THE RELATIONSHIP OF DEPENDENCY BEHAVIOR
TO INTELLECTUAL PROBLEM SOLVING

DISSERTATION

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Approved by:

Adviser
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To my wife
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Intellectual problem solving has long been a focal point of inquiry in psychology. It would perhaps be interesting to trace its antecedents back through the history of human thought, for man, like all living creatures, has been continually beset by innumerable problems of daily living to be solved. Somewhere along the way he began to contrive miniature or artificial problems as if in implicit recognition of the fundamentally problematic nature of life itself. Whether it be in the involved logistics of Socrates, the catechistic tests of faith concocted by medieval ecclesiastics, or the riddles propounded by jealous fathers of desirable and marriageable princesses found in fairy tales and mythology, successful problem solution was in some way recognized as a means of differentiating the gifted from the mediocre.

Problem solving implied more than this. It came to represent a more or less controlled method for observing the "operations of the mind." By setting up a series of "situations" or conditions and directing inquiry toward an analysis of the implication, generalization, and interrelation among the data provided, it was believed that mental processes of reasoning, induction, and deduction would be brought into play. These, then, could be studied in terms of steps toward solution, nature of attack, etc., as well
as in terms of adequacy and speed of actual solution.

No attempt will be made here to go into all the historical ramifications of the theory and application of the problem-solving paradigm. However, at the risk of oversimplifying, this area seems to reflect in a striking way the initial cleavage between theory and application and the inevitable rapprochement of these two emphases as observation accumulates and psychological systematization progresses. The focus on "what" eventually made imperative attention to the "why," "when," and "wherefore" of behavior in a problem situation.

At first on a rational and then on an empirical basis investigators discovered they could distinguish meaningful and useful individual differences in achievement and potentiality. Some people succeeded in solving a problem and others didn't. Basically, this had predictive implications meaning some would be good at certain activities and others wouldn't. Intelligence, achievement, aptitude, and all the other "tests" endorse this principle implicitly or explicitly.

The only trouble was that prediction or generalization from the problem situation to other situations often fell far short of the optimum. It seems very obvious today, from psychology's relatively sophisticated stage of development, that we must devote much attention to what we are measuring if we expect to be able to predict to other sit-
uations. Most fundamental of all, perhaps, we must examine the organism which produces the problem-solving behavior. On the human level, which is the one which interests us here, this means we must know something of the personality of the performing individual. Perhaps the earliest recognized factors were those concerning intellectual ability, past experience, and motivation. A person won't even attempt a solution unless he is somehow motivated and he won't be able to succeed unless he has a certain minimum of intellectual capacity and tools. However, it often happens that individual differences in problem-solving facility exist which are not completely explainable by the above factors. To put it another way, individuals sometimes have difficulty or are unable to solve a problem even though there is every reason to suspect that they have sufficient desire and intellectual endowment to do so.

By an intellectual problem-solving task, we do not have in mind any particularly specialized or systematic definition. Rather, we would define it rather broadly as any problem situation characterized by an objective "correct" solution, determined or meeting an a priori set of conditions and to be arrived at through a series of deductive and inductive operations on the part of the performing individual.

In recent years, several approaches have been used in the attempt to study the relationship between personality
and problem-solving behavior. Some of them include studies on the effects of motivation and anxiety on problem solution, and others look to personality structure or typical modes of reacting, employing such concepts as rigidity and abstractness.

The position held in this dissertation is that individual differences in certain personality variables, apart from that of "intelligence," may be critical determiners of an individual's performance on a problem-solving task. It is suggested that there may be more or less stable personality characteristics with some generality (i.e., not specific to the particular problem situation itself) which appear differentially in individuals, facilitating or retarding performance according to their relative strength and the requirements and context of the task. The nature of those variables can only be suggested initially on a priori grounds. Rotter (33), in a paper on personality and problem solving, suggests several variables, the effects of which on problem-solving ability might be profitably investigated. These include dependency (the seeking of aid from someone else either in achieving a goal or preventing frustration attendant upon failure), cautiousness, projection or rationalization, or possibly some factor such as looking for alternative or particular solutions which are more specific to intellectual problem sit-
uations. Whether or not these will facilitate or impede solution, of course, depends on the particular conditions and situation in which the problem appears. The particular variable selected for this study is that of protection-dependency, which refers to the need to have another individual or group of individuals prevent frustration or punishment and to provide for the satisfaction of other needs. It is possible that dependent behavior thus defined might facilitate solution, providing the examiner or someone else would actually assist the subject in solving the problem. If, however, the subject was required to work alone or especially if others were present yet would give no help, problem-solving behavior might well be impeded. This might occur either because the subject wasted time in seeking help or perhaps more basically because attention was directed away from active attempts toward solution in favor of either implicit or explicit help-seeking behavior.

So far we have mentioned two variables which seem pertinent in the study of problem-solving behavior. These were the problem situation and a personality variable of dependency. Two other variables of presumed importance should also be distinguished. These derive from Rotter's social learning theory (34) which provides the theoretical framework of this study. These are the constructs of need value and freedom of movement. Need
value) is defined as the mean preference value of a set of functionally related reinforcements. FM (freedom of movement) is defined as the mean expectancy of obtaining positive satisfaction as a result of a set of related behaviors directed toward the accomplishment of a group of functionally related reinforcements.

The pertinence of these variables lies in the possibility that a person's responses in a problem situation may hinge, to a large extent, on his expectancies regarding success or failure and the importance of success and failure to him. The reasoning is that many of the above-mentioned personality variables (dependency, rationalization, cautiousness, etc.) may be especially cued to a situation where the expectancy for failure is high (i.e., the problem seems very "difficult.") However, it is anticipated that low freedom of movement is most effective in calling forth these responses which seem to bear less directly on active attempts at solution when the motivation to succeed or avoid failure is high. In the typical problem-solving situation we would describe this as a need for academic recognition or achievement although, of course, other needs may be operant as well.

Bearing in mind the general question of why individuals fail to solve problems when they seem intellectually capable, we might rephrase the problem as follows: To what extent is the difficulty of the problem likely to
produce in the individual a strong expectancy of failure; how important is it to him to avoid this particular kind of failure; what behaviors is he likely to use to defend himself against his failure or to avoid its occurrence; and how do these specific behaviors influence the solving of different kinds of tasks.

Applying this formulation more specifically, this study utilizes the personality variable of dependency and the constructs of NV and FM within the area of academic recognition to determine:

(I) if dependency as a behavior can be predicted from two personality tests, the ISB (Incomplete Sentence Blank) and a Modified TAT (Thematic Apperception Test) to a problem-solving situation;

(II) whether or not dependent behavior does interfere with efficient problem solving.
CHAPTER II

BACKGROUND

Research dealing with relationships between personality variables and problem-solving behavior can perhaps be divided into two main classes: those studies which deal with such generalized personality variables as "rigidity" or "abstractness" and those concerned with the influences of stress, anxiety, or motivation.

It would seem most practicable to confine this review to those studies in greatest detail which have definite implications regarding the theoretical rationale of this study and follow up with more specific research which has been done on the relevant variables themselves.

As indicated in the Introduction, this research follows from a reformulation of the question of why some individuals fail to solve problems when they appear to be intellectually capable of doing so. The question was recast into a social learning framework by suggesting two other variables which seem necessary for accurate prediction in addition to that of dependency and the problem situation itself. These were NV (need value) and FM (freedom of movement) within the area presumed to be best represented by an intellectual problem-solving task, namely, academic recognition.

At the outset, the concept of "rigidity" as a
personality variable interfering with problem solution seemed dogged by certain logical and methodological ambiguities which have shown up in much of the empirical findings. This concept, when applied to problem-solving tasks, usually refers to the inability to change "set" when the original set is no longer appropriate and optimal, or to the perseveration upon one method or path to solution when a simpler or more efficient one is available. In attempting to assess the generality of rigid behavior, there does seem to be some correlation between performance on similar problem-solving tasks, but this breaks down when the tasks are at all dissimilar. Cattell and Winder (8), for example, in giving a battery of tests have differentiated a number of factors underlying what is characteristically labeled "rigid" behavior but which were not all highly related. Cattell, Tiner, and Winder (7) discovered some relationship between several relatively simple motor tasks in the tendency to perseverate. Guetzkow (16) has been able to find some generality for the ability to overcome set in a series of similar tasks, and Cowen, Wiener, and Hess (12) have shown predictability from the Luchins water jar problem to an alphabet maze developed along similar principles. On the other hand, Goodstein (17) could discover no significant relationship between the Luchins water jar problems, the abstract scale of the Shipley Hartford Retreat test and an anagram test. Those tests, al-
though purportedly measuring rigidity, were rather dissimilar in nature.

Katz (20) failed to find significant relationship between rigidity on the water jar problem and the Wisconsin Card Sorting test. Luchins (25), hypothesizing a general characteristic of concreteness underlying rigidity on the water jar problems, failed to find a significant relationship between the latter and the Wechsler-Bellevue similarities test.

It thus appears that rigidity, operationally defined on the basis of one class of problem-solving tasks, has little if any predictability to other dissimilar types of problem tasks. It would seem that the correlations which do exist are better attributed to factors specific to the tasks themselves than to a generalized personality variable of rigidity.

The attempts so far mentioned have dealt with correlations between performance scores on various problems which, by implication, are mediated by the personality variable of rigidity. Logically, of course, this would "prove" nothing about the existence of a generalized trait of rigidity inasmuch as no measurement external to the problem situation behavior has been applied. Similarities or differences in behaviors might as well be attributed to similarities and differences in the tasks without resort to a general personality factor. However, attempts to relate
personality measures of rigidity, such as personality and adjustment inventories, projective tests, or social attitude scales, to problem performance, have generally fared badly as far as prediction is concerned.

Cattell (8), in a previously mentioned study, has related some of his rigidity factors to some of his more general personality factors but it will be recalled that he found several unrelated factors underlying so-called rigid behavior. Working in the area of social attitudes, Goodstein (17) not only failed to find a relationship between the extremeness of social attitudes and their stability, both presumed to be aspects of rigidity, but also failed to find relationships between extreme social attitudes and three measures of problem solving.

Three studies by Rokeach (32), Brown (6), and Levitt and Zelen (22), using the California Scale of Ethnocentrism, produced some rather ambiguous results. Rokeach found that scores on the E scale were related to a tendency to the shorter or critical solution on the Luchins water jar problem. Brown, using the same techniques, failed to verify this finding. However, under conditions where great importance was placed on the results of the problem-solving tasks, Brown was able to find a relationship between the E scale (highly correlated with the E scale) and problem solving. Under more relaxed conditions the relationship failed to hold.
Further complicating the matter, Levitt and Zelen (22) found a relationship between Luchins' Einstellung test and the E scale, under what they termed "free" conditions, but failed to find this relationship under conditions of reward incentive.

Other studies attempting to relate adjustment scales or Rorschach variables to problem solving have been done by Cowen and Thompson (11) and Katz (20). Cowen and Thompson found no relationship between Bell and Bernreuter adjustment scores and Luchins water jar problem solving. They also attempted to relate a series of Rorschach variables to the above problem task. For the most part the Rorschach scorings failed to support a hypothesis for generalized rigidity, although post hoc analysis, which was not cross-validated, revealed some relationship between Rorschach variables and problem-solving rigidity. Katz failed to find any very definite evidence pointing to a relationship between Rorschach rigidity variables and critical solutions on the water jar problem.

Probably one of the biggest difficulties in evaluating the results of this research lies in the variety of operations different experimenters have utilized in assessing the so-called variable of rigidity; certainly, many of the instruments used to measure this general trait bear little theoretical or systematic relationship to the problem criteria of rigidity, nor do they always logically con-
grue with each other.

It is felt that the existence of a general trait of rigidity remains much in doubt and that perhaps this is not the most profitable approach. For example, it might be hypothesized that one attribute being measured is the level of individual adjustment, which may or may not be relevant to problem-solving performance, depending on the condition of the experiment. Some relevant features might be, does the subject perceive a threat in the situation, how much is at stake, how does he perceive the experimenter, etc. Lazarus and Longo (21), for example, found some consistency of defense behaviors under conditions of threat in learning situations. Perhaps the failure to change set in a problem situation which is perceived as threatening is an analogous reaction characteristic of certain individuals.

A second group of studies appears in the literature which relates problem-solving performance to motivation, anxiety, and stress. Two general approaches have been used: the varying conditions of stress or motivation are experimentally manipulated; anxiety, adjustment, or need achievement scales are administered, and individual differences in personality variables of adjustment, tolerance to stress, or need to achieve are related to problem-solving behavior.

Two studies by Bahrick (1) and Bahrick, Pitts, and Rankin (2) fall in the first group. Investigating a
hypothesis of perceptual narrowing, they found a group which was rewarded for their performance showed less incidental learning in a complex learning task than a group told to relax during the experimental period. This finding may have important implications for problem-solving behavior in cases where retention of apparently irrelevant cues becomes vital for eventual solution of a problem, or when a different type of solution is required after the original one which derives from a different set of cues.

In another study utilizing induced stress, Beier (3) made Rorschach interpretations of a threatening nature to one group. He found this group did less well on tasks of abstract reasoning (the Holsapple Concept Shift test and a mirror tracing task) than did the control group receiving no Rorschach interpretations.

Cowen (10) found differences in rigidity on the Luchins water jar problem between three groups under conditions of no stress, mild stress, and strong stress. The strong stress group appeared the most rigid and the no stress group least rigid. However, it appears that these three conditions might be better described in terms of no failure, mild failure, and strong potential failure.

One hypothesis which might be made is that the relevant variable in stress or threatening situations is the fear of failure or punishment involved, rather than increase in drive. This has been suggested or implied in
several studies attempting to relate anxiety motivation or need for achievement to success or quality of problem solving.

Lowell (23), for example, separated two groups by using McClelland's measure for need for achievement (28). He found that the high achievement group worked harder on an addition task and also showed more improvement over a series of trials on a scrambled word problem. Mandler and Sarason (26) found subjects scoring high on a test-taking anxiety scale had longer time scores on the Koh Block Design than did a group scoring low on the anxiety scale. However, the high anxiety group did as well as the low anxiety group on easier multiplication tasks and their performance on the blocks tended to improve with practice.

Sarason and Mandler (35), in a further study, advanced the hypothesis that a higher need for academic recognition may have been operant in the high anxiety group. Evidence for this lay in the fact that there were some differences in social class between the high and low anxiety scores. Higher motivation to succeed may partially account for the high anxiety scorers' relatively better performance on the multiplication task and for their improvement on the Koh blocks. Similarly, their poorer performance in terms of time on the blocks may reflect a higher degree of cautionousness because they have more at stake, or because of the interfering effect of some defensive reactions to the
threat of failure. Some support for this last is found in the fact that Sarason and Mandler found a correlation of .47 between test-taking anxiety scores and an over-all interference score from Waterhouse and Child's (37) scale measuring habitual reactions to frustration.

Further evidence along these lines is suggested by Lucas (24), who found that the relationship between immediate memory and anxiety was a function of implied failure. The interference in performance he found to have resulted from an interaction of so-called anxiety measured by the Taylor Anxiety Scale and failure experience.

Some of the other studies using the Taylor Anxiety Scale have been interpreted by Rotter (33) as perhaps illustrating the reaction of individuals characterized by a variety of maladjustive defense situations involving the potential threat of failure. The studies by Taylor and Spence (36), Montague (29), and Farber and Spence (15) explain the difficulty that high Taylor Anxiety Scale scorers have with difficult intra-serial learning items as compared with easy ones in terms of an increased drive which supports or increases the dominant response tendency. In easy items, the correct response is presumed to be dominant, while in hard items the incorrect ones are dominant; thus, on easy items the correct response is strengthened and learning is facilitated, while the reverse holds for hard items. As
suggestive evidence of his point, Rotter cites the existence of high correlations between the Taylor Anxiety Scale and scales of psychasthenia and neuroticism. It may be that the Taylor Anxiety Scale selects out individuals having strong tendencies to resort to learned defense reactions when any threat of failure is present.

A study by Koshin (30) is suggestive along these lines in that he showed that strong frustration resulted in an interference with performance, even after similar problems had been mastered. On the Passalong Test, induced frustration resulted in poorer scores as compared with a control group, even though the correct response had been made "dominant" through practice.

It is felt that a new systematic approach to prediction in this area is offered by social learning theory. It would seem that a general concept of rigidity or anxiety is too vague and difficult to define logically in terms of personality. Operationally defined, these concepts appear to be insufficient for effective prediction. They either do not take into account or become confounded with other variables, which seem important. However, the literature does suggest several factors which seem important to a social learning approach. These have to do with the degree or strength of a need to achieve, the role of failure or threat of failure and possible characteristic defense reactions to this.
The basic formula in social learning theory,
\[ 3P = f(E+RV), \]
describes the relationships governing the appearance of any behavior. That is, the potentiality of any behavior occurring in a given situation is determined by the expectancy that the given behavior will lead to a reinforcement of a certain value; the higher the expectancy and the higher the RV value, the more likely the associated behavior will occur.

The above formula may be simplified into a more general prediction formula by broadening the constructs of behavior potential to need potential, expectancy to freedom of movement, and reinforcement value to IV. The formula then becomes \[ NP = f(FM+IV) \] and indicates the relationship the two variables, IV and FM, which we have defined for use in this study, have to need potential.

Need potential is defined as the mean potentiality of a given group of behaviors occurring in any segment of an individual's lifetime.

IV, it will be seen, becomes the internal referent of a set of functionally related reinforcements. We may speak of a person having a high preference value for a certain set of related reinforcements as having a high IV in that area.

