EFFECTS OF LEVELS OF ANXIETY ON HOLTZMAN INKBLOT RESPONSES

By

RONALD J. LAVIT

Bachelor of Arts
Adelphi University
Garden City, New York
1964

Master of Arts
Hofstra University
Hempstead, New York
1966

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Thesis Approved:

Julia L. McHale
Thesis Adviser

Kenneth P. Sandvold

Rodol K. Gamble

Harry S. Broto +

J. Dunham
Dean of the Graduate College

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION AND STATEMENT OF PROBLEM

In recent years there has been considerable psychological research utilizing projective techniques to study the areas of anxiety and personality assessment. The two major tests which have been frequently employed are the Rorschach Technique and the Thematic Apperception Test. One essential weakness of both of these tests is the absence of normative data to support their measurement of personality variables. More recently, attention has been directed to the Holtzman Inkblot Technique, which has a standardized normative sample underlying each personality variable it purports to measure. For this reason it is used in the present study to attempt to answer the two questions: Do psychometric and projective measures of anxiety measure the same thing? Can the Holtzman Inkblot Technique measure experimentally-induced anxiety?

Currently there are two major positions concerning the nature of anxiety. The first position, set forth by Taylor (1953), considers anxiety to be a general and pervasive drive state which is independent of situational factors. The Taylor Manifest Anxiety Scale, a psychometric test, is based on this premise. The second viewpoint, formulated by Mandler and Sarason (1952), asserts that anxiety is dependent upon situations and as a drive elicits irrelevant responses which interfere with test performance. It is this type of situational or specific anxiety with which the present study will be concerned. The Test Anxiety

Questionnaire, an instrument designed to measure specific anxiety, will be employed as the psychometric measure of anxiety.

Research (Mandler and Sarason, 1952; Sarason, Mandler, and Craighill, 1952; Raphelson, 1957; Sarason, 1957; Sarason, 1963; and Knight and Sassenrath, 1966) seems to indicate that this instrument is able to discriminate between high- and low-anxious subjects. Studies using college students (Mandler and Sarason, 1952; Sarason, Mandler, and Craighill, 1952; Raphelson, 1957; and Sarason, 1957) found that high-anxious subjects perform significantly below low-anxious subjects on such tasks as stylus maze, block design, digit symbol, aptitude tests, intellectual performance tests, and projective story writing. However, on programmed instruction tasks, Knight and Sassenrath (1966) found that high-anxious subjects perform significantly better than low-anxious subjects.

One of the essential differences between the psychometric and projective techniques appears to be the degree to which external stimulus factors control the response. In psychometric measures the stimulus provides for a specific response without necessarily affecting the individual's motives or predispositions. In projective measures, where there are fewer structured stimuli, the subject responds by relying more on indirect perceptions of the situation, thus revealing more of his motives and predispositions.

If covert fantasy and overt behavior are related to each other, then it might be predicted that a projective measurement of anxiety would have a low, significant, and positive correlation with objective anxiety measures. When students who typically have specific test anxiety are placed in an academic test situation, there should be enough cues to arouse this specific test anxiety. If the administrative

procedures are maintained to become stress-inducing, then there should be heightened arousal in this situation. When such aroused students are then given projective tests, these should also indicate high anxiety.

The major focus of this study will be the effects of experimentally induced stimuli; in this case, high-threat instructions. According to Mandler and Sarason (1952), Sarason, Mandler and Craighill (1952), and Sarason (1961), high-threat instructions raise stress or anxiety levels in college students on various tasks, including intellectual performance tests. The present threat instructions concerning intellectual ability are related to factors close to the college subjects' self-images and were deliberately calculated to increase anxiety. The increase in anxiety was measured by the Holtzman Inkblot Technique, using the following scales: form definiteness, anxiety, hostility, shading, color, movement, barrier, penetrance, animal, and human.

Experimental subjects were divided into four groups of twenty each. These groups consisted of the following: two groups of high-anxious subjects, one under high-threat conditions and one under standard conditions; and two groups of low-anxious subjects, one under high-threat conditions and one under standard conditions.

		Anxiety Levels	
		High	Low
Stress Conditions	High	20	20
	Low	20	20

Figure 1. Composition of Experimental Groups

It is hypothesized that:

1. There will be a significant positive correlation between psychometric (TAQ scale) and projective (HIT) measures of anxiety.
2. High-anxious subjects in the standard condition will show significantly greater anxiety on the Holtzman Inkblot measures than low-anxious subjects in the same condition.
3. High-anxious subjects under threat conditions will show significantly greater anxiety on the Holtzman Inkblot measures than low-anxious subjects under threat conditions.
4. Both high- and low-anxious subjects will show a significant increase in anxiety under threat conditions.

CHAPTER II

REVIEW OF THE LITERATURE

This review is divided into seven sections: (1) Theoretical and Empirical Data Pertaining to General and Specific Anxiety; (2) Measures of Anxiety; (3) Advantages of the Holtzman Inkblot Technique; (4) Validity of the Holtzman Inkblot Technique; (5) Group and Individual Methods of Administration; (6) Anxiety and the Holtzman Inkblot Technique; and (7) Summary and Statement of Problem. Each of these sections will stress those studies which pertain to the present research.

Theoretical and Empirical Data Pertaining to General and Specific Anxiety

Anxiety can be defined as a general emotional state of apprehension and fear which is underlined by specific physiological changes, such as increased heart rate, respiratory rate, glandular secretions, muscle tension, and skin moisture. Anxiety can be either general or specific. General anxiety is a chronic, persistent state of discomfort with concomitant physiological tensions predisposing the individual to react in an anxious manner with headaches, tightness in limbs and neck, body pains, and visceral complaints to minimal stimulation. This anxiety is not tied to specific situations; rather it is pervasive, causing the individual perceptual distortions, since he reacts more on the basis of his own anxious tensions than on the basis of the objective

reality.

In contrast to this chronic anxiety, specific anxiety is tied down to certain situations. It is not pervasive, but is an immediate state and dependent upon the situation and related to specific environmental elements. Situations with these anxiety-arousing cues will evoke the specific anxiety in the subject. As with chronic anxiety, high specific anxiety levels affect performance. Certain situational elements in the present research test situation act as cues to evoke anxiety in the individual. These anxiety responses are irrelevant to the task and upon arousal lead to reduced or disrupted task performance. The individual brings these previously learned responses to anxiety situations with him to the test situation. These may include fear of failure, desire to quit, and feelings of inadequacy.

Numerous studies (Sarason and Mandler, 1952; Sarason, 1957; Raphelson, 1957; Sarason, 1959; and Sarason, 1963) reported significant negative relationships between specific test anxiety as measured by the Test Anxiety Questionnaire (TAQ) and measures of academic achievement, such as grade point averages, aptitude tests, and achievement tests. These correlations ranged from -.12 to -.55. Although the TAQ is negatively related to intellectual performance, this does not suggest that there are differences in intellectual capacity corresponding to the different anxiety levels, but does indicate the extent to which anxiety interferes with academic performance. These specific studies will be dealt with in greater detail in the following section.

Evidence has also shown that high chronic anxiety levels interfere with performance, depending on the complexity of the task. In simple classical conditioning tasks where there is only one possible response

pattern, the raised anxiety levels facilitate the one correct response since there are no competing responses. Spence (1953) reported that in a simple conditioned eyeblink experiment, low-anxious subjects gave fewer conditioned eyeblinks than did high-anxious subjects. However, in more complex situations (Farber and Spence, 1953) where there is a possibility of more than one response, anxiety interfered with performance since the possible incorrect responses were also strengthened. A study by Taylor and Spence (1952) employed a serial verbal maze task where subjects had to correctly anticipate words. The results showed that high-anxious subjects made more errors and took more trials to criterion than did low-anxious subjects. Wiggins (1957) reported a significant negative correlation of -.26 between anxiety and the number of anagrams correctly solved. Taylor and Rechtschaffen (1959) also found that high-anxious college students performed significantly below low-anxious students on a complex alphabet printing task. Numerous other studies (Matarazzo, Ulett, and Saslow, 1955; Grice, 1955; and Rossi, 1959) confirmed the results that high chronic anxiety interferes with performance.

Measures of Anxiety

There are two opposing viewpoints in relation to the nature of anxiety. The first position views anxiety as chronic and general, while the second position considers anxiety to be situationally dependent. The Taylor Manifest Anxiety Scale (TMAS) is designed to measure chronic anxiety. The Test Anxiety Questionnaire (TAQ), constructed by Mandler and Sarason, was developed specifically to measure situational anxiety. In this study the situational anxiety is the test situation.

