related to reinforcement, concludes that a one-principle theory of learning at the present time is not likely. An
attempt at synthesis of these two major points of view would appear to be propitious. Social learning theory is an attempt to consolidate both a reinforcement and an expectancy approach within a unified, systematic framework.

GENERALIZATION IN SOCIAL LEARNING THEORY TERMS

Since the present investigation was executed within the framework of social learning theory, it is desirable at this point to present the aspects of the theory relevant to the foregoing discussion and to this study. The following summary is drawn from a series of mimeographed papers by Rotter (41, 42, 43).

The unit of investigation in the study of personality is the interaction of the individual with his meaningful environment. The study of personality is the study of learned behavior. The method of investigating personality must be historical. Meaningful environment may be usefully described in terms of the potential satisfactions and frustrations it evokes; or stated another way, behavior has directionality. Directionality is inferred from the effect of the reinforcing conditions. This directional aspect of behavior we abstract as "needs" when we refer to the individual and as "goals" when we refer to the environment.

While early goals and needs may arise out of rein-
forcement of simple homeostatic movements, most later goals and needs arise as a means of satisfying earlier learned goals. Needs are learned in relation to other human beings who are controllers of potential sources of satisfaction and frustration for the individual. Needs of an individual exist in hierarchies or organized sequences growing out of learned relationships to higher order needs, i.e., specific behaviors of an individual are functionally related in terms of directionality of behavior.

In a second paper (42) the concepts of internal and external reinforcement are distinguished. Internal reinforcement is defined ideally as experience or perception of change by the individual of his relationship to the goal, resulting in a changed expectancy of the future occurrence of an event (or events) leading to the goal. External reinforcement is the occurrence of an event with known reinforcement value within the culture to which the individual belongs. Relationships between internal and external reinforcement are not assumed to be one to one, but are considered subjects to be studied empirically.

In a still more recent formulation (43) the probability of occurrence of a given behavior in a given situation is expressed in the ideal formula:
BEHAVIOR POTENTIAL = f (EXPECTANCY AND REINFORCEMENT VALUE)

Expectancy is defined as the probability (internal) held by an individual that a particular external reinforcement will occur in a particular situation. Expectancy is independent of the value of the external reinforcement. Reinforcement value is the preference value of a particular object or event, with expectancy held constant. Expectancies change as a function of the occurrence of the reinforcing state of affairs; reinforcement values change as a function of changes in expectancies for other reinforcement values to which the immediate reinforcement values lead.

Expectancy is further elaborated as not an actuarial concept of probability, but the "contingency held by the individual." Expectancy is considered to be function of the past history of direct reinforcements and generalizations from other related behavior-reinforcement sequences. The formula for expectancy could be stated as follows:

\[
\text{EXPECTANCY} = f (\text{IMMEDIATE EXPECTANCY} \& \text{GENERALIZED EXPECTANCIES})
\]

Measurement of the expectancy for occurrence for any single event may range from 0.0 to 1.0. While this conceptualization is convenient for theoretical formulae dealing with the occurrence of an event on an all or none basis, another approach to measurement using modal expectancy level

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or score is frequently practical in formulating empirical observations. For example in performing a task and obtaining a score, a subject may have expectancies ranging from zero to unity for each of the possible scores, within his range of ability. When the subject is asked to state which score he thinks he is most likely to obtain on this task, we assume that his statement reflects the level of the score for which his expectancy most nearly approximates one. We further assume that scores above and below the score selected have lower expectancy values.

While both behavior potential and reinforcement value are measured in relation to other behavior potentials and reinforcement values of the individual, expectancies are assumed to be measured on an absolute scale.

Social learning theory like every other theory of behavior is concerned with the prediction of behavior. Theoretically we may consider the single occurrence of a behavioral event, but since no two stimulus and response situations are ever exactly alike and since in order for a theory to have any practical usefulness, it must be able to make some predictions without complete knowledge of the previous history of the organism -- with only a sampling of the relevant factors operating in any given situation --
some concept of generalization is necessary. Systematic constructs regarding processes of generalization not only enlarge the predictiveness of the theory, but also describe a set of responses which are highly characteristic of the mode of responding of human individuals. Individuals frequently respond to "new" situations or make "new" responses to old situations in such a way that the response is not a simple repetition of one previously made. Such "generalizations" are readily understandable at a common sense level, but much more difficult to formulate systematically so that they become readily predictable.

Social learning theory is concerned with a generalization factor at two different points. One aspect of generalization is in terms of generalization of reinforcement values; the other is in terms of generalization of expectancies. Here we will outline some hypotheses about the way in which generalizations occur. This hypothetical analysis of generalization phenomena is offered as a systematic and predictive way to account for generalization as it occurs in complex social situations. It is hypothesized that generalization of reinforcement values and expectancies occurs to the extent that behaviors or events are functionally and/or need related, that is, to the extent that they have
led to the same reinforcements in the past. Stimulus generalization is made a subsidiary mechanism, that is stimulus similarity becomes a cue utilized by individuals to detect probable functional relationships. On the basis of past learning, things which look, feel, sound, smell, taste alike tend to lead to the same reinforcements. As a cue to functionality, stimulus similarity is frequently useful but occasionally misleading. Functionality on the basis of similarity of reinforcement is learned.

Generalization on the basis of functional relationships is an extension of the concept of mediated stimulus generalization. In this case mediation occurs on the basis of similarity of reinforcements. As stated by Rotter (43, p. 3.1):

By leading to the same reinforcement, behaviors acquire functional equivalence. For example, if screaming, kicking, etc., all lead to expressions of annoyance on the part of a parent, some functional equivalence between these behaviors will arise. A strong reinforcement, positive or negative, of one of these behaviors will effect the potential of occurrence of any of the other functionally related behaviors to a greater degree than it will affect the potentials of behaviors not so functionally related.

Regarding generalization of expectancy changes, he says (43, 3.2):

It could also be demonstrated that changes in
expectancy for other reinforcements would follow a kind of gradient, on which the child refused candy might have a lowered expectancy of getting ice cream while his expectancy of hurting his foot should he kick the door remains relatively unchanged. The generalization gradient of such expectancy changes would have to be determined empirically, although it may be hypothesized that the gradient would follow dimensions of similarity of reinforcement and behavioral similarity determined by the similarity of the reinforcements which usually follow the behavior.

Assuming that the above formulations of the nature of generalization can be accepted, it could be predicted that the expectancy of a complex of behaviors leading to the same (or similar) reinforcements would tend to be similar for behaviors within the complex since they are affected to a maximum degree by a generalization effect of one to the other. The expectancy of any one behavior leading to positive reinforcement could then be estimated to some extent from any other. On this basis it would seem that the functional relationships among reinforcements and among behaviors may be approached profitably through concepts like psychological needs, which organize and classify behaviors and goals (external reinforcements) in terms of directionality (similarity of reinforcements).

Generalization provides us with a way of estimating need-relatedness, in addition to the crude estimates which can be made on the basis of knowledge of the culture in which the individual lives. In a sense, generalization becomes a test of the usefulness of need abstractions from behaviors.

Further important points about generalization on
the basis of functional similarity include the following. If functional similarity of behaviors varies with the degree to which they have led to the same reinforcements, then one might expect the more any classification scheme (of reinforcement or need values) is broadened, the less functional similarity will exist between any two randomly selected behaviors or reinforcements included in that classification.

Any single abstraction of need from behavior represents only one way of abstracting the relationships in which the particular behavior, expectancy, or reinforcement is involved. Any particular behavior, expectancy, or reinforcement may be a part of many systems. The psychologist deals with those systems which are relevant to his purposes at the time.

Any group of functionally related reinforcements may be included in a still larger classification of reinforcements. This process of broadening the classification may be repeated until one arrives at a single over-all concept of directionality. Such an over-all concept might be referred to as **security** or psychological **homeostasis**. The level of generality at which one elects to work will be determined by the inclusiveness or the exactitude of the pre-
dictions which one must make.

In summary, social learning theory hypothesizes that generalizations occur along learned dimensions of common directionality or need-relatedness in behavior. This hypothesis is an extended version of mediated stimulus generalization and is very much related to work in semantic generalization demonstrating the tendency for the greatest amount of generalization to follow communality of meaning rather than similarity of sound.

RELEVANT RESEARCH

Researches which have some direct relationship to the present investigation occur in two broad areas, studies in learning and conditioning and studies in level of aspiration. In addition, a brief discussion of relevant previous studies in social learning theory will be presented.

Other than studies in the area of semantic generalization, an investigation by Wickens and Reid (49) in the area of animal learning seems to have most similarity to the present research. This study demonstrated that the particular drive state under which learning occurs can become a cue to the correct response in the problem solving situation at a later time.

Among the studies of verbal behavior, Razran (36)
has tested generalization of response to synonyms and to homophones of the stimulus words to which subjects had been conditioned. The average amount of generalization to words which sounded alike was 37 per cent, while the average amount to words which meant the same thing was 59 per cent. Reiss (summarized in 4) in a similar study largely confirmed Razran's results, but discovered that the finding is reversed in young children, i.e., children tend to generalize more on the basis of similarity of sound. The latter finding would tend to confirm the inference that meanings are learned and are better established in older, more experienced, and more verbal subjects. Cofer and Foley (4, p. 520) in contrasting mediated and non-mediated generalization say:

It will be noted that the dimension along which the generalization occurs in the experiments described above is not a dimension characteristic of the physical attributes of the stimuli. The classical formulation of generalization principles presupposes naive organisms whereas mediated (e.g., semantic) generalization depends upon previously conditioned (usually language) behavior.

Miller and Dollard (31) report an unpublished dissertation research by Buge in which generalization of responses in young children appeared to be mediated by verbal responses. If the child was taught to call two objects by the same name, other responses to the object (such as
grasping, etc.) were more likely to generalize from one object to the other than when the child had been taught to call them by two different names. The response was reported to be more stable when the child actually said the name aloud.

Research in the area of level of aspiration has been extensive. In this discussion we shall refer only to those studies which are most directly related to the present investigation. Comprehensive reviews of the literature are available. Frank, one of the early workers in this area, reviewed the literature in 1941 (12). In this review he cites his own definition of level of aspiration drawn from an earlier experimental paper (11, p. 161):

... the level of future performance in a familiar task which an individual, knowing his level of past performance in that task, explicitly undertakes to reach.

Lewin, Dembo, Festinger, and Sears (26) have more recently reviewed the field and presented an integrated theoretical approach to the problems it presents. Rotter (40) has reviewed the literature critically from the standpoint of methodology.

In the following discussion, a brief history of the concept, a view of the methodological research which is relevant to this study, previous studies concerned with
generalization of level of aspiration, and studies relating to intensity of failure or success experience will be presented.

The concept of "level of aspiration" was first introduced by Dembo (26). The first experiment directed at aspiration behavior was performed by Hoppe in 1930. Since that time the literature concerning goal-striving behavior has grown and extended into many other related areas of psychological study.

Lewin et al (26) present the level of aspiration technique as having psychological importance in the study of goal-setting and goal-striving behavior particularly in our competitive culture. The technique has provided us with an objective way of making observations, and even controlling and experimentally manipulating experiences, of "success and failure." Further, the technique provides an objective measure of expectancy within a limited type of learning situation.

The method unique to level of aspiration has many variations, but consists of an essential sequence of events. The subject is given some experience with the task (or is asked to draw upon his previous similar experiences), he is asked to set a goal for the next trial, perform the task,
set another goal, perform again, etc. Most studies reported in the literature are interested primarily in the effect of the discrepancy between the stated goal and level of performance on the next stated goal. The difference between the level of past performance and the next stated goal is called the "d score." Obviously many other measures are possible; an aspiration-to-aspiration measure will be used in this study. That is, we are interested in the size and direction of change in expectancy statement after a "success experience" of a constant amount.

The present study also allows only one trial on the task and thus draws upon the generalized experiences of the individual rather than upon specific practice with the experimental task. In order to provide the subjects with some frame of reference in utilizing their past experiences, and as a methodological consideration to prevent too many extreme estimates, subjects were told that college students like themselves who had taken the tests before had made an average score about halfway in the range. Evidence for the effectiveness of group norms for goal setting behavior is to be found in such experiments as those of Anderson and Brandt and of Chapman and Volkman (26).

In order to utilize the level of aspiration tech-
nique to study induced "success" and "failure," it is neces-


erary to find a task which the experimenter can control and on which the outcome can be reported to the subject without arousing suspicion that the situation is "rigged." A common technique is to utilize an academic achievement type task and report scores in terms of a supposed time measure. This study uses another approach, based on the traditional "dis-
guise" of the projective techniques of personality measure-

ment.