Therefore, the assertion that in a problem situation help-seeking kinds of behavior may occur which interfere with problem solution demands several conditions for
its optimal fulfillment. These are:

(1) The potential for dependent kinds of behavior must be high. This requires, according to the BF formula, that the individual have a relatively high value placed on the gratification of dependency needs. Inasmuch as dependency gratification can occur in any need area, perhaps the weight of prediction in the case of dependency falls upon the individual's expectancy to receive assistance in achieving goals or preventing frustration. It should be pointed out that expectancies are not just the function of the number of pairings of the given behavior with a given reinforcer in the one situation. The concept of generalized expectancy refers to the fact that a person's expectancy in a given situation is also a function of expectancies for reinforcement in other situations. Crandall (13), Jessor (19), Chance (9), and Blumenkrantz (4) have shown that expectancies and changes in expectancy generalize along a gradient based on the degree of similarity of reinforcement. For example, in a problem situation, one would predict the most dependent behavior to occur in individuals who, in the past, have actually received help in situations very similar to the one in question.

(2) The need to succeed in the problem task must be high. Thus, if an individual was not particularly concerned with the outcome, he would have little motivation to look for help from someone else.
(3) There must be relatively low expectancy for success in the problem task. This we referred to as "freedom of movement." When we speak of the threat of failure, we are implying two things: that the individual has high desire to succeed but has relatively low expectancy to do so. Given this situation, both fear of failure and motivation to succeed become important in predicting what the individual will do, although in the case of dependency, as we have defined it, both would lead to the same prediction. The individual may resort to dependent tactics to achieve his goal or avoid failure. However, the threat of failure may mean more than just not achieving the goal. In a sense, many of a person's activities may be geared to avoiding the blame for failure, because of what this means to his self-concept. It may be that "ego-defensive" tactics are characteristic of the failure-oriented individual and that dependent behavior, as we have defined it, in some cases is such a defense. We would expect the individual with low FM to be less likely to make direct constructive attacks on the problem simply because he feels his techniques won't work or that he is just not good at such tasks. He must then fall back on less adaptive methods, one of which may be by seeking help. (Again, it must be emphasized that the degree of adaptiveness is dependent upon the conditions of the problem.) To make a distinction between failure-avoidance and goal-achievement may seem like "splittin' hairs,"
but there may be some utility in such a distinction. Thus, in a well-controlled explicit problem situation, there are relatively few ways of solving the problem, but there may be a variety of ways to avoid all of the implications of failure, as the individual sees it. These may not achieve a solution, but the failure-oriented individual may be less concerned with reaching the objectively correct solution than he is in covering up, postponing, rationalizing, etc., the actual failure. A classic example might be hysterical paralysis in a student before an exam. While it is true that he fails the exam, he nevertheless feels more or less absolved from any blame for doing so. In this case, there are relatively few ways of succeeding; namely, by going in and writing the exam; but there may be a great variety of methods of avoiding failure in the sense described. Primarily, then, we may expect an excess of dependent behavior to impede solution because the focus of attention is directed away from active attack and the mechanics of solution. The individual may concentrate his energies upon the experimenter or someone else in an effort to obtain help, or he may sit and wait for the help to be forthcoming.

Before turning to the specific hypotheses, some background on the measures of dependency, NV, and FM in the area of academic recognition, used in this study is perhaps called for. The instruments used were Rotter's IS3 and a set of Modified TAT cards. While a measure of dependency
can be obtained in the problem situation itself, it was felt that some external personality measure would provide additional evidence for the generality of such behavior. We would wish to show that such behavior may be a more or less characteristic reaction of some individuals and not merely the product of the specific problem situation involved. To obtain such a measure, Rotter's IS3 was used. A manual for scoring dependent and independent responses on this test had been devised by Dunlap (171). Elyth (5) used the manual to predict how long individuals would stay in therapy. Fitzgerald (1'), using a revision slightly modified from the original, found a relationship between dependency scores and a sociometric measure of dependency. He was also able to find a relationship between ratings on the IS3 in the area of protection-dependency and MV and NF ratings in this area in an interview. However, he found no significant relationship between IS3 and TAT ratings in this area. The IS3 manual thus has shown some validity in predicting various criteria of dependency, and additional validity information should be provided by comparing IS3 scores with a measure of dependency in the problem situation.

The two variables of HV and FL, in the need area of academic recognition, have also received some attention. McClelland, et al. (20), have devised a series of measures to determine the relative value of a need for achievement with different individuals. Some of these may also be used
to measure anticipation of punishment or failure in the achievement area.

The instruments used in this study to measure these two variables of NV and FM were the ISB and Crandall's Modified TAT pictures (13). Rafferty (31) devised a manual for rating ISB responses on the variables of NV and FM in the area of academic recognition. She was able to establish a satisfactory degree of inter-rater reliability and found significant correlations between the ISB ratings and ratings based on an interview. These were .66 for need value and .30 for freedom of movement.

Crandall (13) constructed a series of TAT type pictures and a scoring manual which were designed to tap FM within the need area of academic recognition, recognition in physical skills, and love and affection from opposite sex peers. He found that an induced frustration situation in the area of physical skills significantly reduced FM in the areas of physical skill and academic recognition, as compared to a control group.

Rafferty, in the previously mentioned research, devised a scoring manual for Crandall's Modified TAT for NV in the area of academic recognition, and modified somewhat the original NV scoring system. She found significant correlation between Modified TAT and interview scores for NV and FM, although she failed to discover a significant relationship between TAT and ISB ratings on these two variables.
in the academic recognition area. She concludes, however, that on an over-all basis, combining TAT and IS3 scores gives a more valid measure than either considered alone.

Statement of Hypotheses

The hypotheses derive from the conception of dependency as a personality variable which may operate to the detriment of optimal efficiency in an intellectual problem-solving task. The extent of the interference is described as a function of the strength of potential of behaviors classifiable as dependent; upon the need to succeed in an academic situation; and upon the expectancy of success or failure.

The first general hypothesis is as follows:

(I) There is a positive relationship between ISB dependency scores and dependency scores obtained in the problem-solving task.

Here the ISB dependency scores are regarded as representing behavior potential. Verification of this hypothesis would provide further evidence for the validity of the ISB measure of dependency. If we can discover relationships between divergent operations measuring what we term a personality variable, we have established some justification assuming the stability and generality of the behaviors from which the variable is abstracted.

The first-stated hypothesis does not take into
consideration the level of NV and FM in the area of academic recognition. Three additional hypotheses of great pertinence to the theoretical orientation of this study seek to predict the appearance of dependency behavior in the problem situation under certain specific conditions involving NV and FM as well as potential for dependent behavior. These are:

IA. Individuals with high need for academic recognition, low expectancy for success, and high dependency potential as measured by the IS3 will show more dependent behavior in the problem-situation than individuals with the same level of NV and FM but with low dependency potential as measured by the IS3.

IB. Individuals with high dependency potential, low expectancy for success, and high NV for academic recognition will show greater dependency in the problem situation than will individuals who have the same degree of dependency potential and FM level but who have a low NV for academic recognition.

IC. Individuals with high dependency potential, high need for academic recognition, and low expectancy for success will show more dependent behavior than will individuals who have the same degree of dependency potential and level of NV but who have a high expectancy for success.

It will be noted that these hypotheses base prediction on the degree of discrepancy between NV and FM; that
is, the higher the need value relative to expectancy of satisfaction of the need, the more "conflict" will result and the greater will be the possibility that dependent or other kinds of non-adaptive behaviors will occur.

The second general hypothesis seeks to investigate the effect of dependency behavior upon problem-solving efficiency. It states that there will be a direct relationship between the degree of dependency and the length of time required to solve the problem.

This may be broken down into two hypotheses involving dependency scores from the IS3 and dependency scores obtained in the problem situation. The length of time required for solution is the measure of degree of interference with efficiency created by the dependency behavior.

We then have the following two hypotheses:

(IIA) There is a direct positive relationship between IS3 dependency scores and problem time.

(IIIB) There is a direct positive relationship between dependency as measured in the problem situation and problem time.
CHAPTER III

METHODOLOGY

The tests used in this study were administered in the following order: the ISB; the Modified TAT; the problem situation. All tests were administered by the experimenter with no more than a few minutes' interval between each one. The total test time ranged from 1-2 hours, with an average of about 1 1/2 hours.

Subjects

The subjects were all 401 Psychology students who were required as part of their course work to participate in a total of three hours of experiment but were free to select the particular experiments in which they wished to serve. A total of 49 subjects completed all three tests. Sixteen of the subjects were males and 33 were females. Their ages ranged from 17-25 years, with the great majority being 18 or 19. Their college class ranged from freshman to senior, most of them being freshmen with a fair sprinkling of sophomores. Their CSPE total test scores seemed to be a fairly representative distribution and ranged from 2 to 99.

ISB

Administration

The ISB was given to each subject with the following verbal directions:
"The experiment is divided into three parts. I believe it will be simpler if I explain each part as we come to it, rather than attempt to describe the whole thing at once. First, I have a blank here which I would like you to fill out. I want you to complete each of these (examiner indicates sentence stems) -- not necessarily with the first thing that comes to mind, but rather with that which best expresses your real feelings or attitudes. You may find this rather frustrating because there are so many different things which you could write for each one. However, try and write that which seems most appropriate and best expresses your attitudes. You may find it easier to skip some of the items and then go back to them later but be sure you do all of them. Do you have any questions?"

The subject was then allowed to complete the sentences with the examiner out of the room.

Scoring

After all 49 IS3 blanks were collected, the names were blanked out to prevent the experimenter's knowledge of the subjects' later performance from biasing his ratings. The blanks were then scored for protection-dependency. IV and FI in academic recognition were scored together after all the protocols had been scored for dependency.

Protection-Dependency

This scoring was accomplished by following the manual presented in Appendix III. The procedure was to score each item for all 49 subjects before proceeding to the next item. It was felt that scoring each item independently from the rest of the items in the protocol would
minimize possible halo effects. Dependency referents were scored either 2 or 1, according to the strength or degree of dependency the statement was judged to reflect. Many statements, of course, did not appear to have reference to the variable and were not scored. Total dependency scores were determined for each subject by adding up the individual item scores.

**UV and FM Scoring in Academic Recognition**

The scores for these two variables were based on ratings on a 1 to 5 scale rather than a frequency count of referents; 1 represented a high degree of the variable and 5 a low degree. Thus, an UV-FM score of 1-5 meant the individual had a high need for academic recognition but a low mean expectancy for success in this area. Here, as in protection dependency, scoring was by example, using the scoring manual in Appendix IV. Again, the procedure was to score all of the protocols for one item before going on to the next. Scores for items which seemed to be referents yet were not represented in the manual were assigned on the basis of similar responses and in accordance with the same general principles as the other items.

After ratings were made on all the items which could be scored, an over-all rating of NV and FM was assigned to each subject. These over-all ratings were not determined by simply averaging the item ratings, but were made on the basis of the frequency and strength of the ref-
erents of need value and freedom of movement.

A satisfactory level of rater reliability was established for protection dependency, and NV and FM in the area of academic recognition. This data will be presented in the following chapter.

**Modified TAT**

This test consisted of six cards picturing a young man in various academic situations. The series was designed to measure FM in the area of academic recognition from thematic material and was divided into two roughly comparable sets of three cards each. Each set contained one picture constructed to elicit responses reflecting high, low, and neutral freedom of movement.

**Administration**

Before presenting the cards to the subject, the following verbal instructions were given:

"Now, I am going to show you some pictures and I want you to tell me a story for each one. You should tell what led up to this particular scene; that is, what was happening before the picture was taken; what is happening now, and what the outcome will be. Also, include something about what the individual is feeling and what his thoughts are. In other words, try to make a fairly complete story--more than just a description of the picture. There are no right or wrong answers to those, so feel free to use your imagination."

Set I was presented, followed by Set II, with the following sequence of FF "pull": neutral, high, low, neutral, low,
high. The order of presentation was the same for all subjects. The stories were recorded on the Gray Audiograph and later transcribed. If a subject failed to meet all the above specifications in his first story, he was reminded. However, omission later in the series received no comment from the experimenter.

**Scoring**

Each TAT protocol received a code number differing from the one assigned on the ISB, so the experimenter had no way of knowing which protocols belonged to the same subject without resort to a special key.

The stories were then rated on a scale from 1 to 5 for NV and FN in the area of academic recognition, 1 indicating a high degree of the variable and 5 a low degree. As on the ISB items, each story was rated independently from the other stories in the protocol for all subjects. The ratings were based on the manual in Appendix 7. In this manual, three aids to rating were provided: some general principles, examples of types of referents graded on the basis of degree or strength reflected, and actual representative stories for the 5 degrees of intensity. Because the Modified TAT pictures were originally constructed to reflect freedom of movement, NV referents were necessarily more sparse than FF referents. Five of the protocols were not included in the final analysis because the experimenter felt they could not justifiably or reliably assigned
a particular score. This may have been because the stories contained no references to the need area in question, because of extreme ambiguity, or because the identification with the "hero" was extremely doubtful.

After all the individual stories for all subjects had been rated, the protocols were read over and over-all ratings for NV and FM in academic recognition were assigned. These over-all scores were based on the individual story rating and the general scoring principles involved applied to the protocol as a whole, rather than simply an average of the individual story ratings.

The reliability coefficients for these ratings will also be presented in the next chapter.

The Problem-Solving Task
Rationale for Selection

The selection of an appropriate problem-solving task was guided by certain criteria. Several of these were determined by the particular experimental design chosen. It will be remembered that an intra-problem measure of dependency was desired. This was based on the verbal statements of the participants. A period of time which was comparable for all subjects in terms of length, stage of familiarity with the problem, stage of progress toward solution, etc., was necessary in order to get a dependency measure upon which individuals could be compared. Obviously,
if one individual had a dependency measure based on only five minutes effort while another's measure was based on 20 minutes, the measures are not equivalent. Prorating to an arbitrary standard period or methods such as using a ratio of dependency to non-dependency behavior does not solve the issue. Not only would more dependency behavior be expected because the longer period afforded more opportunity for questions, etc., but the consequences of frustration, practice, boredom, or fatigue would become much more significant the longer a person worked.

In order to meet the requirement of a comparable period of time for measuring dependency behavior, a problem was selected which was difficult enough to be virtually insolvable within an initial 15-minute period. During this period the dependency measures were obtained. However, a measure of problem-solving facility which might be sensitive to the hypothesized interfering effects of dependency was also needed. Problem-solving ability was, for our purposes, defined as the length of time to solution. To reduce this interval to a practical length, a problem was needed in which certain clues or hints could be given which would facilitate solution yet at the same time remain sufficiently difficult to reflect individual differences in ability. For example, a one-principle "insight" problem would not be sensitive enough to individual differences if most people could solve it immediately after receiving the clue.
Besides level of difficulty and amenability to partial clueing, several other criteria seemed important in the selection of a suitable problem task. It should have an objective "correct" solution; that is, the conditions defining solution should be clear and unambiguous enough that both experimenter and subject could readily perceive and agree upon whether or not the problem was solved. Also, in the interest of objectivity a "one solution" problem was preferred which would not necessitate decisions whether one solution was more or less efficient or "intelligent" than another.

It would also seem important to select a problem which would not capitalize on special interests, abilities, or training. Many mathematical problems, for example, would handicap unduly some individuals, while giving an advantage to others. Furthermore, the problem should not appear so formidable as to discourage many subjects right from the start. Finally, it would seem desirable to select a problem which would create and maintain interest.

Description and Administration of Problem

A copy of the problem work sheet appears in Appendix II. It consists of 45 dots arranged in a square with seven dots per row and seven dots per column, except where a dot is omitted. The following instructions are printed on each sheet:
"The figures below represent a peg board with 49 holes. The dots represent holes with the pegs in them and the blank spaces are holes without pegs. You will note that there are four such blank spaces.

The object of this problem is to 'remove' all of the pegs except 10, so that there remain five straight lines of pegs with four pegs per line. In your solution draw a circle around the pegs you have left in, and also draw in the five lines in which the pegs fall. Any continuous straight line must be regarded as one line only. However, you may have a line in which some pegs are omitted. For example, a line may pass thru seven of the peg holes, even though only four have pegs in them. There must, of course, be a peg at the beginning and at the end of the line. You may use the extra figures in whatever way you wish to get the solution."

When the subject had completed the Modified TAT, the experimenter said:

"The next part of the experiment deals with problem-solving, and we have devised a little puzzle which we'd like very much to see what you can do with. Now, here's the puzzle...(Experimenter hands subject a copy of the problem.) I want you to read the directions. After you read them, I'll go over the instructions with you to make sure you understand what to do because it may seem a little complicated at first."

After the subject had read the directions, the experimenter read them to him again, illustrating several points, until the subject showed reasonable understanding of the objective and willingness to start. This was done because many subjects initially showed some doubt as to the exact requirements of the problem. It was felt that with these subjects the dependency measure would be overly-influenced by
a basic lack of understanding of exactly what was to be done. That is, as compared with the more intellectually facile subjects, they would be faced with the problem of understanding what the objective was in addition to discovering the correct method of reaching it. Therefore, an attempt was made to bring all the subjects to a fairly comparable level of preparedness. An especially important function of this was to help establish the experimenter as a friendly, potentially helpful individual. This would, it was hoped, encourage future help-seeking behavior on the problem by establishing some expectancy that these behaviors would be rewarded. After clarifying the subject's understanding of the directions, he was told:

"The puzzle has a solution but it's not terribly easy, so if you haven't already solved it after a period of time I will give you a hint. We do this merely to keep the total administration time within reasonable limits."

This was done in an attempt to reduce the discouragement a subject might feel if he believed he was more or less unique in requiring assistance. It was also felt that such prior structuring might be productive of help-seeking behavior, such as asking for the hint on the part of dependent subjects.

