TEST ANXIETY DIFFERENCE AS A FUNCTION OF GENDER IN AFRICAN AMERICAN COLLEGE STUDENTS

A Thesis

Submitted to the Graduate School

of

Tennessee State University

in

Partial Fulfillment of the Requirements

for the Degree of

Master of Science

Graduate Research Series No. _____

Aree E. Robinson

August 2009

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DEDICATION

With the utmost appreciation and love, I would like to dedicate this thesis to my mother, Aree Robinson, and my brother, Buster Jerome Thompson. Both of whom are now deceased but if memory serves me correctly there is an adage which appropriately states: gone but not forgotten. You both have been silent, invisible driving forces that have motivated me to continue pursing endeavors that not only benefit me but endeavors that will also create a legacy that makes this family proud. To borrow from another cliche: you are, both, the wind beneath my wings. Thank you for entrusting me with such an awesome responsibility.

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Bradley, and my we will get it done classmate, Kimberly Terrell, along with many others who kept me encouraged, I am certain that God blessed me with the best extended family that Nashville, Tennessee has to offer. So, I offer the most heartfelt thank you to you all.

ABSTRACT

AREE ELIZABETH ROBINSON. Test Anxiety Difference as a function of Gender in African American College Students (under the direction of DR. STEPHEN TROTTER).

Students of all levels of academic achievement and intellectual abilities can be affected by test anxiety. Motivation and self-regulation of cognition and behavior are necessary components to promote student achievement. According to research, females experience more test anxiety, beginning in elementary school, than what is reported by their male counterparts. Traditional and standardized testing does not necessarily measure what it purports to measure. Empirical research has found that test anxiety is associated with lower academic performance. It has been suggested that traditional classroom instruction, which does not encourage personal student investigation and discovery of concepts and ideas, actually retards the movement of students through the cognitive stages identified by Piaget.

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CHAPTER I

INTRODUCTION

Mandated by federal legislation during the administration of President George W. Bush in 2002, the No Child Left Behind Act requires states to administer yearly mathematics assessments to grade school students. However, according to a study conducted by the Institute of HeartMath, 61% of students report being affected by test anxiety (Sidrane, 2008). Of the sixty-one percent, twenty-six percent reported experiencing high levels of anxiety often or most of the time. Results of the study conducted by the Institute of HeartMath suggests a 15 point lower math score when comparing the scores of students who experience high levels of anxiety to students who experience low anxiety. Therefore, the validity of some students' scores may be compromised.

The objective of testing is to measure students' knowledge and mastery of information and skills. However, factoring in test anxiety, the results of a test can often distort the picture of a given student's knowledge and comprehension of the material found on the examination. The relationship between test anxiety and academic performance is complex and depends, in part, upon the age, social class, sex, and intelligence of the individual. Therefore, the performance of individuals with high levels of test anxiety can rival the performance of individuals with low levels of test anxiety on various academic assessment measures when ability is held constant

(McKeachie, Pintrich, Lin, & Smith, 1987).

Beginning with early education, students are bombarded with the constant reminders of tests. Classroom lessons and unconventional approaches to education such as field trips, projects relative to course material, and service learning projects, to name a few, are secondary to test preparation. Test prep is preeminent to all other enrichment activities.

Students of all levels of academic achievement and intellectual abilities can be adversely affected by test anxiety (Supon, 2004). Test anxiety occurs in varying degrees and it is exhibited differently by individuals (McDonald, 2001). Consistent with expectations, studies at the collegiate level also found that anxiety is more prevalent in women and students with inadequate high school academic backgrounds. Nitko (2001) highlighted three types of test-anxious students:

1. A student who lacks the proper study skills and the ability to organize or comprehend the main ideas for the content being taught.
2. A student who possesses proper study skills, but also possesses fear of failure when experiencing assessment.
3. A student who believes he or she possesses quality study skills but in reality does not.

Perhaps some common reasons for test anxiety are lack of competence, inadequate preparation somewhat related to poor skills, negative test taking experiences, a negative attitude toward school, poor self-confidence, or a combination of reasons.

Physiological indication of test anxiety include, but are not limited to, nail biting, increased heart rate, perspiration, increased desire to urinate, memory loss, rapid speech, twitching and other unnecessary movement.

Educators may consider employing some of the various measures of assessment

available in lieu of traditional assessment techniques keeping in mind that any one factor can either negatively or positively impact the final outcome. By using a collaboration of traditional tests (multiple choice, true/false, completion, essays, matching, etc.) and performance based exams (oral presentations, written assignments, projects, etc.) original formative factors can be designed according to the needs of individuals who typically suffer with test anxiety and prepare students for multiple types of assessment which will allow students to become more comfortable during testing thereby increasing their confidence about testing.

The purpose of this study is to assess the reported amount of test anxiety at the undergraduate level and to ascertain which gender currently experiences more or less performance anxiety at the undergraduate level. It is expected that this research will provide additional evidence of the ongoing challenges of test anxiety and its impact on academic performance thus laying the foundation for continued research and potential development of different approaches to an age old conundrum. Knowledge generated by this research would be equally beneficial to both students and educators.