Because "success" and "failure" can be controlled by the experimenter by manipulating the relationship of the subject's level of "achievement" to his stated goal or ex-

pectancy, the level of aspiration technique provides us with a readily controllable situation. Also, in contrast to many other experimentally manufactured situations used in psy-

chological studies, level of aspiration defines the depend-
ent variable in terms of the subject's own frame of refer-
ence as expressed in his stated goal.

A study by Festinger (9) confirms the general hypo-
thesis that the level of the stated goal will tend to follow the experiences which the individual has in the situation. He found that after "success," defined as exceeding the stated goal, 51 per cent raised their next goal estimate,
41 per cent did not change, and 8 per cent lowered their estimate. After failing to reach their level of aspiration 7 per cent raised their estimate, 29 per cent did not change, and 64 per cent lowered their estimate.

Several investigators have been concerned with the reliability of level of aspiration measures. Most of these studies conceive of reliability in terms of a test-retest situation. Frank (26) found that reliability varies with the nature of the task on which it is obtained. On printing and spatial relations tasks he found coefficients varying from .57 to .75 and for quoit throwing, coefficients from .26 to .63. All of these reliabilities were based on the $d$ score measure and the study included only 12 subjects.

Rotter (40) studied retest reliabilities over a period of a month for several measures other than the $d$ score, in a situation where subjects were rewarded or penalized for performance. All reliabilities were statistically significant and indicate reasonable consistency in aspiration behavior over a period of time.

The manner in which investigators have asked subjects to make aspiration statements have been by no means standard from study to study. Rotter (40) cites failure to make clear to the subject what it is he is to do as one
of the uncontrolled factors present in many studies. Some subjects responded in terms of what they thought they might get (expectation), others in terms of what they hoped for, and still others in terms of a combination of undetermined factors.

The goals which a subject sets for himself can be thought of profitably in terms of a number of points located somewhere on a continuum of tasks within the subject's range of ability. As the form of the question which the experimenter asks varies, the height at which the goal is placed will vary. Also the tendency of goal setting to follow performance will be differentially varied. Festinger (9) asked one group of subjects what they "expected" to do next time and another group what they would "like" to do next time. The expect group stayed close to their levels of performance in making their estimates and had lower d scores than did the like group. The former also showed greater tendency to modify their estimate in terms of their performance.

Irwin and Mintzer (21) utilizing a dart throwing task obtained similar results. Preston and Bayton (34) obtained three aspiration statements from their subjects. Subjects were asked to state: (1) the least they expected
to do; (2) the most they hoped to do; and (3) what they actually thought they would do. They found a high correlation between actual and maximum estimates, while the least estimate was unrelated to the other two.

In recent unpublished studies, Jessor (22) and Dean (6) indicate that asking for a series of estimates, specifically expectancy and minimal goals statements, at the same time while serving to delineate the range of goals, also leads to one estimate contaminating the other. Minimal goal levels (or least estimates) tend to produce a "floor" below which expectancy statements do not fall. The various goal estimates tend to become more alike as the experiment progresses. For this reason the present study foregoes some data regarding least estimates in order not to complicate the interpretation of expectancy estimates.

A further consideration regarding the level of aspiration technique is the extent to which its limited sampling of behavior can be extrapolated to "real" situations, i.e., complex social interactions. Child and Whiting (3) asked a group of college men to write descriptions of three situations from their own past histories. One situation was to be a complete frustration in obtaining a goal, another a period of frustration followed by goal attainment,
and a third simple goal attainment. A questionnaire regarding each of these situations was then filled out; this questionnaire was designed to get at the continuum of goals present and the effect of the incident described on the individual. Their results confirm earlier, more narrowly experimental results that aspiration tends to follow experience and that intensity of experience is related to amount of increase or decrease in aspiration level.

Studies related to the generality of level of aspiration measures are very directly related to the purpose of this study. Jucknat (26) in an early study using paper and pencil mazes demonstrated that generalization of success or failure from one series to another depended on the extent to which the two series were made to look alike. Presumably she was discussing a dimension of physical similarity. Frank (11) found that level of aspiration on a task of average difficulty was raised or depressed depending upon whether the task was preceded by a hard or easy task.

Generalization has also been studied by means of the correlations existing between aspiration statements on different tasks or statements from varying situations. Frank, in the study of reliability cited previously, found
correlations between printing and spatial relations in the first session from .50 to .65; the quoit throwing failed to correlate significantly with either of the other two tasks. Frank cites the irreal or play-like nature of the latter as an explanation; in effect he says that the third task was on a different dimension for his subjects.

Gould (26) used six different experimental tasks, giving three in one session and three in a later session. D scores for all tasks were correlated. For tasks given in the same session the median correlation was .46, while between tasks given in different sessions the median was .30. Gould concludes that individuals respond more to the situation than to the tasks themselves. Rotter (40) in his review points out however that her procedure allowed success or failure in one task to easily influence the relationship between performance and estimate in another. Actually her six tasks could be viewed as six trials within a larger level of aspiration situation.

Heathers (13), in the most analytic of the studies of generalization of level of aspiration so far discussed, sets out to test generalization as a function of three factors of possible similarity in the testing situation. The three kinds of similarity which she sought to control were:
(1) similarity in the scale values in which performance scores were reported to subjects; (2) similarity in the shape of the performance curve formed by the scores reported to subjects; and (3) the subject's motivation in desiring to do well on the several tasks.

She utilized a group of students who were applying for scholarships as subjects. Her experimental subjects were told that all these tests were measures of learning ability while controls were left to think what they liked about the tests. Presumably the experimental group would have a constant motivation to perform well throughout, while the control group would be variously motivated depending upon their attitudes toward and interests in the specific tasks. Heathers found that the greater the similarity of the task with respect to these factors the more generalization occurred. It should be noted that her third factor bears some relation to the present research, i.e., that as tasks are seen to lead to the same reinforcement, expectancy for one will tend to generalize more to the others.

Jucknat (26) in a very early study presented some evidence relating to the intensity of the success or failure experience. As experimenter, she made ratings of the subject's reaction to the obtained score. Although she does
not report a statistical test of the data, the percentages she offers indicate that as intensity of reaction increases the size of the shift in goal increases.

This approach to the problem of intensity of reaction is, as has been pointed out by later investigators, very weak experimentally. Steisel and Cohen (44) state that "a definition of intensity of success or failure which depends upon S's reactions to an event does not readily allow for the experimental manipulation of these variables. Indeed, since subjective failure and success are inferences based on S's behavior, it is possible that their identification is not entirely independent of the specific responses they are intended to explain." In their own study they set up two intensities of failure, mild and severe, defined in terms of the number of points below the aspiration level where the subject's score is caused to fall. In addition, certain standard verbal statements were made by the experimenter. Their results indicate reliably greater downward shifts in the severe-failure group than were found in the mild failure group.

Jessor (22) in a study utilizing the minimal goal estimate (defined as the lowest score with which the subject could still be satisfied) also studied possible dif-
ferential effects of varying degrees of success and failure. He found that the greater the distance between the subject's stated MGL and the score he received, the larger the tendency to shift the next goal estimate; however, he did not confirm a related hypothesis that reinforcement (or choice) value of the activity would tend to influence the size of the shifts.

Summarizing the various studies above, we are able to conclude that the following points have been demonstrated at a reasonable level of confidence: (1) reinforcement (usually called "success" or "failure") tends to generalize from one situation to another, at least in terms of physical dimensions of similarity; (2) there is at least tentative evidence that homogenous motivation tends to increase generalization of expectancies from one task to another; (3) differential intensity of reinforcement (defined as distance between the expected event and the event actually occurring) differentially influences amount of generalization; (4) methodologically, results are influenced by the manner in which expectancy statements are obtained; (5) the level of aspiration method is sufficiently reliable for experimental use and provides a way of quantifying expectancy as a variable.

A third hypothesis in this study is concerned with the effect of the preference value of the reinforcement upon
the generalization of expectancy statements. Of the large number of studies relating to preferences and reinforcement, two are most relevant to this particular study. Marks (28) has attempted to show the effect of desirability of outcome on the subject's estimate of objective probability of outcome. Using a card guessing procedure, she demonstrated that the expectancy statement which a child would give concerning whether he would draw a picture card from the pack was dependent on his knowledge of how many picture cards were in the pack and also whether the picture was the outcome which gained him a score point or not. Desirability appeared to have a strong effect on stated expectations.

Jessor (22) in his study sought to control preference or reinforcement value for his subjects by presenting the outcome of his experimental situation as being either related or unrelated to the subjects' major subject matter area. His results did not confirm the hypothesis that higher reinforcement value should produce greater shifts in expectancy in either direct or in generalization measures. Jessor's study was carried out within the framework of social learning theory and is in many ways similar to the present investigation. It will be noted that in the present study the method of controlling preference value is in
terms of the subjects' known responses to a preference list of activities and seeks to analyze the components of the reinforcement areas more closely than had the measure used by Jessor.

An earlier study in social learning theory by Crandall (5) deserves special mention. Crandall was interested in the generalization of freedom of movement, corresponding to a molar clinical view of a number of expectancies, along a dimension of need-relatedness. Briefly, he studied the effects of a frustrating physical skills test on TAT-like stories told subsequently. The pictures were designed to elicit stories in three areas -- physical skills recognition, academic recognition, and love and affection from peers. Groups were equated for freedom of movement in their stories in these three areas beforehand. It was found that judges could reliably differentiate decreases in freedom of movement in stories of subjects who had been subjected to the frustration procedure. The effects of the frustration tended to generalize in the manner predicted, i.e., there was most decrease in physical skills recognition stories, next in academic recognition, and least in love and affection from peers. Thus, the clinically predicted gradient of need-related generalization was obtained.
Jessor (22), likewise, found that the changes produced in expectancies for the reinforcement task (arithmetic problems — a "commerce aptitude test") generalized to the expectancy statements for his vocabulary task, pursuit rotor task, and a social skills task. Again the gradient followed functionality of need as it had been predicted on a clinical basis.

However, in both these studies the possibility had not been eliminated that the gradients obtained could also have resulted from some underlying dimension of physical stimulus similarity. The present design utilizing the same two tasks for all conditions and attempting merely to vary the need-relatedness of them by use of verbal structuring, is intended to control the stimulus similarity of the situations as much as possible.

EXPERIMENTAL HYPOTHESES

The purpose of the present study is to test a hypothesis derived from social learning theory about the way in which generalization of expectancies occurs and to study some of the conditions which influence this generalization. The hypothesis of generalization on the basis of functionality of reinforcements (or need-relatedness) is derived from a basic postulate of Rotter's system regarding goal direct-
edness of behavior. The methodology used represents a modified form of the level of aspiration paradigm, which has been demonstrated by previous research to provide a ready approach to such problems. Much of the rationale for the particular design used is related to the general area of semantic generalization.

The level of aspiration paradigm was chosen rather than some other because it provides an estimate of expectancy followed by occurrence of a score (a reinforcement.) The theoretical implications of the hypotheses are, however, not limited to level of aspiration investigations. Within social learning theory expectancy is always one determiner of the occurrence as non-occurrence of a response. Expectancy is no more limited to level of aspiration than habit strength is limited to T-mazes.

The design used permitted variation of the condition of need-relatedness between two tasks by means of the verbal instructions given for each task, while the stimulus characteristics of the tasks remained constant. Two ambiguous tasks were described to each subject and he was asked to estimate what score he thought he was likely to receive on each. Then one task was administered and a "score" was given each subject. Scores were assigned systematically to
exceed the subjects' estimates by a given amount. Then subjects were asked to re-estimate what they thought they would obtain on the task they had not yet performed.

The hypotheses to be investigated were the following:

1. Expectancy statements for one task will shift after positive reinforcement on another task to a significantly greater extent when both tasks are perceived by subjects as leading to the same reinforcement as compared to when they are perceived as leading to different reinforcements.

2. Expectancy statements for the generalization task will tend to shift significantly more when the size of the disparity between the initial expectancy and the score received is larger.

3. Expectancy statements for the generalization task will tend to shift significantly more where the reinforcement value of obtaining the score is relatively higher for the individual.

These hypotheses may be restated in null form:

1. Expectancy statements on one task, after reinforcement on a second task, will not differ when the two tasks are perceived as need-related as compared to general-
ization when the two tasks are perceived as non need-related, beyond that which might be accounted for in terms of errors of random sampling.

2. Generalization of expectancy statements will not differ between groups who differ in size of expectancy disparities, beyond what might be accounted for in terms of errors of random sampling.