The subject was then told to begin. He was allowed as many work sheets as he needed and was provided with a small ruler, the use of which was optional.
A complete record was kept of all comments made by the subject. Various standard comments were made at standard intervals by the experimenter in an attempt to maintain interaction with the subject. During the first two minutes, the subjects were usually employed in more or less random exploratory behavior. After the first two minutes, the experimenter would say: "It's kind of hard sometimes to know just where to start." At eight minutes the experimenter would say: "Quite a little puzzle, huh?" or "Sort of a puzzling little problem." At five, and again at ten minutes, the experimenter repeated: "Five straight lines, four pegs per line, ten pegs in all." These two repetitions of the instructions were made in order to equalize to some extent the verbal exposure the subjects had to this part of the instructions; that is, some of the subjects would rephrase all or part of the above statement in the form of a question to the experimenter. In such a case the experimenter would simply say, "Yes, that's right."

Questions pertaining to the problem which referred to material not included in the instructions were not answered directly. In these cases, the subject was merely told the only requirements were stated in the printed instructions (which were always available to him for referral). Thus, in the ways described, some communication was maintained between subject and experimenter. The general purpose was to maintain a permissive atmosphere conducive
to dependent behavior without actually giving any individual who sought assistance an advantage over those who worked independently; that is, by answering questions or pointing out pertinent aspects not available for all subjects which might help in achieving the solution.

After the 15-minute period was up, the experimenter said unobtrusively: "Here, I'll give you some hints." The experimenter then drew in with a red pencil the three lines and three circles shown in the example in Appendix II. He then explained that he had drawn in three of the lines and three of the pegs as they would actually appear in the final solution, but that he had left the two other lines and seven other pegs required for the subject to discover. The experimenter also gave two other hints at this time: (1) You must work only in the lower left part of the figure; that is, the area falling below the diagonal. (2) Each peg you use enters in not just one but two of the lines which you draw in. Making sure the subject understood these hints, the experimenter then repeated the over-all instructions and told the subject to begin, and to indicate when he had the solution. Questions were handled as before, but the examiner interpolated no further comments.

Solution time was recorded when the experimenter perceived a correct solution had been achieved and the subject indicated that he believed it was correct. It was not required that a subject state categorically that the solu-
tion was correct, but the experimenter waited until the subject made some indication that he was through. Some affirmative statement was required because a few subjects offered their solutions only very tentatively to the experimenter and seemed more dependent on his verification than on the objective evidence before them. It was felt that the delay caused by their uncertainty may have been an important result of their dependent orientation. On the other hand, absolute certainty was not required because of the penalizing effect of overcautiousness or extreme compulsivity in checking and rechecking, which was not the object of the study but was shown by a few of the subjects.

Occasionally a subject would present an inaccurate solution in which case he was asked if he thought it correct. If the subject still maintained its accuracy, he was told to check it again with the instructions. In all cases, this prompting was sufficient to enable the subject to spot his errors.

Scoring

Two problem scores were obtained for each subject. One score was a dependency measure and included two components. The first and major component was a frequency count of the number of questions asked in the standard 15-minute period. The second component was the number of statements revealing personal inadequacy, and included such statements
as "I was never good at problems," "I guess I'm too stupid to do this," "This is probably easy for other people," etc. The second score was a measure of facility at problem-solving and was determined by the time required to solve the problem after the hints were given.

A maximum of 25 minutes was allowed. Those subjects who had not successfully solved the problem within this time were scored 25+. 
CHAPTER IV

RESULTS AND DISCUSSION

The general plan of this section will be to:

(1) Present reliability data for the ratings made on the IS3 and TAT.

(2) Review the results obtained relating to the experimental hypothesis.

(3) Present some of the more significant additional findings concerning the interrelationship of some of the variables used in the study.

**Reliability**

As stated in a previous section, it was felt that the measures used in this study—protection-dependency, and IV and F1 in the need area of academic recognition—were suggestive of enough validity to warrant inclusion in the design. However, there always remains the problem of individual reliability of judgment, especially crucial where final scores are based on the experimenter’s own judgment. It is unfortunately true that some contamination or biasing of scoring is inevitable unless considerable care is taken in keeping the experimenter’s knowledge of the whole performance of an individual from influencing individual scorings. Furthermore, a procedure relying on scores from only one judge loses in objectivity because it lacks the moderating and stabilizing influence of group consensus. An added
condition which made a reliability check mandatory in this study was the fact that the NV and FK over-all scores were based in part on fairly subjective judgments; that is, they were not merely an average of individual item scores. However, an important step toward objectivity was provided through the use of scoring manuals, which set down as clearly as possible definitions, principles, and actual examples as scoring guides.

Since some general reliability for the TAT and ISB measures used in this study had already been established, only a check on the experimenter's reliability of rating was considered necessary. For this reason, one other judge seemed sufficient. The procedure was to train the judge by having him rate three protocols on each variable. These scores were compared with the experimenter's and disagreements were discussed. Three more protocols were then scored by the judge and similarly treated. After this training period, the judge rated 20 ISB protocols selected at random for dependency behavior potential. He also rated 13 ISB's and 13 TAT's for NV and FK in academic recognition. These latter groups of scores were used to determine reliability coefficients. ISB forms scored for dependency were different from the ones scored for NV and FK, although there was some overlap. NV and FK were scored together on both the ISB and TAT. However, the protocols were scored separately for ISB dependency, ISB NV and FK, and TAT NV and FK. The
Pearson product moment correlations between experimenter and judge scores are presented in Table I.

| TABLE I  
|---|

**Correlation Between Judges' Ratings of the ISB and TAT Protocols for Dependency, NV and FM in Academic Recognition**

<table>
<thead>
<tr>
<th></th>
<th>ISB</th>
<th>F</th>
<th></th>
<th>TAT</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependency</strong></td>
<td>20</td>
<td>.87</td>
<td>.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NV</strong></td>
<td>13</td>
<td>.79</td>
<td>.01-.001</td>
<td>.79</td>
<td>.01-.001</td>
</tr>
<tr>
<td><strong>FM</strong></td>
<td>13</td>
<td>.64</td>
<td>.02-.01</td>
<td>.80</td>
<td>.01-.001</td>
</tr>
</tbody>
</table>

These correlations indicate that the ISB and TAT can be scored for dependency and the two variables, NV and FM in academic recognition, with a fairly high degree of reliability if the manuals and general scoring principles are rigorously followed. One factor lowering the NV and FM correlation, especially in the case of ISB FM, was the lack of variability in the scores. In the case of ISB FM, for example, 10 of the 13 pairs of scores were in perfect agreement, but one pair disagreed by 2 points. In view of the monogeneity of the scores, this was sufficient to lower the correlation considerably.

**Testing the First Hypothesis**

This hypothesis predicted a positive relationship between ISB and problem-dependency scores.
To test this hypothesis, a Pearson product moment correlation was run between IS3 and problem-dependency scores with a resultant

\[ r = .003. \]

The hypothesis of a simple direct relationship between the two measures of dependency is unsubstantiated. Apparently they are not measuring the same thing. The finding illustrates the danger in uncritical prediction from personality test scores or interpretations to a variety of other behaviors. While there was some logical justification for supposing a relationship, one suspects that our personality variable of dependency has too limited generality to encompass such widely differing operations described by our two measures.

Probably an important situational factor contributed to the lack of predictability. The IS3 dependency referents were often relationships of long standing between the subject and intimate members of his family or others to whom he had established a more or less stable role and set of attitudes and behaviors. The experimenter, on the other hand, was a stranger of very short acquaintance with a rather ambiguous role—neither peer nor professor—but probably being perceived as embodying some characteristics of both.
Testing of Hypotheses IA, IB, and IC

Thus far we have failed to consider the effect of NV and FM in the area of academic recognition in testing the relationship between ISB and problem dependency. The assumption underlying these additional hypotheses was that a person would be most likely to resort to help-seeking behavior if he had a high potential for dependency behavior as measured by the ISB, a high need to succeed or to avoid failure, and a relatively low expectancy to do so through the ordinary accepted methods of direct attack on the problem.

The three hypotheses were designed to test the effect of each variable separately by varying them one at a time and controlling the other two. This was done by comparing problem-dependency scores between two groups which were set up for each hypothesis according to its specific predictions. Table II summarizes these hypotheses and the relationships found, using ISB dependency scores, and NV and FM scores in academic recognition.

In categorizing subjects into high and low groups, an attempt was made to use the most extreme scores possible which would still provide sufficient cases for statistical analysis. Natural or logical division points were used wherever possible. Thus, high NV was defined as a score of 1 or 2 and low FM was set at 4-5. The minimum and maximum
high and low ISB dependency scores were set at 9 and 7 respectively. The subjects with an ISB score of 8 were not used in this analysis. Since most subjects, as can be seen by the raw scores presented in Appendix I, scored high on NV, it was necessary, in order to retain enough cases, to set low NV at 3-5 instead of 4-5, the most logical a priori cutting point.

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IA</td>
<td>H</td>
<td>H</td>
<td>L</td>
<td>10</td>
<td></td>
<td>24</td>
<td>.157</td>
</tr>
<tr>
<td></td>
<td>L</td>
<td>H</td>
<td>L</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IB</td>
<td>H</td>
<td>H</td>
<td>L</td>
<td>10</td>
<td></td>
<td>5.5</td>
<td>.068</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>L</td>
<td>L</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IC</td>
<td>H</td>
<td>H</td>
<td>L</td>
<td>10</td>
<td></td>
<td>1</td>
<td>.030</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>H</td>
<td>H</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The first three columns of Table II are self-explanatory. The N column shows the number of cases in each of the six groups. The predicted problem dependency column shows the actual direction of prediction used in setting up the test. In essence, we are predicting in each case that one group scored significantly lower on problem dependency than the other, as measured by the tendency for the group's
scores to receive the lower ranks when the entire set of scores is ranked from low to high. (We could logically just as well predict that one group would have significantly higher scores than the other.)

Columns 6 and 7 give the value of $U^1$ and the probability of achieving such a value if there actually were no difference between the two groups. This statistic was used because it provides a rather sensitive test of group differences, is well adapted to small samples of unequal size, and does not necessitate the assumption underlying parametric methods. As can be seen from the table, all three $U$ values represent differences in the hypothesized direction.

This suggests some predictability from ISB dependency to problem-dependency, if we control the variables of NV and PM in such a way as to maximize the conditions favoring the appearance of help-seeking behavior.

However, taking a significance level of 5%, only Hypothesis IC and to a lesser extent IB are supported with any degree of certainty.

One conclusion suggested by the difference in significance values between the first and the other two hypotheses is that actually the ISB dependency scores are contributing little to prediction, the weight of which falls

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1 The $U$ statistic was originated by Wilcoxon and developed by H. B. Mann and D.R. Whitney (27), as given in Vol.XVIII of the Annals of Mathematical Statistics, 1947, 50-60.
upon the other two variables of NV and FM in academic recognition.

The foregoing procedure was repeated with the substitution of NV and FM ratings obtained from the Modified TAT for those from the ISB. Table III presents these findings.

**TABLE III**

Schema of Group Differentiation for Hypotheses IA, IB, IC Together with Results of Prediction of Problem-Dependency from ISB Dependency and TAT NV and FM Scores for Academic Recognition

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>ISB Depen.</th>
<th>TAT NV</th>
<th>TAT FM</th>
<th>Pred. Prob.</th>
<th>Depen. U</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA</td>
<td>H</td>
<td>H</td>
<td>L</td>
<td>7</td>
<td>L</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>L</td>
<td>H</td>
<td>L</td>
<td>4</td>
<td>L</td>
<td>14</td>
</tr>
<tr>
<td>IB</td>
<td>H</td>
<td>H</td>
<td>L</td>
<td>7</td>
<td>L</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>L</td>
<td>L</td>
<td>2</td>
<td>L</td>
<td>9</td>
</tr>
<tr>
<td>IC</td>
<td>H</td>
<td>H</td>
<td>L</td>
<td>7</td>
<td>L</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>H</td>
<td>H</td>
<td>4</td>
<td>L</td>
<td>11</td>
</tr>
</tbody>
</table>

Apparently, prediction of problem-dependency using the TAT measures of NV and FM in academic recognition is no better than chance. Unfortunately, we are unable to determine whether or not this is due to lack of validity in our TAT measures. However, the fact that by using ISB NV and FM scores, hypothesized differences in problem-dependency were found, lends support to the theoretical reasoning behind our hypothesis. The discrepancy in predictability be-
between the ISB and TAT NV and FM scores suggests the two tests are not measuring the same thing. To determine the extent of any possible relationships, Pearson product moment correlations were run between ISB and TAT scores. Three pairs of scores were correlated: NV, FM, and a score based on the difference between NV and FM (FM-NV). This latter score may be regarded as a measure of degree of conflict existing in the area of academic recognition. Thus the higher a person's need for academic recognition relative to his expectancy to achieve such recognition, the greater the conflict. The correlation between

\[
\begin{align*}
\text{NV scores} &= .15 \\
\text{FM scores} &= .20 \\
\text{"conflict" scores} &= .28.
\end{align*}
\]

While the first two values are not significant, there does seem to be a slight relationship between conflict scores \( (P = .075) \) which suggests there may be some commonality between the ISB and TAT measures after all.

It may be that the TAT cards were too specific and highly structured in terms of FM and NV to validly differentiate individuals; that is, the tendency to give similar stories was enforced to such a high degree by the nature of the cards that sensitivity to individual differences in motivation and expectancy for success was impaired. The result may have been a relatively low contribution made by actual individual differences in NV and FM to
the total variability of the scores.

Another drawback to the pictures which may have reduced validity of the NV and FM measures was the difficulty many of the subjects would be expected to have identifying with the individuals in the pictures. Not only was he a male, but he appeared older and more formally dressed in several of the pictures than was characteristic of the student subjects. These factors would undoubtedly dilute feminine identification and probably that of the younger subjects. For example, it was noted that the pictures showing the central character dressed in a suit was usually perceived as a professor, instructor, or at least as a graduate student.

A further test of the three hypotheses was made by utilizing NV and FM scores derived from the summation of ISB and TAT ratings. These results are presented in Table IV.

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**TABLE IV**

Schema of Group Differentiation for Hypotheses IA, IB, IC
Together with Results of Prediction of Problem-Dependency
from ISB Dependency and Combined ISB and TAT
NV and FM Scores in Academic Recognition

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>ISB Depen.</th>
<th>ISB+ TAT</th>
<th>TAT</th>
<th>Pred. Prob. Depen. U</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA</td>
<td>H</td>
<td>H</td>
<td>L</td>
<td>8</td>
<td>H</td>
</tr>
<tr>
<td></td>
<td>L</td>
<td>H</td>
<td>L</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>IB</td>
<td>H</td>
<td>H</td>
<td>L</td>
<td>9</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>L</td>
<td>L</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>IC</td>
<td>H</td>
<td>H</td>
<td>L</td>
<td>9</td>
<td>L</td>
</tr>
</tbody>
</table>
Comparison of Table IV with Table III indicates a somewhat greater trend toward significance but nothing is gained over using ISB scores alone. Very likely the trend which does exist is largely due to the influence of ISB scores. This is still insufficient, however, to produce a significance at the 5% level.

Two further tests of hypotheses IA, IB, and IC were made by combining the hypotheses, and using the U statistic. From the hypotheses, it follows that maximum difference in problem dependency would occur between a group with high ISB dependency potential, and high NV and low PM in academic recognition as contrasted with a group low on ISB dependency potential, low NV, and high FM. NV and FM scores based on ISB and ISB+TAT ratings were used. The results are summarized in Table V.

### TABLE V

Schema of Group Differentiation When Hypotheses IA, IB, IC are Combined in Order to Maximize Prediction of Problem Dependency from ISB Dependency, ISB NV and FM in Academic Recognition and TAT NV and FM in Academic Recognition

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>H</td>
<td>L</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>L</td>
<td>H</td>
<td>3</td>
<td>L</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>H</td>
<td>L</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>L</td>
<td>H</td>
<td>3</td>
<td>L</td>
</tr>
</tbody>
</table>
Inasmuch as different cases entered into this analysis, the results provide further evidence for our general hypothesis predicting problem-dependency from ISB dependency, and NV and FM.

The question arises as to what role intelligence plays in our prediction of dependency behavior in the problem situation. A Pearson product moment correlation was run between problem dependency scores and OSPE (Ohio State Psychological Examination) scores with a resulting

\[ r = -0.31 \quad (P = 0.05-0.02) \]

Thus, a small but significant tendency for less intelligent subjects to show more dependency behavior in the problem situation does exist.

This result suggests that our groups, set up to test Hypotheses IA, IB, and IC may also be differentiated on the basis of OSPE, as well as ISB dependency and the two variables of NV and FM in academic recognition.

To test the differentiation of OSPE scores, only the four pairs of groups which produced significant predicted differences were used. (Table II, IB and IC; Table V). Using the same subjects and same grouping on ISB dependency, and NV and FM, prediction to OSPE scores was substituted for problem dependency. The probability levels for the U statistics obtained appear in Table VI, column 2.
TABLE VI

Probability that Chance Factors Could Produce Differences in Problem Dependency and OSPE Scores as Extreme as Those Found Between Subjects Which Were Differentiated on ISB Dependency and NV and FM in Tables II (IB and IC) and V

<table>
<thead>
<tr>
<th>Sig. Level of Differences in Prob. Depen. Between Groups Differentiated on ISB Depen., NV and FM</th>
<th>Sig. Level of Differences in OSPE Between Groups Differentiated on ISB Depen., NV and FM</th>
<th>Sig. Level of Differences in Prob. Depen. for Groups Differentiated on OSPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAB.II .068 .030</td>
<td>TAB.II .025 .200</td>
<td>TAB.II .107 .167</td>
</tr>
<tr>
<td>TAB.V .068 .043</td>
<td>TAB.V .009 .114</td>
<td>TAB.V .107 .012</td>
</tr>
</tbody>
</table>

The previously obtained probabilities from Tables II and V appear in column 1.