Definitions

Test Anxiety - is defined as a situation-specific trait that refers to the anxiety states and worry conditions that are experienced during examinations (Spielberger and Sarason, 1989). Fears of Failure - is defined as a debilitating cognitive predisposition prior to engaging in a particular task that precludes maximum performance (Conroy, Kaye, & Fifer 2007). Factor - is defined as any circumstance that influences the course of events Formative Factors - is defined as procedures before, during, and after the assessments. Self-confidence - is defined as belief in ones abilities, qualities, and judgment.

GPA - is defined as grade point average.

Stereotype threat - the extra emotional and cognitive burden that your performance in an academic situation might confirm a stereotype that others hold about you (Aronson, 2002).

CHAPTER II

LITERATURE REVIEW

In America, a commonly held contention is that boys are innately better at math, while girls tend to excel in subjects requiring verbal skills. Therefore, levels of test anxiety and the concomitant patterns of academic achievement are apparently different for male and female students (Hembree, 1988; Wigfield and Eccles, 1989).

Math anxiety has been described as "feelings of tension and anxiety that interfere with the manipulation of mathematical problems in a wide variety of ordinary life and academic situations" (Richardson & Suinn, 1972). Included in the complaints of math-anxious students are reports of nervousness, inability to concentrate, a blank mind, and a feeling of sickness when they are confronted with taking a math test. There are some reported cases of expressed interest to quit school due to test anxiety.

Anxiety is a psychological state characterized by cognitive, somatic, emotional, and behavioral components which can result in physiological signs such as heart palpitations, nausea, chest pain, shortness of breath, tension, etc (Seligman, Walker, & Rosenhan, 2001).

Test anxiety is an indiscriminate foe that students at all levels are confronted with each day of their educational endeavors. Studies indicate that math anxiety is found in elementary students (Jackson and Leffingwell, 1999; Steele and Arth, 1998),

in high school students (Hembree, 1990; Jackson and Leffingwell, 1999), and in college students (Bitner, Austin, and Wadlington, 1999). The onset of test anxiety can begin as early as the announcement that testing will take place and it may continue throughout the testing period. Persons who suffer with test anxiety seem to experience increased anxiety as exam time draws near. An inability to control or minimize the anxiety can lead to a defeatism mentality as test time nears. With recognition of its existence, surely, anxiety must play a role in poor performance. Poor performance, then, can affect students' self-confidence in regard to competency, which could ultimately lead to one's failure to pursue educational goals and/or lower an individual's grade point average (G.P.A.). Consequently, anxiety may be curvilinear in nature.

Theoretically, traditional testing practices may not be the best predictor of learning. In contrast to its purported design, traditional testing may be a predictor of memorization abilities. Traditional and standardized testing does not necessarily measure what it purports to measure -achievement. Given the different ways in which individuals learn, traditional style of testing could be a hindrance of the desired goal: understanding. Fact memorization should not be mistaken for concept understanding. It could be that students with exceptional rote memorization skills are being compared to students, who may or may not have good memorization skills. Students lacking good memorization skills are more likely to simply fold under the pressure of relaying their knowledge according to the current testing methods. In contrast, students with outstanding memorization skills have been known to review test material within one hour of the exam and fair quite or extremely well. Such students have even taken exams without studying due to their ability to recall the material covered during lectures while others spend hours, days in preparation for a particular exam and

perform poorly due to anxiety or poor memory, or a combination. This is not an obvious indicator of who has learned. Paper and pencil exam rather than a cognitive or practical demonstration may be a student's greatest fear. Test anxiety can be debilitating when not treated. There has been some research completed on students of all ages to assess test-taking anxiety. However, there has been little research on college level undergraduate students and the implications of test anxiety.

Empirical research has found that test anxiety is associated with lower academic performance (Zeidner, 1998). Hill and Wigfield (1984) estimated that about 25% of American primary and secondary school children, which currently equates to approximately 10 million students, have lower academic test performance results due to test anxiety. Test anxiety is a type of performance anxiety - nervous anticipation when required to execute a particular task that can lead to debilitation. Meta-analysis of 126 American and European studies found a negative correlation between test anxiety and academic performance (Seipp, 1991). According to this information, Seipp (1991), concluded that low-test-anxious students would outscore high-test-anxious students by almost half a standard deviation and that only 39% of low-test-anxious students would fail, whereas 61% of high-test-anxious students would fail.

Mathematic excellence is stressed in American society as an ideal towards which students strive. However, in practicality, evidence indicates that students continue to struggle to master basic skills and that we as a nation lag behind our international peers in mathematic performance and progress (Lemke, Sen, Pahlke, Partelow, Miller, Williams, Kastberg, & Jocelyn, 2004). Not only is there a gap between desired and actual math performance levels, but there are gender inequities that continue in student intentions to take advanced math courses and ultimately in pursuits of math-related careers (National Science Foundation, 2002). According to

one census, males make up 51.4% of the total population but they only represent 46.5% of SAT 1 test takers. Of that percentage, males made up 68.7% of the test takers in the highest math score range (750 - 800). It was reported that males are disproportionately represented in the score ranges on the math section for all score ranges above 600. With 800 being the most coveted score, males made up 72% of the population achieving that score on the math portion (National Science Foundation, 2002).

