Test Anxiety: Mathematics and Students with Disabilities

William Donahue
St. John Fisher College

How has open access to Fisher Digital Publications benefited you?
Follow this and additional works at: http://fisherpub.sjfc.edu/mathcs_etd_masters

Recommended Citation

Please note that the Recommended Citation provides general citation information and may not be appropriate for your discipline. To receive help in creating a citation based on your discipline, please visit http://libguides.sjfc.edu/citations.

This document is posted at http://fisherpub.sjfc.edu/mathcs_etd_masters/95 and is brought to you for free and open access by Fisher Digital Publications at St. John Fisher College. For more information, please contact fisherpub@sjfc.edu.
Test Anxiety: Mathematics and Students with Disabilities

Abstract
When a test is announced in class some secondary students' experience anxiety. The author of this research investigated twenty-two special education students and the effectiveness of reducing student test anxiety by offering review sessions. These review sessions were voluntary and conducted after school by a special education teacher. Students completed a survey after attending the review session, ninety-four percent reported they felt confident by the end of the session and sixty-nine percent reported that they felt prepared. Other results from this study show the effectiveness of the review session, future studies repeat this study but could benefit from a larger sample size.

Document Type
Thesis

Degree Name
MS in Mathematics, Science, and Technology Education

First Supervisor
Diane Barrett

Second Supervisor
Bernard Ricca

This thesis is available at Fisher Digital Publications: http://fisherpub.sjfc.edu/mathcs_etd_masters/95
Test Anxiety: Mathematics and Students with Disabilities

By

William Donahue

Submitted in partial fulfillment of the requirements for the degree

M.S. Mathematics, Science and Technology Education

Supervised by

Dr. Diane Barrett and Dr. Bernard Ricca

School of Arts and Sciences

St. John Fisher College

April 2010
# Table of Contents

Abstract 4  
Introduction 4  
Literature Review 6  
  Definition of Anxiety 6  
  Differences between Worry and Anxiety 8  
  Demographics of Test Anxiety 9  
  Special Education Students 12  
  Math Anxiety 14  
  Test Taking Strategies 17  
  Summary 21  
Methodology 22  
  Participants 22  
  Data Collection 23  
  Trends 27  
  Restrictions and limitations 28  
Results 29  
  Table 1 29  
  Table 2 31  
Discussion 33  
  Additional Correlations 36  
  Extensions 40  
Conclusion 41
References

Appendix A: Review Session – Test Readiness Survey
Abstract

When a test is announced in class some secondary students’ experience anxiety. The author of this research investigated twenty-two special education students and the effectiveness of reducing student test anxiety by offering review sessions. These review sessions were voluntary and conducted after school by a special education teacher. Students completed a survey after attending the review session, ninety-four percent reported they felt confident by the end of the session and sixty-nine percent reported that they felt prepared. Other results from this study show the effectiveness of the review session, future studies repeat this study but could benefit from a larger sample size.

Secondary Student Test Anxiety

Test anxiety is a well researched area of academia particularly in the field of psychology. A central question that has been researched was when during the course of exams do students in grade school experience anxiety. Differences were evident when comparisons were made between grade level, age, gender, and subject content, particularly mathematics and among students with disabilities.

Anxiety has been studied for over a century. Early research dates to the turn of the century with studies conducted by Yerkes and Dodson; their findings were reported back in 1908. Study results have not been conclusive. In fact, some research concluded that certain levels of test anxiety may actually improve the pupils’ test performance (Whitaker-Sena, 2007). Similar studies have been conducted by Alpert and Haber (1960) as well as Cassady and Johnson (2002) with supporting and conflicting results respectively.
Joyce Whitaker-Sena produced a study, examining the differences in test anxiety between special education (learning disabled – LD) students and general education students. She theorized that both groups had experienced different amounts of anxiety and wanted to study if the current rating scale accurately measured the students’ anxiety levels. Her results were as she predicted; that students with disabilities had lower performance outcomes.

Many mathematics students experience testing anxiety. Sheila Tobias (1993) published many books and articles about students’ math anxieties earning her eight honorary doctorates. She has published books and research articles about when students experience math anxieties and what causes it. Many reasons for math anxiety have been reported yet all the causes are unknown. Some of the reasons for math anxiety have ranged from parents dislike or misunderstandings themselves of math concepts, to poor media portrayals that have displayed math as difficult and only the gifted can do it, to students own confusions with understanding mathematical vocabulary, their teacher or material.

A variety of test taking strategies have been established and suggested for students whom have reported to have test anxiety. There has been research to support different methods in preparation for a test that has been shown to reduce anxiety when taking the test. Also, recommendations to students about what they could have done on the day of the test.

Many researchers have suggested ways to prevent and overcome test taking anxieties. However, no one technique has yet to be proven to work for all students. This
literature review has synthesized finding on students’ math anxieties, students with disabilities with math anxieties, in addition to causation and possible remedies.

Literature Review

Students experience different forms of anxiety when performing different functions. A common place time for students to experience anxiety has been shown to be during testing situations. Students have reported many different symptoms of anxiety and since every student is different, every student experiences different symptoms. Common symptoms reported have included but not limited to: jumbled thoughts, forgetting or blanking on information, an increased heart rate or breathing, or sweaty palms.

This study looked at how anxiety has been defined, why students have reported more anxiety in mathematics class, and how students with disabilities anxieties differ from other students. It then concludes with descriptions of common ways to decrease student test taking anxieties.

Definition of Anxiety

Many definitions of anxiety exist and most definitions involve the negative feelings and thoughts of failure when thinking about a testing situation. But no one has been able to clearly define exactly what test anxiety is. Students have reported that they have felt “helplessness, tension, or panic when asked to perform… it has been described as an ‘I can’t syndrome,’ a feeling of uncertainty” (Grehman, 2007, p. 181). Once a student has felt that feeling, an internal pressure grows within them because they acknowledge that they have not grasped the concept (Cavanagh, 2007). Researchers agree on the physical/behavioral, cognitive and psychological effects but since there are many symptoms a clear definition has yet to be established (Cizek & Burg, 2006).
Three terms have been defined to help in the discussion of test anxiety: physiological hyperarousal (Beidel, 1998), cognitive obstruction (Hodapp, 1995) and social humiliation (Whitaker-Sena, 2007). Each is a specific area of test anxiety that students reported they experienced when taking an assessment. Differences between the three include physical symptoms, cognitive processing and emotional pressures, respectively.