The Taylor Manifest Anxiety Scale was validated against observational ratings of anxiety. In a study by Hoyt and Magoon (1954), eight counselors rated two hundred eighty-nine clinical patients according to their amount of anxiety. The results showed a significant correlation of .47 between Manifest Anxiety Scale scores and the counselors' ratings. In a follow-up to this study (Buss, 1955), a significant positive correlation (r=.60) was found between the TMAS and the anxiety ratings of four clinical psychologists. Further research (Lauterbach, 1958; and Gleser and Ulett, 1952) confirmed the above results, obtaining correlations of .44 and .61 between anxiety ratings by experts and TMAS scores.

Validational studies of the TMAS involving differences within psychiatric populations have also obtained positive results. Rubin and Townsend (1958) found that neurotic patients scored significantly higher on the TMAS than schizophrenic patients. Siegman (1956) reported that patients classified as anxiety neurotics had significantly higher TMAS scores than any other diagnostic group, while those diagnosed as psychopathic personalities had the lowest scores of any group.

A number of other studies (Matarazzo, Matarazzo, and Saslow, 1961; Bailey, Berrick, Lachmann, and Ortmyer, 1960; and Taylor, 1953) have concluded that psychiatric patients score significantly higher on the Taylor Manifest Anxiety Scale than non-psychiatric samples.

The Test Anxiety Questionnaire is divided into three sections dealing with subjective experiences in taking group and individual intelligence tests and course examinations. It consists of thirty-nine questions, each to be scored on a continuum ranging from low anxiety to

to high anxiety. The Mandler-Cowen scoring system is used, and in this system the anxiety total is obtained by dividing each continuum into ten parts and summating the individual responses on the basis of ten possible points per question.

Validational studies using college students have been conducted with the Test Anxiety Questionnaire using the Taylor Manifest Anxiety Scale as the criterion scale. Results indicate a positive correlation between the TAQ and TMAS, suggesting some degree of communality between the two scales. Martin and McGowan (1955) found a correlation of .44 between the TAQ and TMAS; Raphelson (1957) reported a correlation of .53; and Mandler and Cowen (1958) reported a correlation of .59. Other studies (Sinick, 1956; and Alpert and Haber, 1960) found similar correlations which further support the validity of the TAQ. It was further found (Mandler and Cowen, 1958) that male and female college students do not significantly differ in the TAQ.

Academic criteria have also been employed as a source of validation for the TAQ. Sarason and Mandler (1952) reported significant negative correlations at the .01 level of significance between the TAQ and grade point average, mathematical aptitude, and scholastic aptitude. Raphelson (1957) also reported a significant negative correlation, r=-.43, between test anxiety and need achievement. Sarason (1957) found significant negative correlations between the TAQ and measures of academic achievement. Scholastic aptitude correlated -.20 with the TAQ. It was further reported that grade point averages and the TAQ were negatively related for the first two years of college. Correlations for the first year of college and the TAQ were -.14, and for the second year they were -.14. Other more recent research (Sara-

son, 1959; and Sarason, 1963) confirmed these findings and found negative correlations ranging from -.12 to -.29 between test anxiety and high school grades and also negative correlations ranging from -.39 to -.55 between the TAQ and scholastic ability tests. Not only do these studies lend increased support to the validity of the TAQ, but they also indicate that anxiety interferes with academic performance since high-anxious subjects do more poorly than low-anxious subjects in grade point averages and aptitude tests.

It seems that specific and chronic anxiety are not distinct and separate entities, rather they may be considered a unitary phenomenon on opposing ends of a continuum. At one extreme, anxiety is aroused by a precise situation or object; while at the other extreme, anxiety is not directly related to the specific situation, but is more general. The stated differences seem difficult to maintain, because most anxiety seems to lie in between. At any given moment anxiety may be specific to the situation, but it may also be more diffuse. For example, a man who worries about his own health may be afraid of many specific illnesses. Further, the appearance of little physiological differentiation between the two anxiety states also supports anxiety as a unitary state.

Advantages of the Holtzman Inkblot Technique

Since the present research was performed in an academic setting, the Holtzman Inkblot Technique was utilized over other projective techniques, such as the Rorschach Technique, for numerous reasons. The Holtzman inkblots are greater in number than the Rorschach and, correspondingly, offer greater variation in the degrees of blot symmetry,

color, form and shading and may also provide new stimulus dimensions. Further, the Holtzman inkblots have an empirical base. Another advantage of the Holtzman over the Rorschach is its more rigorous and systematic administrative procedures. Response variability is controlled by limiting the number of responses to one per card. By providing more total inkblots, total reliability is increased, while total number of responses is not decreased. Percentile norms are also provided for college populations on the Holtzman on each of its twenty-two variables, making analysis and interpretation more simplified and objective. Finally, group administration and computer scoring allow for larger scale testing and analysis than on the Rorschach. Through more psychometrically based procedures, the Holtzman minimizes certain weaknesses of the Rorschach, such as variability in examiner inquiry and vagueness or lack of agreement as to the scoring criteria.

In spite of these differences, the Holtzman and Rorschach Inkblot Techniques still seem to measure common underlying variables. Holtzman (1968), in a review of the research, cites a study (Beck, Haggard, and Brock, 1949) in which both the Rorschach and Holtzman Techniques were administered to the same Ss and then compared on certain of their scales. The results indicated that the two techniques were related to each other, with correlations ranging from .51 to 1.0 on five of their common scales. The meanings of both the Rorschach and Holtzman inkblots were experimentally studied by Otten and Van DeCastle (1963) with a bipolar adjective scale. Conclusions suggested that the Holtzman measures a more extensive pattern of meanings than the Rorschach, and it was further added that these meanings may be a function of recognizing popular elements in the blots.

The TAQ measures academic or test anxiety, which is also hypothesized to be measured by the Holtzman inkblots. The rationale is that the population employed in this study was college students who typically have large amounts of test anxiety and the setting, an academic one, consisting of a classroom with student desks, a screen, and an academic task, had enough common elements to arouse test anxiety. Anxiety elicited in this academic environment will be similar to that elicited in the actual classroom situation. The subjective responses concomitant with high anxiety, such as those tapped by self-report on the TAQ (somatic sensations of discomfort, feelings of inadequacy, anticipation of failure, and loss of self-esteem) interfere with accurate perception of reality. Perception and the meaningful organization of sensory data is distorted by this anxious tension. While the Holtzman inkblots are ambiguous, they are not without structure; and high anxiety levels will interfere with the precise and critical perception of the inkblot and its meaningful organization.

Validity of the Holtzman Inkblot Technique

Much of the research on the Holtzman Inkblot Technique is of a validational nature and can be divided into five sections, as performed by Holtzman (1968). These sections are: (1) Cognitive-Perceptual Measures; (2) Behavioral Measures; (3) Cross-Cultural Studies; (4) Differential Diagnoses; and (5) Personality Measures. The following sections emphasize those studies that fall into the above categories, each correlating the Holtzman Inkblot Technique (HIT) with external criteria.

Holtzman Inkblot Technique and Cognitive-Perceptual Measures

Research has generally found that the Holtzman inkblots are significantly related to cognitive processes, but the correlations are low. Thorpe and Swartz (1963), employing the California Test of Mental Maturity, divided subjects from varying socio-economic classes into three levels of intellectual ability. An inverse relationship was found between intelligence and number of rejections on the Holtzman, suggesting that rejections are the result of intellectual inability to handle the structural complexity of the inkblots. In a summary of previous studies (Holtzman, Gorham, and Moran, 1964; and Holtzman, 1966) by Holtzman (1968), significant but low correlations ranging from .14 to .45 were reported between the Wechsler-Bellevue vocabulary subtest and integration, movement, and form appropriateness scales of the HIT and also between the WISC vocabulary and the movement scale of the HIT. Similar correlations were also obtained for six other Holtzman variables. In a series of studies by Megargee (1966) to investigate the relationship between personality and inkblot perception, it was found that movement was significantly associated with response length and that encouragement to give longer responses resulted in higher movement scores. It was speculated that since research has found positive correlations between intelligence and movement responses, intelligent subjects may actually be more verbal and give longer responses as reflected in their movement score. Although the HIT positively correlates with intelligence, this is only one aspect of cognitive functioning; and it seems that the HIT is related to cognition in a broader sense.

Creativity, as a second aspect of cognitive functioning, has been investigated by Richter and Winter (1966). Employing the Myers-Briggs

Type Indicator to measure creativity, they found creativity was significantly related to nine variables on the HIT. These variables clustered into two groups, those measuring perceptual maturity and those measuring emotional fantasy. Prior unpublished research (Godkind, 1964; and Gardner and Moriarity, 1965) cited by Holtzman (1968) concluded that individuals with more complex cognitive organizations have greater degrees of fantasy acceptance, as manifested in Holtzman variables, such as integration, movement, and color. It was also reported that high conceptual differentiation, as measured by the object sorting test, was inversely related to psychopathology of thought, or Factor III, on the Holtzman. In summation, it appears that the HIT is significantly related to intellectual-cognitive functioning and provides a means of evaluating cognitive processes.