3. Generalization of expectancy statements will not differ between groups who differ in the need value (or preference value) for the goals proffered beyond what might be accounted for in terms of errors of random sampling.
CHAPTER III

METHODOLOGY

SUBJECTS

A total of 189 subjects, ranging in college level from freshman to senior, took part in the experiment. The majority of these students were freshmen and sophomores; all were enrolled in Psychology 401 and participated in this experiment in order to fulfill a course requirement. Of this group, 169 subjects were seen in small groups consisting of six to eleven people; 20 were seen individually.

Since the outcome of the experiment hinged upon the subject's understanding of the verbal instructions and structuring which the experimenter gave the tasks, it was felt that small groups might help to insure that each subject could receive what individual attention he required and be free to ask whatever questions he found necessary. However, it became evident during the course of the experiment, that many subjects did not adequately understand the directions or the purpose of the tests.

In order to obviate some of the difficulties involved in group administration of the experimental tasks,
It was decided to run a supplementary experimental group on an individual basis. Twenty subjects were solicited from the Psychology 401 sections. Subjects volunteering for this part of the study were not supposed to have participated in the group form of the experiment. In this part of the investigation each subject was asked at the end of the experiment, as a part of a short interview, whether they had heard anything about the nature of the experiment. It was explained that the experimenter understood they could not help hearing something which someone else might thoughtlessly have said. It was decided beforehand to rule out the data from any individual who gave evidence of knowing anything more specific than that the experiment had something to do with personality tests.

Since the major portion of the subjects were seen in twenty small groups during a period of one week in the winter quarter of 1952, it was necessary to combine the twenty subgroups into four large groups for purposes of experimental treatment. The experimental sessions were distributed throughout the day from eight o'clock to four o'clock, and throughout the days of week from Monday through Friday. Each subgroup was numbered and then by means of a table of random numbers the twenty subgroups
were combined into four larger groups. Thus the treatment which any subgroup received was determined in advance of the collection of any data. Although attrition in the various small groups varied considerably, this procedure produced groups very nearly equal in size and well balanced in numbers of males and females.

Protocols of two subjects were eliminated from the data because the subjects failed to follow instructions in the first test, and to have given them scores would have caused other subjects to question the validity of the experimental rationale presented. Another subject was not included because of a language handicap so serious that she refused to estimate her probable score on the word association task. Since the design of the experiment called for the giving of scores above the subject's estimate of his probable score, it was decided beforehand to eliminate arbitrarily any case in which the subject's first estimate was 86 or higher. No cases eliminated by the use of this criterion.

Since the nature of the experiment made it imperative that subjects not communicate with each other about the experimental tasks employed, each group was asked to preserve the secrecy of the procedure. The experimenter made
an informal check of each group during the administration of
the ink blot task. Any subject who did not appear to be
conscientiously interested in the task might have been sus­
ppected of being poorly motivated or antagonized by the situa­
tion. There was no subject who did not seem to be at least
moderately interested. A further check was made with those
subjects who were seen individually concerning what they
might have heard from previous subjects. The results of
these interviews indicated that the "secret" had been well
kept.

EXPERIMENTAL TASKS

Two experimental tasks were employed with each sub­
ject. These consisted of a list of words which was pre­
sented as a word association test and of a series of ten
ink blots, each with a multiple choice list of ten alter­
native responses.

The tasks were described to the subjects as two
personality tests in which the experimenter was interested.
The announced purpose of the experiment was the validation
and refinement of these measuring instruments.

The twenty-five word list was selected from the
Kent Rosanoff Free Association Test. The list was short­
ened to meet the time limits of the experiment. The list
of words used is presented in Appendix A.

The ten ink blots used were selected from a larger group which had been made by the experimenter. These blots had been informally pretested with fourteen of the writer's fellow students and acquaintances. The ten blots used were those which produced the most responses in a free situation. The lists of ten alternative responses for each blot were compiled from the responses given in the free situation.

During the group administration of the experiment, the experimenter needed a period of time in which to "score" the first of the tests. During this time, a form of the incomplete sentences test was administered; this form was the one used by Rockwell (38). The purpose of this part of the procedure was to prevent any subject's attending closely enough to the experimenter's behavior to detect that the test records were not really being scored at all. The incomplete sentences test was presented as entirely independent of the two experimental "tests." Subjects were told, in fact, that this test was part of another research and that the experimenter had agreed to collect this data to help someone else.

Several subjects raised the question of how either
one or the other or both of the experimental "tests" could possibly measure the variable named in the instructions. Whenever such questions occurred the experimenter requested that they be withheld until the end of the session. When an explanation was given, it was in terms of empirical selection and weighting of responses. Usually, the experimenter said something like, "Well, to begin with, we obtained two large groups of people -- one who were good leaders (or well adjusted with the opposite sex) and one who were poor leaders (or poorly adjusted with the opposite sex). We then asked them to take these tests. We noted which answers were characteristic of good leaders and which of poor leaders. The weight which any answer gets in the scoring is determined by the frequency with which it was given in both groups." This explanation seemed to satisfy all subjects.

These same two tasks were administered to all subjects, but with different sets of instructions concerning what the tests were supposed to measure. Each set of instructions contained three major parts: (1) a description of the physical characteristics of the test and the way in which responses to it should be made; (2) a brief statement of what the test was supposed to measure; and (3) a range of possible scores, a pseudo-average, and a request for an
estimate of what the subject thought his most likely score on the test would be. Only the second portion of the instructions was varied to correspond with the experimental group in which the subjects were to be included. In addition, each test form was plainly titled either "Scale of Heterosexual Adjustment" or "Scale of Leadership" to correspond to the variation in the structuring given in the instructions. One test was called the "Minnesota Word Association Scale" and the other the "Delta Ink Blot Scale."

Insofar as possible the wording to the instructions, other than the sentence regarding what the test was supposed to measure, was kept constant. This step was deemed necessary, even at the price of sounding somewhat repetitious at times, to eliminate the possibility of adding uncontrolled sources of differences to the tests through variations in the instructions.

The word association and multiple choice ink blot tasks were originally selected as experimental tasks because of two characteristics. First, both were probably sufficiently ambiguous that subjects would have no way of "knowing" definitely what such tests should measure. Second, the two tasks were dissimilar enough so that generalizations made on the basis of stimulus similarity would tend to be some-
what reduced.

The ink blot "test" was always administered first. The blots had been made with black and green ink on 8½ by 11 inch, 20 pound bond paper and mounted on sheets of white construction paper. The blots were displayed one by one by the experimenter in front of the room. Each subject was invited to request a closer inspection of any blot at any time he wished. Each blot was displayed until everyone in the group indicated his readiness to go on to the next one. Subjects were told to select their responses from the ten provided for each blot on the answer sheet. At the end of the administration of the ink blots, test booklets were collected. The experimenter explained that these tests could be scored very quickly by using a scoring stencil. Incomplete sentence blanks were then distributed to the subjects and the experimenter proceeded to "score" the ink blot test. In each case the ink blot task was the one on which the score or reinforcement was given.

When the experimenter completed "scoring" the ink blot tests, subjects were returned their scores. Each subject received a slip of paper on which his last name and a number was written. The experimenter explained orally that the number was their score obtained on the Delta Ink Blot
Scale of Leadership (or Heterosexual Adjustment).

The experimenter then passed out the second test booklet in preparation for the word association test. The instructions were briefly reviewed and the purpose of the test was mentioned again. The subjects were asked to re-estimate what they thought they would get on the word association test. The words were read at the rate of one every ten seconds. Protocols were then collected. Subjects received no scores on this test.

THE INSTRUCTIONS

In a sense the nature of the experimental tasks involved was incidental to the design of the experiment, except for the two characteristics mentioned above, i.e., that they should be ambiguous and dissimilar. Both tests were labeled personality tests in the prospectus which was circulated in the 401 sections and also in the general introduction which each group was given at the beginning of the experiment.

It was hoped that both the word association technique and ink blot technique were enough familiar to the layman that these tasks would be accepted as personality tests. It was also hoped that the tradition of disguised intent of projective personality tests would aid subjects.
to rely upon the experimenter's interpretation of the what
the particular test was supposed to measure. Both tasks
seemed to hold some intrinsic interest for the college pop-
ulation which was used in the study.

Since the purpose of this study was to test the
hypothesis that generalization of expectancies occurs along
dimensions of need-relatedness, the essential purpose of the
design was to vary the condition of need-relatedness of the
two tasks while holding the stimulus characteristics of the
tasks constant. This purpose was accomplished by means of
presenting each subject with exactly the same tasks and re-
quiring him to do exactly the same things with them. The
condition which varied from experimental group to experi-
mental group was the nature of the verbal structuring which
the subject received regarding the purpose of the test --
that is, what the test was supposed to measure. Some sub-
jects were told that the two tests measured the same aspect
of personality, while others were told that these two tests
measured different aspects of personality.

The instructions for each test consisted of three
parts: (1) a description of the physical characteristics
of the test and the instructions necessary to perform the
task; (2) a short statement of what the test purported to
measure; and (3) a request that the subject make an estimate of what he thought his most likely score would be. Fictitious averages were supplied to add verisimilitude to the process of estimating. Only part two of the instructions was varied. It was varied so that four different experimental conditions were obtained: (1) where subjects were told that both tests were measures of leadership potential; (2) where subjects were told that both tests were measures of adjustment in relationship with members of the opposite sex and potential marriage adjustment; (3) where subjects were told that the ink blot test measured leadership potential and the word association test, heterosexual adjustment; and (4) where subjects were told that the ink blot test measured heterosexual adjustment and the word association test measured leadership potential.

Each test was labeled according to the variation of the instructions. Instructions, test descriptions, and answer sheets for the ink blot test were combined into a test booklet. The four forms of the test booklet are included in Appendix B. New booklets containing a brief review of the instructions for the word association test and an answer sheet were given out before the word association test was administered. The various forms of these booklets
are included in Appendix C.

While previous studies by Crandall (5) and Jessor (22) had attempted to test the hypothesis of need-related generalization, their tests were based primarily upon an a priori evaluation of the degree of need-relatedness of the tasks involved. Each of these studies demonstrated a gradient of generalization of expectancy changes such as could have been predicted from the culturally defined need-relatedness of the task; however, in neither study was it possible to eliminate the fact that the gradients might also have been accounted for on the basis of some dimension of stimulus similarity. In order to study generalization on the basis of need-relatedness, apart from stimulus similarity generalization, it is necessary to control for the physical stimulus characteristics of the tasks used.

The two need areas selected for use in this study represent two of the six which are at present used in the working formulation of Rotter's social learning theory. In social learning theory terms, needs of individuals in this culture have been broadly categorized into needs for: recognition, physical comfort, love and affection, dependence, dominance, and independence. Structuring within the area of heterosexual goals was intended to sample goals under the category of love and affection, while structuring within the
area of leadership potential was intended to sample goals under the categories of dominance and recognition. An unpublished research by Rockwell (38) indicates that these sets of goals are relatively independent and do appear with some internal consistency within the college culture.

It is recognized that these definitions of need areas and degrees of goal relatedness are culturally defined in terms of a group. It would be expected that the degree to which need areas abstracted in this manner would correspond to the need areas abstracted for any particular individual would vary. Thus, it might be predicted that demonstration of the hypothesis based on a method utilizing such cultural definitions would apply only to groups and perhaps only to relatively large ones.

GENERAL PROCEDURE

In all, twenty small groups, varying in size from 6 to 11 persons were run during a period of one week. Subjects volunteered to come at times which were convenient for them. The schedule of times at which groups met covered the entire school day and all five days of the week. Subjects met in a small classroom and were asked to take a seat around the large table in the center of the room. After the group was assembled, the following short introduc-
tion was given by the experimenter:

You are going to be given two personality tests as a part of a research program which we are carrying on in this department. Both tests will be described for you in detail in the introductions which follow. Both of these tests are new and at present are just being tried out. We have already tried them out with students very much like you at another large university.

We are also interested in the ways in which people estimate what their probable scores will be before they have taken a test. In order to give you some idea of what you should be able to make on these tests, we will give you some of the results of students who have taken the tests before.

The first set of test booklets was then passed out. These booklets contained descriptions of both tests and answer sheets for the ink blot test. Subjects were asked to fill in the personal data sheet attached to the front of the booklets.

The experimenter read each test description and the instructions aloud while subjects followed in their booklets. At the end of the description of the word association test, each subject was asked to write in the blank provided the score which he thought that he was most likely to get on that test. At the end of the description of the ink blot test, each subject was asked to make the same estimate regarding that test, and in addition to say what score
would be the lowest one which he could still accept without dissatisfaction on the ink blot test.

At this point the experimenter answered any questions which directly concerned what the subjects were to do in responding to each task. If questions arose about the construction of the test or scoring, the experimenter asked that they be postponed until the end of the session.