Physiological hyperarousal refers to what happens to the body, physically. Some physical symptoms that people experienced were increased perspiration (Cizek & Burg, 2006), shallow or rapid breathing (Beidel, 1998) or desire to move out of their seat (Clark, 2004). Many strategies have been established for how to decrease these symptoms, and will be addressed later in this literature review.

Cognitive obstruction refers to students’ incapability to produce what is in their head (Whitaker-Sena, 2007). Symptoms of this are failure to concentrate on the question being asked (Vuckovic, 1992) and inability to organize events and required information to answer the question (Whitaker-Sena, 2007). Again researchers have found strategies for how to overcome these symptoms, and which will be addressed later.

Social humiliation references prior experiences in testing situations (Clark, 2004). It links negative past test performances with the current test, such that students have feared a low grade on the test that made them unable to perform. Also students worry about their peers’ opinions of their inability to perform on the examination. This has been shown to cause students to focus on the ridicule they would be subjected to for receiving low grades and not on performing to their optimal ability (Whitaker-Sena, 2007).
Differences Between Worry and Anxiety

Many researchers have tried to establish a difference between worry and anxiety. Some researchers believed that they are the same or very similarly related (Putwain, 2007). Other researchers have argued and defined the two terms as two very different sensations (Putwain, 2007). Either way, it has been reported that students suffering from test anxiety became tense and worried when taking a test (Gierl & Rogers, 1996).

Anxiety, specifically test anxiety and worry, causes people to become distraught and not perform their best in an assessment situation. Researchers argued “that there is functionally no difference between worry and anxiety and that worry is merely a cognitive manifestation or a causal by-product of anxiety” (Stöber & Joormann, 2001, p. 49). This would implement a reason to investigate the relationship between anxiety and worry. Researchers have studied to find if worry or anxiety causes more trouble for students when they were assessed or if the relationship is reciprocal. Conclusive results have not been found.

Researchers had also argued about the differences between anxiety and worry. They have stated that worrying is an emotion. This emotional piece of anxiety causes a person to think “negative and derogatory self-statements related to failure“(Putwain, 2007, p. 580). People worry about these unconstructive thoughts when taking a test. Test anxiety has been narrowed down to specifically address the feelings individuals have felt when taking an assessment causing them to reflect back on “evaluative situations involving failure” (Putwain, 2007, p. 580). These negative thoughts have been linked to poor performance because individuals were afraid to experience the failure again.
Test anxiety has been studied by many researchers around the globe. There are three ways test anxiety has been categorically grouped: gender, age, and culture. Each was an important piece in comparing anxiety levels. Each of these will now be explained in more detail.

*Cultural differences.* Anxiety has been studied in many different countries. This was done in an attempt to establish whether one country had significantly more amounts of people with anxiety (Putwain, 2007). These studies were conducted on a global scale and have produced similar results (O’Neil & Fukumura, 1992; Putwain, 2007). Past studies such as those by O’Neil and Fukumura reported cross cultural differences in students test anxieties (1992). Data were “drawn from 14 different counties including North America, the Netherlands, Japan, India and Egypt” (O’Neil and Fukumura, 1992, p. 580). These results have been studied by many to see what differences in daily and societal norms impact student anxiety. Other influential factors that had been taken into consideration had been the students’ families’ expectations and school requirements (Putwain, 2007).

When Chinese students’ anxiety levels were compared to those of American students, the levels found were not significantly different. However, “Chinese adolescents reported significantly higher scores on the subscales of social anxiety and separation anxiety” (Yao, Zou, Zhe, Abela, Auerbach & Tong, 2007, p. 1). The increase has been attributed to the difference in cultural norms and expectations, when compared to western cultures. This was in contrast to American students, that had been shown to be less socially understanding, less selfless and less psychologically self-restrained (Yoa et al., 2007).
Studies in the United Kingdom had again been compared North American student’s anxiety scores, using the results found by the North American studies as the baseline/norm. Studies had found similarities between students’ anxieties in the UK when compared to the North American norm. But questioned the specifics of how the results related directly back to classroom instruction and what role cultural influences had played (Putwain, 2007).

Researchers have investigated the role of gender in students’ levels of test anxieties. Multiple studies have concluded that females have more test anxiety than males (Hembree, 1988; Putwain, 2007). This has been shown through all grade levels and in all varying degrees of anxiety (Putwain, 2007; Yoa et al., 2007).

Yoa et al. (2007) found a significant increase of the magnitude of anxiety behaviors in bodily symptoms and destructive impairments. This was among students in the 16 to 19 years of age range (Yoa et al., 2007). Subsequent studies had concluded that when anxiety was present at a young age it often continued into adulthood (Yoa et al., 2007). Bodily symptoms of anxiety, as reported by Gresham, have included: “sweaty palms, nervous stomach, difficulty breathing and loss of ability to concentrate” (Gresham, 2007, p. 182). Students with math anxiety have reported tension and the inability to manipulate numbers (Gresham, 2007, p. 182).

Age differences. While it has been shown that gender differences in test anxiety have been reliable and constant; literature has been inconsistent in its findings of test anxiety between ages (Whitaker-Sena, 2007). This has been contributed to the differences in daily routines. Students encountered different daily challenges than adults, which could affect anxiety. Problems at school, parental pressures and separation issues
are anxiety causing events that students had to cope with (Yoa et. al. 2007). Studies demonstrated that it had been important when looking at anxiety issues to match the students’ anxieties with appropriate developmental stages (Yoa et. al. 2007). For students in Tsui and Mazzocco’s study of sixth grade mathematics, it was found “math performance was significantly less accurate during timed testing than during untimed testing” (2007, p. 137). Thus, time plays an important part in assessing students’ level of performance.