Holtzman Inkblot Technique and Behavioral Measures

Validational research employing behavioral measures as external criteria is also limited, but significant correlations are found between the HIT indices and behavioral measures, even if on a low level of significance. Holtzman (1968) reported that Megargee (1965), while investigating the records of juvenile delinquents as compared to normal individuals, found a significant but low correlation between the Holtzman barrier scale and aggressiveness in delinquents. Cole, Machir, Altman, Haythorn, and Wagner (1967) found that different behavioral experiences caused modifications in perception of the Holtzman inkblots. For example, subjects placed in socially confined environments with no outside contacts and individual tasks to perform manifested significant changes in the direction of less definite perceptions, increased aware-

ness of details, and reduction in the perception of human form. Unpublished research (Megargee and Cook, 1967; and Brown, Harkness, and Procter, 1967) as cited by Holtzman (1968) is further supportive of the validity of the HIT, since a significant correlation of .40 was ascertained between Holtzman's hostility scale and interviewer ratings for hostility and .50 between Holtzman's anxiety scale and interviewer ratings of anxiety. Mueller and Abeles (1964) also found that the movement response of the HIT was significantly related to the perception of one's behavior by others.

Contradictory evidence has been presented by Barger and Sechrest (1961). In this study no relationship was found between peer group ratings of anxiety and the Holtzman anxiety scale, suggesting that the Holtzman does not measure overt anxiety, but measures fantasized anxiety.

Interest has recently developed concerning the HIT and its relationship to reading. Krippner (1966) correlated the HIT variables with reading improvement as measured by the California Reading Test. Four variables (location, hostility, shading, and pathognomic verbalization) were significantly related to reading improvement. A correlation of .57 was reported between the location scale and reading improvement; and negative correlations (r=-.60, -.95, and -.65) between reading improvement and shading, pathognomic verbalization, and hostility were reported. It was further reported that Factor III was also negatively correlated, (r=-.44), to reading improvement; and this suggested that children with underlying difficulties in cognitive processes, bizarre perceptions, and disturbed fantasy life might not do well in reading unless some fundamental personality changes were made. These results were confirmed (Krippner, 1967) in a replication of the original research. Although

these studies seem to lend positive validational evidence for the HIT, the research is too minimal to warrant any definitive conclusions.

Holtzman Inkblot Technique and Cross-Cultural Studies

There has been recent interest in validating the HIT employing cross-cultural samples. Knudsen, Gorham, and Moseley (1966) compared five cultural samples on one Holtzman inkblot variable, which was the popular variable, and concluded that regardless of cultural background, individuals perceived the same essential elements in the Holtzman blots. The variability in interpretation may be related to the degree of stimulus structure. Derogatis, Leonard, Gorham, and Moseley (1968) divided this ambiguity into two dimensions: interpretive ambiguity, which indicated the amount of cultural response communality; and structural ambiguity, which indicated the structure of the blot itself. It was found (Derogatis et al., 1968) that variability in cultural interpretations was inversely related to the Holtzman inkblot structure.

Holtzman Inkblot Technique and Differential Diagnoses

One of the primary studies (Moseley, 1963) employing the HIT as an instrument of differential diagnoses used Fisher's Linear-Discriminant Function to determine weights for the Holtzman variables in order to maximize their differentiating power. Cross-validational samples were also used for the three classifications: normal, schizophrenic, and depressive subjects. This procedure, which used sixteen of the Holtzman scales, indicated eighty-eight per cent correct classifications among normal and schizophrenic subjects, seventy-one per cent correct among depressive and normal subjects, and seventy-eight per cent correct among

depressive and schizophrenic subjects. Further cross-validation resulted in ninety-six per cent correct classification of normal subjects, an increase from the eighty-three per cent accuracy in the original sample. Connors (1965), in differentiating neurotic and hyperkinetic subjects, reported that these groups differed significantly from Holtzman's original normal sample on all but three test variables.

Normal subjects and hospitalized patients were used in a study by Fernald and Linden (1966) and found to be differentiated by the human scale of the HIT. In a review of the literature, Holtzman (1968) cited a number of studies (Fisher, 1960; Barnes, 1963; and Clevelend and Sikes, 1966) in which the Holtzman scales significantly differentiated between classifications of brain damaged and normal subjects, arthritic patients and those with ulcers, and, finally, alcoholics and non-alcoholics.

Hirt, Ross, and Kurtz (1967) reported evidence which was contradictory to this research. They found that the barrier and penetrance scales of the HIT did not differentiate between subjects with exterior and interior diseases. Further, Morgan (1968) failed to find significant differentiation between normal subjects and a clinic population. However, the types and the severity of the clinic disorders were not controlled. In conclusion, the major portion of the research supports the validity of the Holtzman as a technique able to differentiate between diagnostic categories.

Holtzman Inkblot Technique and Personality Measures

Correlational studies between the HIT and personality measures have generally been significant. Holtzman's review of this research (1968) reported that most evidence using personality measures does not favor

the validity of the HIT. It was noted that the neuroticism scale on Cattell's Junior Personality Scale negatively correlated (=-.25) only with Holtzman's human scale. However, supportive research (Holtzman, Santos, Bouquet, and Barth, 1966) cited by Holtzman (1968) reported signitifant relationships between several HIT scales and the Minnesota Multiphasic Personality Inventory (MMPI) guilt scale. Hill (1966) suggests there is a significant relationship between degree of autism and affect arousal and form definiteness scales of the HIT. Eysenck (1965) suggested that two of the Holtzman factors can be identified as neuroticism and ex[illegible]roversion-introversion. The Mandsley Personality Inventory, which is composed of these two factors, was found by Megargee and Swartz (1968) to be significantly related to the HIT. It was reported that the N-scale and six Holtzman scales were positively correlated at the .05 level, indicating a neuroticism factor on the HIT.

Holtzman (1968) cited a number of studies (Ruebush, 1960; Barger and Sechrest, 1961; and Swartz, 1965) which failed to find significant relationships between the Holtzman scales and personality measures. It is to be noted that Barger and Sechrest (1961) stated that even though they did not find a significant relationship (r=.24) between the anxiety scale of the HIT and anxiety on the MMPI scales, their correlation was in the right direction and close to being significant; and it was therefore suggested that more work be done before any conclusions be drawn.

In conclusion, it appears that the results have been generally positive in correlating the HIT to personality measures; however, these low-level relationships may be all that can be expected. Personality measures, being paper and pencil tests, are frequently measuring super-

ficial aspects of personality, because their items may be transparent, enabling subjects to create their own image. This is not true on a projective test and suggests that projective and objective measures of personality may measure somewhat different layers of personality. Although there will be an overlap, projective measures may tap more fantasy-covert levels, while objective tests may tap more overt aspects of personality. This causes significant though low-level relationships between the two measures.

Group and Individual Methods of Administration

Although the HIT was originally administered on an individual basis, it appears to be easily adaptable for group administration. However, certain modifications have to be made before the HIT can be employed in group situations. First, trial blots must be projected on a screen in order to demonstrate the use of locations and determinants, such as form, color, and shading, in influencing a response. According to Holtzman, Thorpe, Swartz, and Herron (1961), this is needed to compensate for loss of individual rapport between examiner and examinee. A study (Holtzman, Reinehr, Moseley, and Abbot, 1963) with college students concerning the comparability of group and individual HIT administrations has concluded that there are no significant differences between the two methods and that the group method can be substituted for the individual administration. In this study, subjects were given both individual and group tests. Differences due to method were not significant, and it was concluded that the two methods were interchangeable.

Subsequent research (Swartz and Holtzman, 1963) comparing individual and group methods reported similar split-half reliabilities between

group administration and the standardized individual method. Intra-subject stability, derived through test-retest reliability coefficients, was also similar to the individual data.

Research concerning examiner influence in the administration of the HIT has thus far been contradictory. Megargee, Lockwood, Cato, and Jones (1966) reported that examiner differences were significant in four of the twenty-two variables on the HIT. In this study, examiners were divided into three administrative conditions: warm, neutral, and rejecting. However, in group administrations only the shading indices are significantly affected by the examiners' attitudes. Reaction time is dropped, and sex and space responses are too infrequent to be scored.

Contradictory evidence was presented by Hamilton and Robertson (1966) using three conditions of administration which were similar to those used by Megargee et al. (1966). They reported that eight variables on the HIT were significantly affected by examiner influence and that the main difference was in the overall productivity of the subjects. Subjects in the neutral and rejecting conditions were the least productive in terms of their intellectual and imagistic capacities, while subjects in the accepting conditions were significantly more productive than the other two groups. Marwit (1967) confirmed this result. In conclusion, it seems that the HIT is sensitive enough to reflect the examiner's attitude, necessitating that the examiner be aware of this in order to limit its influence on the subject.