Subjects were then instructed to turn to the answer sheets and each blot in the series was displayed in turn long enough for every subject to make two choices. When the ink blot test was completed, the booklets were collected and the experimenter said:

Since this test is set up on a multiple choice basis it is possible to score it rather quickly by using a key. I'm going to score your tests now so that you may have your scores before you leave. While I'm doing that, I have another test here I would like you to do. It is called an incomplete sentences test. It has nothing to do with the test you have just taken or with the test which you will take when I finish the scoring. To be quite honest, it is not part of this experiment at all, but it is some extra data which we are trying to collect. We thought you might not mind doing it while you were waiting.

The incomplete sentences blanks were then distributed.

The experimenter turned to the "scoring" procedure. This consisted of flipping quickly through the booklet and
noting the score which the subject stated he was most likely to make on the ink blot test. To this estimate the experimenter added seven points or fourteen points, depending upon whether the subject was assigned to the small or large expectancy disparity groups. The experimenter inspected each response recorded on the answer sheet and very ostentatiously compared the subject's responses to a series of numbers in columns which had been typed on a card. The experimenter copied the subject's name on a slip of paper and also the score assigned to the subject. No subject, so far as the experimenter could tell, questioned the validity of the scoring procedure.

When all subjects had completed their sentences the experimenter collected the incomplete sentence blanks and handed back the scores. There was some effort to control subjects communicating scores to each other by means of telling them that the experimenter assumed that they wished their scores to be confidential. However, since they were not directly instructed against talking about scores, some subjects did exchange comments.

Subjects were asked to bring up questions which they had and at this point the "construction" of the ink blot test (if that question had arisen) was explained. Many
subjects asked again what the average score of students who
had taken the test previously was.

Booklets for the word association test were passed out and the experimenter reviewed the instructions for this test. Subjects were asked to re-estimate what they now thought they might make on this test.

The experimenter read the list of words aloud, repeating each word twice. The subjects wrote their responses on the answer sheet provided. These booklets were collected and the experimenter explained that this test was much more complicated to score, and therefore scores on it would not be available today.

Subjects were thanked for their participation and cooperation and requested not to discuss the experiment outside. They were offered the reason that to talk about the tests would invalidate them for people taking them later. Although the experimenter had anticipated difficulties arising out of possible communication between groups, no such problem appeared. Throughout the entire week subjects seemed interested in performing both experimental tasks, and no one seriously questioned the instructions; later when a group of subjects were seen individually and interviewed afterward concerning their reactions to the experiment, no subject in-
dicated that he had heard anything about the experiment more specific than that it involved taking some personality tests.

A small group of subjects (N = 20) were seen individually a short time after the group collection of data. Each of these subjects was run through a slightly modified version of the experiment and then briefly interviewed concerning it. Each of these subjects was met in a waiting room and escorted to the room where the experiment was conducted. The experimenter introduced herself and generally introduced the situation in the following words:

First, I would like to know if you participated in the group form of this experiment?

Have you heard anything about this experiment? (If so) What have you heard about it?

You are going to be given two personality tests as a part of a research project we are carrying on in this department. Both these tests are new and at present are just being tried out; however, we have given them once before to a group of about 3000 students to another large university.

One of the things in which we are interested in this study is how people go about estimating their test scores before they have taken a test. The idea is for you to estimate the score which you think you are most likely to get on both these tests as accurately as possible. In order to help you do this, I will describe the tests for you and tell what the average scores of the students who have taken them previously were. Remember that you are to estimate your most likely score as accurately as you possibly can.
A set of test booklets was given each subject and the experimenter read the instructions aloud. The subject was then asked to make an estimate of what he felt his most likely scores would be. He was asked to tell the experimenter and the experimenter recorded his estimate on the front of the test booklet. The ink blot test was then administered.

The experimenter scored the ink blot test while the subject watched. The experimenter, recalling what estimate the subject had given, quickly added either the seven or fourteen points to it (determined by the group to which the subject had been assigned.) The experimenter wrote numbers from one to five beside each response which the subject had indicated; some attempt was made to distribute numbers so that the score would look valid. The experimenter then pretended to add up the score rapidly. The "score" was written with a flourish at the top of the paper and the experimenter announced, "You made a score of [___]; that's somewhat better than you thought you'd make."

The instructions for the word association test were then reviewed and the subject was asked to re-estimate what he thought he would make on this test. The word list was read aloud by the experimenter while the subject wrote out
his responses. The experimenter mentioned the difficulty of scoring this type of test and apologized for not being able to offer a score on it.

Since only a small number of subjects could be seen individually, it was decided to treat all of these subjects within the second experimental condition. Form 1022B of the test booklets was used. All subjects were told that both tests were measures of leadership potential. Half these subjects were given scores seven points above their estimates and half were given scores fourteen points above their estimates. It was decided arbitrarily, before the collection of data, that odd numbered cases should receive 7, while even numbered cases should receive 14 points.

At the conclusion of the experiment, the experimenter talked with each subject to determine whether or not he had had previous information about the experiment. Apparently the secret was well kept.

Upon leaving the room, each subject was thanked for his cooperation and requested not to discuss the experiment outside. He was told that such discussion might invalidate the tests for other people.

SIZE OF EXPECTANCY DISPARITY

The aspect of the investigation described previously
was designed to test the hypothesis of need-related generalization. The possibility of using the same data to test an additional hypothesis regarding changes in expectancies as a function of the size of the disparity between the expectancy statement and the "score" received was also considered. Briefly, the hypothesis was to test whether more generalization would occur along the dimension of need-relatedness as the size of the disparity between the expectancy and the score obtained was larger. Previous work by Jessor (22) and others had indicated that size of change in expectancy statements might be predicted from the size of the expectancy disparity.

In order to vary systematically the size of the disparity each experimental group and each control group were divided into two subgroups. One subgroup received a "score" 7 points above their stated expectancy, while the other received a "score" 14 points above their stated expectancy. Assignment of any subject to either of these groupings was arbitrarily determined by alternating cases in the order in which the papers were collected. That is, the first paper collected in data group 1 received 7, the second paper 14; the first paper in data group 2 received 14, the second paper 7, etc.
When a subject is given a task with a range of possible scores and asked to predict as accurately as possible what score he thinks he is likely to get on this task, it is assumed that the score selected represents the one which for him has the highest subjective probability of occurrence, that is, his modal expectancy score. It is further assumed that scores higher or lower than the score selected have lower subjective probabilities of occurrence, and that this probability varies as the size of the interval between the stated expectation and these other scores varies. That is, if a subject selects 55, 55 is the score which he feels he has the highest expectancy of obtaining; other scores would likewise have expectancies attached to them, but these expectancies would be smaller; and the expectancy for receiving a 45 would be somewhat smaller than the expectancy for receiving a 50, etc.

It might be predicted then that the further the "score" received lay from the modal expectancy score, the greater the effect it would produce in shifting the modal expectancy score. Concretely we would anticipate greater shifts in the estimates of the group receiving fourteen points more than their estimate than in the group who received only seven points.
The prediction concerning the relative size of changes in expectancies and the size of the disparity would not be expected to hold, however, in any case where the modal expectancy fell below the minimal goal level. For this reason, each subject was requested to state a minimal goal level for the ink blot task. No subject, in the group studied, stated a minimal goal level higher than his expectancy.

COMPOSITION OF GROUPS

Four groups, each containing two subgroups, were used in the research:

Group A  Heterosexual adjustment group

1A  small disparity n = 21
2A  large disparity n = 21

Group B  Leadership potential group

1B  small disparity n = 21
2B  large disparity n = 24

Group C  Leadership potential and heterosexual adjustment group

1C  small disparity n = 20
2C  large disparity n = 22

Group D  Heterosexual adjustment and leadership potential group

1D  small disparity n = 20
2D  large disparity n = 21

In this way, it was hoped to study the effect of
the size of the expectancy disparity in conjunction with each of the variations in the condition of need-relatedness.

**NATURE OF THE REINFORCEMENT**

Ideally, a study such as this one should include groups in which scores are given both above and below the modal expectancy score. However, in the interest of economy it was decided to deal first with groups in which scores given were always above the estimates. Also, few previous studies have dealt systematically with success experiences -- that is to say, positive disparities.

**REINFORCEMENT VALUE**

Still another hypothesis was included in this study. By obtaining a measure of the relative value of the particular reinforcement offered by the experimental procedure to which the subject was exposed we could test the hypothesis that higher need value tended to be accompanied by more generalization of expectancies.

It was arranged for a choice form to be administered to all Psychology 401 sections about two weeks before the rest of the data was collected, so that no connection would be established between this procedure and the experimental procedure elsewhere. A sample of this choice form is given in Appendix D. These forms were administered by the in-
structors and it was hoped that subjects would not realize that the forms were related to the rest of the study. In most cases the instructors themselves were not aware that the forms were a part of the later study.

The choice form asked subjects to place a list of six kinds of satisfactions in rank order. Heterosexual and leadership satisfactions were included in the list along with four others. The rankings made by individuals who served as subjects in the latter half of the experiment were noted.

PROPOSED TREATMENT OF THE DATA

The data will consist mainly of distributions of differences between expectancy statements made initially in the situation and expectancy statements made by the same individuals after the "success" experience. The tests of significance of differences will be mainly based upon t's. A few supplementary comparisons will be made in terms of chi square.
CHAPTER IV

RESULTS AND DISCUSSION

The purpose of this chapter is to present the findings of the study with regard to three major hypotheses which the study set out to test and to make whatever supplement comparisons seem necessary to clarify the relationships in the data. The three major hypotheses to be tested are: (1) whether generalization occurs on the basis of need-relatedness of behaviors; (2) whether differences in the size of the expectancy disparity produce differences in the amount of generalization present; and (3) whether generalization occurs to a greater extent in need areas where behaviors have a higher preference value than in need areas where behaviors have a lower preference value. Supplementary minor hypotheses will also be tested concerning: the effect of the minimal goal level on the increment of expectancy; and the direct effect of the received score on the modal expectancy of the individual for the same task; and differences between data collected in small groups and data collected individually.

In most cases the measure of change in expectancy
will be a measure of change in expectancy for the second task (word association test) after receiving a score on the first task (the ink blot test). In a few cases subjects were asked after they received their scores what they thought they might make on the ink blot test if they were to take it a second time. The results of this part of the study will be presented in detail later in this chapter; however, in general, this direct measure of the effect of the reinforcement on the stated expectancy indicated that nearly all subjects shifted their expectancies for the reinforcement task (ink blot test) in the upward direction.

The statistical tests involved utilize mainly the distributions of differences between the first expectancy statement for the word association test and the second expectancy statement for the same task, made after the subject was informed of his "score" on the ink blot test. These distributions tend for the most part to be normal or else slightly positively skewed; therefore, it was possible to use the \( t \) test of mean differences throughout. A few supplementary comparisons were made using chi square.

**GENERAL DESCRIPTION OF THE EXPERIMENTAL DATA**

To review briefly, groups A and B were experimental groups differing only in the specific verbal structuring of
the goal involved in the testing; groups C and D were
the control groups. Inspection of the means of the initial
estimates of all groups on both tasks indicates that the
average expectancy statement fell somewhere slightly above
the mid-point of the distribution of possible scores.
Table 1 presents a summary of the means and the variances
of all the groups on both tasks.

**TABLE 1**

**SUMMARY OF THE MEANS AND VARIANCES OF THE
INITIAL EXPECTANCY STATEMENTS OF ALL
GROUPS ON BOTH TASKS**

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>INK BLOT TASK</th>
<th>Variance</th>
<th>N</th>
<th>WORD ASSOCIATION TASK</th>
<th>Mean</th>
<th>Variance</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 A</td>
<td>57.30</td>
<td>55.2</td>
<td>20</td>
<td></td>
<td>62.00</td>
<td>99.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 A</td>
<td>59.67</td>
<td>54.5</td>
<td>21</td>
<td></td>
<td>59.95</td>
<td>158.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 B</td>
<td>52.43</td>
<td>93.24</td>
<td>21</td>
<td></td>
<td>57.43</td>
<td>203.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 B</td>
<td>55.21</td>
<td>115.23</td>
<td>24</td>
<td></td>
<td>58.83</td>
<td>87.86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 C</td>
<td>50.90</td>
<td>67.10</td>
<td>20</td>
<td></td>
<td>56.60</td>
<td>20.84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 C</td>
<td>53.41</td>
<td>123.14</td>
<td>22</td>
<td></td>
<td>56.64</td>
<td>76.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 D</td>
<td>56.50</td>
<td>97.75</td>
<td>20</td>
<td></td>
<td>59.70</td>
<td>80.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 D</td>
<td>58.14</td>
<td>126.45</td>
<td>21</td>
<td></td>
<td>62.67</td>
<td>12.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>55.49</td>
<td>89.36</td>
<td>169</td>
<td></td>
<td>59.18</td>
<td>72.41</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key to groups:**

A groups - both tests presented as measuring heterosexual adjustment
B groups - both tests presented as measuring leadership potential
C groups - one test measured heterosexual adjustment; the other, leadership potential
D groups - one test measured leadership potential; the other, heterosexual adjustment
1 groups - subjects receiving seven points
2 groups - subjects receiving fourteen points
A test of the significance of the over-all differences in means using analysis of variance indicates that there were no significant differences between groups in initial expectancy statements for the word association task. Tables 2 and 3 present variance estimates and the resulting values of $F$ for these comparisons. The test used here is one described by McNemar (29, p. 247) for use in instances where groups of unequal size are involved.