Students in North America have been studied enough for researchers to be able to specifically break down age groups to determine where test anxiety was worse (Putwain 2007). Math anxiety has been shown to appear as low as the fourth grade (Scapello, 2007). From then on a consistent increase has been identified in students through their middle school years of education. A decline has been found around the time students entered high school but a peak reappeared around the final year of school (Putwain 2007). The decline has possibly been attributed to the fact that tenth grade is the highest level of mathematics that is required to graduate (Scapello, 2007). The latter peak has been attributed to pre-college testing and final assessments before high-school is concluded. High-stakes testing and No Child Left Behind legislation has been the cause of anxiety for many students (Putwain 2007). Steen, also reported in conjunction with Putwain, that high-stakes testing has been attributed to the shift in teaching students the meaning of concepts to just teaching them the procedures to solve a problem. This has left “many students thoroughly confused” (Steen, 2007, p. 13). As a result the teacher’s instructional role becomes more important to not just clarify students’ questions but to exposure them to mathematical concepts: such as fractions, percentages, ratios, algebra
and geometry, that they could encounter in everyday life (Steen, 2007, Tsui & Mazzocco, 2007).

Special Education Students

Students’ test anxieties have been “receiving renewed attention from academic scholars and others” (Cavanagh, 2007, p. 12). A specific area of interest for researchers has been students with learning disabilities (Whitaker-Sena, 2007). Researchers investigated test anxiety in students with learning disabilities and compared their findings to students without learning disabilities (Whitaker-Sena, 2007).

A conjecture had been proposed that students with learning disabilities have “psychological and/or neuropsychological deficits” (Whitaker-Sena, 2007, p. 362) that hinder their ability to execute tasks required in school (Whitaker-Sena, 2007). This was problematic in testing situations for students with learning disabilities because it increased their test anxiety due to the fear of failure (Hancock, 2001). Swanson and Howell showed that when students without disabilities were placed in stressful testing settings, they reported less test anxiety than the students with learning disabilities (1996). It was also reported in their study that students with learning disabilities who had test anxiety were often unable to produce results on the test that showed their actual abilities and knowledge (Swanson & Howell, 1996).

There were several common emotions that students with learning disabilities reported when taking tests: “stress, nervousness, frustration, helplessness and uncertainty” (Whitaker-Sena, 2007, p. 362). The magnitude of the degree of findings was in contrast to students without learning disabilities. Heiman and Precel also added to
the list an inability to focus and increased distractibility when placed in a testing setting (Heiman & Precel, 2003).

Whitaker-Sena (2007) compared the anxiety levels of students with disabilities, with students without disabilities and with students with emotional behavior disorders. The findings were students with and without learning disabilities reported less anxiety, worry and tension than students with emotional behavioral disorders. Sequentially it was found that there was very little difference between the amount of test anxiety students with disabilities reported and the amounts reported by students without disabilities (Whitaker-Sena, 2007).

Levels of anxiety and test performance were researched by Lucangeli and Cabrele (2006) in students with attention deficit hyperactivity disorder (ADHD) and attention deficit disorder (ADD) in mathematics class. Their findings were inconclusive as to the impact the students’ disability had on the students’ performance. They looked specifically at problem solving and calculations, two areas which were often studied because the level of difficulty to answer (Lucangeli & Cabrele, 2006).

Students, who have struggled in mathematics, could be tested for a specific disability called dyscalculia. This disability has been studied in students in relation to anxiety because dyscalculia interferes with a student’s ability to perform on assessments and recall information (Wadlington & Wadlington, 2008). Students with dyscalculia have reported trouble with semantic memory, procedural memory and visual spatial memory. All of these have been shown to be troublesome and cause anxiety for students when taking an assessment (Wadlington & Wadlington, 2008).

*Math Anxiety*
Students have for a long time struggled with mathematics and researchers have placed a specific label on the fear and worry that students face when faced with math problems, math anxiety. Students have been described as having math anxiety when unable to perform to the best of their ability when doing a math problem (Tobias, 2007). Also, it was found by Scarpello that “students who suffer from math anxiety have little confidence in their ability to do math, and tend to take the minimum number of required math courses” (Scarpello, 2007, p. 34). In addition it was found by Steen that “two topics – fractions and algebra, especially Algebra II – are particularly troublesome” (2007, p. 9) for students. These students often reported anxieties and difficulties on math assessments and felt the grade received did not accurately match their knowledge (Steen, 2007, Tobias, 2007). It was found by Cavanagh that ”individuals with high levels of math anxiety tend to rush through problems, making them prone to errors” (Cavanagh, 2007, p. 12). The mistakes that they make on the test are often due to their anxiety not lack of ability (Tobias, 1993).

Fear of math. Many students experienced a moment when they have admitted to themselves that they will not go any further in math (Tobias, 1993). The student then shuts down and does not try to comprehend any math beyond that point, it can be middle school, high school, college or beyond. This can occur at any time, in the middle of a unit on fractions or how to take a derivative. It is a moment when the level of math an individual will master has peaked, and an individual has decided to they cannot do or master any higher level of mathematics, and does not like math. This causes fear and anxiety when confronted with math problems (Tobias, 1993).
Teach as taught. Many students dislike math because many teachers teach their students the way that they were thought themselves. This model has been shown to not be the most inclusive or progressive (Tobias, 1993). Students have reported a feeling of being stuck in a time warp. The methods are old fashion and do not appeal to young minds, and seen as boring and non-engaging (Tobias, 1993). But with change of instruction comes resistance from parents that they do not understand the material because it was not how they were taught.

Natural ability. People believe that mathematical ability was something that an individual was born with. It was a natural gift and people that struggle with math believe that they did not receive it. In Asian societies success in math has been attributed to hard work, where as in America it has been attributed to ability (Tobias, 1993). Parents often accept poor math grades from their children, granting them leniency and compassion by explaining their own personal struggles with math (Tobias, 1993). This enabling behavior leads children to believe they do not have to succeed in math because their parents did not (Tobias, 1993).

Women and math. Many attempts have been made to show girls and young women that they are just as capable of doing math as males. This has been in response to the thought that girls cannot do math (Tobias, 1993). A shift was first made in text books that no longer only showed men in examples. Changes were also made in “television shows and movies” (Stolpa, 2004, p. 3) to show women doing math and more studies were conducted as to why more females were not continuing their math education (Tobias, 1993).
Media’s portrayal of mathematics. Movie companies have made a shift to portraying mathematics and mathematicians in more positive ways. Movies such as *Proof* (Corliss, 2005) and *Good Will Hunting* (Stolpa, 2004) have attempted to show students “the rare genius among us” (Stolpa, 2004, p. 3). Television shows have typically in the past used mathematics as jokes and metaphors for impossible mathematical struggles. This has changed even though most audiences could relate to the struggle and other areas of difficulty are now being used. This shift was to no longer always show mathematics in a negative way (Stolpa, 2004).