Math anxiety can result from environmental factors such as misconceptions, teachers, and parents (Steele & Arth, 1998; Trujillo & Hadfield, 1999). Intellectual factors that affect math anxiety include learning styles, persistence, self-doubt, and dyslexia (Harper & Daane, 1998); Trujillo & Hadfield, 1999). Personality facors such as low self-esteem, shyness, and intimidation can also affect math-anxious students (Fotoples, 2000; Levine, 1995).

Motivation is considered a necessary component to promote student achievement (Paris, Lipson, & Wixon, 1983; Pintrich, 1988, 1989; Pintrich, Cross, Kozma, & McKeachie, 1986). While external factors such as classroom environments and tasks (Corno & Rohrkemper, 1985; Malone, 1981) are significant contributors to a student's motivation, equally important are a student's internal orientations and beliefs about learning. External and internal variables are relevant to cognitive engagement and classroom performance to foster motivation (Ames & Archer, 1988). Paired with motivation, self-regulation of cognition and behavior is an important aspect of student learning and academic performance in the classroom context (Corno & Mandinach, 1983; Como & Rohrkemper, 1985).

Self-regulated learning for classroom performance is best described using the following three components: first, self-regulated learning includes students'

metacognitive strategies for planning, monitoring, and modifying their cognition (Brown, Bransford, Campione, and Ferrara, 1983; Como, 1986; Zimmerman & Pons, 1986, 1988). The second component deals with the student's self-management capabilities in the classroom as it relates to academic tasks. For example, a student, which exhibits tenacity toward difficult task and cognitive perseverance, in a less desirable classroom environment, may enable the student to perform better (Como, 1986; Como & Rohrkemper, 1985). The third important aspect of self-regulated learning that some researchers have included in their conceptualization is the actual cognitive strategies that students use to learn, remember, and understand the material (Como & Mandinach, 1983; Zimmerman & Pons, 1986, 1988). Different cognitive strategies such as rehearsal, elaboration, and organizational strategies have been found to foster active cognitive engagement in learning and result in higher levels of achievement (Weinstein & Mayer, 1986).

The relationship between self-motivation and self-regulated learning manifests itself per individual differences and personal characteristics as it pertains to cognitive engagement and classroom academic performance (Como & Snow, 1986; Snow, 1989).

The theoretical framework for conceptualizing student motivation is an adaptation of a general expectancy-value model of motivation (Eccles, 1983; Pintrich, 1988,1989). The model proposes that there are three motivational components that may be linked to the three different components of self-regulated learning: (a) an expectancy component, which includes students' beliefs about their ability to perform a task, (b) a value component, which includes students' goals and beliefs about the importance and interest of the task, and (c) an affective component, which includes students' emotional reactions to the task. (Eccles, 1983; Pintrich, 1988,1989).

According to motivational literature, the expectancy component of student motivation includes perceived competence, self-efficacy, attributional style, and control beliefs. The basic premise is a student's belief that he or she is able to perform a given task and that each individual is responsible for his own performance. This encourages a student to revert to the mentality fostered by the pre-k monologue illustrated by the little train that could: "I think I can, I think I can." In general, the research suggests that students who believe they are capable engage in more metacognition, use more cognitive strategies, and are more likely to persist at a task than students who do not believe they can perform the task (Fincham & Cain, 1986; Paris & Oka, 1986; Schunk, 1985).

The importance and interest a student places on a given task in relation to the student's goals for the task comprise the value component. Conceptualization of this component includes learning vs. performance goals, intrinsic vs. extrinsic orientation, and task value. However, the agenda of this motivational component is simply the student's reasons for doing a task, "How does engaging in this task benefit me?" The research suggests that students with a motivational orientation possess goals of mastery, learning, and challenge, as well as beliefs that the task is interesting and important, will engage in more metacognitive activity, more cognitive strategy use, and more effective effort management (Ames & Archer, 1988; Dweck & Elliott, 1983; Eccles, 1983; Meece, Blumenfield & Hoyle, 1988; Paris & Oka, 1986).

The third motivational component is comprised of the affective or emotional reactions a student displays toward a specific task. The important issue for students involves the question, "How do I feel about this task?" While there may be a variety of relevant responses such as excitement, uncertainty, and confusion, one of the most important responses in the school-learning context is that of test anxiety (Wigfield &

Eccles, 1989). Test anxiety has been to be related to perceptions of competence (Nicholls, 1976).

In an effort to measure individual test anxiety, Sarason (1952) used the TAQ to develop the drive theory which consists of two components: (a) task-directed drives and (b) learned anxiety drives. Task-relevant responses minimize anxiety by completing the task. Self-directed, task-relevant responses, interferes with focus on the task thus resulting in heightened manifestations of anxiety. Some physical manifestations of anxiety include "feelings of inadequacy", helplessness, anticipation of loss or punishment, and a desire to remove oneself from the challenging situation.