Anxiety and the Holtzman Inkblot Technique

Because of the difficulty inherent in using objective measures of personality variables, one possible approach seems to be to study the

extremes of the variable where the relationships with HIT indices will be more readily seen. This approach was employed in a study by Doris, Sarason, and Berkowitz (1963). They attempted to relate test anxiety to personality variables as measured by projective techniques, one of which was the HIT. In this study, high- and low-anxious second and third grade children were determined by those falling into the upper and lower fifteenth percentiles on the Test Anxiety Scale for Children. Subjects were individually administered the HIT with differential instructions for the two grades. The results showed that test anxiety was directly related to the HIT movement scale and inversely related to form level in the second grade. High-anxious subjects gave more movement responses and had poorer form level than low-anxious subjects. Although level of anxiety did not have such significant effects in the third grade, low-anxious subjects gave more whole responses, while high-anxious subjects had significantly more unusual detail responses. The difference in the effect of anxiety between the second and third grades was attributed to the changes in the conditions of administration. This study indicates the sensitivity of anxiety groups to slight administrative changes and stresses the significance of the stimulus task in discriminating among differing levels of anxiety.

A subsequent study (Swartz, 1965), also with the purpose of investigating the role of test anxiety as measured by the Test Anxiety Scale for Children and the HIT, partially confirmed the previous findings of Doris, Sarason, and Berkowitz (1963). It was found that high-anxious children had significantly lower form level and lower movement scores than low-anxious subjects. Also, test anxiety was found to be inversely related to the barrier scale. This suggests that the HIT indices and

Test Anxiety Scale for Children may not be fully tapping the same aspects of anxiety in the individual situation, but are measuring different levels of anxiety. Differences in results may also be attributed to the variations in experimental procedures, such as in the percentile limits defining high- and low-anxious subjects. Whereas Doris, Sarason, and Berkowitz used the upper and lower fifteenth percentiles, Swartz used the highest and lowest third in defining high- and low-anxious subjects, possibly obscuring relationships.

A problem which has emerged concerns the modification of administrative procedures, such as the instructions, and its effect upon the perception of the inkblots. Specifically, through the manipulation of stress conditions, those aspects of personality which are related to the varying degrees of anxiety can be determined. Research employing the Rorschach Technique has reported conflicting results. Calden and Cohen (1953) administered a group Rorschach and found increased constriction of responses when the Rorschach was represented as an intelligence test. Phares, Stewart, and Foster (1960) reported no significant differences when the instructions were altered to produce stress conditions. Sarason (1959, 1961, and 1961) found that representing tasks as being related to intellectual ability caused changes in performance on word association and anagram tasks. Furthermore, when these same tasks were represented as personality tests, no significant changes in performance resulted. In the first study of this type using the HIT, Herron (1964) altered instructions to create more stressful conditions by representing the task as one of "intellectual striving". Although the resulting changes in perception were not large, the modified procedures did influence subjects' responses by structuring what the subject believed the

blots were measuring. Four variables had significant decreases in the stressful conditions. They were pathognomic verbalization, hostility, animal, and penetrance. Both pathognomic verbalization and hostility are Factor III variables and related to psychopathological thought processes. Movement and anxiety, the other two Factor III variables, also decreased, however, not significantly. It is to be noted that penetrance scale is related to the emotional immaturity factor on the HIT. Although the magnitude of changes under the stressful conditions were not great, they were of significance. The authors concluded that the changes in the test conditions caused a "tightening up" of cognitive-perceptual processes, even though this was not manifested in stereotypy and constriction of responses.

In a study (Megargee, 1966) relating response length to inkblot perception, one group had to respond in over thirty words per inkblot and the second group in under ten words per inkblot. It was reported that manipulation of instructions had a significant effect upon movement scores, since subjects encouraged to respond at length produced significantly greater movement scores than other subjects. It was also found that anxiety, hostility, and barrier were also significantly associated with response length.

Research by Brasfield and Papageorgis (1965) related anxiety to self-image. High- and low-anxious subjects were individually administered the HIT and then given their results in the form of discrepant and negative personality evaluations. It was found that high-anxious subjects would be more ready to accept relevant but stressful outside information. A further implication was that stressful communications were more anxiety arousing to high anxious subjects than to low-anxious

subjects.

Research with procedural modification, although not instructional, has centered on the induction of body image changes and corresponding manifestations on the HIT, specifically, the barrier scale. Fisher and Renik (1966) investigated hypotheses relating body boundaries to awareness and differentiation between exterior and interior body sensations. Specifically, they attempted to determine if increased awareness of body boundaries increases barrier scores and if increased awareness of interior sensations decreases barrier scores. Results showed that exterior-oriented body subjects increased their barrier scores, while interior-sensation-oriented subjects tended to decrease in barrier scores. In a follow-up study (Renik and Fisher, 1968) previous results were confirmed, and it was concluded that the barrier scale measures body experience as altered experimentally.

Summary and Statement of Problem

The foregoing review of the literature reveals only three studies (Doris, Sarason, and Berkowitz, 1963; Herron, 1964; and Swartz, 1965) which deal primarily with the sensitivity of the HIT to situational anxiety. The results generally indicate that certain scales (movement, animal, hostility, anxiety, and penetrance) are more affected by situational factors, such as instructionally-induced stress. Related research employing the Rorschach Technique (Calden and Cohen, 1953) further suggests that the form definiteness and human scales may also be affected by instructional stress. Although these studies are not completely comparable or conclusive since they employ different methods and subject populations, they do indicate the need for a more extensive exploration

of the HIT sensitivity to situational anxiety.

In the present research, anxiety was hypothesized to be a unitary concept with both an overt and a fantasy level, enabling it to be measured by both objective and projective techniques. Only the upper and lower fifteen per cent of those tested were used in the study to get as homogeneous samples as possible, to reduce variability in response to the projective situation, and to aid in uncovering relationships. To induce experimentally situational test anxiety, the projective test instructions were modified to create a stressful situation, possibly related to the subject's self-image. Two experimental groups were given the threatening instructions calculated to raise anxiety levels, and the two control groups were given the standardized directions. It was then hypothesized that the groups will be differentially sensitive to the administrative conditions and that test anxiety will be related to personality variables in the Holtzman Inkblot Technique. Furthermore, there will be a positive relationship between psychometric and projective measures of anxiety.

CHAPTER III

METHOD

Subjects

From a group of three hundred seventy-four summer school students in elementary English and psychology, eighty subjects were chosen (twenty-eight male and fifty-two female). High-anxious subjects and low-anxious subjects were isolated, using the top fifteenth percentile and the bottom fifteenth percentile of the distribution of the Test Anxiety Questionnaire scores (Sarason, Mandler, and Craighill, 1952). Forty high-anxious and forty low-anxious subjects were selected. The subjects were placed in one of two instructional conditions (standard and threat conditions). There were two groups of high-anxious subjects (twenty each), one under standard conditions and one under threat conditions, and two groups of low-anxious subjects (twenty each), one under standard conditions and one under threat conditions (See Figure 1).

Materials and Equipment

The apparatus consisted of a 35 mm Carousal slide projector, a Wollensak tape recorder, a Kodak Programmer, one mil recording tape, and a 34" x 70" screen. The distance from the projector to the screen was 12 feet 14 inches. Subjects sat at desks in front of the screen. The experimental room measured 16' x 16'.

The forty-five cards of Set A of the Holtzman Inkblot Technique

were photographed and mounted on standard 2" x 2" index slides. The decision to use Set A of the Holtzman inkblots instead of Set B was arbitrary, since the two forms are equivalent (Holtzman et al., 1961). Record books, 8½" x 6", were used to record all responses. These consisted of forty-eight pages with location charts and instructions, where necessary, at the top of each page.

The Test Anxiety Questionnaire, which consists of thirty-nine items and asks Ss about their subjective experiences in testing situations, such as, "Before taking an intelligence test, to what extent do you worry?", was employed in order to determine high-test-anxious and low-test-anxious subjects. The Mandler and Cowen (1958) Scoring System was employed. This System consisted of a continuum with a ten-interval range from low- to high-anxiety responses.

Procedure

Forty high-anxious and forty low-anxious subjects were selected from the upper and lower fifteenth percentiles of the TAQ distribution. High-anxious subjects were further divided into two instructional conditions (standard and threat). Low-anxious subjects were similarly divided.

High-anxious and low-anxious subjects were tested separately in groups ranging from five to fifteen. The order of HIT administration was as follows: All groups of high-anxious subjects were tested; then all groups of low-anxious subjects were tested.

One group of high-anxious subjects and one group of low-anxious subjects received standard instructions. The other two groups received threat instructions. Both sets of instructions are presented below.

Subjects were brought into the experimental room in groups of five to fifteen and were seated at desks facing towards a screen at the front of the room. They were told to write down their responses in the answer booklets which were on the desks. Two trial blots (X and Y) were shown to give the subjects familiarity with the determinants which they would be using for scoring.

The forty-five slides of the HIT were then shown in prescribed order and for the prescribed time limits. Cards 1, 2, and 3 were projected on the screen for one hundred twenty seconds; cards 4, 5, and 6 were projected for one hundred seconds; and the remainder of the cards were projected for seventy-five seconds. After each card the examiner said, "Stop writing and turn over to the next page."