Confusion with wording. Students reported that they were able to do math until word problems (Tobias, 1993). Arguing that math is about numbers not reading. Their struggles were due to not understanding the language of the problem, not the concept. Similar to other subjects taught in school, vocabulary had been shown to be just as important to be successful (Tobias, 1993).

Desire for the right answer. In some classes multiple answers could be correct but in math one answer is usually desired (Tobias, 1993). Students strive for one answer when they solved math problems and they wanted their found answer to be the right answer. When students read a hard problem on a test it has been common for a student to jump to the conclusion that the teacher has put a trick question on the assessment instead of thinking of how to solve the problem. This increases their anxiety about the question and does not help them in solving it (Tobias, 1993).

Students have become anxious about solving problems due to the struggle to find the one right answer (Tobias, 1993). They should have been reminded that when making a statement in an essay it requires support, similarly in math the answer needs work to
support how it was found. Also had the student shown all the word needed to find the answer, if a mistake was made it can be sequentially followed to be corrected or for the teacher to provide partial credit (Tobias, 1993).

Also, students forget that an answer can be checked (Tobias, 1993). Anxiety about having the right answer can easily be resolved by seeing if the answer is a solution to the problem. If it works, the student should have moved on knowing that it is correct, if it did not check, the student should come back to the problem, time allotting (Tobias, 1993).

*Test Taking Strategies*

There are many ways to study for or to take a test and there are many suggestions and strategies that can be used to better prepare students for examinations. Differences in ways to prepare vary depending on the subject matter and the type of test that is to be given (Clark, 2004). There have been findings that when students and teachers were reminded that tests hold both parties accountable for the information; both were more apt to try harder. The results indicate if the teacher successfully taught the material and if the students could apply information that was taught (Krivich, 2004). Students have reported it helpful when they were reminded that teachers were willing to help them and it was not their intent to have students answer the question wrong (Cambridge Educational, 2004b).

*In preparation for the test.* It has been shown that students who had developed a positive attitude about the subject and material preformed better. This was accomplished by avoid personal feeling and negative thoughts. Students also attributed success when
they had attended class regularly, took notes while in class, made sure that their notes were legible and reviewed them regularly (Krivich, 2004).

It has been shown to be important to prepare for the test more than 24 hours before the examination was to be given. Students reported this helped the information to only need to be quickly reviewed immediately before the test (Cambridge Educational, 2004b). Students that have used study techniques in preparation for the test found them to help organize the information into usable pieces of information.

Memory techniques also helped students to recall information more easily (Krivich, 2004). Students could make study cards from notes taken in class or recopy notes so that information is more legible and grouped together. It has been shown students who were superstitious by wearing a lucky hat or socks has been shown to perform better on assessments. Even though the item does not bring knowledge, it has helped to not distract them or provide an excuse for performance (Cambridge Educational, 2004b).

*Day of the test.* Students have been encouraged to arrive on time, even early when possible, for assessments so that they could be ready at the beginning of the class. Another benefit to be early is the ability to get situated, with regard to supplies and comfort, so that these things would not distract them during the test. If time exists before the test, this time could be used to review (Clark, 2004).

When students first receive the test students should read all directions. If there are questions of the intent of what is expected the student should have asked for clarification (Krivich, 2004). Next the student should organize his or her thoughts into lists or outlines depending on what the task requires. It is important for students to
remember to leave nothing blank! No answer is a wrong answer. Teachers could give partial credit if work is provided but if a question is left blank, no credit can be assigned (Krivicich, 2004).

Students should check to ensure all direction has been followed. They should not assume what the teacher wants. Having done this has lead to the student not answering the question, doing something different or assuming by doing more work it would yield a better grade (Clark, 2004).

The next tip for students is to start writing something. By getting something on to paper, either a concept map or use of bullet points has been shown to help organize thoughts and information into useable chunks (Cizek & Burg, 2006). It has been reported that by seeing their thoughts it can help guide into what is needed (Cambridge Educational, 2004a). This prevents being overwhelmed with ideas floating around not on paper (Cambridge Educational, 2004a).

Some students have found it helpful when they have been reminded of the time allotted and remaining. Students, who have tried to fight or race the clock, have been found to focus on time instead of the task. Students should strategizing about how much time could be spent on each question with cognition about how much time would be needed to look it over when completed (Clark, 2004).

**Suggestions to reduce anxiety.** Many techniques have been proven to aid in the reduction of anxiety. Some strategies that students used included: acronyms, flashcards, and personal connections (Krivicich, 2004). Acronyms have been made using the first letter of the list of items that need to be remembered to create a word or sentence. It has been shown to be easier to remember smaller pieces of information that had more
meaning then a whole list (Krivicich, 2004). Flashcards should have made with short and precise definitions only including the information that is required. Personal connections to the information link information together through mental pictures or funny silly sentences; these have been shown to be some of the easiest to remember (Krivicich, 2004).

When taking the test, relaxation techniques could help students by allowing them to control their body when they feel the expectations of the assessment are outside of their abilities, thus putting them back in control (Cizek & Burg, 2006). Another strategy that students have used was simply thinking of positive thoughts; this has been shown to have been helpful with reducing anxieties (Cizek & Burg, 2006).

Also, when preparing for the test the night before it has been shown to be beneficial to remember to get a good night’s sleep (Cizek & Burg, 2006). This was in contrast to staying up late cramming at the last minute (Krivicich, 2004). Students that then woke up in the morning and ate breakfast were more focused. Even a small breakfast has been shown to be better than nothing. Having done some physical activity before the test, has also shown to prepare the students body, awakes the brain and puts the heart in good health (Krivicich, 2004).

These steps have all been shown to increase student’s readiness for an assessment. Another important result that has been reported by students that followed these suggestions was reduction in students’ test anxiety (Vuckovic, 1992). That was attributed to students feeling that they were prepared for the assessment and the received grade better reflected their abilities.
Summary

Testing anxiety has been found in many locations and effects many students. An attempt to lessen anxiety has been through knowledge and education. By becoming more knowledgeable about it and learning techniques to prevent it, anxiety can have less impact on a student’s performance. This is true in mathematics and other content classes.