Due to intrusive irrelevant thoughts of high test anxious individuals, they perform relative poorly to low test anxious individuals (Blankstein, Toner, and Flett, 1989). The desire is to attain a moderate level of anxiety that can be appropriately used to successfully accomplish a somewhat daunting task. According to Eysenck (1992), high test anxiety yields lowered cognitive performance due to restriction in working memory capacity. In test situations these individuals battle task-irrelevant thoughts such as worry and concern about failure, which prevents satisfactory execution of prior preparation and learning. Also, test performance is negatively impacted by evaluation practices (Maehr & Midgley, 1991) and (Pintrich & Schrauben, 1992). Anticipation of test scores can increase anxiety unlike a lack of anxiousness if performing the same task that will not be evaluated. Identifying factors such as test anxiety that influence a student's motivation to learn and achieve in classroom settings is a continuing goal of education researchers (Eggen & Kauchak, 1999).

Studies have found that females experience more test anxiety, beginning in elementary school, than their male counterparts of the same age experience and this

continues until high school and college (Hembree, 1988). Females exhibit more math anxiety in secondary school and in college (Bernstein, Reilly, and Cole-Bonanno, 1992 Campbell and Evans, 1997). Research suggests that highly anxious female students underperform in time-limited examinations compared to their less anxious counterparts (Onwuegbuzie, 2006). Thus, high anxiety is expected to be more strongly associated with underachievement during restricted test when compared to unrestricted testing conditions.

There is considerable research associating high test anxiety with reduced student grade point average. African American college students tend to obtain lower grades in comparison to their White or Asian counterparts, despite entering college with equivalent standardized test scores. Previous research suggests that negative stereotypes impugning Black students' intellectual abilities play a role in this underperformance. Awareness of these stereotypes can psychologically threaten African Americans, a phenomenon known as "stereotype threat" (Steele & Aronson, 1995), which can result in impaired academic performance and psychological engagement with academics. Performance gaps between African Americans and other disadvantaged minority groups in comparison to Whites and Asians are attributed to, but not limited to, socioeconomic status, academic preparation, and educational opportunities. There appears to be mounting evidence for stereotype threat as a cause for poor academic results among African American female students, specifically in non-traditional female courses such as math and science. According to Collange, Fiske, and Sanitioso (2009), the primary motivation for stereotyping others may be to enhance one's own self-image.

Betz (1977) found in her study of 655 college students that the students most prone to math anxiety were those whose prior math background and achievements

were inadequate. Crawford (1980) agrees and suggests that poor math instruction at some point in a person's background may help to create anxieties about math and doubts as to one's own competence. Furthermore, Crawford suggests, math instructors must take some responsibility for failing to present material clearly, for their emphasis on exactness, for skipping steps, and for otherwise contributing to the myth that some people have natural math ability while others do not. Students participating in the study mentioned the trauma associated with timed tests, the use of flash cards, and having to solve problems on the blackboard in front of the entire class.

Kogelman and Warren (1978) and Crawford (1980) both implicated mathematics tests in the etiology of math anxiety and math avoidance. Explanation of the mathematical process is largely minimal resulting in partial or incorrect internalization of many math concepts. Due to this lack of understanding, students learn to memorize definitions and formulas with little comprehension. Rote memorization can only be employed up to a certain point. However, math anxiety does not begin for many students until engaging in upper level math courses and many students are unexpectedly surprised and dismayed by their performance.

Renner (1976) suggested that these students may still be functioning at what Piaget termed the level of concrete operational thinking. The concrete operational thinker is limited to manipulation of concrete objects, events, and situations and does not formulate hypotheses outside of his or her realm of direct experience (Shodahl & Diers, 1984). In opposition, the formal operation thinker is capable of stretching beyond the concrete and thinking abstractly according to probability. A person at this level possesses the mental capacity to process abstract propositions and ideas characteristic of higher level math. Renner speculates that some 50% of students entering college are not yet fully formal operational in their thinking (Shodahl &

Diers, 1984).

Creating an atmosphere whereby students do not feel threatened by being called on to give oral answers or by being embarrassed in front of others allows them to relax. Cooperative grouping helps students to understand that others, perhaps, have the same problems with math as they do, and that the problems can be worked out with some assistance and perseverance (Woodard, 2004). Instructors should consider allowing students to retake tests in an effort to build students' confidence and to encourage students' to keep trying. Educators that make themselves available for tutoring send a message to students of sincere concern for their academic success. It is equally beneficial for instructors to slow the pace of material presented to ensure that students understand the lessons as they are covered in the course.

Renner also suggested that traditional classroom instruction, which does not encourage personal student investigation and discovery of concepts and ideas, actually retards the movement of students through the cognitive stages identified by Piaget (Shodahl & Diers, 1984.

CHAPTER III

METHOD

Participants

College students were solicited from undergraduate courses at Tennessee State University, a Historically Black College & University (HBCU), in the Southeastern Region of the United States. This population made up one hundred percent (n = 100) of the sample size. The sample population consisted of 54 percent (n = 54) female, and 46 percent (n = 46) were male. Participants ranged in age from 18 to 21 years.

