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THE EFFECTS OF ANXIETY ON THE ACHIEVEMENT OF
BLACK GRADUATE STUDENTS TAKING STANDARDIZED
ACHIEVEMENT TESTS

DISSERTATION
Presented in Partial Fulfillment of the Requirements for
The Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By
Joseph Levoid Jefferson, B.A., M.A.

* * * * * * *

The Ohio State University
1974

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To my wife, Ida; my children, Eric and Clynita;
and to my parents, Mr. and Mrs. Phillip Jefferson.

j1j
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"To those whom much is given, much is required."

--John F. Kennedy

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CHAPTER I

INTRODUCTION

The manufacturers of educational tests over the past decade can hardly recant the popularity it has received. Widespread use of testing in industry, business, the military and other governmental agencies, and needless to say, in the field of education, is clear evidence to support its popularity. In the area of education, many institutions of higher education have partly or completely abandoned their local testing programs in favor of national testing services. Williams (1973) cited the gross profit picture of the sales from the test manufacturers over the past few years to the colleges and universities. His findings clearly indicate the increased use of outside testing services by colleges and universities.

Over the past few years there has been an increasing growth of criticism of the use of standardized tests. Many of the critics of standardized tests see them as strong support of bias for denying equality of education and job opportunities for Black and other minority groups (Manning, 1968). The effects of these criticisms have been beneficial inasmuch as they are stimulating the research community in an increased interest in bringing test methodology into a closer and potentially more productive relationship with educational and psychological theory (Anastasi, 1967).
Evidence of the research efforts to focus more attention on standardized tests was exemplified by the First National Conference on Testing held in Hampton, Virginia in April 1973. This conference brought together over five hundred educators and representatives from all the major test producers to discuss the criticisms directed at standardized test and their application. A broad base of literature, reviewed by Dreger and Miller (1960) shows a consistent picture of lower scores for Blacks than for whites. Interpretations of this data have caused many heated debates, however, the controversy to this data has not produced any empirical studies of motivational and situational factors that influence the test taking behavior of Blacks.

Statement of the Problem

Cameron (1968), indicated that he observed, from administering scholastic aptitude tests to older Black students, considerable anxiety in these students complicated by fear of failure. Similar findings were discovered by Feld and Lewis (1967) in their study which involved Black subjects ages 1-10 and 11-19. Based on these findings it is possible that the performance of Black adults on standardized tests is also negatively influenced by test anxiety.

Over the years, certain factions of the Black community have waged harsh criticism against psychological tests in terms of yielding an adequate psychological appraisal of Black students. In capsule the word is "bias" or in other words the content of the test is not relevant to the experiences of the Black population. Despite this longstanding criticism, it seems that psychological tests have become
an integral part of the American way of life. In the future, as in
the past, the use of psychological tests will likely play a major role
in the selection and placement of Black graduate students. Thus, for
the most part, the Black graduate student will be judged by the same
measuring instruments as his white counterpart.

There is much concern by administrators and faculty in the
Black institutions of higher education about test performance of Black
graduate students taking standardized tests. Unfortunately, there is
an absence from the literature of research studies which address them-
selves to this problem.

The purpose of this study is to determine the effects of anxiety
on the performance of Black graduate students on standardized achieve-
ment tests at Texas Southern University.

Significance of the Problem

Many studies have been undertaken regarding anxiety effects of
undergraduate students, however, the review of literature is limited
concerning these effects on graduate students. Although there has
been an increased interest in investigating anxiety through a variety
of activities with many different populations, no one has turned atten-
tion to a population of Black graduate students. Even though the
studies undertaken in this area were important and needed, the extent
to which their findings can be generalized to an all-Black population
might be questionable.

Many Black educators feel that there is an extremely high rate
of failure among Black graduate college students taking standardized
tests. Therefore, this study should have particular significance for predominately Black colleges and universities who employ the use of standardized tests. Hopefully, the findings of this study may be used as a basis for colleges and universities to reexamine their testing programs and construct some policy in dealing with students who experience failure on standardized tests due to test taking anxiety.

Statement of the Hypotheses

The following hypotheses are stated in such a manner so as to encompass a variance in the scores from two sets of tests to be administered. In accordance with the problem of this study, several hypotheses are generated.

The overall null hypothesis that no significant relationship exists between anxiety and test taking performance of Black graduate students was tested in this study. Testing of the overall hypothesis was accomplished by formulating sub-hypotheses. These sub-hypotheses were stated in the null form in order that the statistical method to be used in this study could be properly administered.

Anxiety factors were perceived as the dependent variable and test reduction technique as the independent variable with respect to the following sub-hypotheses:

1. There is no significant difference between the degree of anxiety experienced by Black graduate students of the experimental group as a result of taking the Pre and Post assessments of the Achievement Anxiety Test.
2. There is no significant difference between the performance of high anxiety subjects as opposed to low anxiety experimental and control group subjects on the Post assessment of the Otis-Lennon Mental Ability Test.

Assumptions and Limitations

The major assumption of this study is that anxiety can be reduced in stressful situations. In addition, the limitations of this study include, but are not limited to, the following:

1. The measurement of anxiety will be limited by the particular nature of standardized instruments used.

2. The study will only include Black students from one institution and its findings may not be applicable to other graduate students in a similar situation.

3. This study will not exhaust the variables which may be significantly related to anxiety within the context of graduate education. Thus, it is recognized that there may be other variables which may be characterized.

Definition of Terms

Some terms will be used throughout this study that are subject to different interpretations. In order to establish a line of
communication, the following words have been defined.

**Anxiety.** A fearful concern or interest which may operate as a disruptive force in the thinking process, or may even serve as a facilitating factor.

**Predominantly Black College.** An institution of higher education in which the Black student population is greater than fifty percent.

**Standardized Test.** A test for which content has been selected and checked empirically, for which norms have been established, for which uniform methods of administering and scoring have been developed, and which may be scored with a relatively high degree of objectivity.

**Substandard Performance.** The accomplishment of an individual distinguished from potential ability, capacity, or aptitude as exhibited from a task that is not average or typical.

**Test Performance.** The actual accomplishment as distinguished from potential ability, capacity, or aptitude as exhibited on a task.

**Facilitating Anxiety.** A concern or interest which operates to enhance the thinking process or performance.

**Debilitating Anxiety.** A concern or interest which operates to depress the thinking process or performance.
Organization of the Dissertation

An introduction to the study was presented in Chapter I. This chapter included a statement of the problem, a discussion of the significance of the problem, definition of terms, hypotheses to which this study is addressed and an enumeration of the assumptions and limitations within this study.

A survey of related studies and literature is presented in Chapter II.

Chapter III contains a description of procedures, methodology, and instruments used in this study.

Chapter IV contains a report of the research findings and results of the study.

A summary of the study, a discussion of the research findings and a statement of conclusions based on the findings are contained in Chapter V. A discussion of the implications of this study and recommendations for future studies are also presented in this chapter.
CHAPTER II

REVIEW OF RELATED STUDIES AND LITERATURE

Introduction

Paralleling the growth of the popularity of testing, there is an increasing outpour of criticism against standardized tests. Critics see testing as a fortification of bias whose use recants equality of education and job opportunity to Blacks and other minority groups Manning, (1968). The widespread use of testing in the educational system can now be felt from preschool throughout the realm of higher education in the university. The impact of testing affects the majority of the population in the United States directly in terms of measurement of their own characteristics or indirectly through the measurement of their children's characteristics.

To some, a test implies an instrument composed of questions to which there are "right" and "wrong" answers. To others, the word "testing" has a much broader meaning. A test is seen as being equivalent to an "evaluation." Webster (1973) defines a test as being "a critical examination, observation, or evaluation." However, not all testing instruments are examinations utilizing "right" or "wrong" answers. Interest inventories, for example, require no such responses in their scoring process.

Tests serve various functions. In a study measuring intellectual capacity and performance, Manning (1968), notes that tests
have acquired a "societal function" in which the sample of behavior that constitutes the test (and hence scores deriving from it) comes to connote a view that such measures tap innate, fixed and predetermined human characteristics. This societal conception of the function of tests has important consequences as tests influence social values regarding the worth of the individual and the dignity of various forms of work.