After completing the tests, subjects were thanked and dismissed.

Instructions

Holtzman Inkblot Test Instructions for Standard Conditions

1. You will be shown a series of inkblots, each of which will be projected on the screen before you for one minute. Using your imagination, write down in the space provided a description of the first thing the blot looks like or reminds you of.

   Include in your description the particular characteristics or qualities of the inkblot which are important in determining your responses. In other words, what about the blot made it look that way? Give as complete an answer as you can in the time available.

   None of the inkblots has been deliberately drawn to look like anything in particular. No two people see exactly the same things in a series of inkblots like these. There are no right or wrong answers.

2a. Trial blot X was projected on the screen through a slide projector.

   E. stated,

   A common response to this blot is a bat or winged creature.

[E. outlined on the screen the area of the inkblot used in this response and pointed out various parts of the bat]. Here is the head, the tail, and the wings. [E. mentioned the role of form in determining the response.] A response, such as bat, may seem that way because of its form, which then is written in the space provided also outlining the area used on the given diagram. Another common response to this blot is a pool of oil, and this may be seen that way because of the blot's gray-like shading. Another response to this inkblot is a steer's head [E. outlines the area used--Center D], and this may be seen that way because of its form, color, and also the shading.

b. Trial blot Y was then projected on the screen, and E. pointed out a common response.

A common response to this blot is a human figure [E. mentioned the role of form in determining the response]. A response such as this may be seen that way because of its form--the neck, hips, waist--which is then written in the space provided, also outlining the area used on the given diagram. [Using the same area, E. mentioned] Another common response is skeleton, and this may be seen that way because of its form--the bones across and the way it is shaded. [E. pointed out the role of form and shading as determinants.] Another response to this inkblot is blood, and the red color may be the major reason for seeing it that way.

After questions were answered, E. prepared to project the forty-five Holtzman blots, giving the following instructions.

Remember, write down in the space provided a description of the first thing the blot looks like. Do not forget to include characteristics of the inkblot which are important in determining your response. What made it look like it did? Be sure to give a response for each card. Are there any questions?

Holtzman Inkblot Test Instructions for Threat Conditions

1. Threat condition instructions were identical to standard instructions, with the following addition.

Some responses are better than others. Studies have shown that high scores may predict future job success and low scores may predict future job failure. High scores are also related to general intelligence. Do as best you can.

2. Trial blots were shown as in the standard condition, with the sin-

gle variation being the substitution of the word "good" for the word "common".

Verbal Reinforcement

A pre-arranged series of reminders for all subjects was used by the examiner during the administration of the forty-five inkblots. Those instructions entitled "Threat" were employed only in the threat conditions.

Card Number	Verbal Reinforcement
2	Write out as complete a description as you can in the time and space available.
	Threat -- Remember, these are scored, and some answers are better than others.
3	Just let your imagination run; put down what the inkblot suggests to you--what you see in it.
	Threat -- Do as best you can. This is related to intelligence.
6	This is another one of those blots where you'll have to be careful in outlining the area you use.
	Threat -- This is important for evaluation in prediction of job success.
8	Write out as best you can what characteristics of the inkblot were deciding factors in your responses.
	Threat -- Be careful. High scores are related to general intelligence.
9	Be sure to draw a line around the part of the inkblot that suggested your response.
	Threat -- This is needed for us to score. Do as best you can.
14	We're interested in knowing what aspects of the inkblot influenced your response.
	Threat -- Write down a response for each card. Some responses are better than others.
19	Same as Number 9
24	Same as Number 2

Scoring

Responses were transformed from the record booklets to the standard Holtzman record blanks and then sent to be computer scored. A study by Gorham (1967) reported no significant differences between expert hand scoring and computer scoring of Holtzman record blanks. Intercorrelations among Holtzman variables were as high as those derived from hand scoring, while reliability tended to be somewhat higher.

CHAPTER IV

RESULTS

The results will be discussed in the following manner: (1) analysis showing the relationship between the TAQ and the HIT; (2) analysis showing differences within standard and threat conditions on the ten HIT scales; (3) analysis showing differences between standard and threat conditions; and (4) analysis showing the effects of sex differences.

The Chi Square Test was used in the first three analyses. The Fisher Exact Probability Test was employed to analyze sex differences (Siegel, 1956).

Hypothesis 1 Relationship Between the TAQ and the HIT

There were no significant relationships between the TAQ and the following HIT scales: form definiteness, shading, movement, human, anxiety, hostility, and barrier. The HIT color scale was significantly related to the TAQ at the .05 level. There was a tendency toward significance at the .10 level between the TAQ and the animal and penetrance scales of the HIT.

Hypotheses 2 and 3 Analyses Within Standard and Threat Conditions

There were no significant differences between high- and low-anxious subjects in the standard condition for the following scales: form definiteness, movement, color, shading, human, anxiety, hostility, barrier,

and penetrance. Only the animal scale significantly differentiated at the .05 level between high- and low-anxious subjects in the standard condition.

There were no significant differences between high- and low-anxious subjects in the threat condition for the following scales: form definiteness, color, shading, human, animal, anxiety, hostility, barrier, and penetrance. Only the movement scale was significant at the .05 level in differentiating between high- and low-anxious subjects in the threat condition.

Hypothesis 4 Differences Between Standard and Threat Conditions

Six major significant differences were found in comparing the standard and threat conditions. Form, definiteness, color, movement, shading, hostility, and barrier scales significantly differentiated the conditions of administration at the .05 level. There was a tendency toward significance at the .10 level for conditions of administration to be related in the human scale (See Table I).

Sex Differences

Hypothesis 1 Tested by Sex

Table II shows the analysis of significant results relating to sex differences. In order to eliminate the possibility of interaction between sexes masking true relationships, sex was analyzed independently to determine if there were sex relationships between the two instruments. There were no significant relationships between the TAQ and the HIT scales in males in the following Holtzman scales: form definiteness, movement, color, shading, animal, anxiety, hostility, barrier, and human.

The penetrance scale was significantly related to the TAQ at the .01 level. There were no significant relationships between the TAQ and the HIT scales in females on nine of the scales. The color scale showed a significant tendency at the .10 level.

TABLE I

SIGNIFICANT DIFFERENCES BETWEEN SUBJECTS IN THE STANDARD AND THREAT CONDITIONS

Variable	D.F.	Chi Square	Level of Significance
Form definiteness	1	3.200	.05
Color	1	3.200	.05
Shading	1	2.905	.05
Movement	1	3.200	.05
Hostility	1	5.000	.05
Barrier	1	3.200	.05
Human	1	1.800	.10

TABLE II

SIGNIFICANT DIFFERENCES IN HIT VARIABLES ACCORDING TO SEX AND EXPERIMENTAL CONDITION

Comparison	HIT Variable	D.F.	Level of Significance
High- and low-anxious males	Penetrance	1	.01
High- and low-anxious females	Color	1	.10
High- and low-anxious males - standard condition	Human	1	.07
High- and low-anxious males - threat condition	Penetrance	1	.02
High- and low-anxious females - threat condition	Shading	1	.06
Threat males and standard males	Barrier	1	.05
Threat females and standard females	Form definiteness	1	.05
	Hostility	1	.05

Hypothesis 2 Tested by Sex

In comparing high- and low-anxious males in the standard conditions, the Fisher Exact Probability Test was used. The human scale significantly differentiated between high- and low-anxious males at the .07 level in the standard condition. No significant differences were found in the other nine scales. There were no significant differences between high- and low-anxious females in the standard condition for each of the ten Holtzman scales.

Hypothesis 3 Tested by Sex

The Fisher Exact Probability Test was employed in analyzing sex differences in the threat condition. The penetrance scale significantly differentiated at the .02 level between high- and low-anxious males in the threat condition. No significant differences were found in the other nine Holtzman scales. The shading scale significantly differentiated at the .06 level between high- and low-anxious females in the threat condition. There were no significant differences in the other nine scales for females.

Hypothesis 4 Tested by Sex

The barrier scale significantly differentiated at the .05 level between male subjects in the standard and threat conditions. No significant differences were found on the other nine scales. The form definiteness and hostility scales significantly differentiated at the .05 level between female subjects in the standard and threat conditions. However, there were no significant differences in the other eight Holtzman scales.

CHAPTER V

DISCUSSION

In this investigation an attempt was made to determine the relationship between objectively measured test anxiety and fantasized anxiety and to create an experimental situation that would allow prediction to be made about the relation between situational anxiety and fantasized anxiety as measured on a projective technique. The results were not strongly conclusive, but suggestive of significant relationships.