**TABLE 2**

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Variance estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>1314.9</td>
<td>7</td>
<td>187.84</td>
</tr>
<tr>
<td>Within groups</td>
<td>10908.7</td>
<td>161</td>
<td>67.76</td>
</tr>
</tbody>
</table>

Value of $F$ is equal to 2.77, which is significant at the 1 per cent level of confidence.

**TABLE 3**

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Variance estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>675.0</td>
<td>7</td>
<td>96.43</td>
</tr>
<tr>
<td>Within groups</td>
<td>12292.2</td>
<td>161</td>
<td>76.35</td>
</tr>
</tbody>
</table>

Value of $F$ is equal to 1.26, which is not significantly different from what would be expected on the basis of errors of random sampling.
Although there are apparently some mean differences between groups with respect to their initial estimates on the ink blot task, these differences should not affect the test of the experimental hypotheses. No significant differences are present in the initial expectancy statements for the word association task. The insignificant value of F indicates that all groups were homogeneous with respect to modal expectancy statements for the word association task before the differences produced by the experimental design. The latter finding is of importance since the test of the hypotheses is dependent upon a change in this measure.

THE EFFECT OF THE SPECIFIC NEED VARIABLE

The question arises whether or not the generalization which did occur in the expectancies might not be a function of the specific need variable used in the instructions rather than the fact that these instructions created the intended condition of need-relatedness. For this reason two experimental groups, differing only in the specific attribute which the tests were supposed to measure, were used. In experimental group A, the tests were presented as measure of heterosexual adjustment and in experimental group B, they were presented as measures of leadership potential. Similarly two control groups were included. In
addition to providing some check upon the effect of the specific need variable, this design should also provide a check on the assumption that either task had equal face validity for either set of instructions.

Summaries of mean changes in modal expectancy scores are presented in Table 4. Table 5 presents between experimental group and between control group comparisons of changes in modal expectancy scores.

**TABLE 4**

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean Change</th>
<th>S.D.</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3.46</td>
<td>5.96</td>
<td>41</td>
</tr>
<tr>
<td>B</td>
<td>4.40</td>
<td>4.86</td>
<td>45</td>
</tr>
<tr>
<td>C</td>
<td>2.12</td>
<td>4.84</td>
<td>42</td>
</tr>
<tr>
<td>D</td>
<td>1.15</td>
<td>6.66</td>
<td>41</td>
</tr>
<tr>
<td>A plus B</td>
<td>3.80</td>
<td>5.46</td>
<td>86</td>
</tr>
<tr>
<td>C plus D</td>
<td>1.52</td>
<td>5.60</td>
<td>83</td>
</tr>
</tbody>
</table>

**TABLE 5**

<table>
<thead>
<tr>
<th>Comparison</th>
<th>df</th>
<th>t</th>
<th>P level</th>
</tr>
</thead>
<tbody>
<tr>
<td>A to B</td>
<td>84</td>
<td>1.12</td>
<td>&lt;.50 &gt;.10</td>
</tr>
<tr>
<td>C to D</td>
<td>81</td>
<td>.76</td>
<td>&lt;.50 &gt;.10</td>
</tr>
</tbody>
</table>

Comparison of groups A and B yields a t value of 1.12 which does not allow the null hypothesis that these two samples were drawn from the same population to be refuted. It may be concluded that specific variations in
need structuring given the task do not produce significant differences in the degree of generalization. If A and B are not significantly different with respect to mean changes in generalized expectancies, it may be possible to combine them for purposes of further tests of the experimental hypotheses.

Differences between groups C and D yielded a $t$-value of .76 which does not allow the null hypotheses that these two samples were drawn from the same population to be refuted. It appears that neither matching of instructions and experimental tasks tended to produce significantly more or less generalization than the other. Neither task had significantly more face validity for one set of instructions than it had for the other. Groups C and D may also be combined for further comparisons of mean changes in expectancies.

**NEED-RELATED GENERALIZATION**

Mean changes in modal expectancy statements for the word association task indicate that some generalization took place in all groups, except control group D. Values of $t$ and their corresponding probability levels are presented in Table 6.
TABLE 6

SIGNIFICANCE OF MEAN CHANGES IN GENERALIZED EXPECTANCIES FOR ALL GROUPS

<table>
<thead>
<tr>
<th>Comparison</th>
<th>df</th>
<th>t</th>
<th>P level</th>
</tr>
</thead>
<tbody>
<tr>
<td>A to 0</td>
<td>40</td>
<td>3.67</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>B to 0</td>
<td>44</td>
<td>6.00</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>C to 0</td>
<td>41</td>
<td>2.80</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>D to 0</td>
<td>40</td>
<td>1.10</td>
<td>&gt;.10</td>
</tr>
<tr>
<td>A plus B to 0</td>
<td>85</td>
<td>6.42</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>C plus D to 0</td>
<td>82</td>
<td>2.46</td>
<td>&gt;.01</td>
</tr>
</tbody>
</table>

It may be assumed that the generalization effects indicated in Table 6 are the end result of all the factors in the experimental and control situations which tended to produce a change in one expectancy as another expectancy was changed. One would anticipate some generalization in all groups since within the framework of the theory, all behaviors of an individual are to some extent need-related; however, more generalization would be predicted in the experimental groups where the extent of need-relatedness is greater.

The general hypothesis of need-related generalization may now be tested by computing the value of \( t \) for the difference in mean changes in expectancy between experimental and control groups. When mean change in expectancy for all the control subjects (groups C and D) is compared to the mean change for all the experimental subjects (groups A and B), the resulting value of \( t \) is 2.68 which has a probability
of occurring on the basis of errors of random sampling less than one time in one hundred. It may be concluded that changes in expectancies tend to generalize more when both behaviors are perceived as having a common directionality, i.e., being need-related, as compared to when they were perceived as having different goals. A summary of these results is presented in Table 7.

TABLE 7

SIGNIFICANCE OF DIFFERENCES IN CHANGES IN GENERALIZED EXPECTANCIES BETWEEN NEED-RELATED AND NON NEED-RELATED TASKS

<table>
<thead>
<tr>
<th>Comparison</th>
<th>df</th>
<th>t</th>
<th>P level</th>
</tr>
</thead>
<tbody>
<tr>
<td>A plus B to C plus D</td>
<td>167</td>
<td>2.68</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>A to C</td>
<td>81</td>
<td>1.11</td>
<td>&lt;.50</td>
</tr>
<tr>
<td>B to D</td>
<td>84</td>
<td>2.56</td>
<td>&lt;.02</td>
</tr>
<tr>
<td>A to D</td>
<td>80</td>
<td>1.65</td>
<td>&lt;.10</td>
</tr>
<tr>
<td>B to C</td>
<td>85</td>
<td>2.17</td>
<td>&lt;.05</td>
</tr>
</tbody>
</table>

SIZE OF THE EXPECTANCY DISPARITY

Each of the four groups A, B, C, and D included two subgroups of subjects. In each large group, half the subjects received a score 7 points above their stated expectancy for the ink blot test (small disparity group) and half received a score 14 points above their stated expectancy (large disparity group). Table 8 presents the values of t resulting from comparisons of mean changes in generalized expectancies between small and large disparity groups.
within each of the larger experimental and control groups.
From this table it would appear that generalization tends to
occur to a significantly greater extent as the disparity be­
tween expectancy and the score obtained is larger. This
finding appears to obtain under the condition of need-related­
ness but not in the control groups.

**TABLE 8**

**SIGNIFICANCE OF DIFFERENCES IN MEAN CHANGES IN
GENERALIZED EXPECTANCIES BETWEEN SMALL AND
LARGE DISPARITY GROUPS**

<table>
<thead>
<tr>
<th>Comparison</th>
<th>df</th>
<th>t</th>
<th>P level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A to 2A</td>
<td>39</td>
<td>3.70</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>1B to 2B</td>
<td>43</td>
<td>1.40</td>
<td>&lt;.20 &gt; .10</td>
</tr>
<tr>
<td>1C to 2C</td>
<td>40</td>
<td>.50</td>
<td>&lt;.70 &gt; .50</td>
</tr>
<tr>
<td>1D to 2D</td>
<td>39</td>
<td>.51</td>
<td>&lt;.70 &gt; .50</td>
</tr>
<tr>
<td>1A plus 1B to 2A plus 2B</td>
<td>84</td>
<td>3.42</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>1C plus 1D to 2C plus 2D</td>
<td>81</td>
<td>.72</td>
<td>&lt;.50 &gt; .20</td>
</tr>
</tbody>
</table>

Although the difference in mean change in expect­
ancy for experimental group B is not quite significant, the
trend shown is in the direction of significance. When all
S's who received 14 points in both experimental groups are
compared with all S's who received 7 points, a value of $t$
of 3.42 results, which is highly significant.

The question then arises whether or not there is an
interaction effect between the size of the disparity and
the appearance of need-related generalization in the data?

Perhaps it is the generalizations which the subjects
in the large disparity groups make which produce the significance of the differences between the experimental and the control groups. There are indications in Jessor's data (22) that receiving a score which is only slightly above one's expectancy tends to have little effect on subsequent estimates. Also in this study, among the twenty subjects who were seen individually the subjects who received seven points above their expectancies in no case raised their estimates, while seven of the ten S's who received fourteen points raised their estimated scores.

Table 9 summarizes an analysis of the significance of the differences in mean changes in generalized expectancies for the word association task after receiving "scores" on the ink blot task as they occurred by expectancy disparity subgroups.
included in the group used in the experiment; blanks were not available from some subjects owing to absences and other factors.

On these blanks subjects were asked to rank six areas of satisfaction. In this way, a relative ranking of the need value of the reinforcements offered by doing well on the tests was obtained. The hypothesis was that within the experimental groups, the higher the preference value for the particular need variable given by the instructions, the greater would be the tendency to generalize the experience.

As the data is presented, a ranking of 1 indicates highest need value, while a ranking of 6 indicates the lowest. A chi-square test was used for this comparison. Owing to the relatively small number of cases, ranks were combined to produce a four-celled table. Table 10 presents the results of this comparison.

<table>
<thead>
<tr>
<th>Changes in Expectancy</th>
<th>None or negative</th>
<th>Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Group A:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ranking of heterosexual satisfactions</td>
<td>1,2,3</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>4,5,6</td>
<td>11</td>
</tr>
<tr>
<td>Chi square equals .418 (&lt;.90 &gt;.50)</td>
<td>18</td>
<td>23</td>
</tr>
<tr>
<td>Experimental Group B:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ranking of leadership satisfactions</td>
<td>1,2,3</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>4,5,6</td>
<td>5</td>
</tr>
<tr>
<td>Chi square equals 2.86 (&lt;.10 &gt;.05)</td>
<td>13</td>
<td>27</td>
</tr>
</tbody>
</table>

84
### Table 9

**Significance of mean changes in generalized expectancies in groups with varying expectancy disparities**

<table>
<thead>
<tr>
<th>Comparison</th>
<th>df</th>
<th>t</th>
<th>P level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A to 0</td>
<td>18</td>
<td>.421</td>
<td>&lt;.70</td>
</tr>
<tr>
<td>2A to 0</td>
<td>19</td>
<td>5.41</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>1B to 0</td>
<td>19</td>
<td>3.87</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>2B to 0</td>
<td>22</td>
<td>7.99</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>1C to 0</td>
<td>18</td>
<td>1.39</td>
<td>&lt;.20</td>
</tr>
<tr>
<td>2C to 0</td>
<td>20</td>
<td>2.84</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>1D to 0</td>
<td>18</td>
<td>.428</td>
<td>&lt;.70</td>
</tr>
<tr>
<td>2D to 0</td>
<td>19</td>
<td>1.73</td>
<td>&lt;.10</td>
</tr>
<tr>
<td>1A plus 1B to 0</td>
<td>39</td>
<td>2.02</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>2A plus 2B to 0</td>
<td>43</td>
<td>6.16</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>1C plus 1D to 0</td>
<td>38</td>
<td>.719</td>
<td>&lt;.50</td>
</tr>
<tr>
<td>2C plus 2D to 0</td>
<td>41</td>
<td>2.35</td>
<td>&lt;.05</td>
</tr>
</tbody>
</table>

Although there were variations in some of the groups, the table indicates that need-related generalization did occur in some of the small disparity groups to a significant extent, as well as in the large disparity groups. In the control groups there seemed to be more tendency for the generalization which did occur to occur in the case of subjects receiving fourteen points.