Techniques of testing are used in the selection process of students for scholarship and honors, as well as for many routine procedures in entering school (e.g., Scholastic Aptitude Test, American College Test, Graduate Record Examination). Testing is also used widely in industry for the selection of personnel, as a basis for promotion, and as a basis for selecting individuals for positions requiring special abilities. So essentially, a test is a sample of the individual's ability and achievement taken under standard conditions.

Some kind of evaluation of ability and achievement has been going on as long as there have been schools, businesses, armies, and other institutions. Standardized testing, however, is a phenomenon of the 20th century. Scannell (1973), defines a standardized test as one that has been carefully constructed by experts in the light of acceptable objectives or purposes; procedures for administering, scoring, and interpreting scores are specified in detail so that no matter who gives the test or where it may be given, the results should be comparable; and norms or averages for different ages or grade levels have been predetermined.
Standardized tests are planned and written in such a way that any individual living in the same country, speaking and understanding the same language, and going to similar schools will be tested fairly. Tests measure the degree to which certain skills and knowledge have been mastered. Standardized tests are used because teacher-made tests are limited to the classroom situation. The results of such tests cannot be generalized to a widespread populus because students may not be representative of the entire population of a country. The results do not depend on the scorer's opinion or feelings.

According to Stanley and Hopkins (1972):

The significance of the obtained score must be inferred by comparing the performance of an individual with other individuals, with whom are presumably has something in common. In the area of achievement and of capacity to achieve (intelligence and aptitude), measurement is accomplished by providing standard tasks to be performed under standard conditions. The number of such tasks successfully performed under standard conditions (uniform direction, uniform timing, and the like) generally is the basis for determining the quality of the performance.

Anxiety and Standardized Tests

Cameron (1968) points out many disappointing experiences with some standardized tests, however, they have caused some educators to look elsewhere for valid and reliable predictors of performance of various student groups. "Obviously, a poorly motivated student will not perform to his maximum effort on a test." Most examinees, are intrinsically motivated to succeed in test situations, although the degree of motivation varies widely in different ethnic and socio-economic groups.
From the perspective of Manning's societal function of tests, a test score comes to be regarded by a student as a reward bestowed on him by the educational system. But in the case of Black youths impacted in the urban ghetto, for example, there is ample evidence of inequality of educational opportunity and immobility of social class. In the light of this, should anyone be surprised that hostility is expressed toward tests because they symbolize inequality in the rewards bestowed by a rigid, repressive system?

Ruebush (1963) stated:

If an examinee is too ego-involved with his performance on a test, he may become anxious. There have been dozens of research studies relating anxiety and test performance. Almost all this research is consistent in showing a small negative correlation between paper and pencil self-report anxiety measures and performance on intelligence and achievement tests.

Ruebush also defines "anxiety" as generalized feelings of worry and apprehension growing out of resolved frustration. Anxiety has much in common with ordinary fear, except it is attached primarily to one's own impulses rather than to an external danger. Like fear it is a stirred-up state of organism. Both fearful and anxious people, if the stimulus is intense enough, how the same bodily symptoms: pounding heart and rapid pulse, tense muscles, dryness of throat, cold sweat and feeling sick to the stomach.

Unlike fear, however, the anxious person had only a vague idea that he is anxious. Anxious people do not understand the sources of their anxiety. Simply stated then anxiety is a vague fear aroused by internal conflict.
As stated earlier, Ruebush has cited dozens of research studies (e.g., Allison, 1972; Chamber, Hopkins, and Hopkins, 1972; French, 1972; and Silverstein, 1964) relating anxiety and test performance. In a few studies, such as those stated above, researchers have attempted to ascertain experimentally whether high anxiety impairs test performance. In these studies, subjects were randomly assigned to various anxiety-inducing or anxiety-reducing treatments. For the most part, these findings show that anxiety-inducing instructions did cause more errors to be made by high-anxiety examinees.

**Anxiety, Standardized Tests and Blacks**

Evidence that anxiety is usually found to accompany low test scores has been given by Sarason and Mandler, (1952).

They tested the following hypothesis:

When a stimulus situation contains elements which specifically arouse test or achievement anxiety, this increase in anxiety drive will lead to poor performance in individuals who have test-irrelevant (incompatible or interfering) anxiety responses in their response repertory.

Social research has made it common knowledge that Black students, on most academic levels, score consistently lower than whites on most standardized tests measuring intellective factors. There is an abundance of studies in the literature to this effect. One classical example is the work of Shuey (1958). This work contains a review of literature comparing Black and white intelligence extending over a period of 57 years. Pettigrew (1964) gives further evidence of the abundance of these particular types of studies. Con-
tained within this work is an evaluative summary of Blacks and whites. Also Dreger and Miller (1960) gives a rather extensive summary of comparative studies between Blacks and whites. The evidence that Blacks have not measured up as compared to whites in their performance on standardized measuring instruments, appears to be overwhelming. However, it is significant to note that many of these studies, especially those attempting to support the hypothesis that Blacks are innately inferior intellectually, have been found to be inconclusive. The main problems here appear to be the researchers' definition of race and their failure, as social scientists, to follow the scientific models of geneticists in their investigations, which is for all practical purposes almost impossible, Lopate and Gordon (1969).

Many researchers have shown much interest in comparing the intellectual functioning of Blacks and whites. However, there appears to be a lack of commitment on their part to investigate possible causative factors for the relatively substandard performance exemplified by Blacks on standardized tests. In addition, there appears to be no strong commitment to examining some aspects of personality in conjunction with scholastic aptitude and academic achievement. There is certainly little doubt about the need of more of the latter studies. The measurement of personality variables would likely give a more complete picture of Blacks. Dai (1953) asserts that being a Negro in America is apt to color practically every act and thought of the Negro child. Persons who are different in anatomical and physiological characteristics cannot help being also different in behavioral and
mental traits, Sorokin (1947). Maltz (1960) points out that the minority individual's self-image is affected by the conditions under which he is forced to live, for these conditions prescribe the limits for the accomplishment of any particular goals; they prescribe the "area of the possible."

Looking more closely at the personality of Black youth, but in a relatively narrow scope, Cliff (1969) reports that, characteristicly, one would expect to find:

1. That they show anxiety at having to work in two systems of values. In their culture certain actions or ways of living are accepted, but are rejected by the world of school, possibly leading to confusion and hostility toward one or both the systems of values.

2. That they respond primarily with anxiety to any threatening situation and may attempt to solve problems by repeated withdrawal.

3. That they possess massive anxiety and confusion resulting in the inability to maintain one kind of activity or reaction.

These are only a few of the relatively adverse characteristics that are seemingly an outgrowth of the Black youth's culture. Armed with the knowledge that Black and white children, generally, grow up in two distinctly different cultures, one would reason that there
would be distinctly different personality and cognitive styles formed as a result. That this is possibly true has been demonstrated by Feld and Lewis (1967). These investigators administered the Test Anxiety Scale to an entire second grade population of a large school system in the eastern part of the United States. The results of the study revealed that Black children had substantially higher anxiety scores on all four sub-scales along with the total scale.

Biggs and Felton (1973) in their study of test anxiety cite a relationship between test scores and race. They further state that "psychological literature frequently shows an association between elevated test anxiety and lowered performance on such ego-involving tasks as intelligence tests and academic examinations." Several recent investigations have employed such projective techniques as the Rorschach, Thematic Apperception Test, Rosenweig Picture Frustration, and Drawing Tests. The results of these studies have thrown some light on the characteristics of anxiety, emotional conflicts, frustrations, aggressions, and apathy induced by the cultural conditions under which American Blacks generally live. These studies have contributed to a better understanding of the role of cultural factors in shaping personality.