Comparison between columns 1 and 2 shows that in all but one case (IC) our group differentiation on the basis of ISB dependency and NV and FM produces more clearcut differences in OSPE scores than it does in problem-dependency. It appears that this finding, while not invalidating the evidence for our hypotheses, may offer a simpler explanation for our ability to predict problem-dependency behavior. Thus, it seems logical that individuals with relatively low OSPE scores would show more dependency behavior in the form of question-asking and self-depreciation than more intelligent subjects.
Here, as in most psychological research, the question of causation, if not meaningless, is at least a delicate one; that is, to say that all we are measuring with our dependency NV and FM constellation is OSPE may be an oversimplification.

In the first place, the relationship between problem dependency and OSPE is a slight one \((r = -0.31)\). Furthermore, if we take the OSPE scores of the same subjects, producing the results of columns 1 and 2 of Table V, and attempt to predict problem-dependency from them, we obtain the significance values for group differences in problem-dependency shown in column 3. Although a trend appears to exist, only one of the four figures reaches an acceptable level of significance. Within these admittedly limited samples, intelligence does not appear to be related very highly to problem dependency. Also, any information we can glean concerning the relationship of the variables to intelligence does not necessarily render them superfluous, but may, on the contrary, have important theoretical and practical implications.

Probably the best criteria for their utility is the ability to predict behavior, for which prediction a simple intelligence measure is insufficient.

However, the particular operation describing these variables of dependency and FM and NV in academic recognition is the immediate issue, rather than their ultimate
utility or theoretical adequacy, as constructs.

If we correlate ISB dependency, ISB NV, and ISB FM scores with OSPE scores, we have:

<table>
<thead>
<tr>
<th></th>
<th>OSPE</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency</td>
<td>-.16</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>FM</td>
<td>-.20</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>NV</td>
<td>.39</td>
<td>&gt;.05</td>
</tr>
</tbody>
</table>

It will be remembered that high scores in FM and NV indicate a low degree of these variables.

In the light of these figures, it becomes clearer why differentiating groups on the basis of ISB dependency, NV and FM also differentiated them on OSPE. Though the correlations between OSPE, ISB dependency, and FM are not significant, they may cumulate their effects in a situation such as presented in Table V, so as to differentiate groups on the basis of OSPE.

However, NV appears to carry the greatest weight in differentiating our groups in terms of OSPE scores. The obtained $r = .39$ indicates subjects placing the highest value upon academic recognition tend to have lower OSPE scores. Furthermore, there is a definite relationship between overall NV ratings and number of referents for these ratings in each ISB protocol. An obtained $r = -.60$ indicates a tendency for subjects with high NV (low numerical score) to make more references to the academic need area in their sen-
tence completions, than those with low NV scores.

These two findings are significant in that they suggest that saliency or importance of academic considerations is a consequence of frustration or conflict in this area, as far as our NV measures are concerned. We might reason that the less intelligent student has greater difficulty in maintaining a satisfactory level of achievement than his more gifted fellows, suffers more frustration, and has in general a lower expectancy for success. A correlation of -.31 between OSPE scores and the measure of conflict derived by subtracting FM from NV (FM-NV) helps to illustrate this.

One important implication of these results is that the measurement of strength or even presence of a need from projective tests is contingent on some degree of conflict in that area; otherwise, referents may not even be elicited. It should be pointed out that our references to low FM in this discussion apply to the conditions requisite to the elicitation of responses reflecting a given need. Actually, the ISB NV and FM measures used in this study were independent of one another ($r_{NV\cdot FM} = .006$).

In summary, Hypothesis I, which sought to predict problem-dependency from ISB dependency potential, was not supported by the data. Evidence supporting Hypotheses IB and IC was found and a test combining Hypotheses IA, IB and IC also showed significant prediction of problem-depen-
dency. However, only a slight relationship was found between ISB and TAT measures of NV and FM (i.e., in the difference, "conflict" scores). The operations providing prediction with the ISB measures of NV and FM in academic recognition failed to do so in the case of analogous TAT measures. Furthermore, problem-dependency differentiation made on the basis of ISB dependency and NV and FM was complicated by an automatic differentiation of OSPE scores.

Testing Hypothesis IIA

The general hypothesis stated that there would be a direct positive relationship between dependency scores and length of time required to solve the problem. Support for this hypothesis can be taken as evidence for the assertion that dependency behavior may interfere with efficient problem solution.

Hypothesis IIA predicts a positive relationship between ISB dependency scores and problem time.

To test this hypothesis, a chi square test was applied to a fourfold table in which ISB dependency and problem time were dichotomized into high and low groups. Examination of the raw data given in Appendix I reveals that the distribution of time scores readily lends itself to division at the 12 or 14 minute scores (i.e., it is bimodal, with most scores below 6 or above 25 minutes). The comparison of ISB dependency scores with problem solution
time scores yielded:

\[ X^2 = .70 \ (P = .50-.30) \]

indicating no significant relationship between dependency potential on the ISB and the length of time required for solving the problem with the 49 subjects as a whole.

However, it might be reasoned that by using only subjects with relatively high ISB C scores (2, 3, or 4), a better differentiation on time scores could be obtained; that is, we would expect the behavior potential for dependency to be greater when an individual has a high need to succeed on the problem, relative to his expectancy to be able to do so. To test this, the 24 subjects with relatively high C scores were dichotomized into high and low groups on the basis of their ISB dependency and time scores, and a fourfold chi square test was made, resulting in:

\[ X^2 = 1.51 \ (P = .30-.20) \]

Although this value is not statistically significant, it does perhaps represent a refinement over using the entire group of 49 subjects not selected on the basis of C scores. The fact that the relationship was in the hypothesized direction lends somewhat more significance to the obtained chi square value. Thus the probability of obtaining a chi square of 1.51 in the predicted direction drops to .15-.10.

It appears that our results do not support the
Hypothesis IIA, although there may be a slight trend toward
the hypothesized relationship. We still do not know whether
this is due to lack of predictive validity of the ISB mea-
sure of dependency or to error in our hypothesis that depen-
dency behavior can interfere with problem-solving efficien-
cy. However, the particular operations defining dependency
within the problem situation may be more crucial in testing
the effect of dependency on problem time. This is because
they define behaviorally and more narrowly what we mean by
the term. We have already found that there is little rela-
tionship between our behavioral measure of dependency and
those derived from the ISB. Let us turn, then, to our sec-
one and perhaps more crucial hypothesis.

Testing Hypothesis IIB

This hypothesis predicts a positive relationship
between dependency behavior as measured within the problem
situation and length of time required to solve the problem.

To test this hypothesis, a Pearson product moment
correlation was run between problem dependency and problem
time. An

\[ r = .31 \ (P = .05-.02) \]

was obtained, indicating a small but fairly definite rela-
tionship between problem dependency and time. This finding
is consistent with our interpretation of the interfering ef-
fect of dependency behavior.

However, it would be expected that intelligence as measured by the OSPE would also be related to success in the problem solution as measured by length of time required. A Pearson product moment correlation of -.31 shows this to be the case. Furthermore, if problem dependency is related to OSPE, we are faced with the necessity of ruling out the influence of intelligence, if we are to attribute any independent significant effects to dependency behavior as such. A correlation was therefore run between these two measures. The results of all three correlations are presented in Table VII.

TABLE VII

Intercorrelations Between Problem Dependency, Problem Time, and OSPE Scores

<table>
<thead>
<tr>
<th></th>
<th>r</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Dependency-Problem Time</td>
<td>.31</td>
<td>.05-.02</td>
</tr>
<tr>
<td>OSPE Scores-Problem Time</td>
<td>-.31</td>
<td>.05-.02</td>
</tr>
<tr>
<td>Problem Dependency-OSPE Scores</td>
<td>-.31</td>
<td>.05-.02</td>
</tr>
</tbody>
</table>

This last relationship, while complicating our prediction of problem time, is interesting in that it is consistent with our thesis which stresses the importance of expectancy for failure and consequent help-seeking or failure-avoidant behavior. The fact that less intelligent sub-
jects tend to ask more questions and make more self-depre-
ciating remarks could be predicted on the theory that these
individuals will have had fewer success experiences and more
frustrations in academic situations than the more intelli-
gent subjects.

To control the effects of intelligence, a matching
procedure was utilized. The 49 subjects were dichotomized
into high and low dependency groups (problem dependency
scores of 3 and above were considered high and scores from
0-2 were considered low). Then, starting with the extreme
OSPE scores (high and low alternately), each individual
scoring high on problem-dependency was paired with an in-
dividual scoring low on problem-dependency who had an equi-
valent OSPE score. Table VIII shows the 14 pairs of sub-
jects which it was possible to match with reasonable accur-
acy on OSPE with their dependency and time scores.

As can be seen from the table, the matchings are
very close; the greatest difference which occurred was 12
OSPE points. In cases where more than one subject vied
for a matching, two criteria for selection were employed:
the similarity of OSPE scores and the extremeness of ISB
dependency scores. Thus, if two subjects within one of the
two dependency groups had the same or very similar OSPE
scores, the one with the most extreme dependency score was
used in matching with a subject in the other group.
TABLE VIII

Problem Dependency, OSPE and Time Scores of 14 Pairs of Subjects Dichotomized into High and Low Dependency Groups and Matched on OSPE Scores

<table>
<thead>
<tr>
<th>Problem Dependency</th>
<th>OSPE Scores</th>
<th>Time Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H  L</td>
<td>H  L</td>
</tr>
<tr>
<td>1.</td>
<td>6 1</td>
<td>5 4</td>
</tr>
<tr>
<td>2.</td>
<td>4 2</td>
<td>8 6</td>
</tr>
<tr>
<td>3.</td>
<td>8 1</td>
<td>17 19</td>
</tr>
<tr>
<td>4.</td>
<td>5 0</td>
<td>17 24</td>
</tr>
<tr>
<td>5.</td>
<td>3 0</td>
<td>26 26</td>
</tr>
<tr>
<td>6.</td>
<td>5 2</td>
<td>30 30</td>
</tr>
<tr>
<td>7.</td>
<td>4 1</td>
<td>36 37</td>
</tr>
<tr>
<td>8.</td>
<td>4 0</td>
<td>45 43</td>
</tr>
<tr>
<td>9.</td>
<td>7 2</td>
<td>57 51</td>
</tr>
<tr>
<td>10.</td>
<td>6 2</td>
<td>63 64</td>
</tr>
<tr>
<td>11.</td>
<td>4 0</td>
<td>65 62</td>
</tr>
<tr>
<td>12.</td>
<td>4 1</td>
<td>66 78</td>
</tr>
<tr>
<td>13.</td>
<td>4 0</td>
<td>81 83</td>
</tr>
<tr>
<td>14.</td>
<td>4 0</td>
<td>97 99</td>
</tr>
</tbody>
</table>

To test the significance of the relationship between problem-dependency and time, chi square tests were applied to the dichotomized variables. These are shown in Table IX.
TABLE IX

Chi Square Tables Showing the Relationship Between Dichotomized Problem Dependency Scores Matched on OSPE and Dichotomized Time Scores

<table>
<thead>
<tr>
<th>Problem Dependency</th>
<th>Time</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.5-12</td>
<td>14-25</td>
</tr>
<tr>
<td>0-2</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>3-8</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>15</td>
</tr>
</tbody>
</table>

\[ x^2 = 3.58 \quad (P = .1-.05) \]

---

<table>
<thead>
<tr>
<th>Problem Dependency</th>
<th>Time</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.5-14</td>
<td>20-25+</td>
</tr>
<tr>
<td>0-2</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>3-8</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>

\[ x^2 = 2.28 \quad (P = .2-.1) \]

Inasmuch as the chi square shown in Table A represents a trend in the hypothesized direction, a one-tail test of significance yields a probability value between .05-.025. However, Table A represents the most favorable dichotomy of time scores which it seems justifiable to make. If we demand a more stringent test dichotomized on an even fifty-
fifty basis by including the time score of 12 in the high time group, we have the results shown in Table B. Although this yields a lower chi square value, a one-tail test of significance achieves a probability level of .1-.05.

The results provide definite support for our hypothesis that problem dependency is directly related to problem-solving time. Even when the influence of intelligence is equalized, the evidence is suggestive of such a relationship.

While no causal relationship can definitely be "proved," the results are consistent with our general thesis that dependency behavior may interfere with efficient problem solution.

As mentioned, 16 males and 33 females were used as subjects in this study. Because there might be some question about treating males and females as one population, tests were made to determine any sex differences that might exist in the measures of problem dependency; ISB dependency; ISB NV, FM, and conflict; problem time; and OSPE. The T values for the differences between means of male and female scores for these variables are presented in Table X.

These results show no significant sex differences, except for problem-dependency scores (females' mean score was greater than males') and provide some justification for treating males and females as one group. It might be added
tangentially that the high dependency scores shown by females is in agreement with the common cultural stereotype of females being more dependent than males.

TABLE X

T Values for Sex Differences Among Subjects in Dependency, NV, FM, C, and Problem Time

<table>
<thead>
<tr>
<th></th>
<th>T</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Dependency</td>
<td>2.46</td>
<td>&lt;.02</td>
</tr>
<tr>
<td>ISB Dependency</td>
<td>1.27</td>
<td>&gt;.1</td>
</tr>
<tr>
<td>ISB NV</td>
<td>.89</td>
<td>&gt;.1</td>
</tr>
<tr>
<td>ISB FM</td>
<td>1.20</td>
<td>&gt;.1</td>
</tr>
<tr>
<td>ISB C</td>
<td>1.24</td>
<td>&gt;.1</td>
</tr>
<tr>
<td>Problem Time</td>
<td>.58</td>
<td>&gt;.1</td>
</tr>
</tbody>
</table>

Before concluding this section it may be worthwhile to consider the adequacy of the various instruments and measures used in testing our hypothesis. Accuracy of prediction is dependent upon how well we can measure the variables upon which prediction is based and it will be noted that even where statistically significant results were obtained, these were not of a particularly high level.

Concerning our projective instruments, several weaknesses in the TAT have already been suggested which may have contributed to the fallibility of the NV and FM scores.
For example, if an older age group of subjects or pictures portraying a younger, less formally-dressed student had been used, a greater degree of involvement and more personal reflection of needs and expectancies may well have resulted. Also, the cards were structured in terms of FM and not NV, resulting in relatively few referents for NV ratings provided by the manual. Perhaps a set of TAT cards designed more specifically to assess NV could be developed, such as a series of pictures presenting a choice situation involving two different need areas. This technique would involve a comparison of relative strength of needs within each subject, rather than the method used in this study where subjects were rated on an absolute scale for the need in comparison with each other.

The fact that the cards were structured in terms of low, neutral, and high FM may have reduced validity and reliable differentiation of ratings among subjects. Thus, all of the stories together for each subject were rated subjectively for the final over-all scores, but no provisions were made to guide the judges' weighting of the different stories in terms of their different degrees of FM. There also tended to be a predominance of low FM referents provided by the manual as compared with high FM. The result was a piling up of scores at the low end of the FM scale. Perhaps a series of cards reflecting more or less neutral FM would have reduced the difficulty in weighting different
cards in judging an over-all FM score.

Another rather basic difficulty in both the TAT and ISB was deciding whether a given reference to the area of academic recognition reflected NV, FM, or both. Thus, if a person minimized a given activity within a certain need area, we can not be certain if this is because of low NV or low FM or both.

It is felt that an increased sample on which to base the scoring manual would help reduce some of this ambiguity.

It is also obvious that this study could have benefited from a large number of cases. Some of the group between which comparisons were made were very small and obviated the use of the more usual parametric statistics.

Because of the predominance of high NV and low FM scores, groups based on low NV and especially high FM were necessarily small. Prior selection of these relatively rare scores could have been made, perhaps, by group administration of the ISB before administering the other two tests.

One implication for further research is suggested by the tendency for high NV to be related to the number of references made to that need area in the ISB. It may be that the ISB in its present form does not adequately measure the lower end of the NV scale because there are relatively few referents for low NV. A more highly structured set of sentences specifically focused on a given need area (or need
areas) would probably allow for more adequate differentiation at the lower end of the scale.

Since high NV in academic recognition tended to be associated with low OSPE in this study, research might profitably be directed to determine how characteristic it is of unstructured projective tests in general to elicit material reflecting needs for which the individual has in the past been frustrated in satisfying.

The lack of predictability of dependent behavior from the ISB to the problem situation suggests that the appearance of such behavior may be closely tied to a particular situation. The ISB scores we regarded as representing a general potential for dependency behavior may have, in the case of our academic recognition situation, reflected merely NV. It is quite likely that inherent in such a situation are sanctions against seeking help and generally low expectations for receiving it.

For these reasons, prediction might be considerably refined if NV and PM ratings were separately derived using statements bearing more directly on the area of academic recognition.

The behavioral criteria for dependency may also have contributed to the lack of a relationship between ISB and problem-dependency. Thus, it is possible that some of the questions and self-depreciating remarks deserved more weight in the derivation of a total score than others. For
example, the asking for a hint might be indicative of a higher degree of dependency than a question concerning some aspect of the procedure.

It is also possible that with some individuals our behavioral measure partly reflects a general resistance to the whole problem situation as well as dependency. Presumably, this would have the same interfering effect on problem solution as dependency behavior, but if such a contamination existed, it would serve to lower the correlation between dependency measures.

A more sensitive measure of individual differences in dependency might be achieved if different weights were assigned to different kinds of questions asked.