Research has clearly shown effective ways to decrease students’ anxieties when being assessed. The specific recommended techniques have shown to reduce anxiety in students and result in the assessment more accurately representing their ability.

Recent attempts by the mass media to represent mathematics in a less threatening, unusable, terrifying way has been in attempt to encourage students to continue with the mathematics curriculum, even when struggling. Scarpello stated that “it is important that math anxiety be identified as early as possible to lessen its effect on course and career choice” (Scarpello, 2007, p. 34). This is because math exists beyond the classroom and in many careers.

One area of limitations to this literature review has been the inability to locate research investigating specific levels of test anxiety by male and female students. An area of interest would be to find when boys are more anxious in testing situations than girls and when girls are more anxious than boys. Another area of limitation exists when comparing male students with disabilities level of test anxiety and female students with disabilities level of anxieties. Limitations also exist in identifying the techniques used to acquire the reported information. Most researchers have stated using part of a test anxiety scale but did not report a clear methodology, for future studies to be compared.
Unfortunately one method or way to cure math anxiety has yet to be found. However, through research more strategies have been found to reduce student anxiety levels and ways to identify it in the classroom have has become easier. All students can benefit from understanding ways to make sure that a test authentically represents their knowledge of the content.

Methodology

Review sessions may be able to reduce students’ test taking anxiety. To evaluate whether reviews have an effect on students perceived levels of anxiety, in this study students attended review sessions the day prior to exams, in a structured after school review session. In this session material required for the test was be covered. At the conclusion of the session students were provided with a survey, where they self-evaluated their perceived level of anxiety in reference to the material to be covered on test. The surveys were collected weekly and analyzed to establish the effective of the review session.

Participants

The students that participated in this study consisted of twenty-two students in eighth grade, twelve males and ten females. The ages of the students ranged from eleven to thirteen years old. According to the New York Department of Education (2010) the middle school they attended was classified as a suburban setting with the following characteristics. The median per household income for the area was $66,095. The majority of students included in this survey were special education students who primarily received IEP accommodations and were known to have test related anxiety.
The other students included in this study consisted of general education students and special education students who received 504 accommodations.

Also, reported by the New York Department of Education (2010), the school in which the study was conducted consists of 880 students in grades 6-8. Approximately seven percent of students were African American, three percent American Indian, Alaskan Native or other, fourteen percent Asian or Pacific Islander, seventy-four percent Caucasian and two percent Hispanic. The district has reported about fourteen percent of students receive special education support services and three percent English Language Learners.

The research was conducted during after school review sessions by a special education teacher. These sessions were voluntary. Students were not provided incentives or rewards for attending and filling out surveys. Since the researcher was not administering the surveys it ensured that all student responses were obtained anonymously. The review sessions were held one to two nights prior to the assessment and contained less than a 5:1 student: teacher ratio.

Data Collection

Prior to an exam students were invited to attend an hour long, after school review session that covered material that would be assessed on the exam. All of the special education teacher’s students, as well as all general education students, were invited to attend the review sessions, but no students were required to attend. After the hour long review session surveys were distributed, administered, and collected by the special education teacher and a teacher’s assistant (see Appendix A). The students who attended the review session were asked to complete the ten question survey which provided
feedback on how helpful they found the review session and the current level of their anxiety regarding the upcoming test.

The first set of questions determined gender and other demographic information. Since the survey was created to be anonymous, this helped to categorize the data collected. Also since both seventh and eighth graders were able to participate in this study, by identifying grade level created an opportunity for comparison of the results.

By asking which class the student was studying for established content area, so as multiple surveys were completed the data could be categorized in to trends and anxiety levels by subject. The specific unit helped to identify which test the student was taking. This information made it possible to not report findings in just one subject area and make broad statement about content specific anxieties.

**Question one.** The first question was designed to establish the exact sample population. Since the student’s name was not asked on the survey it made it impossible to see who had filled out a survey before. For example, thirty surveys were collected, without this question it would create the illusion that thirty students filled out surveys, but in actuality fifteen students filled out the survey twice. This information was not previously gathered or known because students may not have attended a review session for a test before, new students were always encouraged to join the study and fill out a survey.

**Question two.** The goal of the study session was to help students become more ready and confident in the material for the test. The question was intended to ask students if the study session accomplish its goal. This was asked after the session
finished reviewing the material. Were students questions answered and misconceptions removed or did areas of concern and confusion still exist?

*Question three.* The question helped to show if the student was invested in the content, and whether he or she did all of the homework assignments asked of him or her. According to Rubin (1986), “student achievement rises significantly when teachers regularly assign homework and students conscientiously do it.” This suggests a correlation has been established between homework completion and preparedness for the test.

*Question four.* The premise of this question was to establish if students felt prepared to answer questions based on the material to be covered on the test. Did he or she feel that they could take the test and would produce answers that accurately demonstrate his or her knowledge? Hopefully by attending the review session it increased their preparation. Also by asking this question before the test and after the review, it provided the opportunity for the student to question themselves about their preparedness.

*Question five.* This question was asked to see if the student felt nervous about taking the test? Students may base their answer to this question on the current unit or on past experiences. For example a student may only be nervous for math exams but not for science. The students level of nervousness could be related to their perceived level of preparedness, as asked in question four.

*Question six and seven.* Questions six and seven ask the student about their grades. The objective to question six was to see how the student feels he/she will perform on the test. This presents another measure of confidence. The answer can also
be based on past performances and was the reasoning for asking in question seven about the grades the student recalls receiving in that content subject. The two questions combine to show if the student felt they would continue to perform as before, better or worse.

**Question eight.** Many symptoms of anxiety exist. Question eight’s goal was to see if students reported any common symptoms when testing. Answers A through D have been shown to be the most common problems for students. Because students could experience more than one symptom multiple answers could be chosen. For example, a student could have jumbled thoughts and sweaty palms, or any combination of the five options. Option e was added to see how often the student feels overwhelmed by a test that he or she was willing to jeopardize their grade to be finished.

**Questions nine and ten.** Questions nine and ten were designed to investigate the student’s readiness level for the test. As shown in the literature review many studying techniques can be used to reduce student anxiety, five common options were presented as choices for this research. Multiple answers could be selected because students may have done more than one activity. The last option of “other” was presented for students to write in a different activity that they found helpful. This information could have then been suggested to other students as a good studying technique.