Cameron (1968), pointed out in one of his studies that when administering standardized aptitude tests to Black students, one frequently observes not only poor motivation for taking these tests, but considerable anxiety, complicated by fears of failure. It is not difficult to discern that many of these students are poorly prepared
to perform on highly verbal and abstract tests by observing their
different communications styles, expressed attitudes, work habits,
low test motivation, and seemingly lack of experimental background
with test materials. Quite early in their formal education, too many
Black children appear to have been conditioned to except failure on
standardized aptitude tests. The recurring experiences of failure are
said to account, in part, for these students' lower academic perception
of self, limited range of occupational aspirations, and lower
need to achieve.

Persons exposed to inconsistent and often incompatible mores,
goals, and social pressures represented by different cultures are
likely to develop difficulties of varying degrees of severity. At an
early age, the American Black becomes aware of the characteristic
behavioral traits associated with his racial and national stereotype.
In daily contact with family, playmate, teacher, and other adults,
he finds constant reminders of what is expected of him. In his study
on Black intelligence, Pettigrew (1964) comments on the role of the
"Negro."

The role of the Negro is again a critical factor. Put simply, the Negro is not expected to be bright.
To reveal high intelligence is to risk seeming "uppity" to a white supremacist. He will not be
eager to learn, and he will not be strive to do well
in the testing situation. After all, an intelligence
test is a middle-class white man's instrument; it is
a device whites use to prove their capacities and
get ahead in the white world. Achieving a high test
score does not have the same meaning for a lower-
status Negro child, and it may even carry a definite
connotation of personal threat. In this sense,
scoring low on intelligence measures may for some talented Negro children be a rational response to a perceived danger.

Gradually these expectations become part of his own self concept, which in turn affects his motivation and achievement.

Katz and Greenbaum designed an experiment to examine the effects of variations in level of general anxiety, racial environment, and degree of personal threat on the performance of Blacks. Reference is cited to an experiment by Katz and Cohen (1962), which pointed out that the relatively poor performance of Black subjects can be interpreted as an effect of personal threat experienced in the biracial situation. "Negroes may have surpressed correct responses to prevent instigations to hostility in whites whose self-esteem they thought would be threatened by displays of Negro ability." Or they may have been motivated by feelings of incompetence to suppress interest in the task in order to escape having to compare themselves unfavorable with whites. However, a process quite different from suppression may have been operative, in which threatening features of the biracial situation aroused anxiety in Blacks to a high level, where their ability to respond appropriately to task relevant cues were impaired. Many studies have shown that anxiety tends to lower performance on certain tasks. This suggests the possibility that the anxiety experienced by Black subjects has a detrimental effect upon their problem solving efficiency.

Oakland and Emmer (1973) noted that persons from racial and ethnic minority groups may manifest feelings of insecurity, self-de-
gedation and self-consciousness. One may expect these feelings and attitudes to have an attenuating effect on their test performance. In connection with this, Clift (1969) observes that Blacks can and do develop negative feelings about their personal worth and as a result may come to feel self-hatred. This, he surmises, is inappropriately attributable to race and is not conducive to the realization of the best of their potentialities. In this regard, Vontress (1966) shares a similar view. In looking at the Negro personality, there is one component that is more significant than all others, self-hatred. This component, indeed, precipitates many related difficulties. For when one is a member of a downtrodden reference group, he not only tends to despise his group but to hate himself for being a member of the group Vontress (1966).

Deutsch (1967) has shown that Black children have significantly more negative self-images than white children. He avers that among the influences converging on the Negro urban child,

... is his sensing that the larger society views him as inferior and expects inferior performance from him as evidenced by general denial to him of realistic, vertical, mobility possibilities. Under these conditions, it is understandable that the Negro child would tend strongly to question his own competencies and in no questioning would be acting largely as others expect him to act, an example is that of a "self-fulfilling prophecy" the very expectation itself is a cause of its fulfillment (Deutsch, 1967).

In search of established psychological theory that is consistent with the present line of discussion, one finds that Karen Horney's theory appears quite applicable. Horney (Jersild, 1955)
advances the notion that there is a kind of basic anxiety linked to a child's helplessness when he has to deal with a world that is hostile, unjust, and unaccepting and with an environment that blocks the free use of his energies and hinders his efforts to be himself. As a result of this, the child develops certain strategies in an effort to cope with his own inner response to threats that are visited upon him from the external world. These strategies may take three major directions: (1) moving toward people, (2) moving away from people, and (3) moving against people (Hall and Linzey, 1957). Moving toward people essentially means compliance, conformity, self-effacement and appeasement. Moving away from people is manifested in withdrawal behavior, a tendency to remain aloof and detached. Moving against people would be exemplified in aggressive, expansive, and competitive behavior (Jersild, 1955).

Horney's theory suggests that the Black child has a multiplicity of obstacles to overcome in an effort to adjust favorably in the American society. For he can literally be considered as entering into a hostile, unjust and unaccepting environment. Cameron (1968) indicates that he frequently observes considerable anxiety in these students complicated by fears of failure. While several of the observations and studies cited involved Black children and youths, it is safe to assume that the same tendencies and dispositions found among them are also found among Black adults. Cameron suggests that we should move forward the goal of finding predictors more valid than aptitude scores alone, or variables which when combined with aptitude
scores that will result in a better predictor of classroom performance.

There are many factors that may impair a test's predictive validity. There are test related factors, or conditions that affect the test scores but which may have relatively little relation to the criterion. Such factors may include test-taking skills, anxiety, motivation, speed, understanding of test instructions, degree of item or format novelty, and other general or specific abilities that underlie test performance but which are irrelevant to the criterion.

According to Alpert and Haber (1959) a specific anxiety scale is an appropriate vehicle for rationalization or justification of poor academic performance. Because people of lower intelligence are more apt to have experienced the effects of the results of poor academic performance in the past, more of them would be inclined to use such rationalization than would people of higher intelligence and the specific scales are more sensitive to rationalization attempts. The more intelligent the individual, the less anxiety he manifests in test situations because he has least reason to fear the experience.

In taking the above proposition as a basis of discussion, i.e., the more intelligent the individual, the less anxiety he manifests, is not one that would be contested strongly. However, it is significant to note, that in any test situation, regardless of the individual's intelligence, there is a chance that certain individuals may be prone to use their time unwisely. For example, the compulsive individual or the more intelligent person who might tend to dismiss simple tasks as trivia and thus, find solutions to them some what
frustrating. Also, there is the individual who is not test wise, and regardless of his intelligence may fail to discern the test items and their importance.

There appears to be some relationship through the implication of the presence of anxiety as an operating factor in test taking behavior. Furthermore, it suggested that anxiety serves only as a disrupting force where intellectual functions are concerned. However, there is evidence that anxiety is not always a disruptive factor in the testing process; in some cases it may serve as a facilitating factor. Using the **Manifest Anxiety Scale**, Montague (1953), studying the role of anxiety in serial rote learning, reports that subjects who score high on the scale perform relatively better on simple tasks than those scoring low. Similar findings have been reported by Taylor and Chapman (1955) in investigating paired-associate learning as related to anxiety. However, Farber and Spence (1953), Raymond (1953), and Sinha and Singh (1959) in separate studies investigating the effects of anxiety in performing various mental tasks and using the **Taylor Manifest Anxiety Scale**, found that on complex tasks subjects who scored high on the scale performed relatively more poorly than those subjects who scored low.

The underlying theory of the **Manifest Anxiety Scale** is that there is a relatively constant level of internal anxiety or emotionality and overt or manifest symptoms are measurable (Alpert and Harber, 1960). Thus, the **Manifest Anxiety Scale** is considered to be a measure of general anxiety. Because of this, results yielded by the scale
have been questioned in view of evidence presented by Child (1954) that anxiety, varies within the individual in content and intensity from one situation to another. This would support Mandler and Sarason's (1952) contention that instruments measuring anxiety should be composed of items that are relevant to specific situations in question. Obviously there are conflicting views as to the nature of anxiety, how it affects the individual and how it should be measured. The present study proceeds on the assumption that it is a construct of a specific nature and requires specific instruments in given situations to determine its effect.

The increased concern and interest of researchers in the effects of anxiety in testing have produced several studies in this problem area. Several such studies have been conducted by Alpert and Haber (1960), Davids (1955), Farber and Spence (1953), Mandler and Sarason (1952), and Raymond (1953). However, the investigator found none of these studies involved Black college graduate students.