It would seem, therefore, that the relative crudity of our measures may largely account for the non-significance or low level of significance obtained in testing our hypotheses.
This study was designed to investigate a question which has been perplexing psychologists for a long time; namely: why do individuals who apparently have sufficient intellectual endowment nevertheless sometimes fail to perform as well as might be expected on intellectual problem-solving tasks?

Several kinds of approaches have attempted to answer this question. These include the positing of rigidity factors, anxiety states, or susceptibility to stress, characteristic of the performing individual which may impede solution.

It is felt that much of the contradictory and ambiguous evidence resulting from these studies can be attributed to the over-generalized nature of such constructs. Prediction is being attempted on the basis of too few variables which may in reality include highly pertinent aspects which are either not spelled out clearly enough or not recognized at all.

In an effort to render the question of the discrepancy between presumed ability and actual performance amenable to experimental investigation—particularly from a social learning theory orientation—the question has been
recast. It would seem necessary to ask: To what degree is an individual motivated to solve the problem; what internally-held expectancy does he have that he will be able to do so; what behaviors may be elicited from him in a situation which produces a low expectancy for success; and what effect will these behaviors have on the efficiency of his problem-solving performance.

This study selected dependency behavior as one type of reaction which may be characteristically elicited in certain individuals by an intellectual problem situation. As viewed in this study, the behavior potential for dependency is a function of the reinforcement value and expectancy for achieving the reinforcement.

However, dependency behavior may be instrumental in achieving many goals or preventing a variety of frustrations. For this reason, the elicitation of dependency behaviors in a problem-solving situation would seem to be largely predicated on the value an individual places on success and his anticipation of succeeding through alternative behaviors involving a direct attack on the problem itself.

Thus, an individual who had learned dependency behaviors were effective in providing him satisfaction (high dependency behavior potential), who was strongly motivated to succeed on a problem-solving task (high NV) but who had from past experience come to expect great difficulty or failure on such tasks (low FM) would be expected to
show more dependency behavior in a problem situation than would an individual with a lower dependency potential who was less concerned about succeeding, and who possessed a higher expectancy for solving the problem.

Following from this line of reasoning, two other variables were selected for study besides dependency. These were NV and FM pertaining to the need area of academic recognition which seems most representative of an intellectual problem-solving situation. By the need for academic recognition, we mean the attachment of value to gaining status, recognition or prestige or attaining a high level of achievement in activities commonly recognized as academically or professionally oriented.

Thus far we have considered one of the kinds of behavior a person might be expected to use in a problem situation when he perceives little chance for achieving a desired goal through the usual appropriate methods of solution.

When this conflict situation exists (defined as the discrepancy between FM and NV), an individual is most likely to turn to the experimenter (or any other person or thing available) for help in achieving a problem solution or in order to avoid the frustration attendant upon failure.

Such behavior would, of course, only be maladaptive if the individual receives no help in arriving at a correct problem solution. If no help is forthcoming, the
behavior may become maladaptive by interfering with active attempts to solve the problem directly.

To meet the requirements of this design, a problem was chosen which would allow a comparable period of time to every subject for the appearance and recording of dependency behavior, a simple objective criteria for solution, and a measure reflecting efficiency of solution.

The objectives of this study were two-fold: to predict the differential appearance of dependency behavior in a problem situation, and to investigate the relationship between dependency and efficiency in problem solving.

The procedure was to administer the ISB and a modified set of TAT cards, and then to present the problem task to 49 college subjects.

Reliable scores were derived from the ISB for dependency potential and also for the two variables of NV and FM in academic recognition. The Modified TAT was also reliably rated for NV and FM in academic recognition, and over-all scores obtained. The measures for all three variables were based on certain principles and specific examples provided by scoring manuals.

The criteria for choosing a suitable problem task demanded that there be a comparable period of time for all subjects in which dependency behavior could be noted. A difficult problem was chosen which allowed a 15-minute period for making these observations. During this period a
friendly and cooperative attitude was maintained by the experimenter, but great care was taken not to assist one individual any more than another. The behavioral measure of dependency was defined as the number of questions asked and self-deprecating remarks made by the subject in the 15-minute interval. After this initial period, a series of hints were given to all subjects in order to make the problem more readily solvable yet still difficult enough to be sensitive to individual differences in proficiency. Length of time required for solution was taken as the measure of problem-solving efficiency.

The first general hypothesis comprises four specific hypotheses and seeks to determine the relationship between our personality test measures of dependency NV and FM and actual dependency behavior in a problem-solving task. These are:

(1) There is a positive relationship between ISB dependency scores and dependency scores obtained in the problem-solving task.

IA. Individuals with high need for academic recognition, low expectancy for success, and high dependency potential as measured by the ISB will show more dependent behavior in the problem situation than individuals with the same level of NV and FM but with low dependency potential as measured by the ISB.
IB. Individuals with high dependency potential, low expectancy for success, and high NV for academic recognition will show greater dependency in the problem situation than will individuals who have the same degree of dependency potential and FM level but who have a low NV for academic recognition.

IC. Individuals with high dependency potential, high need for academic recognition, and low expectancy for success will show more dependent behavior than will individuals who have the same degree of dependency potential and level of NV but who have a high expectancy for success.

The results of testing these hypotheses are as follows:

1. No significant relationship between the ISB measure of dependency and the behavior problem measure was found. It was concluded that what validity the ISB measure may have is probably in terms of general patterns of attitudes and behaviors an individual has built up to members of his own family and others with whom a stable and probably long-term relationship has been established.

2. No significant difference was found between problem-dependency scores of a group showing high ISB dependency potential and a group showing low ISB dependency potential when the groups are equated on high NV and low FM. This was true whether ISB, TAT, or a combination of ISB+TAT measures of NV and FM were used.
3. A tendency was found for the group having low need value to show less dependency behavior than the group having high need value when the two groups were equated on high ISB dependency potential and low FM. However, the relationship held only when ISB measures of NV and FM were used. When TAT and a combination of TAT+ISB NV and FM scores were used, the groups were not differentiated on the amount of problem-dependency shown.

4. A significant tendency was found for the group having high FM to show less dependency behavior than a group having low FM when the groups are equated on ISB dependency potential and high NV. Once again, however, this finding obtained only when the ISB measures of NV and FM were utilized.

Reasoning that combining Hypotheses IA, IB, and IC would produce maximum prediction (although not revealing individual contribution of the three variables) the problem dependency scores of a group having low dependency potential, low NV, and high FM were compared with a group having high dependency potential, high NV and low FM.

A significant difference in problem dependency scores was found when the groups were differentiated on the basis of ISB+TAT NV and FM scores, and a difference approaching significance was obtained when ISB scores were used alone.

It was found, however, that a slight but signifi-
cant negative relationship existed between problem dependency and intelligence as measured by the OSPE. Furthermore, there was a significant inverse relationship between NV and OSPE scores. This fact suggests that a partial explanation of our significant differences in problem-dependency between groups differentiated on NV, PM, and ISB dependency may be attributed to group differences in intelligence. This does not invalidate our hypotheses, inasmuch as dependency potential, NV, and FM means were derived entirely independently from considerations or knowledge of OSPE scores.

The negative relationship between NV and OSPE is especially interesting in light of the fact that there was a decided tendency for individuals with high NV scores to make more academic recognition references in their ISB statements. One conclusion which might be made is that the appearance of referents for a need in projective tests is dependent upon some degree of conflict or frustration in that need area, which causes it to become more salient or important to an individual.

As a general conclusion, it is felt that a genuine aid to prediction of behavior is provided by taking into consideration NV and FM as separate determiners. One of the causes of poor predictability from projective or personality test to actual behavior may result from the lumping together of a variety of fantasies, wishes, statements of
action, etc., and regarding them all as representing behavior potential.

The problem of obtaining valid NV and FM measures is illustrated by the lack of relationship between the ISB and TAT measures of these variables. We can only judge such validity if the use of NV and FM measures enables us to make predictions. While the evidence is indirect, the results of Hypotheses IB and IC favors the ISB measures.

The correlation between ISB and TAT NV-FM, conflict, scores, suggests some commonality between these two operations, but this is slight. Certain aspects of the TAT cards were suggested as possible factors reducing sensitivity to individual differences in NV and FM. These included the difficulty many subjects would have identifying with the central character and the fact that the cards were originally designed to measure FM specifically, and not NV. The result may have been an over-production of stereotyped stories, in which the subject's own personal needs and expectancies had relatively little representation.

The second general hypothesis was designed to investigate the relationship between the two measures of dependency and actual problem-solving ability. The two hypotheses are:

IIA. There is a direct positive relationship between ISB dependency scores and problem time.

IIB. There is a direct positive relationship be-
between dependency as measured in the problem situation and problem time.

The results of testing these hypotheses are as follows:

1. No significant relationship was discovered between ISB dependency scores and length of time required to solve the problem. The utilization of only subjects with high NV relative to FM likewise failed to produce a significant relationship, although a slight trend to the hypothesized relationship was suggested. Inasmuch as the ISB estimate of dependency potential was unrelated to actual dependency behavior in the problem, this finding adds nothing except perhaps further evidence of the lack of generality of the ISB dependency measure.

2. A significant correlation was found between dependency behavior within the problem situation and problem time. This finding is consistent with our hypothesis that dependency behavior may interfere with problem-solving efficiency.

However, it will be remembered that problem dependency was negatively related to intelligence (OSPE). Since problem time was also negatively related to OSPE to the same degree, the possibility arises that our result may be in part attributed to the effect of intelligence on problem time.

To control the effects of intelligence on problem
time, subjects were matched on OSPE scores. With the effects of intelligence controlled, there was still evidence of a positive relationship between dependency behavior and problem time.

In summary, the results of this study suggest that it is possible, on a group level, to predict the appearance of dependency behavior in an intellectual problem-solving situation if the individual's need to do well on the problem and his anticipation of being able to do so is taken into account.

There is also some evidence that this dependency behavior may interfere with the efficiency of problem solution. However, both findings are at a fairly low level of statistical significance, and should probably be regarded as merely suggestive.
# APPENDIX I

## PROBLEM TASK, ISB AND TAT SCORES

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-82-
The figures below represent a peg board with 49 holes. The dots represent holes with the pegs in them and the blank space are holes without pegs. You will note that there are four such blank spaces.

The object of this problem is to "remove" all of the pegs except 10, so that there remain five straight lines of pegs with four pegs per line. In your solution draw a circle around the pegs you have left in, and also draw in the five lines in which the pegs fall. Any continuous straight line must be regarded as one line only. However, you may have a line in which some pegs are omitted. For example, a line may pass thru seven of the peg holes, even though only four have pegs in them. There must, of course, be a peg at the beginning and at the end of the line. You may use the extra figures in whatever way you wish to get the solution.

HINT GIVEN AFTER INITIAL 15-MINUTE PERIOD

CORRECT SOLUTION
APPENDIX III

Appendix III contains instructions for rating the ISB and scoring manual for protection-dependency.
Responses which verbalize or imply:

1. That the actions and attitudes of authority figures have, for S, a high reinforcement value, i.e., are "important."

   a. A strong, close relationship with parents and/or parental figures.

      Examples: Back home...I dislike having even a tiny disagreement with my parents.
                 A mother...is always needed.

   b. Feelings of guilt and/or indebtedness toward parental figures.

      Examples: I failed...my parents by failing here.
                 I feel...deeply indebted to my parents.
                 I suffer...when I have been wrong.

   c. Other indications that the positive or negative attitudes of authority figures are important to S' feelings of security and satisfaction.

      Examples: What annoys me...are people who are impatient when teaching me the song.
                 What pains me...is very sharp criticism.
                 What annoys me...is teachers who don't understand.

2. A felt need for advice, guidance, suggestion, structuring, e.g., regarding plans, study situations, social behavior, vocational choice.

   Examples: I need...the advice of an authority about my problems.
                 I need...help from someone older.

3. Difficulty in making decisions; concern with indecision.

   Examples: What pains me...is not being able to decide.
                 The only trouble...is that I've become used to others making major decisions for me.
                 I...wish I could make up my mind.
4. a. Wishes or preference for dependent, protected situation, e.g., childhood, being at home with parents, non-demanding circumstances.

Examples: The happiest time...was when I was young. Back home...is where I like to be when things go wrong. I feel...children need the protection of a home. I...wish I didn't have to go so far from home.

b. Discomfort or lack of self-confidence in unprotected, demanding situations, e.g., worries regarding responsibility taking, own abilities, the future.

Examples: My greatest fear...is meeting any very new situation. The future...is something that I fear. I can't...do half the things expected of me.

5. a. Reliance on adults, i.e., authority figures for mediation of satisfactions and protection.

Examples: I like...to do what I am told, even though I do argue. I am best when...I am with older people. My mind...has already been decided for me. A mother...should comfort and aid her children at all times.

b. Reliance on other's values, opinions, attitudes; tries to meet others (especially parents') standards, e.g., "Mother knows best" attitudes.

Examples: A mother...usually knows best; mine does. My greatest fear...is of disappointing dad. My father...suggested I come to this school. I...would like to do what my father would like.

6. Strong inadequacy, inferiority, lack of self-confidence feelings; need felt for extreme preparation before S can feel secure and adequate.
Examples: when I was a child...I didn't know how
discouraging life can be.
I need...someone to bolster my self-confidence.
Sometimes...I feel lost.
What pains me...is my lack of confidence.

7. a. Wishes to be "understood" and "appreciated"--and
feelings that S is not understood and appreciated.

Examples: Back home...I have a feeling of security
and understanding.
What pains me...is very sharp criticism.
I wish...you would try and understand.
I need...encouragement.

b. Complaints about symptoms of physical or mental ill-
ness.

Examples: I wish...someone could help me get over
my "nervous stomach." (2)
When I was a child...I had a bad heart
and couldn't engage in sports. (2)
My nerves...are on the brink of a nerv-
ous breakdown. (1)

My greatest fear...is that I will stut-
ter when talking. (1)

3. Difficulty in disagreeing with others' opinions; "fol-
lower" rather than "leader" tendencies.

Examples: My mind...is sometimes too easily swayed.
when I was a child...I was very shy and
let my sister do the talking.
I need...more will power. (1)
I secretly...like to do what I am told.

9. Feels secure only with people S knows well.

Examples: I am best when...I am with one or two
close friends.
My greatest fear...is meeting any very
new situation.

10. S views self as immature or childlike; has interests,
attitudes, characteristic of those younger than him-
self.

Examples: when I was a child...I liked childish
things and still do.
Other people...think I look about 12.
I am very...young and inexperienced.
The only trouble...is that I don't think
I'm ready for college.

**Where there is only a statement of the symptom, rate the response as "1"; when, in addition to the symptom, some plea or wish for help is stated or **strongly** implied, rate the response as "2".**
MANUAL FOR INCOMPLETE SENTENCE BLANK

PROTECTION-DEPENDENCY

SCORE

1. I like...

2: to do what I am told, even though I do argue.

1: to be happy.
to know why I have these headaches.
people who are successful
to be with my family.
to be of help to other people.

0: comfort.
being interesting.
the U.S.A.
to sleep.

2. The happiest time...

2: of my life was in my youth.
was when I was young.
was between ages 14 and 18.

1: was when my father recovered.
is when I have no worries.
of my life will be when I am professionally, matrimony-
ially, and financially secure.
is with my wife and family.
was in school.
is on my way home.
is when I help others.

0: of my life; when I got married.
was when I became freed from prison.
is summertime.
is really not the happiest time.
is when I'm with my friends.
is in school.
is when I came to school.
was my trip to Italy.

3. I want to know...

2: how to gain complete faith.
if you are going to doctor me.
what to do.
if I'm in need of medical care.
why people act the way they do.
1: what will happen to me in the next 5 years.
more about the way to react to the problems confronting me in life.
what I am best suited for.
if people like me or not.
more about health.
the truth.
a better life--more about living.
if I can be a success.
what the future holds for me.
how to make people content.

0: how to make the most of leisure hours.
more about the McArthur deal.
if it's true.
what you think.
how to be a better student.

4. Back home...

2: is where I always want to be.
I had a few responsibilities.
I have a feeling of security and understanding.
my sister helps me with my work.
is where I stay. There is no place like home.
life was quiet and easy.
I am not worried.

1: I worked for Dad.
my house is the place I like most.
to my love.
to my wife.
is a pleasant place.
I get treated swell.
the people are friendly.
we are a happy family.
I am quite happy.
I enjoy being with my family and friends.

0: I have a good home.
we like old fashioned meals.
my parents are still living.
for my vacation.
things have changed.
I could get into my old clothes and relax.
I have a lot of close friends.
I have a great time.

5. I regret...

2: I was not a Christian sooner.
to say I have lost some of my friends.
having to be away from home.
being away from my family.
that my mother's life has been unhappy.
being angry with my parents.
when I was younger.

1: that I am self-conscious.
having difficulty talking with people.
not going through school.
that I am tired.
all my mistakes.
many things I have not done.
that I do not look older.
that my wife and I parted.
that I can't spend more time with you.
that I am not farther along financially.

0: I cut my finger.
starting to drink beer.
to say that I must leave.
not having been there when the Indians won.
the amount of time spent in service.
not studying harder in high school.

6. At bedtime...

2: we all said our prayers.
was say a prayer.
I take a sleeping pill.
I thank God for all the things he's given me.

1: I'd like to sleep.
I try to sleep; sometimes I sleep well.
I see that my little girl is all right.
I am usually very tired.
I prefer to sleep with my son.
I think of the ones at home.
I usually write to my parents and friends.

0: I usually eat something.
things are kind of noisy.
we should lay aside our worries and go to sleep.
I like to eat.
I try reading to relax for slumber.
it's time to relax.
I always drink a glass of milk.
I'm sleepy.

7. Boys...

1: are very self-centered species of mammal.
seem farther advanced financially than I am.
are usually sissy.
are humans and to be treated as such.
are soul-minded.