The results of the surveys were converted into a spreadsheet so the information could be easily analyzed. The responses were tallied to determine any trends. Trends could be found between questions or between review sessions. Limitations and restrictions also existed in this study that will be discussed later.
Trends

Questions were examined for trends. Question one allowed for a trend to be looked at between review sessions. It would allow for the researcher to look at conclusions between students who have previously attended a review sessions and students who attend for the first time. The information from question one could correlate to the results gathered from question two. This was because students who had attended a review session before were prepared for these questions and may have been more aware of how they felt prior to the session so they could more accurately state yes or no.

Questions three, four and five could result in a trend based upon the effect of homework and preparation of the level of test anxiety. This information would be used to compare individual students on a single exam and on all of the exams of a particular subject, for all of the students who attended review sessions. The results of these three questions would also be compared over time to determine if the review sessions were effective.

There could be a trended between questions six and seven. This was because students know how they typically do on a test in this subject and after attending the review session do they feel they would continue to perform on the same level, improve or decline. The results could be connected to the answers to question four. If they felt more prepared, did they feel they would do better than their typical grades?

The results from question eight, typical symptoms of anxiety could produce a trend with question four. If a student reports having experienced a symptom of anxiety before does that mean that he/she will feel it again on this test? There could be a correlation between previous anxiety and present anxiety.
Questions nine and ten could result in a trend between what students have done and what students could have done. Students could report a unique different option that could be recommended to other students in the future. This other option could be an activity that multiple students come up with.

**Restrictions and Limitations**

Many restrictions existed to this study. The primary restriction was that the researcher was not present in the classroom to administer the survey. This restriction aided in ensuring anonymity, however because of this the researcher had no way of know how seriously the review session and surveys were taken which may have affected the validity of the results. Another restriction was the inability to anonymously obtain the students grade received on the test or ask follow up questions of the students about how their level of anxiety was during the exam. This information could have been useful in comparing their pretest perceived anxiety and their actual performance grade.

An extension could be designed to follow up with the students that attended the review session and ask them, via anonymous survey, if they felt less anxious while taking the test because they attended the review session. This extension would require the teacher to promptly grade the assessment, return it to the student and require the student to complete the second survey while still remembering how they felt when taking the test. This timeline should be very short since the student could have forgotten their actual feelings of anxiety.

Other limitations existed in surveying students. The student that took the survey may have a pre-identified disposition affecting their anxiety because of the class, subject or teacher. This could have affected their level of anxiety before taking the test. For
example, a student who admits to not liking or understanding math might have a higher established heightened level of anxiety because of the topic. In comparison, a student that continuously does well on assessments, but has not always put much effort into preparing for them may be overly confident in his or her abilities. This could result in a reduced amount of pre-test anxiety that could increase drastically during the assessment.

Results

The same Test Readiness Survey (TRS) was administered to all students (n = 22). Pair wise comparisons and t-tests were used to analyze the data. This was completed between questions, which produced few significant results (Table 1).

Table 1

Review Session – Test Readiness Survey

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Have you filled out this form before?</td>
<td>31% Yes 69% No</td>
<td></td>
</tr>
<tr>
<td>2. Did attending the review session make you feel more confident?</td>
<td>4% Yes 6% No</td>
<td></td>
</tr>
<tr>
<td>3. Did you do all your homework in this unit?</td>
<td>53% Yes 47% No</td>
<td></td>
</tr>
<tr>
<td>4. Do you feel prepared for the test/quiz?</td>
<td>69% Yes 31% No</td>
<td></td>
</tr>
<tr>
<td>5. Do you feel nervous about the test?</td>
<td>78% Yes 22% No</td>
<td></td>
</tr>
<tr>
<td>6. What grade do you expect to get on the test/quiz?</td>
<td>13% A 41% B 44% C 3% D</td>
<td></td>
</tr>
<tr>
<td>7. What types of grades do you usually get in this subject?</td>
<td>13% A 9% B 50% C 28% D</td>
<td></td>
</tr>
<tr>
<td>8. When you take the test do you feel: (circle all that apply)*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Jumbled thoughts</td>
<td>69%</td>
<td></td>
</tr>
<tr>
<td>b. Blanking on information</td>
<td>69%</td>
<td></td>
</tr>
</tbody>
</table>
c. 0% Increased heart rate or breathing

d. 0% Sweaty palms

e. 16% A desire to rip the test in half and take the zero

9. What could you have done to prepare better? (circle all that apply)*

a. 53% Meet with your teacher

b. 28% Make flashcards/acronyms

c. 16% Study with a friend

d. 6% Start studying sooner

e. 16% Recopy notes and homework problems

f. 0% Other: __________________________

10. What have you done to prepare? (circle all that apply)*

a. 69% Met with your teacher

b. 84% Made flashcards/acronyms

c. 31% Studied with a friend

d. 41% Studied sooner than the night before

e. 59% Recopied notes and homework problems

f. 0% Other: __________________________

*Percentages do not add to equal one hundred percent because students were allowed to choose multiple answers per question.

Pair wise correlations were conducted between questions. Question one was not included in these comparisons since it was only used to establish sample size. Correlations are shown in Table 2.
Table 2

*Pair Wise Correlations Between Questions*

<table>
<thead>
<tr>
<th>Questions</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Confidence</td>
<td>0.19</td>
<td>-0.11</td>
<td>-</td>
<td>0.40</td>
<td>0.20</td>
<td>0.18</td>
<td>-</td>
<td>0.28</td>
</tr>
<tr>
<td>3. Homework</td>
<td>-</td>
<td>-</td>
<td>-0.13</td>
<td>-</td>
<td>-</td>
<td>0.50</td>
<td>-</td>
<td>0.14</td>
</tr>
<tr>
<td>4. Prepared</td>
<td>-</td>
<td>-</td>
<td>0.15</td>
<td>-</td>
<td>-</td>
<td>-0.17</td>
<td>-0.20</td>
<td></td>
</tr>
<tr>
<td>5. Nervous</td>
<td>-</td>
<td>-</td>
<td>-0.14</td>
<td>-</td>
<td>0.18</td>
<td>0.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Expected Grade</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.19</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Previous Grade</td>
<td>-</td>
<td>-</td>
<td>0.19</td>
<td>-</td>
<td>-0.16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Symptoms</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.37</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Could Prepare</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Did to Prepare</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Correlations that were found between questions which produced r values between -0.1 and 0.1 were not reported in the table of correlations. Results per correlation are categorized below.