**Anxiety, Standardized Tests and Black Graduate Students**

Because of the apparent absence of studies concerning the relationship between anxiety and testing involving Black college students, the theoretical frame of reference for the present study which treats the effects of anxiety on the achievement of Black graduate students taking standardized achievement tests, must be extended to include studies that do not treat a similar population or minorities; but which have indirect implications for this study. Thus, for
example, Atkinson (1968), was concerned primarily with intellectual and non-intellectual correlates with anxiety in Black undergraduates. This study involved a comparison of relationships between intellectual and non-intellectual factors of high and low anxiety groups. Three instruments (the Taylor Manifest Anxiety Scale, the Rotter Incomplete Sentence Blank and the Otis Quick Scoring Test of Mental Ability), were administered to one hundred sixty sophomores enrolled in educational psychology at Tennessee A and I State University. The 51 Ss scoring from zero to 11 on the Manifest Anxiety Scale were arbitrarily designated as low Manifest Anxiety Scale scores, and 42 Ss scoring 17 and above were arbitrarily designated as high anxiety scores. In addition, cumulative grade point averages were obtained from the Office of Admissions and Records.

The Incomplete Sentence Blank was administered to determine an index of adjustment according to the degree of conflict expressed in sentences. Grade point averages were used as a measure of achievement and the Otis Quick Scoring Test was used to obtain the intelligence quotient. This data were analyzed to determine the relationship between anxiety and other variables under investigation for the separate groups, and low anxiety and high anxiety groups were compared to determine if there were statistical differences in the nonintellectual and intellectual factors under investigation.

The results of this study revealed that the level of anxiety tended to be positively related to both groups studied though not significantly related to any of the factors under investigation for
the high anxiety group (p < .05) level. There was a significant difference (.05 confidence level) between low anxiety and high anxiety groups in intelligence in favor of the low anxiety group.

A further possible influence might be that high anxiety Ss with greater conflicts in adjustment have, to some extent, repressed general intellectual drives but have been able to maintain the same level of academic performance as low anxiety Ss who were better adjusted and measured higher on an intelligence test. The results of this investigation seem to indicate that the Taylor Scale is confounded with intelligence, conflicts in adjustment and grade point averages for low anxiety Black college Ss.

Smouse and Munz (1968) in their study using 113 male and female subjects from two sections of an introductory psychology course were combined for the administration of their final examination. The combined group was randomly assigned into two groups, one high test taking anxiety group and the other a normal anxiety group. The high anxiety group was established by the researchers imparting anxiety provoking information to the subjects selected for the group just prior to the test, whereas the normal anxiety group did not receive such information and was placed in a normal test taking atmosphere. The subjects in each group were randomly assigned one of three examinations forms, each form differed only in order of item difficulty (easy-to-hard, hard-to-easy and randomly mixed). Attached to the end of each examination was the Multiple Affect Adjustment Check List (MAACL) which measured the amount of anxiety felt in the test situa-
tion and was used in the study to examine the effects of three item
difficulty sequences on test taking anxiety. (Smouse and Munz, 1968).

Subjecting the data in the above study to a 2 x 3 unequal
analysis of variance (ANOVA) revealed no significance among the tests
given. Anxiety treatment failed to produce a statistically signifi-
cant difference. This study revealed that there was no significant
interactive effect of the two variables (anxiety treatment x difficult
orders of test). It could be concluded that these Ss were from a more
test sophisticated population than those subjects in the previous study.

Faber and Spence (1953) conducted an investigation to observe
the performance of anxious and nonanxious Ss on a task involving
response competition. The task required was namely the learning of a
ten-choice stylus maze in which the level of difficulty of choices
were established in a previous investigation.

The subjects were selected from undergraduate psychology
courses on the basis of their scores on a modified form of the Taylor
Anxiety Scale. The anxious and nonanxious groups in the Maze Study
consisted of 40 students each whose scores fell respectively within
the upper and lower 20% of scores for a standardization population of
about 2,000 students. Of these, 28 anxious and 26 nonanxious Ss also
served in the conditioning experiment. All Ss were naive with respect
to the experimental task and were unaware of the reason for their
selection.

The results of the data indicated that the nonanxious Ss were
superior to the anxious in terms of both number of errors ($t = 2.56$, $p. < .02$) and number of trials to the criterion of mastery ($t = 2.03, p. < .05$). These results are consonant with the theoretical expectation that nonanxious $S$s would perform better than the anxious $S$s in complex learning situation. In Sarason's study (1956), "Effects of Anxiety, Motivational Instructions, and Failure on Serial Learning," several variables were examined. This study dealt with the effects of one individual difference variable, anxiety and two instructional variables on performance in a serial learning situation. Anxiety was defined as score on the Taylor Anxiety Scale. The instructional variables were high and low motivating instructions and failure and nonfailure reports.

The sample subjects were 180 students, (99 male, 81 female), in introductory psychology classes at Indiana University. The $S$s were divided into 12 groups representing all levels of variables under study.

The $S$s were not informed of any connection between the group-administered anxiety questionnaire and their participation in the memory experiment. All $S$s were naive with respect to verbal learning experimentation.

A $2 \times 3$ analysis of variance (ANOVA) was performed on the results of the data. The only significant effect was the anxiety X motivation (AXM) interaction. This interaction was significant beyond the .001 level of confidence.

The finding in this experiment of an interaction between anxiety and differential motivating instructions indicates the
importance of assessing personality differences among experimental groups.

The results revealed that high motivational instructions were detrimental for high-anxious groups and facilitating for low-and middle-anxious groups. Furthermore, this anxiety X motivation interaction continued to be significant 24 hours after, and over one month after, administration of the motivational instructions. The performance of failed Ss was found to be significantly poorer than that of non-failed Ss immediately after administration of failure reports; however, 24 hours later the effects of failure had completely dissipated. At no time did the high, middle, and low-anxious groups perform differently on the basis of the anxiety variable alone.

The results were taken as a further verification of the influence of individual differences (e.g., anxiety) variables on performance. Two interpretations of the results were considered: one emphasized associative factors involved in the learning of certain deleterious responses by high-anxious individuals, while the other stressed the motivational aspects of anxiety.

Summary

Testing is a big business and its effect touches the lives of everyone, either directly or indirectly. Tests are administered to determine the rank or placement of individuals within the educational system; tests are used for job placement and promotion; and even an
individual's interests and attitudes are evaluated by tests. Because of the nature of tests and the vital role in which they play, tests are defined slightly different by almost everyone. More specifically, test results are used to determine one's social value, the dignity of various forms of work; the selection of students for scholarships, honors, who do and do not enter colleges or universities; personnel selection, promotion and job assignments in industry. There is hardly any facet of life that is not affected by tests or test results.

Ample evidence of the poor performance of Blacks on standardized tests flood the literature. Some reasons for such performance are attributed to ghetto living conditions, inequality of educational opportunities and immobility of social class. With these factors in mind, it is no wonder that hostile, anxious and fearful feelings are exerted when confronted with teacher-made or standardized tests. Time and again researchers have found a significant relationship between anxiety and test performance. The hypothesis that the higher the state of anxiety, the lower the test performance scores tend to be has been tested. A classical example of Blacks performing lower on standardized tests than whites is found in the works of Shuey (1958), which cover a period of more than 57 years. Pettigrew (1964), Dreger and Miller (1960), for example, give further evidence of these particular types of studies.

Taking this a step further, it has not been proven that Blacks are innately inferior to whites. Research in this area is inconclusive at this time. There is a dire need for the study of personality,
intellectual and causative factors of substandard performance on tests by Blacks. Until this research is done, many questions will remain unanswered.

It is apparent from this review of the literature that studies which have focused on this problem are inconclusive. This finding underscores the need for further research in this educational problem area possibly utilizing different populations (e.g., Blacks and Chicanos) in examining the effect of anxiety on standardized test performance.
CHAPTER III

DESIGN OF THE STUDY

Introduction

This chapter describes the design of the investigation including the procedure used in identifying and selecting the subjects, and collecting and analyzing the data. The four major sections of this study are: (1) Description of Research Design, (2) Sampling Procedures, (3) Data-Gathering Instruments, and (4) Statistical Treatment.