Hypothesis 1, dealing with the relationship between the TAQ and HIT, was not confirmed in that nine of the ten HIT scales were not related to the TAQ, suggesting that the TAQ and HIT are not measuring the same types of anxiety. Only the color scale was related to the TAQ, with high-test-anxious subjects getting low color scores. This indicates that only the color scale on the HIT is sensitive to the same type of test anxiety as the TAQ. Analysis of sex differences revealed that the penetrance scale for male subjects only may also be sensitive to the same type of test anxiety as the TAQ. Low-test-anxious male subjects scored higher on the penetrance scale than did high-test-anxious male subjects.

Hypotheses 2 and 3, dealing with the responses of subjects under both standard and threat conditiors, were also rejected. It appears that high-anxious and low-anxious subjects do not respond in a significantly different way in either standard or threat conditions on nine of the ten

HIT scales. Under standard conditions, high-anxious subjects gave significantly more animal responses than did low-anxious subjects. Under threat conditions only the movement scale significantly differentiated between high- and low-test-anxious subjects, suggesting that under threat conditions high-anxious subjects employ more dynamic energy in their responses than low-anxious subjects (Holtzman et al., 1961). Analysis of sex differences showed that high-anxious male subjects scored significantly lower on the penetrance scale than low-anxious male subjects under threat conditions. This implies that high-anxious males under threat conditions are less susceptible to environmental stress than the low-test-anxious male subjects under the same conditions.

Hypothesis 4, dealing with all subjects, was confirmed and is consistent with theoretical expectations. Subjects under threat conditions had significantly lower scores on the hostility and movement scales than subjects in the standard condition, and they also had significantly higher scores on the form definiteness scale than subjects in the standard condition. Subjects under threat conditions also tended to give fewer whole and total human responses than subjects in the standard condition. The color, shading, and barrier scales were also significant at the .05 level. These findings correspond with those of other investigators (Calden and Cohen, 1953; Fisher and Renik, 1958; Herron, 1964; and Swartz, 1965) who seem to conclude that induced stress may cause shifts towards greater cognitive functioning with a reduction in fantasy activity. In the present research the increase in the form definiteness scale under stress suggests a tightening up of intellectual-rational functioning characterized by greater objectivity, definiteness, and specificity. The decline in hostility under the stress conditions

appears to indicate less overt, less direct, and more fantasized expressions of hostility in the threat groups. The decrease in the movement scale is also suggestive of a shift away from fantasy activities and unconscious processes in determining responses.

The present study indicates that this shift to greater intellectual involvement is probably accompanied by a corresponding shift towards decreased personal involvement. Subjects under stress may show a significant decrease in affective response components of the HIT. This decrease is indicated by the finding of significant differences at the .05 level for the threat condition. The subjects under stress score lower on the color and shading scales than subjects in the standard condition. The tendency for the human scale to decrease under stress instructions, also, may be indicative of an accompanying emotional withdrawal. The significant increase in the barrier scale after instructional stress is further supportive of a cover of protectiveness aimed at maintaining distance from affective involvement with the situation or inkblot. This barrier increase seems to indicate a strengthening in the body boundaries or character armor under stress which reduces the amount of emotional interchange with the environment and produces more rational thought processes.

Recent and past research seems to agree that stress produces a movement towards the objective and away from the affective. Since these components reflect diverse cultural expectancies for males and females, it might be predicted that the sexes would respond differently, especially under stress. Males in western culture are judged by their ability to be objective and to remain objective under stress. Females are allowed considerably more emotional lability and are possibly less

threatened by situations calling for objective achievement and control. Results of an analysis of experimental conditions by sex show some differences, but are not as conclusive as might be expected. Female subjects under situationally-induced stress scored significantly higher on the form definiteness scale (.05) and lower on the hostility scale (.05) than female subjects in the standard condition. Although there were no significant differences on the form definiteness and hostility scales for male subjects between the standard and threat conditions, male subjects tended to score in the same direction as female subjects.

Male subjects under threat conditions significantly increased (.05) their barrier scores over male subjects in the standard condition. Females did not show this increase.

In conclusion, it would appear that the present study supports and extends research findings relative to the applicability and interpretation of the HIT as an instrument for understanding of anxiety processes in college students. The HIT does not appear to test anxiety as measured by the TAQ. Nevertheless, this instrument does appear to be sensitive to situational anxiety (threat) and to mirror some very definite response changes in the individual. These responses, a constriction of the emotional field with increased objective involvement under stress, agree generally with the clinical literature on anxiety. Sex differences were minor and inconclusive.

Implications for future research in this area might include further analysis of age and sex differences in response to anxiety and also differential responses to verbally- and non-verbally induced stress. The use of the computer scoring system is especially recommended to future researchers as an efficient method of handling projective data.

CHAPTER VI

SUMMARY

The purpose of this study was to determine the relationship between psychometric and projective measures of test anxiety and to determine the relationship between situational anxiety and fantasized anxiety on the HIT. Two major hypotheses were submitted: (1) There would be a direct and positive correlation between the TAQ and related scales on the HIT; and (2) Subjects placed under situational stress (threat) would show more anxiety on the HIT than subjects in standardized conditions.

High-test-anxious subjects and low-test-anxious subjects were isolated using the TAQ as a measure of test anxiety. From a sample of three hundred seventy-four undergraduate summer school students, forty subjects from the upper fifteen per cent and forty subjects from the lower fifteen per cent were employed in this experiment. High-anxious subjects and low-anxious subjects were shown the HIT in group administrations ranging from five to fifteen subjects per group for high-anxious subjects and five to fifteen subjects per group for low-anxious subjects.

The high- and low-anxious subjects were split. One-half of the high-anxious subjects and one-half of the low-anxious subjects were given instructions designed to create stress. The other halves of the high-anxious and the low-anxious subjects were administered standardized

instructions. The HIT protocols were scored by computer and analyses were performed on ten of the variables using Chi Square and the Fisher Exact Probability Test.

Results indicated that there is no significant relationship between the HIT and the TAQ. This seems to imply that the two tests are measuring different types or facets of anxiety. This finding rejects Hypothesis 1.

Hypotheses 2 and 3 were also rejected. High-anxious subjects do not appear to respond in a significantly different manner from low-anxious subjects in either the standard or threat condition.

Hypothesis 4, dealing with conditions of administration (standard and threat) using all subjects, was supported. HIT responses of both high- and low-anxious subjects in the threat condition differed significantly from their HIT responses under standard conditions.

These changes under stress conditions seem to represent a shift from affective processes to more intellectual processes in determining perception of the inkblots. There were no major sex differences found.

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APPENDIX A

SUMMARY OF STATISTICAL ANALYSIS

SUMMARY OF THE CHI SQUARE ANALYSIS FOR DIFFERENCES BETWEEN HIGH- AND LOW-ANXIOUS SUBJECTS ON HIT SCALES

Variable	D.F.	Chi Square	Level of Significance
Form definiteness	1	.0000	
Color	1	3.2000	.05
Shading	1	.0000	
Movement	1	.0000	
Human	1	.2000	
Animal	1	1.8000	.10
Anxiety	1	.0000	
Hostility	1	.2000	
Barrier	1	.8000	
Penetrance	1	2.0250	.10

SUMMARY OF THE CHI SQUARE ANALYSIS FOR DIFFERENCES BETWEEN HIGH- AND LOW-ANXIOUS MALE SUBJECTS ON HIT SCALES

Variable	D.F.	Chi Square	Level of Significance
Form definiteness	1	.0000	
Color	1	.6222	
Shading	1	.8888	
Movement	1	.0000	
Human	1	.6222	
Animal	1	.6222	
Anxiety	1	.0000	
Hostility	1	.0000	
Barrier	1	.6222	
Penetrance	1	7.2000	.01

SUMMARY OF THE CHI SQUARE ANALYSIS FOR DIFFERENCES BETWEEN HIGH- AND LOW-ANXIOUS FEMALE SUBJECTS ON HIT SCALES

Variable	D.F.	Chi Square	Level of Significance
Form definiteness	1	.3152	
Color	1	2.8364	.10
Shading	1	.0952	
Movement	1	.3152	
Human	1	.0000	
Animal	1	.3152	
Anxiety	1	.3152	
Hostility	1	.3152	
Barrier	1	1.2606	
Penetrance	1	.3152	

SUMMARY OF THE CHI SQUARE ANALYSIS FOR DIFFERENCES BETWEEN HIGH- AND LOW-ANXIOUS SUBJECTS IN THE STANDARD CONDITION

Variable	D.F.	Chi Square	Level of Significance
Form definiteness	1	.0000	
Color	1	.4000	
Shading	1	1.2919	
Movement	1	.0000	
Human	1	.4000	
Animal	1	3.6000	.05
Anxiety	1	.4000	
Hostility	1	.0000	
Barrier	1	.4000	
Penetrance	1	.0000	

SUMMARY OF THE FISHER EXACT PROBABILITY TEST FOR DIFFERENCES BETWEEN HIGH- AND LOW-ANXIOUS MALE SUBJECTS IN THE STANDARD CONDITION