0: are in the army.
don't understand everything.
are the most intelligent of animals.
are a lot fussier about clothes than women.

8. The best...

2: thing for me is to have more contact with women.
which will improve my self-confidence.
part of my life is gone.
thing was to live with my parents.
in the world are my parents.

1: way to learn is to be taught properly.
to get well.
people are people who are not one way.
hours of the day I have to work.
are friends, happiness, and your family.
in health is very important in one's life.
people always think of others.

0: is none too good.
is yet to come.
is far from the worst.
dinner I ever ate was chicken.

9. What annoys me...

2: trying to decide what to do.
is people who do not give others due consideration.
are people who embarrass or hurt others.
is people talking about others.
most are professors who don't answer questions.
is "catty" females.
is being criticized even though I know I don't know everything.

1: is my back.
is my nerves.
are the things some people do.
is that I can't do enough for other people.
is my relatives.

0: is the way Mom keeps the doors locked.
is some of these politicians.
most is the attitude which he takes.
is an intolerable environment.
is affected people.
is conceited or self-centered people.

10. **People...**

2: that do not consider others.
should always be considerate of others.
are often very rude.
as a rule think only of themselves.
live for themselves.
puzzle me.
are distrustful and deceiving.
are not always kind and considerate.
don't know how sick I am.

1: are nice to a certain degree but some aren't.
usually treat me very well.
are both self-interested and interested in helping others.
are what make the world go round.
are nice, most of them.
think that I am quiet and moody.

0: all have a little good in them.
are living too fast to enjoy their lives.
congregate at any scene of an accident.
are taking more interest in government.
is general are o.k.

11. **A mother...**

2: should comfort and aid her children at all times.
helps you to study when you should.
always protects her children.
will give her life for her child.
is indispensable.
is the only woman a man can really trust.
is someone to take care of you.
is everything.
is one who will never let you down.
is to be treated well.
is one you can always rely on.

1: means very much to me.
is your best friend.
is a wonderful woman.
can be the most comforting one in your life.
is an important member of the family in making home
for husband and children.
loves her children best.
is the best friend in the world.
is the only friend you got.
my mother was very good to us.
is a boy's best pal.
should hold the respect of her family.

0: must have a busy day.
is one who has children

12. I feel...

2: a strong attachment for any security.
that the future is too insecure.
like going home.
that I am dependent on my wife for a lot.
best at home.
terribly upset and nervous.
ashamed at times when I hurt others.
as if I don't know what I want to make of myself.
useless.
so awed at the thought of the future.
that I am slipping at times and not sure of myself.

1: worried about college life.
bad all the time.
uneasy most of the time.
that people should be more friendly to each other.
sad.
nervous.
that I may have a slight inferiority complex.

0: the best is none too good.
hungry!
with my hands.
as if I were forgetting something.
like I need sleep.
good today.
sick.

13. My greatest fear...

2: is indecision on my future until it's too late.
is of disappointing dad.
is making a wrong choice.
is that America will forget God.
sad.
is of God.
is that I will disappoint my parents in the coming world.

1: is the unknown.
is the health of my father and mother.
is that of failure.
is having to face people and to talk easily and interestingly.
is personal weakness.
is death.
is accidents.
is other men.
is driving.
is of drowning.
worries.
is myself.
is being all by myself for a time.
fear.
people won't like me.

0: is that I will become old.
is another war.
that day I was in combat.
is snakes.
is airplanes.
is high places.

14. In high school...

2: I failed.
were the happiest days of my life.
I was never too bright.

1: I stayed out of too many things.
I had an inferiority complex.
my friends--I liked them all.
I was liked.
I was always rushed.
I was a very poor student.
we had a good time.

0: my greatest asset was good teaching.
my child should learn.
studying too hard is worse than none.
I was an average student.
I was very happy.

15. I can't...

2: decide what to do.
dance because I'm awkward.
do half the things expected of me.
do it well.
understand why people can't always be congenial.
do go on like this.
adjust myself and feelings.
understand why I could not be like other men and get ahead in the army.
1: see why anyone would laugh at mistakes,
do very many things anymore,
hold a job for long until my nerves break down,
seem to understand anyone,
do many things I would like to do,
learn to relax and enjoy my life,
sleep so good at night,
feel that I ever express myself fully,
remember a lot of things,
seem to concentrate.
spell good enough,
do anything right sometimes.

0: conceive people with any education so blind to their
environment,
be president but I must pay taxes,
understand the attitude of the heads of our government,
get up,
believe it's true,
seem to get started.
concentrate if it's very noisy.
swim.

16. *Sports*...

2: are one good way of teaching morality.

1: I dislike taking part in most sports,
as a rule bother me.

0: interest me, though I seldom take part.
have never interested me very much.
are good for health.
are good exercise.
do not interest me very much.
are swell for kids.
are all forms of recreation.
are fun to watch.

17. *When I was a child*...

2: I was always afraid of the dark.
I had a fear of meeting people.
I didn't realize how lucky I was.
I had a bad heart and couldn't engage in sports.
I didn't know how discouraging life could be.
I felt inferior to others.
I was weak and sickly.
I enjoyed living more.
I was happiest.
1: my mother worked long and hard to provide and care for me.
we never had much and were glad to get what we could.
I had a good time.
I feared being alone.

0: I nearly got hit by a car.
I went to school.
(mention of specific illness, as rheumatic fever, fits)
I was very happy.

18. My nerves...

2:

1: are a cause for my sleepless nights.
are very much on edge.
are shaky.
sometimes get the best of me.
are keeping me restless.
are not very good.
bother me more when I am tired.
bother me.
are shot.

0: are o.k. I think.
are fair.
change at times.
are not a problem.
don't bother me.
are average.

19. Other people...

2: will determine my future.
appear to me as my superiors.
must think I'm awful.
think I look about 12.
think I'm mean.
don't know, don't care and some don't understand.
at times annoy me (bother or irritate).
still disturb me when I am sick.
seem to like me.
sometimes get on my nerves.
make me mad at times.
can make me feel very unimportant.

1: don't seem to have any trouble.
have no trouble at all.
certainly have tried to help me get ahead.
want what you have.
are nice.
seem to accomplish more than I.
never notice the things I do.
sometimes misinterpret my actions.

0: seem to be nervous and restless.
have their faults.
are o.k.
fascinate me.
usually are friendly.

20. I suffer...

2: when I have been wrong.
like all disabled war veterans.
a great pain.
from an inferiority complex.
daily for the price of freedom.
with terrific headaches.
in that I'm not exactly sure what I want.
from wanting to go home too much.

1: when I make mistakes.
from sickness when I was small.
from emotional instability.
from a lot of headaches.
from sinus.
from a back injury.
from worry.
from pain that causes me to postpone meals.
when not near people.
from nervousness.
worring.

0: from both extreme heat and cold.
from smoking.
when I see so many good foods I can't eat.
with the best of them.
when other people suffer.
from stage fright.
when I broke my arm.
when I go without sleep.

21. I failed...

2: to gain courage.
to be what I expected.
to say my evening prayer last night.
a number of times of achieving my goal.
in marriage and a lot in school.
to do right.
in everything I tried.
to make good.
at most of the things I have ever started.
to go to church last Sunday.

1: to do the right thing many times.
at many things.
to make the grade.
to be as successful as my father.
to make a go of my married life.
in several ways.
to realize the value of education.
to secure a better job.

0: to understand math problems.
in making an outstanding impression in high school.
to read the paper.
to see the red light.
in some things.
to get the grades I wanted last quarter.
to do the right thing in some instances.
Latin.

22. Reading...

2:

1: gets on my nerves.
is something I should do more of.
is something I cannot do because of lack of concentration.
is difficult to me.

0: is bad on the eyes if you read too much.
was hard at first.
is a pastime.
does not interest me any more.
don't like it.
can be tiring.
too much is harmful.
is a bore to me.

23. My mind...

2: is still immature.
is opened for help.
is sometimes too easily swayed.
is in a muddle as to what to do in life.
is unsure.
is mixed up.
is always thinking things that I shouldn't do.
is uncertain on what career to choose.
can't seem to think clearly.

1: seems undeveloped.
seems to be slower and more dull.
gerets off the track sometimes.
sometimes gets confused.
is a blank when I get excited or nervous.

0: is a conglomeration of facts and figures.
is at rest when I'm sleeping.
wanders at times.

24. The future...

2: is something that I fear.
is very insecure.
for me is very uncertain.
does not look any brighter than the past.
scares me.
holds very little for some people.

1: right now is not very bright.
is not clear.
does not look too good at times.

0: home and family.
no one knows about.
could be world war.
of the world is in a heck of a mess.
will come.
is undecided as yet.
puzzles but doesn't worry me.
is indefinite.

25. I need...

2: help from other sources.
help.
encouragement.
more self-confidence.
help from someone older.
much guidance in later life.
the advice of an authority about my problems.
aid from everyone to accomplish my end.
someone to help me with my homework.
my family.
more kindly interest.
to behave myself.
friendship from many people.

1: lots of things I guess I will never own.
more experience in meeting people.
a change in working conditions.
something to make me feel better.
to write my parents more often than I do.
financial aid to finish school.

0: a good meal at least once a day.
to have more.
to get more sleep.
to study.
money.

26. Marriage...

2: is a fine sacred thing.
is a good responsibility to make you work.

1: my wife is one of the nicest persons.
is something that is bothering me at present.
in the past has been very difficult.
is jumped into too quickly by young people.
is too much responsibility for a young person.

0: is a wonderful institution.
is something we should all engage in.
is a fine thing for two people in love.
is still far away.
is a good thing for you.
is a fine way to spend your life.
is 0.k.
might be possible.
is a great change that I need.
like married life.
is nice.
is great.
that is out.
have been.

27. I am best when...

2: I have encouragement.
I am with older people.
I am with one or two close friends.
the people around me are helpful.
treated kind.
i'm among a few close friends.
under pressure.
1: I am well-prepared.
   not suffering from a headache.
   I feel good.
   things go right.
   free from worries.
   when everything agrees with me.
   feel more confident.

0: asleep.
   I have rested.
   I first arise.
   I can do more for my wife.
   I have had a good night's sleep.
   when I've had sufficient sleep.
   with a group of people.
   happy.
   competition is keenest.

28. Sometimes...

2: I wish I had stayed at home.
   I feel lost.
   things seem dark.
   I wonder if it's all in vain.
   we can use a little encouragement.
   it is hard to understand people.
   it isn't easy to understand.
   I feel I don't know what I want to do.
   I miss home.

1: I feel tired for no good reason.
   I get feeling sad over my mistakes.
   little things worry me.
   I feel awful.
   I am blue.
   I get pains in my heart.
   I feel I've failed in some things.

0: we should change our work.
   is like no times.
   I like to see a fast plane streak across the sky.
   I am bored with my job.
   I get in a bad mood.

29. What pains me...

2: is not being able to decide.
   is my lack of confidence.
   is when my efforts are not appreciated.
   is when nothing I do seems to go right.
   to see myself retarded.
   is to have destructive criticism.
   is people who continually annoy others.
1: most is to see my Mother hurt,
is to see men and women smoke,
my stomach, back, and sides.
is my nerves,
my fingers.
is my leg,
is selfishness.
is discomfort to those I love.
is unfriendly people.
is to hear people complain, about others.
double-crossers.

0: is to see a child punished.
are suffering children.
is a sunburn behind my knees.
more than anything is social injustice.
is usually cured by rest.
are snobs.

30. I hate...

2: to leave home again.
to see things not in good taste.
to make a nuisance of myself.
to be bothering people.
to hurt other people.

1: myself when I lose my temper.
to be called a sissy.
being late.
to leave this place.
no one.
to be laughed at.

0: men who don't think of their wives.
to fight.
dancing,
operas.
to think of the U.S. becoming involved in another war.
to hear children cry.
persecution in any form.
nothing.
someone who ridicules others.
to get up.

31. This school...

2: is trying to do the best they can for fellows like me.
can help a vet.
will leave me with some fond memories.
I wish I knew better how to understand.
is to help people out of their trouble.
was designed to help ex-service men.
is not understandable.
holds for me the chance to start anew.

1: is like home.
is like a city in itself.
I feel somewhat lost.
too far from home.

0: is clean and orderly.
is quiet and restful.
is o.k.
looks all right.
is a great help to some people.
is one of the busiest places in the city.
is a very good city for some people.
is always humming.
wonderful.
is too large.

32. I am very...

2: young and inexperienced.
self-conscious.
confused at times.
sorry for all the trouble I have caused my parents.
much in doubt about my vocation.
anxious for a change in life.

1: worried about my future.
slow to catch on at times.
dissatisfied with my profession.
fond of congenial people.
sorry.
tired.
in love with my wife.
tense.
lonely— it shouldn't be that way.
troubled at the times when my bills come due.
sensitive.
slow in things I do.
depressed about school.

0: satisfied.
hungry.
uncertain of his ability.
moody.
33. The only trouble is...

2: I have in making decisions.
is that I've become used to others making major decisions for me.
is that I'm so little.
I don't know what I do want.
is people never give me any credit.
is to be nervous, disturbed and talk loud.
is me.
is not being given credit for anything.

1: is, can I make the grade?
is my shyness.
is finding enough time to be home.
is that it's all up to me.
is that nervousness.
domestic.
is there is too much of it.
I miss my fiance.

0: is dad.
I can think of is more trouble.
is my spelling.
I can't go.
we found was in the engine.
how is that we lack peace.
is more trouble.
finances; money.
I don't study enough.
not enough time.

34. I wish...

2: that I were entering high school again.
I had stay at home.
that you would try and understand.
I could make up my mind.
I would quit worrying about everything.
everything was going along smoothly.
I knew what is best.

1: I were a better boy.
I could put my mother on "easy street."
I were going to a smaller school.
I could overcome my shyness.
for a more pleasing way of talking with people.
for a change.
I was well and back on the job.
I could be able to work.
I would work.
I were more of a leader.
there was not so much sickness.
all was well.
I was rich.
I could get a position that was more interesting.
the war in Korea would end soon.
I didn't have to work.
I were older.
I had more time for things I'd like to do.
I were out of school.

35. My father...

is going to help me all he can.
has done more for me than I can ever repay.
is the best man in the world.
could do more for me.

suggested I come to this school.
is very understanding.
has been very good to me.
was very good to us.
is too plain spoken to others.
is a very faithful dad.
I respect and admire.

works for the school board.
works every day.
I know nothing about.
died last year of cancer.
is living.
is a fine man.
is much older than I.
is employed at----
is one swell fellow.
is no good.
was a good father.
was successful.
is like all men.
is generous.

36. I secretly...

like to do what I am told.
hate to leave home and start living somewhere else.
pray that God will help me in my choice of life's work.
would like to stay home.
lack confidence in myself in getting along with people.
1: hope to be well off and help my family out.
    love some women a long time before I tell them.
    have done things I have regretted.
    am scared of college.
    wish I could overcome my fears.
    have my doubts about making good.
    admire many people about me.
    ponder.

0: left the building.
    wish we had peace.
    love another.

37. I...

2: hope I am helping you to help me.
    wish I could make up my mind.
    depend too much on others.
    am lonesome and restless most of the time.
    don't know whether to marry or not.
    don't know what to say.
    realize my parents will do anything for me that I feel is
    really important.

1: try to be good.
    have been doing the best I can.
    am very self-conscious.

0: think my baby is very cute.
    am hungry.
    wish to keep the appointment.
    can't believe that he is wrong.
    like the beautiful things in the world.

38. Dancing...

2: one of my feet belongs to church when it comes to
    dancing.

1: presents an obstacle.
    is something I never learned.
    don't know how.

0: I gave up years ago.
    I do not go dancing.
    makes your feet ache.
    is a sport.
    isn't interesting to me.
    is one thing I don't like.
    is a wonderful social activity.
39. My greatest worry is...

2: finding a place of security.
   being separated from my family.
   what the future holds.
   about the future.
   will my dad want me to continue school.

1: my mother's health.
   will I be successful in the eyes of my parents.
   what's going to happen when I die.
   i can't get rid of it.
   people.
   getting to feel good.
   security for my sons.
   my health.
   my children.
   trying to do the right thing.
   becoming successful.

0: the world situation.
   will we ever get the U.S. straightened out.
   is my brother.
   money.
   not liking to study.
   failing out of school.

40. Most girls...

2: are loving, kind, and considerate.
   don't know or understand me.

1: are easy to get along with.
   get and have more than my wife.
   are nice of you treat them right.
   get along well with them.
   don't trouble, worry or embarrass me unduly.

0: use too much powder and rouge.
   don't treat their men as husbands.
   are pretty.
   marry in their early 20's.
   like to shop.
   are fools.
   are pretty nice people.
   are good sports.
   have a herd life raising children.
   go to college to find a husband.
APPENDIX IV

Appendix IV contains instructions for rating the ISB and scoring manuals for need value and freedom of movement in academic recognition.
INSTRUCTIONS FOR RATING THE ISB FOR NV AND FM IN ACADEMIC RECOGNITION

ISB protocols will be rated on a five-point scale for need value and freedom of movement. On each of these scales a rating of 1 will indicate a high degree of the variable while 5 will indicate a low degree of the variable; e.g., a 1 need value rating and a 5 freedom of movement score would indicate high need value and low freedom of movement.

After familiarization with the manual, rate all the subjects for one stem before proceeding to the following one. The method of scoring is by example. However, the manuals do not contain examples for all stems, because none were given in the exploratory group. In cases in which a response occurs for which there is no example given, it should be scored as similar responses are and in accordance with the same general principles as the other sentences. Follow the manuals as closely as possible and avoid clinical "hunches."

After all relevant sentences for an individual have been scored, an over-all rating of freedom of movement and need value should be made. The basis for these ratings should not be an average of all the scores given, but should be arrived at by use of the general principles of the interview and also the frequency and strength of any particular referent.
1. I like...