Description of Research Design

Of one hundred (100) potential subjects, fifty (50) composed the subjects of this study. Initially, anxiety was measured by the administration of the Achievement Anxiety Test (AAT) ($A_1$). Subsequent to the AAT, the Otis-Lennon Mental Ability Test (OLMAT) ($O_1$) was administered. The treatment variable (X) followed in the form of lectures on test taking techniques and film presentation on techniques of testing for the purpose of reducing anxiety. In order to measure the extent to which the treatment reduced anxiety the AAT ($A_2$) was administered. Finally, an equivalent form of the OLMAT, initially given to measure performance, was administered.

The subjects in the control group received the pre and post assessments of the OLMAT. The control group allowed the investigator
to measure the effects of the independent variable administered to the experimental group.

Theoretically, the subjects in the experimental group were expected to produce a higher score than the control group.

The design employed in this study was the pretest-posttest control group design using randomization as illustrated below:

**Black Graduate Students**

\[(A)_1 R_1 O_1 \times (A)_2 O_2\]

\[(A)_3 R_3 O_3 \times (A)_4 O_4\]

Comparisons may be used with \(A_1\) and \(A_2\), \(A_3\) and \(A_4\), \(O_1\) and \(O_2\), \(O_3\) and \(O_4\) and \(O_2\) and \(O_4\).

Black graduate students were the subjects which composed the design groups. The symbol "A" in the design represents the Achievement Anxiety Test (AAT) which was administered in the selection process and again following the application of the treatment \(X\). The "R" represents the random selection of the subjects.

Treatment "\(X\)" was administered to the experimental group \(O_1 - O_2\), in order to test anxiety reduction. The treatment consisted of two (2) one and one-half (1½) hours of test taking techniques.

The investigator applied the treatment to the experimental group in two separate sessions of one and one-half (1½) hours each. The treatment consisted of a recorded film presentation (taking examinations), lecture and question and answer sessions. The presentation
of treatment X to reduce anxiety was demonstrated by Biggs and Felton (1973). These investigators administered an achievement motivation course to a sample of Black collegiate low achievers. The results of the study revealed that anxiety could be reduced with the undergraduate low achievers.

**Sampling Procedures**

The population investigated in the study consisted of all graduate students at Texas Southern University. This population included representatives from several ethnic backgrounds—Black, White, Chicano (Mexican-American) and foreign students.

The sample used consisted of one hundred graduate students. In order to identify the subjects for this study, a random systematic sampling of one hundred students was drawn.

The Achievement Anxiety Test was administered to this group in order to identify students with debilitating test anxiety. From the results of the test, the first fifty-one (51) students evidencing debilitating anxiety were included in the study. In order to complete this sampling process, the fifty-one (51) subjects selected from this group were then randomly assigned, twenty-five (25) to an experimental group and twenty-five (25) to a control group.

**Data Gathering Instruments**

Data was collected by the use of two tests, The Achievement Anxiety Test and The Otis-Lennon Mental Ability Test (Equivalent Form J and K).
Achievement Anxiety Test. The Achievement Anxiety Test (AAT) was constructed by Alpert and Haber (1960) and designed to measure the effects of anxiety experienced in test taking situations. The test is composed of two scales. One is a facilitating scale which consist of nine items; while the other is a debilitating scale consisting of ten items. Each type of anxiety is measured by a separate subtest of items. The two scales are administered in one questionnaire. The test-retest reliability for a ten week interval were reported to be .83 and .87, respectively. Over an eight month period the test-retest reliability was reported to be .75 for the facilitating scale and .76 for the debilitating scale (Alpert and Haber, 1960).

Otis-Lennon Mental Ability Test. The various levels composing the Otis-Lennon Mental Ability Test series have been designed to provide a carefully articulated comprehensive assessment of the general mental ability or scholastic aptitude of the student. The student's performance is the result of many complexed interacting factors which affect his ability to cope with the types of materials presented in the test. There are two equivalent forms of the test-- J and K. The items appearing in these two forms are balanced with respect to their content, difficulty, and discriminating power. The test is designed to last approximately forty minutes. Both forms of the test may be administered within a two week time period.
Statistical Treatment

Statistically, the t-test was used to analyze the mean score experienced on the Otis-Lennon Mental Ability Test and the Achievement Anxiety Test. The application of the t-test was used to test for differences between mean scores of the two groups. The Pearson Product Moment r Correlation Statistical test was also used to determine what extent the tests administered correlate. A check was made to determine the significance for the coefficients of correlations.

The significance levels of .05 were accepted as adequate for the acceptance or rejection of the Null Hypotheses Tested.

The formulas were used as follows:

1. t test for independent samples
   \[ t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{\sum x + \sum x}{(N_1 + N_2) - 2} \left( \frac{1}{N_1} + \frac{1}{N_2} \right)}} \]

2. t test for non-independent samples
   \[ t = \frac{D}{\sqrt{\frac{\sum d^2 - (\sum d)^2}{N (N - 1)}}} \]

3. Pearson r computed for original data
   \[ r = \frac{N \Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\left[ N \Sigma X^2 - (\Sigma X)^2 \right] \left[ N \Sigma Y^2 - (\Sigma Y)^2 \right]}} \]
CHAPTER IV

ANALYSIS OF DATA

The identification of the relationship between the effects of anxiety and the performance of Black graduate students taking standardized achievement test was the major purpose of the investigation. Testing of the over-all null hypothesis that no significant relationship exists between anxiety and test taking performance of Black graduate students was accomplished by formulating the following sub-hypotheses:

1. There is no significant difference between the degree of anxiety experienced by Black graduate students of the experimental group as a result of taking the Pre and Post assessments of the Achievement Anxiety Test.

2. There is no significant difference between the performance of high anxiety subjects as opposed to low anxiety experimental and control group subjects on the Post assessment of the Otis-Lennon Mental Ability Test.

The findings of the study were statistically analyzed in the Office of Institutional Research at Texas Southern University. The following statistical methods were used in analyzing the data:
1. A t-test of significance was used to analyze the mean scores on the Achievement Anxiety Test and the Otis-Lennon Mental Ability Test. The t-test was used as the statistical treatment in determining whether or not differences could be found between the groups.

2. The Pearson Product Moment \( r \) Correlation statistical test was used to measure the correlations among the variables in the experimental and control groups.

Table 1 shows the summary of the anxiety scores for the experimental and control groups in the design analyzed. The mean and standard deviation (SD) for both groups and the results of the t-test are presented.

The difference between the means for the pre and post tests for the experimental group reflects a reduction in anxiety. The mean score of the pre-test for the Achievement Anxiety Test is -9.32 as compared to the mean score on the post-test of 1.36. The mean score of the control group pre-test is 3.24 as compared to the mean score for the post-test of 3.68.

With 24 degrees of freedom, a t-score of 2.064 is required to be significant at the .05 level of confidence. The obtained t values of 5.32 for the experimental group and 2.11 for the control group were significant. The mean score of the post-test for the experimental group decreased, while the mean score of the post-test for
## TABLE 1

SUMMARY DATA FOR PRETEST AND POSTTEST ANXIETY
SCORES OF BLACK GRADUATE STUDENTS
ON THE ACHIEVEMENT ANXIETY TEST

<table>
<thead>
<tr>
<th>BLACK GRADUATE GROUPS</th>
<th>N</th>
<th>Statistical Data</th>
<th></th>
<th></th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pretest</td>
<td>Posttest</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>Experimental</td>
<td>25</td>
<td></td>
<td>-9.32</td>
<td>7.30</td>
<td>1.36</td>
</tr>
<tr>
<td>Control</td>
<td>25</td>
<td></td>
<td>3.24</td>
<td>11.10</td>
<td>3.68</td>
</tr>
</tbody>
</table>

*Significant at .05

**Significant at .01
the control group increased.

Table 2 shows the analysis of the pre-test and post-test results for the experimental and control groups on the Achievement Anxiety Test. The Pre-test mean score of the experimental group is -9.32 and the Post-test score is 1.36. For the control group, the mean score of the Pre-test is 3.24 and the Post-test score is 3.68. The anxiety score for the experimental group is greatly reduced as revealed by the post-test results. The post-test results of the control group reflect an increase in anxiety by the subjects.