Variable	D.F.	Fisher Exact Probability	Level of Significance
Form definiteness	1	.4286	
Color	1	.5143	
Shading	1	.2286	
Movement	1	.4286	
Human	1	.0714	.07
Animal	1	.2286	
Anxiety	1	.2286	
Hostility	1	.2286	
Barrier	1	.4286	
Penetrance	1	.4286	

SUMMARY OF THE CHI SQUARE ANALYSIS FOR DIFFERENCES BETWEEN HIGH- AND LOW-ANXIOUS FEMALE SUBJECTS IN THE STANDARD CONDITION

Variable	D.F.	Chi Square	Level of Significance
Form definiteness	1	.5357	
Color	1	.5357	
Shading	1	.9167	
Movement	1	.0000	
Human	1	.5357	
Animal	1	.3333	
Anxiety	1	1.2000	
Hostility	1	.5357	
Barrier	1	2.1429	
Penetrance	1	.0000	

SUMMARY OF THE CHI SQUARE ANALYSIS FOR DIFFERENCES BETWEEN HIGH- AND LOW-ANXIOUS SUBJECTS IN THE THREAT CONDITION

Variable	D.F.	Chi Square	Level of Significance
Form definiteness	1	.4000	
Color	1	.4000	
Shading	1	.4500	
Movement	1	3.6000	.05
Human	1	.4000	
Animal	1	.0000	
Anxiety	1	.0000	
Hostility	1	.4000	
Barrier	1	.4000	
Penetrance	1	.5333	

SUMMARY OF THE FISHER EXACT PROBABILITY TEST FOR DIFFERENCES BETWEEN HIGH- AND LOW-ANXIOUS MALE SUBJECTS IN THE THREAT CONDITION

Variable	D.F.	Fisher Exact Probability	Level of Significance
Form definiteness	1	.3529	
Color	1	.2471	
Shading	1	.2333	
Movement	1	.3529	
Human	1	.3529	
Animal	1	.3529	
Anxiety	1	.4235	
Hostility	1	.3529	
Barrier	1	.1324	
Penetrance	1	.0238	.02

SUMMARY OF THE FISHER EXACT PROBABILITY TEST FOR DIFFERENCES BETWEEN HIGH- AND LOW-ANXIOUS FEMALE SUBJECTS IN THE THREAT CONDITION

Variable	D.F.	Fisher Exact Probability	Level of Significance
Form definiteness	1	.3483	
Color	1	.1354	
Shading	1	.0650	.06
Movement	1	.2438	
Human	1	.3483	
Animal	1	.3483	
Anxiety	1	.3483	
Hostility	1	.2438	
Barrier	1	.2438	
Penetrance	1	.2438	

SUMMARY OF THE CHI SQUARE ANALYSIS FOR DIFFERENCES BETWEEN SUBJECTS IN THE THREAT AND STANDARD CONDITIONS

Variable	D.F.	Chi Square	Level of Significance
Form definiteness	1	3.2000	.05
Color	1	3.2000	.05
Shading	1	2.9050	.05
Movement	1	3.2000	.05
Human	1	1.8000	.10
Animal	1	.8000	
Anxiety	1	.0000	
Hostility	1	5.0000	.05
Barrier	1	3.2000	.05
Penetrance	1	.2250	

SUMMARY OF THE CHI SQUARE ANALYSIS FOR DIFFERENCES BETWEEN MALE SUBJECTS IN THE THREAT AND STANDARD CONDITIONS

Variable	D.F.	Chi Square	Level of Significance
Form definiteness	1	1.4737	
Color	1	.1637	
Shading	1	.1778	
Movement	1	1.4737	
Human	1	1.4737	
Animal	1	.1637	
Anxiety	1	.1637	
Hostility	1	1.4737	
Barrier	1	4.0936	.05
Penetrance	1	.2020	

SUMMARY OF THE CHI SQUARE ANALYSIS FOR DIFFERENCES BETWEEN FEMALE SUBJECTS IN THE THREAT AND STANDARD CONDITIONS

Variable	D.F.	Chi Square	Level of Significance
Form definiteness	1	3.9140	.05
Color	1	.7189	
Shading	1	.8571	
Movement	1	1.9969	
Human	1	.7189	
Animal	1	.0799	
Anxiety	1	.0799	
Hostility	1	3.9140	.05
Barrier	1	.7189	
Penetrance	1	1.9969	

APPENDIX B

TEST ANXIETY QUESTIONNAIRE

Name:

Age:

Sex:

Classification:

Questionnaire on Attitudes Toward Three Kinds of Testing Situations
(College Form)

Name: _____
(Please Print)

This questionnaire is designed to give you an opportunity to indicate how and what you feel in regard to three types of testing situations:

a) the group intelligence or aptitude test, such as those you took upon entrance to college,
b) the course examination,
c) the individual (face-to-face) type of intelligence test.

One of the main reasons for constructing this questionnaire is the fact that very little is known about peoples' feelings toward the taking of various kinds of tests. We can assume that people differ in the degree to which they are affected by the fact that they are going to take a test or by the fact that they have taken a test. What we are particularly interested in here is how widely people differ in their opinions of and reactions to the various kinds of testing situations.

The value of this questionnaire will in large part depend on how frank you are in stating your opinions, feelings, and attitudes: Needless to say, your answers to the questions will be kept strictly confidential; they will under no circumstances be known to any instructor or official of the University.

We are requesting you to give your name, class, etc., only because it may be necessary for research purposes.

Each of you has taken a course examination and a group intelligence or aptitude test, but not all of you have taken an individual intelligence test. Those of you who have not taken such a test are requested to answer the relevant questions in terms of how you think you would react to them. We want to know what you think your attitudes and feelings toward such a test would be and not what you think they ought to be. Those who have taken an individual intelligence test will, of course, answer the questions in terms of what they actually experienced.

For each question there is a line or scale on the ends of which are statements of opposing feelings or attitudes. In the middle of the line you will find either the word "Midpoint" or a phrase, both of which are intended to reflect a feeling or attitude which is in-between the statements of opposing feelings described above. You are required to put a mark (X) on that point on the line which you think best indicates the strength of your feeling or attitude about the particular question. The midpoint is only for your guidance. Do not hesitate to put a mark on any point on the line as long as that mark reflects the strength of your feeling or attitude.

If you have any questions at this time, please ask the person who has passed out the examinations.

THERE ARE NO "CATCH" QUESTIONS IN THIS QUESTIONNAIRE. PLEASE READ EACH QUESTION AND EACH SCALE VERY CAREFULLY. THERE IS NO TIME LIMIT.

SECTION I.

The following questions relate to your attitude toward and experience with group intelligence or aptitude tests. By group intelligence tests we refer to tests which are administered to several individuals at a time. These tests contain different types of items and are usually paper and pencil tests with answers requiring either fill-ins or choice of several possible answers. Scores on these tests are given with reference to the standing of the individual within the group tested or within specific age and educational norms. The College Entrance Board tests which you have taken represent this type of test. Please try to remember how you usually reacted toward these tests and how you felt while taking them.

THE MIDPOINT IS ONLY FOR YOUR GUIDANCE. DO NOT HESITATE TO PUT A MARK (X) ON ANY POINT ON THE LINE AS LONG AS THAT MARK REFLECTS THE STRENGTH OF YOUR FEELING OR ATTITUDE.

1. How valuable do you think group intelligence tests are in determining a person's ability?

Very valuable	Valable in some respects and valueless in others	Valueless

2. Do you think that group intelligence tests should be used more widely than at present to classify students?

Should be used less widely	Should be used as at present	Should be used more widely

3. Would you be willing to stake your continuance in college on the outcome of a group intelligence test which has previously predicted success in a highly reliable fashion?

Very willing	Uncertain	Not willing

4. If you know that you are going to take a group intelligence test, how do you feel beforehand?

Feel very unconfident	Midpoint	Feel very confident

5. After you have taken a group intelligence test, how confident do you feel that you have done your best?

Feel very unconfident	Midpoint	Feel very confident

THE MIDPOINT IS ONLY FOR YOUR GUIDANCE. DO NOT HESITATE TO PUT A MARK (X) ON ANY POINT ON THE LINE AS LONG AS THAT MARK REFLECTS THE STRENGTH OF YOUR FEELING OR ATTITUDE.

6. When you are taking a group intelligence test, to what exten do your emotional feelings interfere with or lower your performance?