**The effect of need value on generalization**

As a preliminary step in this investigation, a preference blank was administered to all sections of Psychology 401. (See Appendix D) Actually, preference blanks were obtained from about 94 per cent of all the subjects.
The value of chi square is equal to .418 for experimental group A; with 1 degree of freedom this value is not significant. The value of chi square for experimental group B is 2.86; with 1 degree of freedom this value indicates some tendency toward a significant difference. The difference which appears in Group B is, however, in the opposite direction from the difference predicted by the hypothesis.

While it cannot be concluded from the above comparison that the hypothesis regarding the effect of need value on generalization has been substantiated this problem deserves further investigation. It should be pointed out that the measurement of need value was so crude in the first place as to make any test of an hypothesis based upon it suspect. The results obtained are ambiguous in their relationship to the hypothesis.

A better test of the hypothesis might be made in a situation where the determination of need-value was based on an actual choice of activities. It is also possible that one could set up a contrary hypothesis to the one offered in this study. Although social learning theory has not yet reached the point where either hypothesis -- of more or less generalization -- is systematically derivable, one could find much clinical evidence to indicate that
ated that the median estimate for all groups was approximately 45. Tabulation of the size of the differences between the expectancy and minimal goal level statements revealed the median difference was 10 points. That is to say, the typical expectancy statement -- minimal goal statement relationship was for the expectancy to exceed the minimal goal level by 10 points. Table 11 presents a chi square comparison of change in modal expectancy level for those experimental subjects whose difference between E and MGL was less than 10 points with those whose difference was more than 10 points. Since "scores" had been given subjects on the basis of their expectancy statements, this procedure compares those whose "scores" were far above their MGL and those whose scores were closer to their MGL. Experimental subjects are those in groups A and B.
those activities which have high need value for individuals also have clearly defined referents for those individuals. It would be possible, using more clearly defined referents as a rationale, to hypothesize that generalization would be less as a reinforcement is more highly preferred.

**SUPPLEMENTARY MINOR HYPOTHESES**

Minimal goal level was a very important construct in earlier formulations of social learning theory. It was defined as the point in a continua of reinforcement above which the occurrence of the reinforcement would tend to increase the probability of future occurrence of the behavior and below which would tend to decrease the probability of occurrence of the behavior. Much later controversy has centered around the problem of whether such a construct could be usefully managed to predict the increase or decrease of expectancies. Some evidence seems to indicate that the necessary predictions can be made from the $1 - E$ disparity and the $1 - MGL$ disparity is not useful for prediction of changes in expectancies.

In this study it was possible to test the usefulness of the $1 - MGL$ disparity as an alternative way of predicting increments of expectancies. Tabulation of the minimal goal level estimates of all subjects for the ink blot task indic-
TABLE 11

CHANGE IN MODAL EXPECTANCY LEVEL IN RELATION TO DISTANCE BETWEEN MINIMAL GOAL LEVEL AND SCORE RECEIVED

Experimental subjects receiving seven points:

<table>
<thead>
<tr>
<th></th>
<th>Less than 10</th>
<th>More than 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>No change or negative change in expectancy</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>Positive change in expectancy</td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>

Chi square equals 1.20 ( < .30 > .20)

Experimental subjects receiving fourteen points:

<table>
<thead>
<tr>
<th></th>
<th>Less than 10</th>
<th>More than 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>No change or negative change in expectancy</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>Positive change in expectancy</td>
<td>7</td>
<td>17</td>
</tr>
</tbody>
</table>

Chi square equals .09 ( < .80 > .70)

Neither of the resulting values of chi square are significant. The relative distance between the least acceptable goal stated and the actual score received does not significantly influence the degree of generalization.

Thus far the study has assumed that the scores which subjects received on the ink blot task had some direct effect on their subsequent expectancies for that task, and...
attention has been directed only toward the indirect measurement of the change in modal expectancy level called for by the generalization hypothesis. The assumption that direct changes in expectancies occur is borne out by previous level of aspiration investigations which have demonstrated that stated goals tend to follow performance, and also by the work done by Jessor (22), where in situations very similar to the ones used in this experiment significant direct changes in expectancy statements were obtained.

Within experimental group B, twenty-eight subjects were asked after receiving their scores on the ink blot test to estimate what they thought they might do on this test if they were to take it a second time. They were asked this question in addition to being asked to re-estimate their scores for the word association task.

The average increase in expectancy score between first and second estimates for the ink blot task was 12.5 points. Of the group of 28 only 1 person changed not at all in his second estimate; one subject changed 25 points. All subjects who changed, raised their estimates. Although the data were not subjected to a statistical test, it would appear that very decided changes occurred in this more direct measure of change in expectancy.
ANALYSIS OF DATA COLLECTED IN INDIVIDUAL SITUATIONS

Inspection of the twenty cases where data was collected individually reveals that of the ten subjects who received seven points more than their stated expectancy, not one raised his expectancy estimate for the second test. Among the ten subjects who received fourteen points, seven raised their expectancy estimates. Although the amount of data is small the question may be asked whether or not the generalization of expectancies was significantly different between subjects seen in small groups and subjects seen individually. Table 12 presents the result of a t test of the significance of the difference between data collected individually and the data collected in experimental group B, where the same instructions and procedure had been used, but subjects had been seen in small groups.

TABLE 12
SIGNIFICANCE OF THE DIFFERENCE BETWEEN DATA COLLECTED IN GROUPS AND DATA COLLECTED INDIVIDUALLY REGARDING THE GENERALIZATION OF EXPECTANCIES

<table>
<thead>
<tr>
<th>Individual data</th>
<th>Sum of values</th>
<th>41</th>
<th>Sum of values²</th>
<th>445</th>
<th>N</th>
<th>20</th>
<th>Mean</th>
<th>2.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group data</td>
<td>Sum of values</td>
<td>198</td>
<td>Sum of values²</td>
<td>1934</td>
<td>N</td>
<td>45</td>
<td>Mean</td>
<td>4.40</td>
</tr>
</tbody>
</table>

\[
t = 1.34 \\
\text{df} = 63 \\
P \text{level} < .20 > .10
The value of \( t \) resulting from a comparison of data collected on an individual and on a group basis is not significant. Subjects seen under the two sets of conditions did not behave in a significantly different fashion with respect to their generalization of expectancies.

**DISCUSSION**

Our first finding indicated that generalization of expectancies, as evidenced by changes in expectancy levels for the word association task after experience with the ink blot task, occurred in both of the experimental groups and in one of the control groups. Since both tasks were initially labelled "personality tests" and since they were administered by the same experimenter, in the same room, during the same session, etc., there were a number of factors present in the situation which would lead subjects to generalize from one task to another. These results could be predicted from the literature on generalization of level of aspiration and also from the previous social learning studies of Crandall (5) and Jessor (22).

Although the present investigation follows the level of aspiration paradigm, it is also a learning paradigm depicting the effect of one sequence of events on the subsequent behavior of the individual. The finding that learning
generalizes, particularly on the basis of the use of language symbols by human beings, has been repeatedly demonstrated. In general, however, owing to kind of designs which have been used, the bases upon which such generalization occurs have been left unanalyzed or else have been interpreted in varying ways.

Within the social learning framework, it is hypothesized that many important relationships between behavior occur on the basis of functionality, and that degree of generalization will vary as degree of functionality varies. Functionality between behaviors occurs where behaviors have led to the same reinforcements in the past; that is, where behaviors have common directionality.

This investigation sought to demonstrate that generalization would occur where behaviors led to the same reinforcements, while holding constant the physical stimulus similarity of the tasks. The results confirm the hypothesis of need-related generalization at a high level of confidence. (Value of $t$ equals 2.68, with a probability level of less than .01 and greater than .001.) Generalization occurred to a significantly greater extent in the groups where the subjects saw the tasks as functionally related to one another as compared to where tasks were seen as non-func-
tionally related.

Both the previous studies by Crandall (5) and Jessor (22) had sought to demonstrate similar hypotheses, however, in each of these studies the definition of need-relatedness was derived from clinical judgments about the culture from which the subjects came and the experimental tasks used. Although both these investigators obtained gradients which could have been predicted on the basis of the judged need-relatedness of the behaviors involved, they were not able to answer objections that the same gradients could have been predicted on the basis of the physical stimulus similarity of the tasks. By using the same tasks in all cases and by varying the condition of need-relatedness through the verbal instructions given subjects, this study attempted to overcome the latter objection. Admittedly, in framing the verbal instructions designed to create need-relatedness, the experimenter utilized some high level abstractions about the culture from which the subjects were drawn.

The particular method chosen to test the hypothesis of need-relatedness in this study is only one of several possible approaches. The particular method is somewhat dependent on several assumptions about the nature of verbal
behavior. In some ways this experiment is a reinterpretation of the area of semantic generalization.

One possibility for further research related to the same hypothesis would be to utilize a series of experimental trials to create the condition of need-relatedness, rather than to depend upon the verbal instructions. For example, a series of three problem solving tasks might be presented to individuals where two of the tasks always lead to the same reward while the third leads to a different reward. By using several groups and a Latin square design, each of the tasks could be paired with the other two and it would be possible to predict and to manipulate the generalization gradient following the experimentally induced pattern of need-relatedness.

The second major hypothesis concerned the effect of the size of the disparity between the expectancy and the occurrence of the actual event on the extent of the generalization. This hypothesis is an outgrowth of the $1 - E$ principle which states that the distance between Expectancy and $1$ is a factor in determining the increment of expectancy on subsequent trials. Correspondingly, this study hypothesized that as $1 - E$ is larger not only will the direct effect on expectancy be larger but its indirect or generalization ef-
fect will also be larger. Within the experimental groups, generalization occurred to a significantly greater extent in the group of subjects who received scores furthest above their expectancies. (Value of $t$ equalled 3.42, with a probability level of less than .001.) This effect was more clear cut in the case of subjects who received the instructions that both tests measured heterosexual adjustment than it was in the groups who were told both tests measured leadership potential. However, the differences within the second experimental group tended to be almost significant and were in the predicted direction. It is possible to conjecture about the source of the varying results here; it is highly likely that in some way the difference between groups A and B is related to the specific referents which the subjects had for the two need areas. It may be that heterosexual adjustment is more clearly defined than is leadership for this college group. Perhaps a seven point difference in a hundred point scale becomes more significant to subjects when the variable is more clearly defined for them.

In a supplement to this study, twenty subjects were seen individually. The experimental procedure was administered in the same way. All subjects in this group were
told that both tests measured leadership potential. Ten of these subjects were given scores seven points above their stated expectancy for the ink blot task, while ten subjects were given scores fourteen points above their expectancies. In the seven point group, no subject raised his second estimate for the word association task; nine did not change at all, while one lowered his estimate. In the fourteen point group seven subjects raised their estimates, two did not change, and one lowered his estimate. Although this data was not treated statistically, the trend apparent on inspection of the data agreed with the finding discussed above. (See Appendix E) As the disparity increases the tendency to generalize also increases.

The third major hypothesis tested in the study remains as yet an empirical hypothesis, not directly derivable from social learning theory at the present time. The results of this portion of the study are somewhat ambiguous. It should be pointed out first the measurement by which need value (or preference) was determined was so crude as to make any test of an hypothesis based upon it suspect; ambiguous results may merely reflect the unreliable method rather than something inherent in the hypothesis tested. For the area of heterosexual satisfactions the hypothesis did not
hold; preference was not related to tendency to generalize. In the area of leadership satisfactions a value of chi-square of 2.86 (1 df < .50 > .10) was obtained. While not significant, there seemed to be some slight tendency for subjects who attached relatively high need value to leadership satisfactions to show less generalization of expectancies. This finding is the opposite of the one predicted by the study.

A better test of the third hypothesis could be made by utilizing a less ambiguous situation. For example, one might work with preferences for simple play activities, either determining preferences in advance or actually manipulating them by a series of pre-experimental trials. Changes in expectancies and the extent to which they generalized with different degrees of preference could then be studied.