Standard deviations for the experimental group show 7.30 on the pre-test and 8.79 on the post-test. Results of the standard deviation for the control group show the pre-test as 11.10 and 9.41 for the post-test.

The calculation of the standard error of the mean is also presented in the table. For the experimental group, the standard error of the mean for the pre-test is 1.49 and 1.80 for the post-test. The control group's standard error of the mean for the pre-test is 2.27 and 1.92 for the post-test. The 95 percent confidence level for the means gives the limits within which 95 percent of confidence that the population mean falls. Since 1.96 standard deviations are taken on each side of the mean include 95 percent of the scores, for the experimental group pre-test, the score limits of 6.40 and 12.24 and the post-test score limits of -2.17 and 4.89 mark off the confidence intervals within which the population mean probably lie. The control groups pre-test score limits of -1.21 and 7.69 and post-test score
TABLE 2

ANALYSIS OF PRETEST AND POSTTEST RESULTS OF THE EXPERIMENTAL AND CONTROL GROUPS ON THE ACHIEVEMENT ANXIETY TESTS

*(N = 25)

<table>
<thead>
<tr>
<th>STATISTICS</th>
<th>EXPERIMENTAL GROUP</th>
<th>CONTROL GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRETEST</td>
<td>POSTTEST</td>
</tr>
<tr>
<td>Means</td>
<td>-9.32</td>
<td>1.36</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>7.30</td>
<td>8.79</td>
</tr>
<tr>
<td>Standard Error of Means</td>
<td>1.49</td>
<td>1.80</td>
</tr>
<tr>
<td>&quot;t&quot; Test</td>
<td>5.22</td>
<td></td>
</tr>
<tr>
<td>Level of Significance</td>
<td>&lt; .05</td>
<td></td>
</tr>
</tbody>
</table>

Significant at .05

*N = 25 for each group
limits of -0.48 and 7.44 are the confidence intervals within which the population mean probably lies.

Using 24 degrees of freedom, a t-score of 2.064 is required to be significant at the .05 level of confidence. The obtained values of t 5.22 and 2.11 for the experimental and control groups respectively were significant.

Correlation coefficients were calculated to determine whether significant correlations existed among the variables in the experimental and control groups from the results of the Achievement Anxiety Test. The results of these correlations are found in Table 3. A coefficient of .396, with 23 degrees of freedom is required to be significant at the .05 level of confidence. The obtained r of .87 for the control group pre and post test was the only r showing significance.
TABLE 3

PEARSON PRODUCT MOMENT $r$ CORRELATION FOR THE EXPERIMENTAL AND CONTROL GROUPS ON THE ACHIEVEMENT ANXIETY TEST

<table>
<thead>
<tr>
<th>GROUP</th>
<th>TEST</th>
<th>$r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>Pre and Post Test</td>
<td>.30</td>
</tr>
<tr>
<td>Control</td>
<td>Pre and Post Test</td>
<td>*.87</td>
</tr>
</tbody>
</table>

$df = 23$

*Significant at $< .05$
Table 4 gives the comparisons of the T results of the experimental and control groups on the pre and post tests of the Achievement Anxiety Test. The pre-test mean for the experimental group A\textsubscript{1} is -9.32 and the control group A\textsubscript{3} mean is 3.24. On the post-test of the experimental group A\textsubscript{2} the mean is 1.36 and for the control group A\textsubscript{4} the mean is 3.68.

Using 24 degrees of freedom, a t-score of 2.064 is required to be significant at the .05 level of confidence. Only the obtained t value of 2.55 for the experimental A\textsubscript{1} and control A\textsubscript{3} groups of the pre-test was significant.

Hypothesis 1. There is no significant difference between the anxiety of Black graduate students taking the pre and post assessments of the Achievement Anxiety Test. Based on the findings in Table 5, the significance of the obtained t for the pre-test of the experimental A\textsubscript{1} and control A\textsubscript{2} groups, the null hypothesis is rejected. The finding revealed that there is a significant difference between the anxiety of Black graduate students taking the pre and post assessments of the Achievement Anxiety Test.

The mean, standard deviation and the t-scores for the pre and post test scores on the Otis-Lennon Mental Ability Tests are summarized in Table 5. A comparison of the mean scores of the experimental group represent an increase of 17.20 on test performance. The mean score of the pre-test is 30.68 and the mean score for the post-test is 47.88. The standard deviation for the experimental group changed slightly. The standard deviation for the pre-test is 11.52 and 11.38 for the post-test.
<table>
<thead>
<tr>
<th>Groups</th>
<th>Number</th>
<th>Mean</th>
<th>t</th>
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</thead>
<tbody>
<tr>
<td><strong>Pre Test</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>25</td>
<td>-9.32</td>
<td>*</td>
</tr>
<tr>
<td>A1</td>
<td></td>
<td></td>
<td>2.55</td>
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<tr>
<td>Control</td>
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</tr>
<tr>
<td>A3</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Post Test</strong></td>
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<td></td>
<td></td>
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<tr>
<td>Experimental</td>
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<td>1.36</td>
<td>-.85</td>
</tr>
<tr>
<td>A2</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
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<td>3.68</td>
<td></td>
</tr>
<tr>
<td>A4</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Significant at $< .05$
TABLE 5

SUMMARY DATA FOR PRETEST AND POSTTEST
SCORES OF BLACK GRADUATE STUDENTS
ON THE OTIS-LENNON MENTAL ABILITY TEST

<table>
<thead>
<tr>
<th>BLACK GRADUATE GROUPS</th>
<th>N</th>
<th>Statistical Data</th>
<th>t</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Pretest</td>
<td>Posttest</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mean  SD</td>
<td>Mean SD</td>
</tr>
<tr>
<td>Experimental</td>
<td>25</td>
<td>30.68 11.52</td>
<td>47.88 11.38</td>
</tr>
<tr>
<td>Control</td>
<td>25</td>
<td>32.68 15.17</td>
<td>40.56 12.75</td>
</tr>
</tbody>
</table>

Significant at < .05
Control group comparisons for the mean scores show an increase on the post-test results. The mean for the pre-test is 32.68 and for the post-test 40.56, a difference of 7.88 increase. The standard deviation shows 15.17 for the pre-test and 12.75 for the post-test.

With 24 degrees of freedom, a t-score of 2.064 is required to be significant at the .05 level of confidence. The obtained values of $t$, 14.33 for the experimental group and $t$, 2.11 for the control group were significant. The mean scores on both the experimental and control groups increased on the post-tests.

Table 6 shows the analysis of the pre-test and post-test results of the experimental and control groups on the Otis-Lennon Mental Ability Tests. The mean score of the experimental group pre-test is 30.88 and the post-test is 32.68 and the post-test 40.56. Test performance on the experimental group is greatly increased by the results of the post-test. The post-test scores of the control group reflects an increase in test performance.

Standard deviations of the experimental group show 11.52 on the pre-test and 11.38 on the post-test. Results of the standard deviation on the control group show the pre-test as 15.17 and the post-test as 12.75.

The calculation of the standard error of mean is also shown in the table. For the experimental group, the standard error of the mean for the pre-test is 2.36 and 2.33 for the post-test. The control group standard error of the mean for the pre-test is 3.10 and the
The 95 percent confident level for the mean gives the limits within which 95 percent of confidence that the population mean will fall. Since 1.96 standard deviations taken on each side of the mean include 95 percent of the scores, for the experimental group pre-test, the score limits of 26.26 and 35.5 and the post-test score limits of 43.31 and 52.45 mark off the confidence intervals within which the population mean probably lie. The control group pre-test score limits of 26.6 and 38.76 and the post-test score limits of 35.45 and 45.69 are the confidence intervals within which the population mean probably lie.