A strong positive correlation was found between:
• Confidence obtained for the test by attending the review session and the grade students expected to receive on the test.

• The students’ completion of homework in the unit and amount of symptoms a student reports experiencing while taking a test.

• Amount of symptoms a student reports experiencing while taking a test and the number of items a student has done to prepare for the test.

• The number of items a student reports he/she could have done better prepare for the test and the number of items a student has done to prepare for the test.

A weak positive correlation was found between:

• Confidence obtained for the test by attending the review session and homework completion.

• Confidence obtained for the test by attending the review session and the grade students report receiving on previous tests.

• Confidence obtained for the test by attending the review session and the amount of symptoms a student reports experiencing while taking a test.

• Confidence obtained for the test by attending the review session and the number of items a student has done to prepare for the test.

• Students who reported feeling nervous about the test and the number of items a student has done to prepare for the test.

• The grade students expected to receive on the test and the number of items a student reports he/she could have done better prepare for the test.

• Students who reported feeling nervous about the test and the number of items a student reports he/she could have done better prepare for the test.
The grade students report receiving on previous tests and the number of items a student reports he/she could have done better prepare for the test.

Students who felt prepared and the grade students expected to receive on the test.

The students’ completion of homework in the unit and the number of items a student has done to prepare for the test.

A weak negative correlation was found between:

- Confidence obtained for the test by attending the review session and how prepared the student felt.
- The students’ completion of homework in the unit and having felt nervous for the test.
- Students who felt prepared and the number of items a student has done to prepare for the test.
- Students who felt prepared and the number of items a student reports he/she could have done better prepare for the test.
- The grade students report receiving on previous tests and the number of items a student has done to prepare for the test.
- Students who reported feeling nervous about the test and the grade students report receiving on previous tests.

There were no correlations that were strongly negative.

Discussion

Based on the research it appears that the review sessions helped the student become more confident in the material to be covered on the test. The ten questions allowed for numerous comparisons to be made and resulted in significant results. This
study could produce different results and correlations with different students, a larger sample size or a longer amount of time to collect data, resulting in more review sessions per subject on different units equaling more surveys being completed.

For the purposes of this research the class and unit was not significant in the data analysis. This was because there was only one unit covered in four content areas: Mathematics, Science, Social Studies and English Language Arts (ELA). Thus content areas were generally compared, such that all survey results were grouped together and not divided into categories. More data may have resulted in significant correlations.

The significance between question two and four indicated that the students who did attend the review sessions also felt that they were more prepared for the test/quiz. However, 81% still admitted to feeling nervous about the test/quiz. This could imply that the review session did not reduce the student’s anxiety. After finishing the review session they felt they knew the information they needed to know but did not feel confident enough to not be nervous for the actual test.

The connection between questions two and five, student confidence and students’ nervousness, had shown no significant results in being paired. The surveys showed that students continued to feel nervous about the test after the review session. Even though the students had reported that the review session helped then in feeling confident they continued to feel nervous. It was reported that only 3% of students did not feel more confident after the review session and 19% of students reported not feeling nervous. The percent of students that continued to feel nervous could imply that the student remains nervous regardless of extra review and/or they did not benefit from being in a small group review session.
Student’s completion of homework created interesting correlations between questions. When correlating students’ completion of homework for the unit with their feelings of nervousness, it was found that homework completion made the students feel a little more nervous. Then when correlating student homework completion with the amount of common symptoms of anxiety students report experiencing while taking a test there was a strong positive correlation that found. It implies that the more homework the student completes the more symptoms they report experiencing while taking the test. And finally, when correlating students’ homework completion with the number of items students report to having done to prepare for the test, it showed a weak positive correlation that if the student did all their homework they only did a few items to further prepare for the test. These results are contrary to the findings of this researcher, since many teachers believe completing homework helps students become more confident in the material and better prepared for the test.

As shown in the results in question eight none of the student selected answers C (increase in heart rate or breathing) or D (sweaty palms). Both of these symptoms have been shown be common with anxiety. Students may not have chosen these options because they did not cognitively remember, they were too embarrassed to admit it or because these symptoms were not present in this group.

Also, in question eight answers of jumbled thoughts and blanking on information were chosen the same amount of times. These two questions could be expanded into when the information is most commonly forgotten, such as after reading the first question, half way through or towards the end? Another question that could be asked of the students what is jumbled about their thoughts? Answers that could be offered in
future studies as multiple choice answers to this question could be: too much information to remember, difficulty recalling what was taught, or issue outside of classroom control.

In question nine, it was found by giving an answer choice of other resulted in students answering “all of the above”. This limited the study because the research is unable to determine if the student just quickly wrote that in place of circling the answers they felt or if they felt they knew they have not done enough and the five options were previously mentioned by the teacher as good studying techniques. For the purpose of the study when analyzing the date the researcher converted the answers of “all of the above” into a choosing each item individually. Had this not been done, it would have been found that none of the students chose the option of starting to study sooner, as something they could have done to better prepare them for the test.

In question ten, similarly to question nine, a few students choose to write the answer of “all of the above” on the blank line after the option of other. For these responses the statistics of question ten were conducted in the same way as in question nine. It was discovered that eighty-four percent of students chose option B (making flashcards/acronyms). It was unknown to the researcher if it was a requirement of the teacher or class if flashcards/acronyms were required.

Additional correlations

The weak positive correlation between questions two and three showed that the students that answered yes to feeling confident also did the required homework. Conversely the students that did not feel confident about the test also did not complete the assigned homework for the unit. If the surveyed students were not anonymous then
the researcher may have been able to establish which could have been the explanation of
the correlation.

The weak negative correlation between the confidences the students felt after the
review session and how prepared the student felt, showed that students that reported
feeling confident did not also feel prepared. This correlation could imply that the student
left the review session confident in his/her abilities or the student felt left the review
session confident in his/her inabilities (he/she confidently knew that they would not
receive perform well) and did not feel they had adequately prepared nor been prepared.

The correlation between students’ confidence and their expected grade resulted in
a positive relationship. This correlation could imply that due to the increased confidence
they felt their abilities were increased, shown by an increased in expected grade. This
helped to meet the goal of the review sessions that students would obtain a higher grade
due to increased confidence for the test.