1 2 things in many fields.
the physical and biological sciences, engineering
and agriculture.
school.

2. The happiest time...

3 of my life will be when I graduate from OSU.
will be when I have completed school and start at
the work I want to do.

4 time of the day is when my work is done.

5 (s) that I spend are when I am not concentrating.

1 1 time of my life was experienced in college.

1 2 is when discussing philosophy.

3. I want to know...

1 as much as possible in as short a time as possible.
everything I possibly can.

2 why I have fallen down in my incentives.

3 enough of industry to get a good job.

1 2 more about natural science and philosophy.
all I'm capable of knowing concerning the universe
and people who inhabit it.
more about research and business.
more about the chemical functioning of living or-
ganisms.

1 4 how to get better grades.

5. I regret...

2 that I dropped out of college for two quarters.

3 that I did not finish college sooner.

4 that my success is still uncertain.
that I will fail to accomplish all the things I'd like to.

I lacked good study habits on entering college. that I have not learned how to study effectively. getting low grades in school. college and its importance and corruption. having wasted my high school education. my ignorance of subject matter. (academic deficiency)

intellectual deficiency. my inability to concentrate.

that I didn't get more out of college.

At bedtime...

that I've never finished my day's work.

The best...

thing about college is the knowledge I receive. thing to have is knowledge. thing that can happen is to go to college. things that has happened to me is school where I am attending now.

is supposed to be in college.

What annoys me...

is having someone talking in class while the instructor is giving instructions. is that I must take so many required courses. (an academic subject)

the laxness of terms in psych 401, courses in which the lecture is only a recitation of the book, wasting time and slow thinking.

is that I'm not interested in anything in particular.

I feel...

that the only way to get ahead is through an education.
2 as if I could annihilate my chemistry difficulties.
5 that I will never succeed.
2 4 that I have not done my best in school.
3 5 as though I would like to run away.
4 5 I don't know why I'm at school.

13. My greatest fear...

1 is that of not finishing my prime goal--college.
is not reaching the goal I have set for myself.
losing my job so that I won't be able to finish school.
is that I may lack the ability in the career I desire to follow.
is that I shall not be a successful engineer.
is that something will hold me back from my goal.
is that I will be a failure after leaving college.
is that I may be drafted disrupting my education.
is failure.
is before midterms.

14. In high school...

1 I thought of going on with my education.
I made good grades, but I was socially inactive.

2 I did not have the interest maybe due to "temper of times," other values.

1 I was a good student.
I had a wonderful time combining school and social life into a pleasant combination.

2 (statement of liking subjects)
I did all right.

3 one should study if one wants to go to college.
I didn't study much.
I made average grades.

4 I acquired bad study habits.
I did not make good grades.
I hated to study.
I neglected my opportunities.
I played around daydreaming when I should have been learning to study.
I played too much.

5 it was like being in jail.
I was better off.
I hated to read.
I was bored.
I was no shining star.
I was a poor student.

2 5 I was very dissatisfied.

3 1 I didn't study very much but I got good grades.

15. I can't...

3 help but want to start working on a permanent job.

4 understand why I have to take certain required courses in college.
seem to be wholly satisfied.
apply myself to study hard.
express myself well in words.
study.
get the best of reading.
(study specific subject matter)
(understand something: subject matter, e.g., geometry, English, etc.)

5 think straight.
do much.
concentrate.

1 4 do all A work at this university.
raise my point-hour enough to get into graduate school.
seem to get good enough grades to suit me.
afford anything but high grades from now on.

3 5 seem to find a field in which I am interested and desire to go to college and study hard to obtain a degree in that field.
get enthused about my present choice of vocation.

18. My nerves...

1 4 are usually fairly calm except before finals.
sometimes cause me to be irritable from too much school and work.
are being made worse by higher education.

20. I suffer...

in final exams.
mostly from study.

from lack of knowledge and ability to use it.

21. I failed...

at nothing.

(academic subject with no added rationalization)
one subject in high school.
too many courses.
myself by expecting too much.
to do my best in high school and college
to get as high grades in college as I should have.
to get a good basic foundation in high school for
college.
to realize until I let my point hour get so low
how important college is today.
to live up to my vow to study harder this year
because I did not apply myself enough.
a course once because I was too lazy to study.
to apply myself.
in becoming a good student.
to train my mind to concentrate.
(academic failure with rationalization, e.g., ac-
counting because I could not force myself to do
something uninteresting to me)

22. Reading...

good books (both modern and classical) is a neces-
sary factor for a good education.

used to interest me a lot but it doesn't appeal to
me like it used to.

is a pleasure.
I love to read.
2 is a very pleasant avocation—stimulates the mind.
is enjoyable.
is now more informative than diverting.
is a pleasant pastime.
is becoming a hobby.
is a favorite pastime.
is an interesting pastime and improves your mind.
is interesting.

3 the right books is very educational.
is for people with time.
is a good way to use idle moments.
is good for stimulation of the imagination.
is a great source of enjoyment and education.
is the best way to gain knowledge from others.
and writing are taught in grade school.
is broadening.
does us all good.
is a good habit to acquire.
is something I wish I had more time for.

4 is beginning to be a task.
is enjoyable to me if there are no dead parts.
is wonderful but I must have peace and quiet.
is of some difficulty to me.
is something I do very little of except for school work.
is a good pastime when there is nothing to occupy the mind.
is a great pastime if properly directed.
Novels and magazines takes too much of my time.
is not my specialty.

5. is my downfall in college.
is boring to me.
is very poor and quite a handicap.
is tiring.
is difficult for me—unless I'm intensely interested in the subject matter.
hurts my eyes.
is enjoyable if I can relax for awhile.
is quite a problem for me.
out loud is my weak point.
is slow for me.
23. My mind...

1. is set on being a success.
   is made up to what field I will enter when I graduate.

1. is sound and sharp enough to comprehend college studies.

2. is active about something most of the time.
   usually decides on one thing and then sticks to it.

3. is somewhat better than average, but not much.
   wanders during lectures sometimes.
   is increasingly active but my memory is decreasing.

4. is sometimes a little slow--usually in the morning.
   seems pretty efficient except I may daydream too much sometimes.
   is analytical not rote memory.
   is capable of absorbing anything if it is presented right.
   sometimes seems dull in school, yet alert on the outside.
   isn't as organized as I would like.
   is too analytical--I could be more carefree.
   is on the whole better than average, but can't seem to concentrate.
   wanders half of the time.

5. often wanders when I should be concentrating.
   has had a great deal of trouble concentrating lately.
   runs away in imaginative thinking.
   wanders.
   is unable to concentrate.

24. The future...

1. I hope to become a good...
   I hope to be of more service to humanity.

3. I hope to get a good steady job.

25. I need...

1. more education.
   to succeed in my profession.
   to make good grades.
to decide what I want to do so that I can apply myself in order to reach that particular goal.

a quiet place to study--too much noise at home.

but learn what I do not know.

to be able to speak more effectively before people. some help in German.

27. I am best when...

able to work when it is quiet.
I take a course that I am interested in and not just because it is required.
I understand something.

rid myself of feelings of incompetence.

(using academic skills)

28. Sometimes...

I feel that I'm not working as hard as I should.
I like to study.
I manage to get my school work done.

I feel I'm not getting anywhere.

I dislike college.
I wish that I had not returned to school.
I feel I'm wasting time in school.
I feel as though I should give up school.

I wonder what I am doing in college for I have no desire to continue in the course I am now taking.

29. What pains me...

is if I give up school I won't have the required background for success.

is that I have no goals.

most is not having a good instructor.
piling unnecessary work on students.

low grades.
30. I hate...

1 5 to make a mistake.

2 4 to be late for class.

being late for school or work, but do so too much.

31. This school...

2 seems more reasonable now than any ever has before.

1 is a wonderful institution and is doing a good job.

is a wonderful educational institution.

is my favorite.

is a good school.

has many opportunities.

is more interesting.

is swell.

2 is quite adequate for my purposes.

has been a good one for me to attend.

has one of the finest "business administration"

staffs in the U.S.

is ok.

is all right.

3 has served me well, but I feel very little loyalty

for it.

is fine but a little too big.

is a good one, but it could be improved.

is rather large although it has more fields than a

smaller school.

is very large.

is average.

is not the most difficult in the state.

is good in some ways; very bad in others.

is overcrowded.

is not as good as it could be, nor as bad.

like many others is not divorced from politics.

4 has some required courses that are unnecessary.

could be improved.

is a factory but rather efficient.

lacks the intimate touch.

is too big.

does not compare favorably with Duke University and

other heavily endowed schools.

works on a mass production basis.

is not conducive to working.
is merely a machine to grind out diplomas.
(is too radical or too conservative)

is run according to how much you can memorize and
not how much practical knowledge you gain from a
course.
is highly inefficient and wastes considerable of
students' time in classes.
gives me no relief.
lacks an atmosphere of reality.
is no good.
is disorganized.

32. I am very...

1 interested in getting a complete education.
happy to be in school.
determined to do well.
glad I started college.

2 eager to complete my schooling.

3 tired of going to school.
studious sometimes.

5 dissatisfied with school.

1 4 worried about my lack of proper education.

1 5 worried about grades.

33. The only trouble...

1 is the long hours needed for studying.
is driving 80 miles a day to school.

3 with the library is that it's too stuffy.

4 I have is concentrating while studying.
with school is all the courses you take which have
no value to your particular course but are re-
quirements.

5 is my lack of knowledge in book learning.
is with school.
is inability to study.

2 4 is there a job for me that I can do good.
34. I wish...

to accomplish all my goals set up at the present time.
to gain more knowledge.

to become a successful man in my field.
I could get a three point this quarter.
that nothing will interfere with my schooling.

I was thru school and had a good job.
the war was over, I had graduated and had a good job.
I had a definite goal in life.
I were thru with school.

I didn't have to take so many requirements.

that I were very smart.
I was able to utilize my intelligence.

36. I secretly...

hope to be a big factor in establishing world principles.
desire to gain recognition in the work I want to do.
want to be a great success.
wish for success as ... (something specific)
hope to be a ... (some skilled occupation)

hope to graduate.

37. I...

wish to become a successful man in my field.
hope to become a CPA.
am determined to make something of myself.
(ambition--specific)

hope I will be able to graduate.
want to get a good job.
would love to settle down with a high paying job.

39. My greatest worry is...

not being able to do what I want to do.
at the present time is school.
ot being as successful as I hope to be.
how to succeed.
whether I have the ability for the job which I want to get
Getting in med-school (concerning entrance into professional school).
Failure.
College.
Exams.
Just before midterms.

2. If I'll get a good job after I graduate.

3. That I will not get out of school soon.

1 4. Getting ahead in school.
      The lack of apparent motion toward my goals.

1 5. Not getting thru school.
      Passing my first year in college.
APPENDIX V

Appendix V contains instructions for rating the Modified TAT and scoring manuals for need value and freedom of movement in academic recognition.
The Modified TAT will be rated on a five-point scale for need value and freedom of movement. On each of these scales a rating of 1 will indicate a high degree of the variable while 5 will indicate a low degree of the variable; e.g., a 1 need value rating and a 5 freedom of movement score would indicate high need value and low freedom of movement.

After thorough familiarization with the manuals, read all the stories which were given for the first card and then rate each of these on freedom of movement and need value. Proceed in the same manner with the second card, etc. All of the ratings for card one are to be tallied on one sheet, all for card two on another and so forth. This is done to avoid a halo effect for any particular subject. After all of the stories have been rated, reread all of the stories of one subject and give an over-all rating for freedom of movement and need value for this subject. Proceed in the same fashion for all other individuals. In making ratings the manuals should be used for examples and principles. Avoid being influenced by clinical "hunches." The basis for the over-all ratings should not be an average of all the ratings given, but should be arrived at by use of the general principles and also the frequency and strength of any particular referent.
General Instructions

1. Mere occurrence of failure-avoidance behavior, regardless of the positiveness of the remainder of the story, is always scored 2. Examples are as follows:

   a. **Withdrawal:**

   "This is one of the nights when Joe has quite a bit on his mind--about dating, the different functions of the organizations he belongs to. So he tries studying, but all he sees in front of him is a blank page there. He finally gives up trying to study and thinks more about the functions of the organization."

   b. **Extreme dependence:**

   "But his attitude there is, "I can't see it. Why can't somebody tell me?"

   c. **Daydreaming not followed by constructive action:**

   "He'll probably be daydreaming about getting the top grade on the exam; he hopes tomorrow he does all right."

   d. **Reality denial:**

   "He'd been trying to convince himself that it didn't matter a whole lot or that there wasn't going to be any exam really."

2. Rejection of the picture is always scored 2. For example:

   "From this one I can't get anything at all except he's looking at something. Can't tell by the expression what it is. I don't know. That could be anything. No imagination, I guess. How can you tell when you look at these what it could be? I can't do anything on that."

3. Unrealistic endings are always scored at least 4. If there are other negative indicators they may be scored 5. For example:

   "He must be going to get a fairly good grade on it whether he understands it or not."
4. Evaluation of other indicators should be made in terms of intensity as well as occurrence:
   a. Repetition of an indicator suggests greater intensity.
   b. Strength of adjectival phrases is important, e.g., "very" is more intense than "fairly."
   c. Positive statements are stronger than negatives, e.g., "he looks happy" as opposed to "he doesn't look mad."

5. Reversals are always scored low freedom of movement (and high need value), i.e., cases in which a story begins negatively and ends positively or vice versa. For example:

"Poor forlorn student sitting in a classroom trying to figure something out. Maybe he's had class in this building some time before and we'll assume that he had a class here several days ago. He tried to figure out what was going on. He couldn't quite figure out what to do about it, so he studied his notes and still couldn't get it and decided it might be an inspiration if he came back and sat in the classroom. Look at the same board, and although it was blank he thought he might be able to figure out something about it. So he sits there for a long time, gets nowhere, sits there some more till he finally gets the idea and writes it down in his little notebook here. Takes it home and works it out and gets a good grade."

Specific Referents

Academic Recognition

Perception of Environment

5 Central character perceives instructors as uninterested in their students, unreasonable in their assignments, unpredictable about their exams.

Central character perceives university as a threatening place and full of obstacles.

4 Courses and assignments are difficult and involve much work for the central character.

Study conditions, library facilities, etc., are described as poor or inadequate.

3 Central character perceives competition as being a little stiff.
2 Study conditions, library facilities are described as good.

1 University perceived as a friendly place, etc.
   Instructors are described as good, etc.

Perception of Adequacy

5 Central character expresses feelings of self-doubt concerning the adequacy of his behavior and/or dejection because of this felt inadequacy.

4 Central character has difficulty concentrating while studying.

   Central character has difficulty understanding the material he is studying.

   Courses are difficult and involve much work for the central character.

   Central character feels he's not making much progress in school.

3

2 Central character does relatively little studying and gets high grades.

   Central character is quite certain he's making progress in school.

1 Expectancy of success in school is high for central character.

   Central character well satisfied with progress being made.
1. Here is a student who has the task of writing a term paper, or something of the sort. Gone to the library for reference. Knows what he is doing with the files. He is looking for reference books. Knows what he's looking for. He will get his reference books, probably write a very good theme with these books. He seems to be intelligent. He seems to be interested in his work. Bright. Possibly get A or B on it.

This looks like a fellow who is quite interested in his work—he's looking up in the card catalogue for a particular book in the library and he has an interested expression on his face—somewhat of half a smirk and half a smile. It looks like he's going to go about his work with quite a bit of zest and zeal, and that he'll do pretty good in his field.

2. The individual in the photo is a student who is in the library of a large university looking up some reference material. He wants to get it because he is interested in it, wants to read further into it. He is particularly interested in Elizabethan history and there are many works to be read on the subject. He's a senior who will graduate in the spring.

He's probably doing some research. His thoughts are one of a person who is doing research—apparently knows what he is looking for. He's in the card catalogue now. He's searching for his material which he has a pretty good idea where it is and the results of his paper on whatever he's doing, when he completes it, will be good.

3. I'd say that this was in the library and the student has been asked to look up some things—a reference book or something and he's checking the catalogue files to see where it is and if it is there and what books are available and more than likely he'll find what he's looking for and probably proceed to write out the report on the book.

This boy has received an assignment from one of his classes I take it which required a little library work and he's looking through the index file to find the book he wants so he can get a call slip made out for it. Then he'll have to take it back and read it and I guess probably make an outline on it.
4. Shows a student in the library probably assigned to read a certain book. He's looking it up in the card file and doesn't look too happy about the whole thing. Might have to read the book assigned and it won't be too interesting—probably for research. After he gets the card he'll go over and read the book and get whatever he wants, whatever is important.

Well, I think that this person is definitely looking up some sort of material—probably in a library. I would say that he's not real content with what he's doing. He may be a little bit bored. He's probably looking up some information and he'll find what he wants and go on his way, but I think he's going to do something here that doesn't make him too happy.

5. Fellow is approaching a card catalogue with the intention of finding a book. Probably he don't really want to read the thing, but has to for a course. He'll get the book and read it, write the paper, possibly copying excerpts from a number of papers which have been written by friends. He turns it in and gets a good grade because the professor is too lazy to check.

This boy has to look up a book report for 401 econ. He's looking through the card index, trying to find the book. He'll probably read the book, go to sleep about halfway through it. Finally turn in the book report about two days after it was due. Gets a low grade.

PICTURE 1, SET II

1. The individual in this photo is a student doing research on a theme or term paper. He is in the library reaching for a volume to aid in his research. It is evening and there is still much to be done toward the completion of the theme, although work on it has gone very well so far. He has developed a genuine interest in the subject of the theme. He has the ambition of making something of himself and come to school to do something about it. He is a competent student. He will finish his paper and receive a good grade on it.