Procedure

Permission was obtained from the instructors of undergraduate courses to conduct a survey, at their convenience, regarding test anxiety. Prior to participation in the survey, students were informed, orally, about the purpose of the study. Expectations of participants were conveyed which included answering the survey items as completely and truthfully as possible, reframing from identifying marks on the survey material, including their names, and reminding the participants of their right to discontinue participation at any time, without explanation, during the process. Participating students were made aware of possible extra credit from their professor, at the professor's discretion. Each participant completed an informed consent document prior to the survey. With regard for anonymity, completed consent forms were collected in a manner that protected the privacy of each participant. Measures

The Demographic Questionnaire - Participants were asked to complete a

demographic questionnaire containing questions pertaining to age, gender, ethnicity, and classification. The information provided on this questionnaire was required data for proper completion of the study.

Test Anxiety Inventory (TAI) - The TAI (Spielberger, 1972; Spielberger et al., 1978) is a Likert-type self-reporting psychometric scale developed to measure individual differences in test anxiety as a situation-specific personality trait. It was designed to evaluate the effectiveness of various behavior therapies in the treatment of college students suffering from test anxiety (Spielberg, 1972). The TAI Test Form is one page and includes directions, twenty items, and space for recording responses. The respondents are asked to report how frequently they experience specific symptoms of anxiety before, during, and after examinations. In addition to measuring individual differences in anxiety proneness in test situations, the TAI subscales assess worry and emotionality as major components of test anxiety. There are no time limits; however, usual completion is within 8 to 10 minutes. Students use a four-point scale to report how frequently they experience specific symptoms of anxiety in test situations. The four choices are: (1) almost never, (2) sometimes, (3) often, and (4) almost always. The TAI minimum total score is 20 and the maximum is 80. The subscales, which measure the two major components of test anxiety, are Worry (TAI/W) and Emotionality (TAI/E). Each subscale consists of eight items, and therefore scores range from 8 to 32. The TAI reliability coefficients were .80 or higher. When compared to the Liebert and Morris's (1967) Worry and Emotionality Questionnaire (WEQ) for male and female undergraduates, the relatively high correlations of the TAI scales with the WEQ scales provided evidence of the concurrent validity of the TAI as a measure of test anxiety. The TAI Scales provide operational measures of test anxiety, worry, and emotionality. The remaining four

survey items excluded from the TAI/W and TAI/E are factored into the total TAI score. Research Hypotheses

1. There will be higher levels of test anxiety reported by African American female students than by African American male students.
2. There will be higher levels of reported worry and emotionality by African American female students than by African American male students.
3. Test anxiety will be reported at a significantly lower rate among Junior and Senior classified African American students than in Freshman and Sophomore classified African American students.

Statistical Analysis

Kolmogorov-Smirnov test: It is one of the statistical measures to test if the data is normally distributed. To test the normality of the data the samples are standardized and compared with a standard normal distribution. If the resulting significance value is less than 0.05 then the data is not normally distributed.

Mann-Whitney U Test: Mann-Whitney is a nonparametric test to assess whether two independent samples of observations come from the same distribution. Mann-Whitney requires:

a. The data samples are independent.

b. Observations are ordinal and continuous measurements.

Hypothesis 1 2 & 3 A Kolmogorov-Smirnov test was used to determine if the data if the data is normally distributed.

Hypothesis 1

A Mann-Whitney U test was used to assess differences in Test Taking Anxiety levels

of students based on gender difference.

Hypothesis 2

A Mann-Whitney U test was used to assess the difference in the extent of worry and emotionality based on gender.

Hypothesis 3

A Mann-Whitney U test was used to assess the difference in test anxiety between Junior and Senior classified and Freshman and Sophomore classified African American students.

CHAPTER IV

RESULTS

Data was collected on 100 participants. One hundred percent (n = 100) of the participants were African Americans. Participants ranged in age from 18 to 21 years. The average age of the participants was 18.96 years Junior and Senior. The median age was 19.5 years. The sample population consisted of 54 percent (n = 54) female, and 46 percent (n = 46) were male. As it relates to classification, 87 percent (n = 87) freshman, 10 percent (n = 10) sophomore, and three percent (n = 3) junior status. There was no senior status reported. One hundred percent of the sample population was derived from undergraduate courses at Tennessee State University, a local Historically Black College & University in Nashville, TN. Descriptive participant attributes (frequency and percentage) for demographic variables were reported and summarized in table 1.

TABLE 1

Demographic Characteristics of Subjects

Ethnicity		
African-American	100	100
Total	100	100
Gender		
Male	46	46
Female	54	54
Total	100	100
Age		
Eighteen	43	43
Nineteen	29	29
Twenty	17	17
Twenty-one	11	11
Total	100	100
Classification		
Freshman	87	87
Sophomore	10	10
Junior	3	3
Senior	0	0
Total	100	100

The alpha level for all statistical tests was set at 0.05. To make a comparison between the different gender groups and different classification the author checked the normality of the data distribution to determine the appropriate statistical test. Table 2 shows the test of normality for different categories of raw scores. Kolmogorov-Smirnov Test Statistics (Table 2) shows that for all the categories of the raw score, the data is not distributed normally (since $p<0.05$).