Using 24 degrees of freedom, a t-score of 2.064 is required to be significant at the .05 level of confidence. The obtained value of t, 14.33 for the experimental group and t, 5.59 for the control group were significant.

The correlation coefficients were calculated to determine whether correlations could be found among the variables in the experimental and control groups from the results of the Otis-Lennon Mental Ability Test. The results of these correlations are found in Table 7. A correlation of .396, with 23 degrees of freedom was required to be significant at the .05 level of confidence. The obtained \( r \), .69, for the experimental group on the pre and post test was significant. The obtained \( r \), .89, for the control group on the pre and post test was also significant.

Table 8 gives the comparisons of the t results of the experimental and control groups on the pre and post test of the Otis-Lennon
TABLE 6

ANALYSIS OF PRETEST AND POSTTEST RESULTS OF THE EXPERIMENTAL AND CONTROL GROUPS ON THE OTIS-LENNON MENTAL ABILITY TEST

<table>
<thead>
<tr>
<th>STATISTICS</th>
<th>Experimental Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pretest</td>
<td>Posttest</td>
</tr>
<tr>
<td>Means</td>
<td>30.88</td>
<td>47.88</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>11.52</td>
<td>11.38</td>
</tr>
<tr>
<td>Standard Error of Means</td>
<td>2.36</td>
<td>2.33</td>
</tr>
<tr>
<td>&quot;t&quot; Test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of Significance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Significant at $\alpha = .05$
TABLE 7

PEARSON PRODUCT MOMENT \( r \) CORRELATION FOR THE EXPERIMENTAL AND CONTROL GROUPS ON THE OTIS-LENNON MENTAL ABILITY TEST

<table>
<thead>
<tr>
<th>GROUP</th>
<th>TEST</th>
<th>( r )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>Pre and Post Test</td>
<td>* .69</td>
</tr>
<tr>
<td>Control</td>
<td>Pre and Post Test</td>
<td>* .89</td>
</tr>
</tbody>
</table>

\( df = 23 \)

*Significant at \( \alpha = .05 \)
Mental Ability Test. The pre-test mean for the experimental group 01 is 30.68 and the control group 03 mean is 32.68. On the post-test of the experimental group 02 the mean is 47.88 and for the control group 04 the mean is 40.56

Using 24 degrees of freedom, a t-score of 2.064 is required to be significant at the .05 level of confidence. Only the obtained t value of 2.20 for the experimental 02 and the control group 04 of the post-test were significant.

Hypothesis 2. There is no significant difference between the scores of the post-test of the experimental and control groups on the Otis-Lennon Mental Ability Test. Based on the findings in Table 8, the significance of the obtained t for the post-test of the experimental 02 and control 04 groups, the null hypothesis is rejected. The findings reveal that there is a significant difference between the test performance scores of the experimental and control groups taking the post-test of the Otis-Lennon Mental Ability Test.

Chapter five presents the discussion of findings.
TABLE 8

COMPARISONS OF T RESULTS OF THE EXPERIMENTAL AND CONTROL GROUPS ON THE PRE AND POST TESTS OF THE OTIS-LENNON MENTAL ABILITY TEST

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>NUMBER</th>
<th>MEAN</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>25</td>
<td>30.68</td>
<td>-.52</td>
</tr>
<tr>
<td>Control</td>
<td>25</td>
<td>32.68</td>
<td></td>
</tr>
<tr>
<td>Post Test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>25</td>
<td>47.88</td>
<td>*2.20</td>
</tr>
<tr>
<td>Control</td>
<td>25</td>
<td>40.56</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at $\leq .05$
CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Summary

The purpose of this study was to determine the effects of anxiety on the performance of Black graduate students taking standardized achievement tests at Texas Southern University, Houston, Texas. Specifically the study was designed to determine whether the reduction of anxiety could significantly enhance the test performance of Black graduate students on Standardized Achievement Tests. The theoretical assumption was that reduction of anxiety would increase test performance.

An experimental design was used in order to test the over-all null hypothesis: The over-all null hypothesis that no significant relationship exists between anxiety and test taking performance of Black graduate students was tested. A pre-test-post-test control group design was employed using two dependent variables: Anxiety and the test performance. The independent variable studied consisted of anxiety reducing techniques.

The sample population utilized in the investigation consisted of fifty (50) Black graduate students who were attending Texas Southern
University. The procedure used for gathering data involved the use of using two instruments. The subjects were administered the Achievement Anxiety Test and the Otis-Lennon Mental Ability Test. Those students whose scores on the AAT were identified as having debilitating anxiety were used in the study. The Otis-Lennon Mental Ability Test was used to measure test performance before and after the treatment to reduce test taking anxiety.

Data analyzed in the investigation consisted of raw scores from The Otis-Lennon Mental Ability Test and the Achievement Anxiety Test. The over-all null hypothesis that no significant relationship exists between anxiety and test taking performance of Black graduate students was tested.

Testing of this hypothesis was accomplished by testing the following sub-hypotheses:

1. There is no significant difference between the degree of anxiety experienced by Black graduate students of the experimental group as a result of taking the Pre and Post assessments of the Achievement Anxiety Test.

2. There is no significant difference between the performance of high anxiety subjects as opposed to low anxiety experimental and control group subjects on the Post assessment of the Otis-Lennon Mental Ability Test.
The assumption here is, if the anxiety level of the experiment group is reduced and the group subsequently performs at a level lower than the control group (anxiety not reduced) then the over-all null hypothesis can be rejected. This implies a significant relationship between anxiety and test performance of Black graduate students.

Two statistical treatments were used to analyze the data:

1. A t-test of the significance of difference between mean scores was used to determine whether a difference existed between the Achievement Anxiety Test mean scores for the experimental and control groups.

2. A t-test of the significance of difference between mean scores was used to determine whether a difference existed between the Otis-Lennon Mental Ability Test mean scores for the experimental and control groups.

3. The Pearson Product Moment \( r \) Correlation was used to determine the relationships between Test Anxiety and Test Performance.

Significance levels of .05 were accepted as adequate for the acceptance or rejection of the null hypotheses.

Summary of Findings

This section constitutes a summary of significant findings in the study, based on the comparisons of mean scores and correlations.
Results of the tests of hypotheses and interpretations were:

1. **Hypothesis One.** There was a significant difference between the degree of anxiety experienced by Black Graduate Students as a result of taking the Achievement Anxiety Test ($t = 2.064$, experimental $p = 5.22$ and control $p = 2.11$). Anxiety in the experimental group was reduced by anxiety reducing treatments.

2. **Hypothesis Two.** There was a significant difference between the experimental and control group post-test scores on the Otis-Lennon Mental Ability Test, ($t = 2.064$, experimental $p = 14.33$ and the control $p = 5.59$). The performance scores for the experimental group were increased as a result of the reducing anxiety treatment.

Listed below is a summary of the findings as related to sub-tests made on the aforementioned hypotheses:

1. Significant differences were obtained between the means of the pre-test and post-test on the Achievement Anxiety Test for the experimental group. The mean for the
pre-test was -9.32 and the post-test was 1.36.

2. Significant differences were obtained between the means of the pre-test and post-test on the Achievement Anxiety Test for the control group. The mean for the pre-test was 3.24 and for the post-test 3.68.

3. Significant results were obtained between the differences of the mean of the pre-test and post-test of the experimental group on the Achievement Anxiety Test. The difference of the means was 10.68.

4. Significant correlation results were found between the pre and post tests of the control group on the Achievement Anxiety Test. The correlation of .87 was significant.

5. Significant differences were obtained between the experimental and control groups on the pre-test of the Achievement Anxiety Test. The t, 2.55 was found significant.

6. No significant differences were found between the experimental and control groups on the post-test of the Achievement Anxiety Test. The t, -.85 was not significant.
7. Significant differences were obtained between the means of pre-test and post-test on the Otis-Lennon Mental Ability Test for the experimental group. The mean for the pre-test was 30.68 and the post-test was 47.88.