In this study the fact was utilized that all of the expectancy statements given by subjects (and therefore all of the scores received) fell above the minimal goal level. It was assumed on this basis that the reinforcement received was positive in all cases and ruled out the possibility that the differences between the small and large disparity groups might be accounted for in terms of differences in "direction" of the disparity. The question arises what is the relation-
ship of minimal goal level to change in expectancy. More specifically, would cases showing larger discrepancies between MGL and E (and thus larger discrepancies between the event and MGL) also show more generalization? The values of chi square obtained from this comparison were not significant; use of the MGL in addition to the expectancy does not result in a better prediction of differential generalization.

We confirmed an hypothesis that receiving a score in excess of the stated expectancy for a task tends to produce changes in the direction of raising of subsequent expectancy statements for that task. This finding is merely a restatement of the well established finding that level of aspiration tends to follow performance in some fashion. Jessor's study (22) would also tend to confirm this direct change in expectancy after reinforcement. Since this problem had been so widely and adequately investigated before, it was made only a minor part of this study. Logically, the hypothesis would have to be assumed before the rest of the study could be undertaken.

Briefly stated, this investigation has confirmed at a statistically significant level of confidence the following:

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1. Some generalization occurred in expectancies regarding the tasks for both experimental groups and for one of the control groups.

2. Degree of generalization of expectancies from one task to another tended to increase as functionality or need-relatedness of the tasks increased.

3. Within the groups where the tests were presented as need-related, as the disparity between the expectancy stated by the individual and the score he received for the task was larger, the tendency to generalize by raising other expectancies was significantly greater.

4. No clear conclusion regarding the effect of need value on generalization of expectancies can be reached from this study.
CHAPTER V

SUMMARY

The present investigation attempts to test three hypotheses concerning generalization of learned behaviors derived from Rotter's social learning theory. Social learning theory is an attempt to understand and predict behavior utilizing a framework which is unified, consistent in its point of view, and systematically derived. Social learning theory selects as its unit of investigation the interaction of the individual with his meaningful environment. Meaningful environment can be usefully described in terms of the potential satisfactions and frustrations which the environment evokes; therefore, the individual's interactions (or behaving) may be described by means of making abstractions regarding common directions in behavior. Common directionality of behavior may be abstracted as "needs" when referring to the individual and as "goals" when referring to the environment.

Some early "needs" or "goals" arise out of reinforcement of simple homeostatic movements; however, most later "needs", and "goals" are learned as a means of satisfy-
ing earlier needs. The behaviors which the personality theorist is concerned with understanding and predicting are ordinarily those which have been learned.

"Need" as it is used in this study does not refer to the restoration of any internal tissue balance. Need is a construct which is used to conveniently organize and to abstract a number of learned behaviors which have common directionality. Directionality is inferred from the effect of the reinforcing conditions on the behavior. Behaviors are said to have common directionality when they lead to the same reinforcements or goals. Directionality or functional relatedness of behavior may vary in extent depending upon the similarity of reinforcements or goals to which the behaviors have led in the past.

The first of the hypotheses tested by this study states that generalization will occur along a dimension of need-relatedness, in a situation where factors of stimulus similarity are constant. Stated in another way, the hypothesis says that generalization of expectancy changes will tend to occur as the behaviors involved have common directionality, or have led to the same reinforcements in the past.

The aspect of behavior in which the study seeks
to demonstrate generalized change is a measure which social learning theory calls expectancy. This construct is similar to the current use of the term in other behavior theories. For the purposes of this study it is defined specifically as the probability which is internally held by the individual that a particular external reinforcement will occur in a particular situation.

The second hypothesis is related to the first and attempts to test the relationship of the size of the disparity between the original expectancy and the score received on the experimental task and the extent to which generalized changes occur in the expectancies for other tasks. The hypothesis states that as the size of the disparity between the event which occurs and the expectancy increases there will be an increased tendency for other expectancies to change on the basis of generalization.

Out of the inadequacy of either simple reinforcement theories or expectancy theories to account for all of the changes in behavior which concern the behavior theorist, social learning theory has sought to integrate constructs of both kinds. Behavior is said to be a function of the expectancy held by the individual that he will obtain a particular reinforcement by means of a given behavior in
combination with the value which the individual places upon the reinforcement which is to be obtained. This formulation is translated into a formula:

\[ \text{BEHAVIOR POTENTIAL} = f (\text{EXPECTANCY \& REINFORCEMENT VALUE}) \]

The third hypothesis of the study, while not systematically derived from social learning theory, attempts to clarify the relationship of the extent of generalized expectancy changes to the relative need value of the task on which the score was given. This hypothesis states that as the reinforcement value (or need value) of the particular goals used in the experiment is higher for the individual, he will tend to generalize more from one expectancy increment to another.

Some concept of generalization is central to any theory of behavior. Human organisms can respond adaptively to situations which they have never experienced in exactly the same way before. They respond on the basis of previous similar experiences. Also it is commonly observed by theorists, clinicians, and others that behaviors, tendencies, habits, expectancies, or whatever particular constructs they use to describe behaving possess some kind of organization and interrelationships. These empirical observations must be adequately handled by any theory which would account
for behavior.

Without something like the phenomenon generalization no theory of behavior would be possible. The basic purpose of a theoretical framework is to provide a basis for prediction. If we were able to make statements about sequences of behaviors and events which were limited to only highly specific instances in the individual's history or to those events which have already occurred in exactly the same way, no practical theory of behavior could be worked out. At best we would be able to work out elaborate descriptions of specific behaviors after they had occurred. The relationships in behaviors which are subsumed under generalization makes the very existence of behavior theories possible.

Early work in the area of conditioning soon led to the conclusion that a conditioned response might be given to a stimulus to which the response had not been originally attached, but to which the conditioned stimulus was related in some way. Since that time, investigations in the area of generalization and the controversies regarding them have revolved around determining the bases of the relationships between conditioned stimuli and generalization stimuli.
A history of the attempts to provide a theoretical basis for generalization phenomena leads from Pavlov's cortical irradiation, which sought to relate generalization to a hypothetical physiological process, to Hull's treatment of generalization in terms of just noticeable differences in degrees of stimulus similarity. While Hull's position is appealingly simple at first glance, many instances of generalization apparently do not fit neatly into an analysis in terms of dimensions of physical stimulus similarity. For this reason Hull and his group have described another basis upon which generalization can occur; that is, generalization by means of stimulus mediation. Mediated stimulus generalization is defined as generalization which occurs between stimuli which have elicited the same response in the past; it is ordinarily dependent upon contiguity of stimulating conditions in time.

Social learning theory attempts to take a more analytic approach to the problems of generalization. While recognizing the operation of stimulus similarity in generalization, social learning theory proposes that much generalization, especially in complex social behaviors, occurs on the basis of, or is mediated by common directionality or functional relationships in behavior. A change in the ex-
pectancy for one behavior will tend to generalize to the expectancies of other behaviors which have led to the same reinforcement in the past. It is still mediated stimulus generalization which is being described, but in this formulation mediation occurs on the basis of common goals or motivations for behavior.

The design used is based on the level of aspiration paradigm. The rationale for the operations involved relies heavily on the work which has been done in the area of semantic generalization. The special purpose of this study was to produce a situation in which the stimulus similarities could be held constant while the condition of need-relatedness could be varied. In order to do this two pseudo-projective techniques were used. Varying conditions of need-relatedness, or common directionality, were created by the structuring which the subjects received regarding what the tests were supposed to measure.

All subjects met with the experimenter in small groups. They were told that they would take two personality tests which the experimenter was refining and validating. Both tests were described and subjects were asked to make estimates as accurately as they could of what they thought they might do on the tests. The first test con-
sisted of a series of ten ink blots, with the instruction to pick for each blot out of a list of ten alternatives the two things which the blot most resembled. The second test consisted of a list of twenty-five words which the experimenter read aloud, with the instruction that each subject was to write on his answer sheet the first word he thought of after hearing each stimulus word.

After both tests had been described and all subjects had made their estimates of what score they thought they might make on both tests, the ink blot test was administered. Immediately afterward the test protocols were collected and scored by the experimenter. "Scoring" consisted of noting the score which the subject had estimated he would get on that test and adding to it a constant number of points, determined by the experimental group to which the subject belonged.

His "score" on the ink blot test was returned to each subject on a slip of paper. Description and instructions for the word association test were then reviewed and subjects were asked to re-estimate what score they thought they were most likely to get on that test. The second test was administered and the protocols were collected.

Data was collected from twenty small groups of
subjects. These twenty small groups were combined into four major groups, who, although they were subjected to the same experimental procedure, were given varying instructions about what the tests were supposed to measure. In two groups the tests were presented as need-related; that is, subjects were told that both tests measured the same personality attribute -- in one heterosexual adjustment and in the other leadership potential. In the other two groups subjects were told that the tests measured different attributes so that the tests were presented as non need-related.

Two disparities were used in order to test the second hypothesis of the study regarding the relationship of the size of the expectancy disparity and the subsequent increment in expectancy. Half the subjects in each group were given scores seven points above their expectancy statements and half were given scores fourteen points above their expectancy statements.

The third hypothesis regarding the relationship between need value of the reinforcement offered by doing well on a particular test and extent of generalization in expectancy changes was tested by tabulating the extent to which a subject showed the generalization phenomenon against
the ranking on a questionnaire he had given need satisfactions in the areas tested. The questionnaire had been administered in the psychology classrooms of all the potential subjects of this study.

One hundred and sixty nine subjects volunteered from psychology classes. They were divided into experimental groups in the following way:

Groups

A Need-related -- told that both tests measured heterosexual adjustment
   1A -- received seven points  N 20
   2A -- received fourteen points N 21

B Need-related -- told that both tests measured leadership potential
   1B -- received seven points  N 21
   2B -- received fourteen points N 24

C Non need-related -- told ink blot test measured leadership potential; word association, heterosexual adjustment
   1C -- received seven points  N 20
   2C -- received fourteen points N 22

D Non need-related -- told ink blot test measured heterosexual adjustment; word association, leadership potential
   1D -- received seven points  N 20
   2D -- received fourteen points N 21

The following major hypothesis, stated in null form, were tested:

1. When the two tasks are perceived as need-related expectancy statements on one task, after reinforcement
on the second task, will not differ from generalization which occurs when the two tasks are perceived as non need-related, beyond that which might be accounted for in terms of errors of random sampling.

2. Generalization of expectancy statements will not differ in extent between groups who vary in the size of the expectancy disparities, beyond what might occur by chance.

3. Generalization of expectancy statements will not differ in extent between groups who vary in the reinforcement (or need) value for the attribute which the tests were supposed to measure.

The data made the rejection of the first two of the null hypotheses tenable and permitted the following conclusions.

1. Generalization of expectancy changes occurred to an extent which was greater in the groups where the two tests were presented to subjects as leading to the same reinforcement as compared to the groups where the tests were presented as leading to different reinforcements. The value of $t$ resulting from this comparison was 2.68, which is significant between the .01 and .001 levels of confidence.

2. Within the groups where the tests were presented as need-related, the tendency to generalize the
increment of expectancy was greater for subjects receiving fourteen points as compared to subjects receiving seven points. The value of \( t \) resulting from this comparison was 3.42, which is significant at less than the .001 level of confidence.

3. It was not possible to reject the null hypothesis regarding the effect of need value on the tendency to generalize expectancy increments on the basis of need-relatedness. Some flaws in the method employed to test this hypothesis, particularly in the reliability with which the original determination of need value was made, were pointed out and suggestions for a more adequate test were made.

On the whole, the basic postulate of social learning theory concerning generalization of expectancies on the basis of common directionality in behavior was substantiated. It was likewise demonstrated that the size of the difference between the individual's expectancy and the score which he actually received tends to influence the degree to which changes in expectancies are generalized. The concept of generalization can be handled predictively and with utility within the framework of social learning theory.


11. Frank, J. D. The influence of the level of performance in one task on level of aspiration in another. J. exp. Psychol., 1935, 18, 159-171.


34. Preston, M. G. and Bayton, J. A. Differential effect of a social variable upon three levels of aspiration. J. exp. Psychol., 1941, 29, 351-369.


"MINNESOTA WORD ASSOCIATION SCALE"

1. table
2. music
3. mountain
4. deep
5. man
6. short
7. cold
8. wish
9. beautiful
10. red
11. working
12. stem
13. dream
14. white
15. swift
16. ocean
17. light
18. child
19. hammer
20. memory
21. city
22. loud
23. joy
24. green
25. afraid
PROJECT 112

NAME ___________________________ CLASS ____________

AGE ___________ SECTION __________

SEX M or F (circle)

CLASS: Freshman ______
Sophomore ______
Junior ______
Senior ______
Graduate ______

COLLEGE (Ed., Com., Agric., Arts, etc.) _____________

MAJOR SUBJECT MATTER AREA ____________________________

VOCA TIONAL AIM ________________________________________

120
THE MINNESOTA WORD ASSOCIATION SCALE OF HETEROSEXUAL
ADJUSTMENT

This test consists of a list of twenty-five words. The examiner will read these words aloud to you at the rate of one every ten seconds. A word will be read once and then repeated at the end of five seconds. You are to write down the first word you think of after hearing the word which the examiner reads. For example, if the examiner says cloud you might say sky or if the examiner says ham you might say eggs. Write your word opposite the appropriate number on the answer sheet.