Table 2 *Kolmogorov-Smimnov Test of Normality*

	Statistic	df	Sig.
Worry Raw Score	.110	99	.005
Total Raw Score	.105	99	.009
Emotionality Raw Score	.131	99	.000

Table 3 shows the distribution of male and female population across different age groups. Table 3 illustrates the total Female population is slightly more than the total Male population but on the whole the gender distribution in both the age groups is relatively equal enough to draw a meaningful conclusion from the data given.

Table 3 *Gender Distribution Across Age Groups*

	18 Years	Above 18 Years	Total
Female	33	21	54
Male	28	18	46
Total	61	39	100

Table 4 shows the distribution of gender category across different year groups. The reader can see that the study included a high number of Freshman year students in the study. Sophomore and Junior students form a smaller percentage of the total research population.

Table 4 *Gender Distribution Across Classification*

	Freshman	Sophomore	Junior	Senior
Female	50	2	2	0
Male	37	8	1	0
Total	87	10	3	0

Statistical analysis indicates that all the data is not normally distributed. Therefore, it violates the criteria for parametric analysis. As a result, a non-parametric test was used to analyze the statistical difference between the groups. The most commonly used non-parametric statistical measure is Mann-Whitney U Test.

Hypothesis 1

African American female students will have significantly higher levels of test anxiety than African American male students. A Mann-Whitney U test was conducted to analyze data received addressing this research hypothesis. There was significant support found for this hypothesis. Therefore the hypothesis was held as presented in Table 5. Hypothesis 2

This research question attempted to determine if higher levels of worry and emotionality are reported by African American female students than by African American male students. The Mann-Whitney U test was conducted to analyze data received addressing this research hypothesis. There was significant support found for this hypothesis. Therefore the hypothesis was held as presented in Table 5.

Table 5 *Mann-Whitney U test to compare test anxiety level in female and male students for different category of raw score data.*

	Gender	N	Mean Rank	Sum of
Emotionality Raw Score	Female	54	57.62	3111.50
	Male	46	40.86	1838.50
	Total	100		
Total Raw Score	Female	54	55.71	3008.50
	Male	46	43.14	1941.50
	Total	100		
Worry Raw Score	Female	54	55.16	2978.50
	Male	46	43.81	1971.50
	Total	100		

The higher rank among female students in comparison to rank of male students for all the raw score categories is illustrated in Table 5. It is clear from Table 5 that female students experience higher level of test anxiety overall as a result of higher levels of worry and higher levels of emotionality. To test whether the differences of Table 5 were statistically significant the author subjected the data to a Mann-Whitney U test. Table 6 shows the results of further analysis of Mann-Whitney U Test and it illustrates that the difference in raw scores between male and female students is statistically significant since $p<0.05$.

Table 6 *Test statistics for Mann-Whitney U Test*

	Emotionality Raw Score	Total Raw Score	Worry Raw Score
Mann-Whitney U	803.500	906.500	936.500
•Asymp Sig. (2- tailed)	Q04		05Q

*Assumption is significant at the 0.05 level.

Hypothesis 3

This research question assessed the difference in reported test anxiety between African American Junior and Senior students when compared to African American Freshman and Sophomore students. A determination related to significant difference was not discernable due to the lack of participants at the Senior level and a relative lack of participants at the Junior level. Previously the author proved that all the data distributions are not normally distributed and therefore a non-parametric test was used to analyze the statistical difference between the groups. The difference between the test anxiety level in Freshman and Sophomore students compared to Junior and Senior students is calculated using Mann-Whitney U Test and presented in Table 7.

Table 7 *Mann-Whitney test for comparison of test anxiety level in Junior and Senior Freshman and Sophomore students.*

	Year	N	Mean Rank	Sum of Ranks
Emotionality Raw Score	Freshmen/Sophomore Students	97	50.33	4378.50
	Junior/Senior Students	3	47.62	571.50
	Total	100		
Total Raw Score	Freshmen/Sophomore Students	97	51.35	4467.50
	Junior/Senior Students	3	40.21	482.50
	Total	100		
Worry Raw Score	Freshmen/Sophomore Students	97	51.48	4479.00
	Junior/Senior Students	3	39.25	471.00
	Total	100		

The higher rank of Freshman and Sophomore students in comparison to rank of Junior and Senior students for all the raw score categories is illustrated in Table 7. It is clear from Table 7 that Freshman and Sophomore students experience higher levels of total test anxiety as a result of higher levels of worry and higher levels of emotionality than the Junior and Senior students. To test whether the differences of Table 7 were statistically significant the author subjected the data to a Mann-Whitney U test. Table 8 shows the results of further analysis of Mann-Whitney U Test and illustrates that the difference in raw scores between Freshman and Sophomore students and Junior and Senior students is not statistically significant since $p>0.05$. However, the results indicate that there is a great variation between the number of Freshman and Sophomore students and number of Junior and Senior students and thus it may be possible that the Mann-Whitney U Test results may erroneous.