Do not interfere at all	Midpoint	Interfere a great deal

7. Before taking a group intelligence test, to what extent are you aware of an uneasy feeling?

Am very much aware of it	Midpoint	Am not aware of it at all

8. While taking a group intelligence test to what extent do you experience an accelerated heartbeat?

Heartbeat does not accelerate at all	Midpoint	Heartbeat noticeably accelerated

9. Before taking a group intelligence test to what extent do you experience an accelerated heartbeat?

Heartbeat does not accelerate at all	Midpoint	Heartbeat noticeably accelerated

10. While taking a group intelligence test to what extent do you worry?

Worry a lot	Midpoint	Worry not at all

11. Before taking a group intelligence test to what extent do you worry?

Worry a lot	Midpoint	Worry not at all

12. While taking a group intelligence test to what extent do you perspire?

Perspire not at all	Midpoint	Perspire a lot

13. Before taking a group intelligence test to what extent do you perspire?

Perspire not at all	Midpoint	Perspire a lot

THE MIDPOINT IS ONLY FOR YOUR GUIDANCE. DO NOT HESITATE TO PUT A MARK (X) ON ANY POINT ON THE LINE AS LONG AS THAT MARK REFLECTS THE STRENGTH OF YOUR FEELING OR ATTITUDE.

14. In comparison with other students how often do you think of ways to avoid a group intelligence test?

Less often than other students	Midpoint	More often than other students

15. To what extent do you feel that your performance on the college entrance tests was affected by your emotional feelings at the time?

THE MIDPOINT IS ONLY FOR YOUR GUIDANCE. DO NOT HESITATE TO PUT A MARK (X) ON ANY POINT ON THE LINE AS LONG AS THAT MARK REFLECTS THE STRENGTH OF YOUR FEELING OR ATTITUDE.

SECTION II.

The following questions relate to your atitude toward individual intelligence tests and your experience with them. By individual intelligence tests we refer to tests which are administered to one individual at a time by an examiner. These tests contain different types of items and thus present a variety of tasks. Those tasks can be both verbal and manipulative, i.e. verbal or written answers to questions or manipulation of objects such as is involved in puzzles, form boards. etc. Examples of tests of this type would be the Stanford-Binet test and the Wechsler-Bellevue test. Please try to remember how you have usually reacted toward these tests or how you would expect to react to them.

THE MIDPOINT IS ONLY FOR YOUR GUIDANCE. DO NOT HESITATE TO PUT A MARK (X) ON ANY POINT ON THE LINE AS LONG AS THAT MARK REFLECTS THE STRENGTH OF YOUR FEELING OR ATTITUDE.

16. Have you ever taken any individual intelligence tests?

Yes No (Circle the appropriate answer)

If your answer to the above question is YES, indicate in the questions below how you do or did react to individual intelligence tests.

If your answer to the above question is NO, indicate in the following questions how you think you would react to or feel about individual intelligence tests.

17. When you are taking an individual intelligence test, to what extent do (or would) your emotional feelings interfere with your performance?

Would not interfere with it at all	Midpoint	Would interfere a great deal

18. If you know that you are going to take an individual intelligence test, how do you feel (or expect that you would feel) beforehand?

Would feel very Unconfident	Midpoint	Would feel very confident

THE MIDPOINT IS ONLY FOR YOUR GUIDANCE. DO NOT HESITATE TO PUT A MARK (X) ON ANY POINT ON THE LINE AS LONG AS THAT MARK REFLECTS THE STRENGTH OF YOUR FEELING OR ATTITUDE.

19. While you are taking an individual intelligence test, how confident do you feel (or expect that you would feel) that you are doing your best?

Would feel very confident	Midpoint	Would feel very unconfident

20. After you have taken an individual intelligence test, how confident do you feel (or expect that you would feel) that you have done your best?

Would feel very unconfident	Midpoint	Would feel very confident

21. Before taking an individual intelligence test, to what extent are you (or would you be) aware of an "uneasy" feeling?

Am not aware of it at all	Midpoint	Am very much aware of it

22. While taking an individual intelligence test to what extent do you (would you) experience an accelerated heartbeat?

Heartbeat does not accelerate at all	Midpoint	Heartbeat noticeably accelerated

23. Before taking an individual intelligence test to what extent do you (would you) experience an accelerated heartbeat?

Heartbeat does not accelerate at all	Midpoint	Heartbeat noticeably accelerated

24. While taking an individual intelligence test to what extent do you (would you) worry?

Worry a lot	Midpoint	Worry not at all

25. Before taking an individual intelligence test to what extent do you (would you) worry?

Worry a lot	Midpoint	Worry not at all

THE MIDPOINT IS ONLY FOR YOUR GUIDANCE. DO NOT HESITATE TO PUT A MARK (X) ON ANY POINT ON THE LINE AS LONG AS THAT MARK REFLECTS THE STRENGTH OF YOUR FEELING OR ATTITUDE.

26. While taking an individual intelligence test to what extent do you (would you) perspire?

Would never perspire	Midpoint	Would perspire a lot

27. Before taking an individual intelligence test to what extent do you (would you) perspire?

Would never perspire	Midpoint	Would perspire a lot

28. In comparison to other students, how often do you (would you) think of ways of avoiding taking an individual intelligence test?

More often than other students	Midpoint	Less often than other students

THE MIDPOINT IS ONLY FOR YOUR GUIDANCE. DO NOT HESITATE TO PUT A MARK (X) ON ANY POINT OF THE LINE AS LONG AS THAT MARK REFLECTS THE STRENGTH OF YOUR FEELING OR ATTITUDE.

SECTION III.

The following questions relate to your attitude toward and experience with course examinations. We refer to major examinations, such as mid-term and finals, in all courses, not specifically in any one course. Try to represent your usual feelings and attitudes toward these examinations in general, not toward any specific examination you have taken. We realize that the comparative ease or difficulty of a particular course and your attitude toward the subject matter of the course may influence your attitude toward the examinations; however, we would like you to try to express your feelings toward course examinations generally, at any time, to any of your instructors or to any official of the University.

THE MIDPOINT IS ONLY FOR YOUR GUIDANCE. DO NOT HESITATE TO PUT A MARK (X) ON ANY POINT ON THE LINE AS LONG AS THAT MARK REFLECTS THE STRENGTH OF YOUR FEELING OR ATTITUDE.

29. Before taking a course examination, to what extent are you aware of an "uneasy" feeling?

Am not aware of it at all	Midpoint	Am very much aware of it

30. When you are taking a course examination, to what extent do you feel that your emotional reactions interfere with or lower your performance?

Do not interfere with it at all	Midpoint	Interfere a great deal

31. If you know that you are going to take a course examination, how do you feel beforehand?

Feel very unconfident	Midpoint	Feel very confident

32. After you have taken a course examination, how confident do you feel that you have done your best?

Feel very unconfident	Midpoint	Feel very confident

THE MIDPOINT IS ONLY FOR YOUR GUIDANCE. DO NOT HESITATE TO PUT A MARK (X) ON ANY POINT ON THE LINE AS LONG AS THAT MARK REFLECTS THE STRENGTH OF YOUR FEELING OR ATTITUDE.

33. While taking a course examination, to what extent do you experience an accelerated heartbeat?

Heartbeat does not accelerate at all	Midpoint	Heartbeat noticeably accelerated

34. Before taking a course examination, to what extent do you experience an accelerated heartbeat?

Heartbeat does not accelerate at all	Midpoint	Heartbeat noticeably accelerated

35. While taking a course examination, to what extent do you worry?

Worry a lot	Midpoint	Worry not at all

36. Before taking a course examination to what extent do you worry?

Worry a lot	Midpoint	Worry not at all

37. While taking a course examination, to what extent do you perspire?

Never perspire	Midpoint	Perspire a lot

38. Before taking a course examination, to what extent do you perspire?

Never perspire	Midpoint	Perspire a lot

39. When, in your opinion, you feel well prepared for a course examination, how do you usually feel just before the examination?

Confident	Midpoint	Anxious

THE MIDPOINT IS ONLY FOR YOUR GUIDANCE. DO NOT HESITATE TO PUT A MARK (X) ON ANY POINT ON THE LINE AS LONG AS THAT MARK REFLECTS THE STRENGTH OF YOUR FEELING OR ATTITUDE.

VITA

Ronald J. Lavit

Candidate for the Degree of

Doctor of Philosophy

Thesis: EFFECTS OF LEVELS OF ANXIETY ON HOLTZMAN INKBLOT RESPONSES

Major Field: Psychology

Biographical:

Personal Data: Born in Brooklyn, New York, January 4, 1942, the son of Sidney and Rose Lavit.

Education: Graduated from George W. Hewlett High School, Hewlett, New York, in June, 1960; received the Bachelor of Arts Degree from Adelphi University in June, 1964, with a major in Psychology; attended Long Island University in the Summer of 1964; received the Master of Arts Degree from Hofstra University in June, 1966, with a major in Clinical-School Psychology; completed requirements for the Doctor of Philosophy Degree at Oklahoma State University in July, 1970.

Professional Experience: Research Assistant, William Schlackman, Ltd., Summer, 1965; Psychometrician, Human Resources and Abilities, Summer, 1966; Research Executive, William Schlackman, Ltd., Summer, 1967; Graduate Teaching Assistant, Fall, 1967, through Spring, 1969; Psychology Intern, Children's Medical Center, Fall, 1969, through Summer, 1970.