We have found that from the scores people make on this test we can predict how well-adjusted a person is in relationships with members of the opposite sex. We are also able to tell from this test something about the chances which an individual has of eventual happy marriage.

For each answer you receive a number of points, depending on whether it is excellent, good, fair, or poor. On this test it is possible to obtain scores from 0 to 100. When this test was given to students at another large university who were enrolled in introductory psychology courses, their average score was 52.

We are also interested in how accurately you can predict your test score before you have taken the tests. That is, what score do you think you are most likely to get on this test? Make your estimate on the basis of what you know about yourself and what you know about the test from this description. Try to make your estimate as accurate as possible.

Fill in the blank below:

I will be most likely to make a score of _____ on the word association test.
THE DELTA INK BLOT SCALE OF HETEROSEXUAL ADJUSTMENT

This test consists of ten ink blots. For each blot you will find on your answer sheet a list of ten possible things which a blot or a part of a blot might resemble. For each blot, as the examiner shows it to you, select the two things which the blot or any part of the blot most resembles to you. You may see more than two things, but pick the two you see most clearly. Be certain that for each blot you select two, and only two. Place a check in the spaces beside the two things you select.

This ink blot test is similar to some other tests which are widely used by psychologists; however, this set of blots have been specially made up for this test. They have been made up to measure how well-adjusted a person is in his relationships with members of the opposite sex. We are also able to tell from this test something about the chances which an individual has of eventual happy marriage.

Each of the ten possible answers listed for each blot is worth from 1 to 5 points, depending on the degree to which it indicates good adjustment in relationships with the opposite sex. On this test it is possible to obtain scores from 0 to 100. When this test was given to students at another large university who were enrolled in introductory psychology courses, their average score was 49.

We are also interested in how accurately you can predict your test score before you have taken the test. That is, what score do you think you are most likely to get on this test? Make your estimate on the basis of what you know about yourself and what you know about the test from this description. Try to make your estimate as accurate as possible.

Fill in the blanks below:

I will be most likely to make a score of ______ on the ink blot test.

The lowest score which I would still be satisfied to get would be ______. That is, I would feel disappointed with any score lower than that.
THE MINNESOTA WORD ASSOCIATION SCALE OF LEADERSHIP

This test consists of a list of twenty five words. The examiner will read these words aloud to you at the rate of one every ten seconds. A word will be read once and then repeated at the end of five seconds. You are to write down the first word you think of after hearing the word which the examiner reads. For example, if the examiner says cloud you might say sky or if the examiner says ham you might say eggs. Write your word as quickly as possible. Write your word opposite the appropriate number on the answer sheet.

We have found that from the scores people make on this test we can predict whether they are apt to be good at initiating, directing, and organizing group activities. That is, whether they are the kind of people who are recognized as leaders.

For each answer you receive a number of points, depending on whether it is excellent, good, fair, or poor. On this test it is possible to obtain scores from 0 to 100. When this test was given to students at another large university who were enrolled in introductory psychology courses, their average score was 52.

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Fill in the blank below:

I will be most likely to make a score of _______ on the word association test.
THE DELTA INK BLOT SCALE OF LEADERSHIP

This test consists of ten ink blots. For each blot you will find on your answer sheet a list of ten possible things which a blot or a part of a blot might resemble. For each blot, as the examiner shows it to you, select the two things which the blot or any part of the blot most resembles to you. You may see more than two things, but pick the two you see most clearly. Be certain that for each blot you select two, and only two. Place a check in the spaces beside the two things you select.

This ink blot test is similar to some other tests which are widely used by psychologists; however, this set of blots have been specially made up for this test. They have been made up to measure whether individuals are apt to be good at initiating, directing, or organizing group activities. That is, whether they are the kind of people who are recognized as leaders.

Each of the ten possible answers listed for each blot is worth from 1 to 5 points, depending on the degree to which it indicates whether an individual would make a good leader. On this test it is possible to obtain scores from 0 to 100. When this test was given to students at another large university who were enrolled in introductory psychology courses, their average score was 49.

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Fill in the blank below:

I will be most likely to make a score of ____ on the word association test.
THE DELTA INK BLOT SCALE OF HETEROSEXUAL ADJUSTMENT

This test consists of ten ink blots. For each blot you will find on your answer sheet a list of ten possible things which a blot or a part of a blot might resemble. For each blot, as the examiner shows it to you, select the two things which the blot or any part of the blot most resembles to you. You may see more than two things, but pick the two you see most clearly. Be certain that for each blot you select two and only two. Place a check in the spaces beside the two things you select.

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Fill in the blanks below:

I will be most likely to make a score of _____ on the ink blot test.

The lowest score which I would still be satisfied to get would be _______. That is, I would feel disappointed with any score lower than that.
THE MINNESOTA WORD ASSOCIATION SCALE OF HETEROSEXUAL ADJUSTMENT

This test consists of a list of twenty-five words. The examiner will read these words aloud to you at the rate of one every ten seconds. A word will be read once and then repeated at the end of five seconds. You are to write down the first word you think of after hearing the word which the examiner reads. For example, if the examiner says cloud you might say sky or if the examiner says ham you might say eggs. Write your word as quickly as possible. Write your word opposite the appropriate number on the answer sheet.

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Fill in the blank below:

I will be most likely to make a score of ____ on the word association test.
THE DELTA INK BLOT SCALE OF LEADERSHIP

This test consists of ten ink blots. For each blot you will find on your answer sheet a list of ten possible things which a dot or a part of a blot might resemble. For each blot, as the examiner shows it to you, select the two things which the blot or any part of the blot most resembles to you. You may see more than two things, but pick the two you see most clearly. Be certain that for each blot you select two and only two. Place a check in the spaces beside the two things you select.

This ink blot test is similar to some other tests which are widely used by psychologists; however, this set of blots have been specially made up for this test. They have been made up to measure whether individuals are apt to be good at initiating, directing, and organizing group activities. That is, whether they are the kind of people who are recognized as leaders.

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We are also interested in how accurately you can predict your test score before you have taken the test. That is, what score do you think you are most likely to get on this test? Make your estimate on the basis of what you know about yourself and what you know about the test from this description. Try to make your estimate as accurate as possible.

Fill in the blanks below:

I will be most likely to make a score of _____ on the ink blot test.

The lowest score which I would still be satisfied to get would be ______. That is, I would feel disappointed with any score lower than that.
BLOT IV

skeleton
symbol of war
suit of underwear
two Colonial dames
two French poodles
matches
swords
Satan
headless gorilla
open mouth of a large animal

BLOT V

Oriental goddess
seal
crawdad
force (an abstraction)
snakes
a swallow
animal skin
two hands
a hat
sea horse

BLOT VI

two angels
elephant trunks
two chickens each with a worm
woman standing on a stairway
pump handle
fur piece
sea horses
woman holding a dog
crown
crest
BLOT VII

two sheep
two poodles
face
white vase
goal posts
clouds	
two girls on a sofa
two baby carriages
butterflies
two women with dresses blowing in the wind

BLOT VIII

spinal cord
Donald Duck
man standing in a doorway
pointing fingers
two ghosts
skull
two arrowheads
entrance to a cave
cotton boll about to open
an undersea scene

BLOT IX

Buddha
person standing on hands
pineapple
pennants
lamps
crown
chafing dish
two roses
two mermaids
cactus plant
ANSWER SHEET FOR DELTA INK BLOT SCALE

BLOT I

___________ spider
___________ octopus
___________ fox face
___________ tree stump
___________ beetle
___________ sheep skin spread out
___________ two clowns asleep against a post
___________ tongs
___________ witch doctor's headdress
___________ modern dancers

BLOT II

tropical fish
rabbit with long ears
two Indian heads
two scottie dogs
face with a beard
king with a crown
two faces with large noses
butterflies
primitive war club
pair of worn-out shoes

BLOT III

dress form
dog's face
someone with big shoes
weight lifter
a bottle
an orchid
man with a cloak
Chinese kite
mask
a scale with a balance

129
butterfly

two feather dusters

headman's axe

two elves shaking hands

umbrella

dumb-bell

fuzzy spider

two English barristers in court

tropical orchid

a bridge
APPENDIX C
GENERAL INSTRUCTIONS

Remember that on this test you are supposed to put down the first word you can think of after hearing the word which the examiner says aloud. Listen carefully.

This test predicts how well you are apt to get along with members of the opposite sex and also something about your chances of eventual happy marriage. You can obtain scores from 0 to 100. The average score of students who took this test previously was 52.

As we told you earlier, one of the things we are interested in in this study is how accurately people can estimate their scores before taking a test. We would now like you to re-estimate what you think you are most likely to get on the word association test. If you wish to change your first estimate, feel perfectly free to do so. Remember you are trying to estimate your most probable score as accurately as possible.

Fill in the blank below:

I will be most likely to make a score of ____ on the word association test.
ANSWER SHEET FOR MINNESOTA WORD ASSOCIATION SCALE

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25.
We are making a survey to determine what people like you are most interested in. Below you will find a list of six personal attributes or things about yourself. We would like to know which of these attributes you would most like to have. These attributes may be characteristics you already possess or they may be ones you would like very much to possess. If you could have any of them, which one would you prefer to have?

Select the thing you most prefer and place a 1 in the space beside it. Pick the thing which you next most prefer and place a 2 beside it. Continue until you have made a third, fourth, fifth, and sixth choice. Be sure to place a number beside each one. Think about them carefully and try to put them down the way you really feel.

_________ ability to learn things quickly and to get good grades
_________ remaining calm and cheerful when others are upset and pessimistic
_________ ability to accomplish what you want without help from others
_________ being the kind of person who is a leader in many situations
_________ attractiveness to and being happy in relationships with the opposite sex
_________ special talent in sports, writing, art, or similar things

Remember, 1 is the attribute which you most prefer and 6 is the attribute which you least prefer.
APPENDIX E
DATA

GROUP I
(BOTH TASKS LABELED MEASURES OF HETEROSEXUAL ADJUSTMENT)

1A Group, Receiving score seven points higher than their initial estimate on the Ink Blot Task

<table>
<thead>
<tr>
<th>Subject</th>
<th>Ink Blot Task Expectancy 1</th>
<th>MGL</th>
<th>Word Association Task Expectancy 1</th>
<th>Expectancy 2</th>
<th>Diff.</th>
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GROUP I
(BOTH TASKS LABELED MEASURES OF HETEROSEXUAL ADJUSTMENT)

2A Group, Receiving score fourteen points higher than their initial estimate on the ink blot task

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<th>Subject</th>
<th>Ink Blot Task</th>
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GROUP II
(BOTH TASKS LABELED MEASURES OF LEADERSHIP POTENTIAL)

IB Group, receiving score seven points higher than their initial estimate on the Ink Blot Task

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141
GROUP II
(BOTH TASKS LABELED MEASURES OF LEADERSHIP POTENTIAL)

2B Group, receiving score fourteen points higher than their initial estimate on the Ink Blot Task

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GROUP III
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10 Group, receiving score seven points higher than their initial estimate on the Ink Blot Task

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GROUP III

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GROUP IV
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GROUP IV
(WORD ASSOCIATION TASK LABELED HETEROSEXUAL ADJUSTMENT AND INK BLOT TASK LABELED LEADERSHIP POTENTIAL)

2D Group, receiving score fourteen points higher than their initial estimate on the Ink Blot Task

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146
GROUP V
(BOTH TASKS LABELED LEADERSHIP POTENTIAL) COLLECTED INDIVIDUALLY

1E Group, receiving score seven points above their initial estimate on the Ink Blot Task

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2E Group, receiving a score fourteen points above their initial estimate on the Ink Blot Task

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</table>
I, June Elizabeth Chance, was born in Gambrills, Maryland, on June 18, 1926. I received my secondary school education in the public schools of Anne Arundel County, Maryland. In 1947 I received my B.A. degree from the University of Maryland, and in 1949 I received my M.A. degree from the same school. I was appointed as graduate teaching assistant in the department of psychology of the Ohio State University in 1949-50. I received a U. S. Public Health Scholarship in 1950-51. During 1951-52 I held a position as psychological intern at the Columbus State School and at the Bureau of Juvenile Research in Columbus, Ohio. I have specialized in the department of psychology while completing the requirements for the degree Doctor of Philosophy.