Table 8 *Test Statistics for Mann-Whitney UTest*

	Emotionality Raw Score	Total Raw Score	Worry Raw Score
Mann-Whitney U	493.500	404.500	393.000
*Asymp. Sig. (2-tailed)	759	.207	.166

*Assumption is not significant at the 0.05 level.

CHAPTER V

DISCUSSION

Interpretation of Results

The objective of this study was to investigate the difference of test taking anxiety between African American female and male undergraduate students. The following analysis was conducted to measure the anxiety proneness in test situations:

1. Test the normality of raw scores.
2. Compare the test anxiety level (Total, Worry and Emotionality) in female students and male students.
3. Compare the test anxiety level (Total, Worry and emotionality) in Freshman and Sophomore students compared to Junior and Senior students.

According to research conducted on an undergraduate statistics course at the University of Waterloo, Ontario, Canada, test anxiety relates to poor test performance. Hunsley (1985) found that test-anxious students obtain lower examination grades than do their non-test-anxious counterparts. Previous research suggests that both teachers and students can employ particular strategies to reduce math test anxiety such as creating a non-threatening atmosphere, encouraging feedback, consideration for

different learning styles, alternative assessment, tutoring, cooperative grouping, and elimination of placing students in embarrassing situations of response to course material.

The study is consistent with results reported by Sidrane (2008). A significantly larger percent of the participating population reported being affected by test anxiety, and

28 of those reporting being affected by test anxiety, there were reports of high levels rather consistently.

Consistent with Supon (2004) students at all academic levels have reported test anxiety challenges. The results of the research aligned with the findings of Hembree (1988) which found that females experience more test anxiety continuing through the postsecondary education years. However, due to an unequally distributed gender population, this research can be considered skewed toward females as it relates to reports of test anxiety.

According to research conducted by Schmader, Forbes, Zhang & Mendes (2009), stereotype threat may play a significant role in test anxiety. Schmader et.al. states that three studies tested the hypothesis that negative metacognitive interpretation of anxious arousal create cognitive deficits in intellectually threatening environments. One such study conducted showed that among minority and White undergraduates, anxiety about an intelligence test predicted lower working memory when participants were primed with doubt as compared to confidence. This is consistent with Corno & Snow, (1986); Snow, (1989), who stated that the relationship between self-motivation and self-regulated learning manifests itself per individual

differences as it pertains to cognitive engagement and academic performance. Stereotype threat, as discussed by some researchers, may also be associated with an individual's internal motivation to affirm and uphold the cultural worldview since academic tests and the varied administration conditions associated with academic tests are culturally loaded (Landau, Greenberg, & Rothschild 2009). From a somewhat basic perspective, stereotype threat can be viewed as a cultural or class dysfunction that thrives by labeling others in order to maintain a positive self-image. Such a perspective may lend assistance in perpetuating self-fulfilling prophecies related to thoughts of incapability and deficiencies in students from low socioeconomic statuses (SES). As a possible explanation to excessive numbers of failures and high school drop-outs, stereotype threat along with self-fulfilling prophecies may be at the crux of our failing educational system.

As stated by Woodard (2004), educators are extremely instrumental in the success of students on a path to academic achievement. Renner (1976) further stated that educators are responsible for setting the tone and environment to make it the most conducive for learning. The demeanor of the instructor, along with supportive staff and faculty, are at the helm of cultivating a successful educational experience for every student at all levels of educational endeavors. Originality and creativity should be embraced for developing such an environment. Limitations of the Study

Considerations for inconsistencies in hypotheses can be attributed to a limited subject pool pertaining to gender and race. Male subjects were also more difficult to obtain due to the overall male-female enrollment ratio which has declined, tremendously, over years. There was a relatively limited lack of representation across all classifications and no representation for students classified as Seniors. Such a study may be more revealing with a larger population and access to documented grade

point average (G.P.A.) for each student. Additionally, the results of this research conducted at Tennessee State University, a predominantly African American population, may contradict the expectation due to the social and socioeconomic background of the participants.

Oppression can lead to stress which, in turn, can have an adverse impact educational endeavors. Recommendation for Future Research

In future replications of this study, researchers should attempt to eliminate the limitation of inequality related to gender. A measurement of self-esteem and self-efficacy may be beneficial in future studies. It may also be beneficial to factor in the impact, if any, the role of stereotype threat as it relates to failure and/or success during test examinations. A socioeconomic component, such as a questionnaire or some categorization per student participant, may provide additional insight as to how prepared a student is for examinations of any kind and what type of preparation was provided during the grade school years. If possible, a review or report of previous high school grades which should specifically include examination scores and final grades particularly in core subjects. Additionally, inclusion of specific early education mathematical preparation may provide a more in depth and concise result of contributing factors related to test taking anxiety. Broadening the research to include other races and ethnicities may be more telling about the growing disparities related to examination performance and the overall educational approach. Finally, an incremental administration of tests, under varying conditions, would offer a broader perspective for the sample population. This could possibly lead to some research on viable interventions which could begin as early as elementary school thus, positively impacting core subject matter for both male and female students particularly in the areas of science, math, and other technical based educational endeavors in higher

learning. A longitudinal study of students, beginning at the entrance of school, may be the best approach for collecting, analyzing, and reporting findings related to test anxiety in order to obtain the most accurate cause and effect relationships to develop solutions that will be beneficial for those students that follow.