8. Significant differences were obtained between the means of the pre-test on the Otis-Lennon Mental Ability Test for the control group. The mean for the pre-test was 32.68 and the post-test mean was 40.56.

9. Significant correlation results were obtained on the pre and post tests of the experimental and control groups on the Otis-Lennon Mental Ability Test. The correlation for the experimental group was .69 and .89 for the control group.

10. No significant differences were obtained between the experimental and control groups on the pre-test of the Otis-Lennon Mental Ability Test. The t, - .52 was obtained and was not significant.

11. Significant differences were obtained between the experimental and control groups on the post test of the Otis-Lennon Mental Ability Test.
The t -2.20 was found significant.

**Conclusions**

The data presented in Chapter IV appears to warrant the following conclusions concerning the effects of anxiety on the performance of Black graduate students on standardized achievement test at Texas Southern University:

1. Anxiety in test taking situations can be reduced.
2. When test taking anxiety is reduced test performance will increase.
3. High anxiety students perform less efficient than low anxiety students.
4. There was a significant correlation between the pre-test and post-test of the experimental group. When the results of both the experimental and control groups were combined, there was no significant correlation. Therefore, between the total group there is something more than anxiety operating within the total group.

**Recommendations**

The following recommendations are based on the findings of the study and the survey of the literature:
1. A longitudinal study should be implemented in order to observe the effects of anxiety on test taking performance of Black graduate students on standardized tests.

2. Anxiety can be reduced by instructing subjects in test taking techniques, by its reduction, test taking performance will increase. Literature cited previously and the results of this study indicate the above. Therefore, it is recommended that test taking skills be studied and design be developed to teach students the techniques of taking tests.

3. Difference between age, sex and previous enrollment in graduate school may have some affect on test taking anxiety. The relationship of these variables on test taking anxiety should be investigated.

4. The finding on the Achievement Anxiety Test (post-test) that anxiety increased among the control group subjects implies that other variables not investigated affected the change. Therefore, a study using other variables should be undertaken.
5. It is recommended that policies dealing with testing in the University be evaluated and modification be made with reference to reducing anxiety.
Dr. E. W. Rand, Dean  
School of Education  
Texas Southern University  
Houston, Texas 77004

Dear Dean Rand:

I am in the process of beginning a research study to meet the requirements for the Doctor of Philosophy degree at The Ohio State University. This letter is written as a request for your permission to conduct this investigation in the School of Education.

The title of this investigation is: The Effects of Anxiety on the Achievement of Black Graduate Students Taking Standardized Achievement Tests. All data will be treated confidential with responses to instruments used only for group analysis. It would require the investigator to administer the Achievement Anxiety Test and the Otis-Lennon Mental Ability Test.

This investigation is designed to analyze the effects of reducing test anxiety of black graduate students taking standardized achievement tests. Hopefully, the study findings will provide a basis for reexamining the policy used with students who experience failure on standardized tests due to test taking anxiety.

Thank you very much for your consideration to this request.

Respectfully yours,

/s/

Joseph L. Jefferson

JLJ/gmt

Approved

/s/

E. W. Rand  
2/26/74  62
Dear Graduate:

As you may know, various members of the faculty in the School of Education are presently conducting ongoing research experiments. The purpose of this communication is to solicit volunteers who are interested in the research process and would be willing to serve as a subject in one of these experiments. Briefly, your involvement would consist of participating in an experiment which should not exceed forty minutes. Unfortunately, "extra class credit" cannot be extended in this instance.

If you are interested and would like to volunteer as a subject, would you please sign your name below.

Sincerely,

/s/

Joseph L. Jefferson
Assistant Professor

/s/ Bernetta Harris
Name
ACHIEVEMENT ANXIETY TEST*

Please print:

Name________________________________________

Birthdate____________________________________

Sex__________________________________________

Instructions:

Indicate the degree to which each item applies to you by circling the desired number. If, in the following example, you do not like animals at all then you would circle the #1. If you liked animals very much, then you would circle #5. The numbers between 1 and 5 represent different degrees of how you feel about liking animals.

For example: I like animals.

\[
\begin{array}{ccccc}
1 & 2 & 3 & 4 & 5 \\
\text{Not at all} & & & \text{Very much} \\
\end{array}
\]

1. Nervousness while taking an exam or test hinders me from doing well.

\[
\begin{array}{ccccc}
5 & 4 & 3 & 2 & 1 \\
\text{Always} & & \text{Never} \\
\end{array}
\]

2. I work most effectively under pressure, as when the task is very important.

\[
\begin{array}{ccccc}
5 & 4 & 3 & 2 & 1 \\
\text{Always} & & \text{Never} \\
\end{array}
\]

3. In a course where I have been doing poorly, my fear of a bad grade cuts down my efficiency.

\[
\begin{array}{ccccc}
1 & 2 & 3 & 4 & 5 \\
\text{Never} & & \text{Always} \\
\end{array}
\]

4. When I am poorly prepared for an exam or test, I get upset, and do less well than even my restricted knowledge should allow.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This never happens to me</td>
<td>This practically always happens</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. The more important the examination, the less well I seem to do.

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Always</td>
<td>Never</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. While I may (or may not) be nervous before taking an exam, once I start, I seem to forget to be nervous.

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I always</td>
<td>I am always Nervous during an exam</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. During exams or tests, I block on questions to which I know the answers, even though I might remember them as soon as the exam is over.

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This always</td>
<td>I never block on questions to which I know the answers</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. Nervousness while taking a test helps me do better.

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>It never helps</td>
<td>It often helps</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. When I start a test, nothing is able to distract me.

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This is always true of me</td>
<td>This is not true of me</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. In courses in which the total grade is based mainly on one exam, I seem to do better than other people.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never</td>
<td>Almost always</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
11. I find that my mind goes blank at the beginning of an exam, and it takes me a few minutes before I can function.

<table>
<thead>
<tr>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>I almost always blank out at first</td>
<td>I never blank out at first</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. I look forward to exams.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>Always</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. I am so tired from worrying about an exam, that I find I almost don't care how well I do by the time I start the test.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I never feel this way</td>
<td>I almost always feel this way</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14. Time pressure on an exam causes me to do worse than the rest of the group under similar conditions.

<table>
<thead>
<tr>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time pressure always seems to make me do worse on an exam than others</td>
<td>Time pressure never seems to make me do worse on an exam than others</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15. Although "cramming" under pre-examination tension is not effective for most people, I find that if the need arises, I can learn material immediately before an exam, even under considerable pressure, and successfully retain it to use on the exam.

<table>
<thead>
<tr>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am always able to use the &quot;crammed&quot; material successfully</td>
<td>I am never able to use the &quot;crammed&quot; material successfully</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16. I enjoy taking a difficult exam more than an easy one.

<table>
<thead>
<tr>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
<td>Never</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

17. I find myself reading exam questions without understanding them and I must go back over them so that they will make sense.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>This never happens to me</td>
<td>This almost always happens to me</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
18. The more important the exam or test, the better I seem to do.

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This is true</td>
<td>This is not true of me</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

19. When I don't do well on a difficult item at the beginning of an exam, it tends to upset me so that I block on even easy questions later on.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This never happens</td>
<td>This almost always happens to me</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TREATMENT FOR REDUCING TEST TAKING ANXIETY

HIGH TEST TAKING ANXIETY STUDENT

Input

Test Preparation
Techniques of Test Taking
Taking Tests
Motivation
Self Appraisal
Confidence Building
Individual Group Interaction
Facilitator Interaction with Group

FILM PRESENTATION*

Treatment Process

LECTURE

DISCUSSION AND ANSWER**

LOW TEST TAKING ANXIETY STUDENT

Output

*Taking Examinations, "Studying for Success"
Eyegate Film Strips, Jamaica, N. Y.

**Use of Research Using Problem Solving Techniques (RUPS)
BIBLIOGRAPHY
BIBLIOGRAPHY


Audio-Visual Material, Taking Examinations, "Studying For Success" Series of Sound Film Strips, Eyegate Film Strips, Jamaica, N. Y. Copyright, 1967.