A positive correlation was also established between the students’ reported feelings
of confidence and the grade they reported to receiving on previous exams. This
correlation is similar to the previous comparison of students’ reported confidence and
expected grade. However this correlation did not result in as strong a relation as the
previous. The lack of strength between the two questions could imply that the students
increased confidence led them to believe they would receive a higher grade.

The relationship between confidence for the test and the amount of symptoms
students reported feeling during a test resulted in a weak correlation. This could be
because students that reported not being confident also felt they did not experience many
or no symptoms, in addition students that felt confidence also felt they experiences multiple symptoms helping the strength of the correlation.

A positive correlation between students’ confidence between confidence for the test and the number of items a student has done to prepare for the test. This positive correlation could indicate that the students that did more to prepare also felt confident for the test. With the extension of knowing students’ outcomes on the test this question could help the researcher understand if the confident and activities preformed in preparation aided the student as shown in their actual grade received.

A weak negative correlation appeared between homework completion and nervousness about the test. The surveys revealed that students that felt they were more nervous when they had completed all the homework. Was this because the students that did not care enough to do the homework also did not care enough to be nervous for the test? Or did the extra practice in the homework problems overwhelm the students so they are now more nervous about retaining the information for the test.

The second strongest correlation in this study was found when correlating the students’ completion of homework in the unit and amount of symptoms a student reports experiencing while taking a test. This could be explained because the students that did not complete all the assigned homework remember experiencing more common symptoms of anxiety. Similarly, to help strengthen the correlation, the students that reported that they did do all their assigned homework all reported to experiencing some symptoms. Since all the students reported experiencing at least one symptom the positive correlation is not surprising.
A weak positive correlation was found between students who felt nervous and the number of items a student has done to prepare for the test. This could have been because students did some items to prepare but could have done more thus not making them less nervous. Also the students that did not feel nervous did only a few items to prepare for the test creating a weak correlation.

The correlation between the grade students expected to receive on the test and the number of items a student reports he/she could have done better prepare for the test was weak and positive. The reason for the correlation could be explained by the idea that students think they will receive a higher grade do to the amount done to prepare.

A strong positive correlation value was found between the relationship the amount of symptoms the student reported to have experienced during tests and the amount of items they have done to prepare for the test. So the more symptoms they experience during the test could be due to the more they did to try to prepare to the test. Thus if someone was nervous and anxious about the test they may try to do more things to get themselves ready and as a result psyched themselves out.

The strongest correlation that was discovered in this study was between the between the number of items a student reports he/she could have done better prepare for the test and the number of items a student has done to prepare for the test. This was seen in the data where most of the students chose they had completed one item to prepare and acknowledged there were at least three other activities they could have done to better prepare. This could imply that students are aware of other studying techniques but chose not to do them or do not see the value in completing other activities in preparation for the test.
Extensions

This research could be extended for future research which could be carried out in multiple ways. One way would have been to record student grades. By collecting this information the researcher could compare test grades earned when the student did and did not attend a review session and if they reported feeling nervous about the test. This would have required the surveys to not be completed anonymously, thus the researcher could look at past grades and current grades to see if there was an improvement when comparing scores received when the student did and did not attend a review session. Again, if the study was conducted such that the students did not remain anonymous, the students could have taken a follow up survey where they actually record how they felt while taking the assessment, and did the review session make them feel more confident or less anxious while taking the test. This extension would require the researcher to be in the classroom administering the surveys. However, these extensions do require extra work and the students to fill out more surveys. It was the goal of this study to not interrupt instructional time, which was the reasoning for having students fill out surveys during optional after school review sessions.

A larger sample size may produce different outcomes also. This could be accomplished with more time, conducted by more teachers that service more students and/or in multiple schools. Further studies may include more mainstream students and administered in general education classrooms, reach a larger student body.

Future studies may want to include question one into comparison tests. With a larger sample size or more time with more students attending more review sessions it could produce interesting correlations of students feelings whom regularly attend review
sessions and student who do no. Due to the limitations on time this study did not have enough data to produce noteworthy values.

It could be investigated how students felt at the end the last class, in regards to how confident, anxious, nervous and unclear they felt about the material, if the review session changed that and post test, did it make a difference. It was concluded in this research, based on this sample that the review sessions were beneficial in reducing students’ levels of nervousness and anxiety, and also increasing confidence for the assessment.

Conclusion

The results of this study have shown that after attending voluntary after school review sessions students felt less nervous about their up coming test. Also, by the end of the review session students reported expecting to receive a higher grade on the test than they had received on prior assessments. And 94% of the students reported that the review session helped them to feel more confident. This implied to the researcher that the review sessions were successful in reducing students’ anxieties about up coming tests.

This research has positively concluded that holding review sessions are beneficial to student learning. They have been shown to help students by increasing preparedness, and reducing anxiety and nervousness. It would be beneficial to student learning to continue to hold after school review session in the future.
References


Appendix A

Review Session – Test Readiness Survey

☐ Male   ☐ Female

Grade ___________ Class ___________ Unit ______________________

1. Have you filled out this form before?   ___Yes ___No
2. Did attending the review session make you feel more confident?   ___Yes ___No
3. Did you do all your homework in this unit?   ___Yes ___No
4. Do you feel prepared for the test/quiz?   ___Yes ___No
5. Do you feel nervous about the test?   ___Yes ___No
6. What grade do you expect to get on the test/quiz?   ___A  ___B  ___C  ___D
7. What types of grades do you usually get in this subject?   ___A  ___B  ___C  ___D
8. When you take the test do you feel: (circle all that apply)
   a. Jumbled thoughts
   b. Blanking on information
   c. Increased heart rate or breathing
   d. Sweaty palms
   e. A desire to rip the test in half and take the zero
9. What could you have done to prepare better? (circle all that apply)
   a. Meet with your teacher
   b. Make flashcards/acronyms
   c. Study with a friend
   d. Start studying sooner
   e. Recopy notes and homework problems
   f. Other:____________________________________________________________
10. What have you done to prepare? (circle all that apply)
    a. Met with your teacher
    b. Made flashcards/acronyms
    c. Studied with a friend
    d. Studied sooner than the night before
    e. Recopied notes and homework problems
    f. Other:____________________________________________________________