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APPENDECIES

APPENDIX A IRB APPROVAL LETTER

Research and Sponsored Programs
Tennessee State University
3500 John A. Merritt Blvd.
Nashville, Tennessee 37209-1561

Office of the Vice President

To: Aree E. Robinson
arobinson@mytsu.tnstate.edu
Dr. Stephen Trotter (Thesis Chair)
Dept.: Psychology

From: li^Omih^md^^
Dr. G. Pamela Burch-Sims,
Chair, Institutional Review Board
Protocol #HS2008-1965

Date: Friday, October 24, 2008

The document listed below has been carefully reviewed and found to be in compliance with OPRR document title 45, Code of Federal Regulations part 46, the protection of human subjects, as amended by Federal policy, effective August 19, 1991. This project is approved as it presents minimal or no research risks to the pool of impending human subjects. Please make note, that any deviations in the administration of the protocol, accidental or otherwise should be reported to the IRB as soon as possible. The FWA for Tennessee State University is #FWA00007692, which is effective from July 16, 2007 through July 16, 2010.

Test Anxiety Difference as a Function of Gender in African American College Students

This approval is valid for one year from the date indicated above. Continuation of research beyond that date requires re-approval by the Institutional Review Board. Please e-mail irb@tnstate.edu for additional information.

APPENDIX B Informed Consent Form

Informed Consent

The purpose of this study is to assess the Test Taking Anxiety levels of African American male and female undergraduate students. You will be asked to answer a brief 20 item questionnaire, The Test Attitude Inventory (TAI). Completion time should take no longer than 10 minutes.

The information will be collected anonymously. Do not place your name or any other identifying mark on materials used for data collection. If you participate, please answer the questions as truthfully as you can. There is no right or wrong answer. Your participation is completely voluntary and you may refuse at anytime to participate.

At the instructor's and/or the participants' requests, you can provided information on the process of collecting data and writing a thesis. This initial exposure to research may be a potential benefit to the class. An additional potential benefit for students will be the possibility of extra-credit points in a related course at the discretion of your instructor. There are no known risks associated with your participation

This informed consent will be unattached to any individual survey. If you have any questions about your participation in this research or the findings, please contact Aree E. Robinson, the researcher, at the following address:

Email: arobinson@mytsu.tnstate.edu
Phone:615-793-1927

You may also contact Dr. Stephen Trotter thesis chair
Phone:615-963-5161

All my questions regarding this study have been answered. I have read and understood the explanation of this study and agree to participate.

Name Date

APPENDIX C

Demographics

Gender:

Male = 1 Female = 2

Age

Ethnicity:

Black =1 White = 2 3 = Asian 4 = Hispanic

Classification

1= Freshman

2= Sophomore

3= Junior

4= Senior

APPENDIX D

Test Anxiety Inventory (TAI)

Test Attitude Inventory

Please provide the following information:
Gender: Male Female
Date:

Directions: A number of statements which people have used to describe themselves are given on the following page. Read each statement and then circle the appropriate number to the right of the statement to indicate how you generally feel:

1 = Almost Never, 2 = Sometimes, 3 = Often, 4 = Almost Always

There are no wrong or right answers. Do not spend too much time on one statement but Give the answer which seems to describe most accurately how you feel.

Please answer every statement. Please turn the page for the statements. Do not write below this line. Score: T W E

Test Attitude Inventory

1. I feel confident and relaxed while taking tests	1 2 3 4
2. While taking examinations I have an uneasy, upset feeling	1 2 3 4
3. Thinking about my grade in a course interferes with my work on tests	1 2 3 4
4. I freeze up on important exams	1 2 3 4
5. During exams I find myself thing about whether I'll ever get through school	1 2 3 4
6. The harder I work at taking a test, the more confused I get	1 2 3 4
7. Thoughts of doing poorly interfere with my concentration on tests	1 2 3 4
8. I feel very jittery when taking an important test	1 2 3 4
9. Even when I'm well prepared for a test, I feel very nervous about it	1 2 3 4
10.I start feeling very uneasy just before getting a test paper back	1 2 3 4
11. During tests I feel very tense	1 2 3 4
12.I wish examinations did not bother me so much	1 2 3 4
13. During important tests I am so tense that my stomach gets upset	1 2 3 4
14.I seem to defeat my self while working on important tests	1 2 3 4
15.I feel very panicky when I take an important test	1 2 3 4
16.I worry a great deal before taking an important examination	1 2 3 4
17. During tests I find myself thinking about the consequences of failing	1 2 3 4
18.I feel my heart beating very fast during important tests	1 2 3 4
19. After an exam is over I try to stop worrying about it, but I can't	1 2 3 4