2. Well, this fellow was given some research work to look up in the library. Seems to have it pretty well shaped to a definite form. He's going about it now collecting his books, reference books. Gradually he will refer to these references developing his report. He has all these references and he's in graduate work and he'll use these
references to further his knowledge. When he hands his report in, he'll have a thorough knowledge of the subject he is to report on.

3. Well, this picture looks like probably a graduate student, and I'd say this because it looks from this sort of books, it is strictly a reference job. Could be an M.A. or Ph.D. Something like that. Looks a little older. Expecting to get his Ph.D. or M.A. in some field.

4. This looks like some guy in a library and he's getting a book. I think he feels disgusted because maybe he can't find the material that he's looking for in these books and he don't know what to do. Probably writing a research paper and can't find the stuff to go in it. I don't think he's going to find the material because looks like he isn't pulling a book out; he's just looking at the covers of them. See what the names of them are. He'll find it eventually but it's going to take him a long time.

5. That looks like somebody looking through the books in the psychology library. Well, on second thought, he isn't looking through the books. He looks like he's measuring the door. No, he's pulling a book out of the shelf. He's probably a student who's not too advanced and has found something in the subject matter he was studying that interested him particularly and decided to get a book on that. If he is, he'll probably read about half way through the book and find that there's too many of the terms that he doesn't understand and decide to give it all up and wait to get someone to interpret it for him.

PICTURE 2, SET I

1. I don't know--I'm equating him to myself--a young fellow, some college, of course, just sitting there before an exam began right there. Studying. Wondering just how it will come out--his notes are sitting beside him. Studying his notes and trying to recall certain things that he thinks will be on. No doubt he'll do all right because he has already finished studying and it appears that he knows it and undoubtedly will come out all right and he will do the things that he wishes to do in life.

Well, it appears to me to be either one of two things--either a student sitting early in class and thinking about what's going to happen, either that or he's found empty rooms are..., but I think I'll choose the former because he looks like he's a student from the first water, and he's been sitting there looking over his class notes and is gazing off and reviewing by recall. I think
that he will do very well in class and I think that his dress, appearance—he's very well dressed and mannered that he should do very well by himself.

2. This fellow is taking a course in solid geometry and he's just walking into class to find a problem facing him on the board and he's decided to give it some thought before the other members of the class have appeared. He seems quite intent on the problem and I think with his consideration he's giving it, he'll probably figure out and be able to give the correct answer on it when it's presented to him in class.

He is studying. He's taking notes from the board. He is intent on learning from the board and as a result of this learning he will probably—it will probably do some good.

3. Here we have a student in a math class. He seems to be intent upon looking at the board. Possibly studying something he isn't quite sure about. Possibly he thinks he has the answer, but he isn't sure and he'd just like to check on it or he thinks he knows, but he'd like to be certain. You can't tell from just their picture how you think a guy's intelligent or not, but with the intentness he's looking at the board I'd say he would probably understand it before he left the room—pleasing himself and the teacher too.

Well, evidently this is probably a classroom, I would say, and the man is well dressed. He looks like he's studying something, but there isn't anything to study there, so he must be staring into space, dreaming possibly. I don't know. He has his book there. He isn't looking at it. He isn't looking at anything in general I don't guess. Probably, maybe he's in a classroom early and he's waiting for the professor to come into the classroom possibly and he's just sitting there thinking about anything that comes into his mind, I suppose. The outcome—I suppose the professor, if he's waiting on the professor and other students, why sooner or later they'll have class.

4. This fellow's obviously studying that problem that's on the board which appears to be a problem in either...could be solid geometry, could be in other things. No, probably solid geometry, and from the looks of his concentration, from the looks of his problem he's having a bad time with it. He hasn't got it very well at all. The probable outcome is that he won't solve it.
Well, we've got a guy here that's just taken a test of some kind. Hasn't done very good on it and he has come in to see his instructor about it and what he can do to help him get along better with his work and he's not studying but he's just sitting here and actually not looking at the blackboard--just gazing off in the distance, just thinking about it more or less; and they talk it over and suggested what he could do to get better work which he does follow through with and does better.

5. Student sitting at his desk and there is some kind of geometry problem on the board which he seems to know something about because he isn't taking notes or he's probably baffled by what it is, by the explanation the professor's given to him and he can't figure it out and he is trying to get the facts in his mind before he asks a question. More than likely the professor will have him still more confused at the end.

Poor forlorn student sitting in a classroom trying to figure something out. Maybe he's had class in this building some time before and we'll assume he had a class here several days ago. He tried to figure out what to do about it, so he studies his notes and still couldn't get it and decided it might be an inspiration if he came back and sat in the classroom. Look at the same board, and although it was blank he thought he might be able to figure out something about it. So he sits there for a long time, gets nowhere, sits there some more till finally he gets the idea and writes it down in his little notebook here. Takes it home and works it out and gets a good grade.

PICTURE 2, SET II

1. Well, I see here a student, studying at the library. Looks like a very industrious fellow, intelligent and conscientious. He usually gets good marks. He looks like a likable fellow. He does very well in his school work.

2. Well, this man is studying--he looks like he's pretty intelligent and he's not studying too feverishly--looks like he's a slow methodical studier. He's probably--looks like he might be a medical student and he's a hard worker. Doesn't put things off till last--does things as they come.

3. A boy studying in the library. He's working rather hard, no, on second thought, I would say that he's not working, he has paused. He still has pen in hand toward the top of the paper. He must be thinking about something else.
I'd say that he stopped a minute to look right through his book, as though he's not reading it any more--his eyes sort of fell out of focus and he's sitting there thinking probably--I can't tell what he's thinking about--it's hard to--probably what he will do after he's finished. Oh, he goes on to finish his report, closes the book and goes out.

4. Well, this guy's studying, writing reports, but he has to get done by the next day and he has to get it typed up and everything and he's very worried about whether he'll get it done on time. He doesn't know exactly what to write. He's spending half of his time studying and writing and the other half he's just thinking about it. Let's say the report will count very much towards his grade--it may be possibly the difference between passing and flunking the course. So he does get it finished and turns it in. Turns out so he does pass the course.

5. Here is a boy who has an assignment and he's writing diligently trying to finish it. Most probably for one of his classes--teacher's given him, well by Monday hand in a 5,000 word composition on the liberty bell or something like that or Grant's tomb--who made it. It looks like he's a little disgusted--he's reading a reference book there and wondering how he's ever going to finish it with so little material and such a big amount. Well, in the end he'll probably finish it but I don't think he'll have too many facts in the report. He isn't too happy about it--it looks like to me like it's a very vague subject on which he could write quite a bit, and is just throwing the bull around.

PICTURE 3, SET I

1. Well, this fellow's been studying pretty hard. The final exam's Monday and he's thinking, expectant and I would say that this fellow would be prepared to meet the exam and pass with flying colors.

(Laughs) So the young man hit the bottom of the barrel. Possibly he's happy that there is an exam on Monday. He's carrying two books there. Looks like a healthy young man there, and I'm sort of inclined that he's a good student and maybe he would welcome an exam on Monday to show what he knows and probably the outcome would be good. He looks like maybe--of course, I perceive this in my own light, I would say that he looks like an ex-veteran who may be going to school under difficult conditions or something.
2. Suppose he's not too glad to see that sign up there. Probably thinking of all the things he has to do before Monday, before the exam. Thinking of where he stands in the class, and his chances of getting a good grade. Trying to figure out what he has to do to maintain his average or perhaps increase it if he has any leeway. He's just walked into the class apparently and the outcome will probably be good because he seems to be thinking quite a bit about the final exam and the chances are he'll probably do well on the test.

Well, this could be perhaps a student who has come to class perhaps on Friday expecting to take an examination and finds that the exam is being postponed until Monday. He'll no doubt be, I wouldn't say that he was pleased with the outcome, I think that he probably is unhappy with the situation in the sense that perhaps he's very well prepared today. He'd just as soon take it today than wait till Monday. Many people upon seeing something like that would rejoice and be happy and be thankful for a little bit more time to study and so forth, but I think that he's fairly disappointed and that he's all set to take the exam today and now he has to wait until Monday. It's postponing something that could have been done today. From the way he's standing there and looking at it and so forth I think that that's the situation.

3. Well, this boy's just finished his class in which the teacher's announced a final exam on Monday. He stands there looking a little bit dazed as if he can't realize the course is over and he already has to take an exam and I can't see much of his face, but he looks like he's a little confused by the thought, "My gosh, it's over already and I have to review everything--all I've evolved this quarter to get ready for the final Monday." It's Friday, I would say. Oh, he'll go home and study a little bit, review mostly, cover it as well as he can by Monday and take the exam.

Here's the guy that finds by looking at the board that the final exam is Monday. It's probably Friday. He's one of the fellows that always waits till the last minute to cram and now he's beginning to wonder if he should have studied all quarter and thinks that it might be a little too late, but he's going to give it the old college try. He might make out, I don't know.

4. This fellow has just come into class and apparently there's no class for the day because of the notice is just on the board that the final exam will be on Monday. He's looking
at the notice with rather mixed emotion—sort of happy that there isn't class, but not so happy that there's going to be a test Monday. He doesn't appear to be a very studious individual, from his dress, and probably fears the test on Monday which he won't do very well on.

This is someone looking at the announcement of a final exam. It's the kind of guy that hasn't studied too much, looks like. I don't understand it. I think this guy's pretty worried about this exam. Don't think he'll do too well on it—looks pretty worried.

5. Well, this boy realizes the final exam is Monday and that this is probably Friday and he has not been studying through the course like he should and he realizes that over the weekend he will have to study if he hopes to pass the exam or make a good grade, but he also knows probably that he won't study because he has other things he would rather do and he will finally get around to studying late Sunday night and probably make a better grade on the exam than he thought he would.

Here's a picture of utter dejection. The boy doesn't know that there's going to be a final exam, when the final exam's going to be given. Tries to find out. One of his buddies tells him it's going to be given Tuesday, and so he gets all ready to study Monday night. Monday he just happens to be going past the room and peeks in and sees something written on the board. Here it is Monday, and he finds out the exam is going to be given Monday, so he really starts to cram like crazy—exam starts about 10:00. He does the best he can, but he's so upset, though, that he's sure to fumble the ball. He passes the course, but he doesn't do as good a job as he thinks he could.

PICTURE 3, SET II

1. Well, this is a late study session, obviously. Even though it seems to be almost one o'clock in the morning, this fellow is still struggling. Undoubtedly, he's going to bed pretty soon, but right now the pressure of the books dictates that he stay with them a little while longer. The number of cigarettes in the ash tray indicates that he's been at it quite steadily. He has been there probably since right after dinner. He seems like an older fellow, probably a veteran. He's taking his work seriously. Probably a better than average student.

2. Here we have a student studying geography. Midterms are coming up shortly and he's decided to play it wise and study before the night before the midterm. It is late in
the quarter and he is behind somewhat. Probably study till say two-o'clock for two or three nights until he gets caught up. That way he'll do o.k. on his midterms.

3. Looks like he's having a hard time studying late. He's evidently cramming for a midterm on which he's not very straight. He has probably let his work slide and now he's trying to get caught up. He'll probably get caught up some, but I don't think that the cramming will help him too much on the exam.

4. Seems to be trying hard to concentrate. He is trying to compare two books. Probably, what he did, he knew he had a midterm, but he went to a show anyway. Now he is starting to study late and he is trying very hard to get done before the next three or four hours when daylight breaks. He certainly won't do very well on his midterm.

5. Here is a man making a last minute stab at studying for an important midterm that's coming up at eight o'clock the next morning. From the cigarette butts, he looks worried and nervous about it. He looks awfully tired and I imagine he probably has a splitting headache along about this time in the morning. He'll probably fall asleep studying and sleep through the exam in the morning.
General Instructions

Reversals are always scored high need value (and low freedom of movement), i.e., stories in which the beginning is negative and the ending positive or in which the beginning is positive and the ending negative. An example of the former type of reversal is given below:

"This boy is a college student and he's sitting in a trig class and he's puzzled by the problem on the board. He doesn't know what to make of it. The teacher explains it all to him and finally he understands and feels much better when he leaves the class with a clear mind."

Specific Referents

Academic Recognition

5 Central character questions worth of attending school rather strongly and is attending only because of strong parental pressure.

Central character spends little time in study despite low grades.

Central character contemplates dropping out of school, although there is no academic or economic reason for so doing.

4 Central character came to school largely because GI bill was available.

Central character came to school because all his friends were coming.

Central character stresses non-academic aspects of college.

Central character comments that low grades are due largely to lack of interest on his part.

Dating or being with the family often interferes with study for the central character.

Central character would like to get a degree but might leave before that time (i.e., freely, not because of being called into service.)
College seen as culturally prescribed behavior for central character.

Central character doesn't normally cut down studying for dating, but attempts to do both by planning.

Central character fairly interested in school, but has some gripes about courses, methods of teaching, etc.

Central character attending school so that he can be a big financial success.

Central character feels that college is necessary to gain recognition.

Central character has always wanted to go to college.

Central character was free to come to college or not and coming was his decision.

Central character feels that college is essential to the kind of job he wants.

Central character came to college despite some family opposition.

Grades are important to central character and lead to positive reinforcement from parents and/or peers.

Central character spends long hours in study so that he can make the kind of grades he wants.

Central character argues with teacher because grade wasn't higher.

Central character will drop a course rather than take a low grade.

Central character is determined to make good in college so that he cuts other activities to a minimum.

Central character came to college with specific intention of going on to graduate or professional school.

Central character going to college under considerable hardship.
1. He's going to read this material for his own benefit. As a matter of fact this isn't an assignment or required reading—he's going to read it just because he's interested in the subject and it's for his own benefit. (1,II)

Fellow had always thought about going to college. He never had the opportunity and then the war came along and he was in for a while and he came back. He got a chance to go on the GI bill and now he's spending extra time in the library studying extra hours trying to make good. (1,II)

He's probably worked pretty hard in college and he finds that by continuing his work, he hopes to get ahead in his field. (1,II)

He's made an appointment to see the instructor or professor afterwards to try to get this particular point straightened out. (2,II)

And the fact is, he wants to get a lot out of this so maybe in the long run to be able to do some creative work. (2,II)

No doubt he's after some goal and that's the driving force for him to do something such as this. (2,II)

He's a serious type person who is studying hard for some vocation which will be pleasant to him in both monetary gain and culturally—something as far as society is concerned. (2,II)

In the past his studying came a little bit tough for him and he's found that like anything else the only way to get it is to get down and dig because I guess all good things require hard work. (2,II)

He's going to have to give up some social life that night to finish up that report or studying, and he's going to miss out with the boys tonight, but in the end he thinks it will be worthwhile, 'cause after all that report, if he doesn't finish it, he won't be able to pass the course, doesn't pass the course it'll mean not graduating from the university. (2,II)

Very conscientious, very studious—he is studying to better himself in life, as well as for his wife. (3,II)
He's taking a night school course with aspirations of working his way up a little bit. He realizes that to get anywhere an education is fairly desirable. (3,II)

2. He's concentrating grimly. He's going to do some serious work on it. (1,I)

Probably he went through school studying very hard and now he's slacking off a little. (1,I)

This boy's trying to get through school on the GI bill. He will never had much opportunity to go to school, but now he has and he's making the most of it. (2,I)

He's going to stick it out and get it--he has that determination. (2,II)

Maybe studying for a number of reasons. Probably one of the most important, one of the foremost reasons is that he's trying to get through school in a particular time. Maybe also he wants to help humanity better than just helping himself, being able to marry the girl of his choice and so forth. (2,II)

This guy has studied hard and will study for the exam. (3,I)

Probably figures that he'll have to go home and study pretty hard tonight and the next several days until the final exam comes. (3,I)

He'll go home and hit the books for about five hours and get up early the next morning and hit 'em again. (3,I)

Looks like he's making a very sincere attempt to have all the material organized in his mind by the next day. (3,II)

3. Probably wondering about all the studying he's got to do and how he's going to work in three dates and a couple of games of golf, but he probably realizes that he's going to have to do it sometime, and so he'll probably set up some sort of tentative schedule to follow. (3,I)

He might have a couple of dates and he realizes he hasn't got much time to study..."Well, I wonder if I've got time to study--I'll have to stay up all night probably Sunday night, maybe Saturday night after my date." And he'll probably stay up Sunday night all night studying for the exam. (3,I)
"Final exam Monday." Well, it's a good thing to get this over with—I'm tired of this course, I want to get out of this university." (3,I)

4. He's most probably thinking more about what he's going to do when he gets out of class, what he's going to do in the evening. (2,I)

He might have been over to Larry's before he came into class and he seems to be rather uninterested in what's going on. After this he'll probably go to the Union and go down to the snack bar and maybe have a cup of coffee. (2,I)

He'd rather be out playing baseball or something. (2,I)

He hasn't been to class for about a week and a half so he decided to come one day. (3,I)

He also knows probably that he won't study because he has other things he would rather do and he will finally get around to studying late Sunday night. (3,I)
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AUTOBIOGRAPHY

I, Haig Kelly Naylor, was born in Chicago, Ill., September 2, 1926. I received my secondary school education in the public schools of Chicago, Ill. My undergraduate training was obtained at the University of Chicago, where I received the degree of Bachelor of Philosophy in 1949; and at the University of California at Berkeley, where I received the degree of Bachelor of Arts in 1951. From The Ohio State University, I received the degree of Master of Arts in 1952, at which time I held the position of Graduate Assistant. While completing the requirements for the degree of Doctor of Philosophy in the Department of Psychology at The Ohio State University, I held the following positions: United States Public Health Scholar, from 1952-53; Psychological Intern at the Columbus Receiving Hospital, from 1953-54; and United States Public Health Scholar, from 1954-55.