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Utilization Of Emotional Freedom Techniques (eft) To Reduce Test Anxiety In High Stakes Testing

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UTILIZATION OF EMOTIONAL FREEDOM TECHNIQUES (EFT) TO REDUCE TEST ANXIETY IN HIGH STAKES TESTING

by

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This dissertation, submitted by Marie Elaine Mohler, in partial fulfillment of the requirements for the Degree of Doctor of Philosophy from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done, and is hereby approved.

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Marie Elaine Mohler
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To my mother

Katie Hansen

In memory of

Dr. A. Harvey Baker
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A Pioneer in Energy Psychology Research

ABSTRACT

There are many reasons a person may fail a high stakes test such as the National Council Licensure Examination for Registered Nurses (NCLEX-RN®). Sleep deprivation, illness, life stressors, knowledge deficit, and test anxiety are some of the common explanations. A student with test anxiety may feel threatened by this evaluation process. This reaction causes the students to become self-absorbed with altered cognitive abilities such as reduced ability: to concentrate, to remember, and/or to retrieve information, thus lowering the students' performance. This research study explored the correlation among factors such as stress, test anxiety, and student expectations that may be predictive of success or failure in passing the NCLEX- RN® exam. This study also compared the methods of Emotional Freedom Techniques (EFT) to Guided Imagery regarding the reduction of test anxiety and success in passing the NCLEX-RN® exam. Emotional Freedom Techniques, a form of energy psychology, works by having an individual concentrate on a specific psychological issue while simultaneously tapping on specific meridian points. Guided Imagery, a well-respected form of meditation, utilizes directed and focused thought and imaginations.

The participants of this quantitative study were nursing students enrolled in a NCLEX Review course at a university in the Midwest. Randomized groups received two treatment sessions. The students completed the Test Anxiety Inventory (TAI), Westside Test Anxiety Scale, Stress Vulnerability Questionnaire, Subjective Units of

Disturbance Scale (SUDS), and had their blood pressure taken before and after treatments. The students also completed the SA-45 Symptom Assessment (SA-45™), a Personal Profile Data Sheet, and three Student Perception Surveys.

The results of the study showed scoring below an 80% on the HESI Exit Exam and obtaining a lower score on a retake of the HESI Exit Exam was associated with the pass rate of the NCLEX-RN® exam. There was a statistical significant difference in the SUDS rating recorded pre-treatment versus post-treatment which indicated the treatment lowered distress levels in both groups. The systolic and diastolic blood pressure showed a statistical significant decrease in Group 1 (Guided Imagery) after the second treatment. The diastolic blood pressure showed a statistical significant decrease after the second treatment in Group 2 (EFT). There was a statistical significant difference in the Westside Test Anxiety incapacity subscale before treatments and after treatments in Group 2 (EFT). On Student Perception Survey 3, at the end of the study, Group 2 (EFT) reported a decrease in test anxiety while Group 1 (Guided Imagery) conveyed a slight increase. Both groups reported they thought the treatments were effective. Emotional Freedom Techniques did reduce test anxiety in high stakes testing.

CHAPTER I

INTRODUCTION

Background of the Study

Just saying the words *test anxiety* creates a sense of discomfort in some people. Media frequently addresses this topic. Cartoons and comic strips portray students struggling with the examination process. Movies and books depict the anxious person's dilemmas, tactics, tragedies, successes, or failures. This phenomenon has been with the human race for a long time. In 1872, Darwin declared that fear is an adaptive response to threatening situations (Spielberger & Vagg, 1995a). Fear stimulates physiological adaptations (elevated heart rate, sweating, nervousness, anxiety, dizziness, nausea, and a feeling of panic) in the autonomic nervous system, which propels a person into action. Fear is universal and has been necessary for survival of the human race. Fear, stress, and test anxiety, however, affect a student's learning and higher performance. Test anxiety can be so debilitating to a student that interventions are needed for the student to succeed (Reitz, 1989, Spielberger & Vagg, 1995a).

There have been many treatment programs and interventions developed over the years to reduce test anxiety such as behavioral treatment programs, biofeedback, desensitization, cognitive interventions, cognitive behavioral interventions, behavioral modification interventions, rational-emotive therapy, study skills training, and test-

taking skills training (Cizek & Burg, 2006; Goetz, Preckel, Zeidner, & Schleyer, 2008; Vagg & Spielberger, 1995; Wine, 1982). Some treatments intend to improve cognitive task performance by increasing attention to task-relevant cues so that preoccupation with worry will not occur. Interventions that target test anxiety can utilize emotion-oriented treatments such as relaxation techniques. Competence-oriented treatment would teach learning skills. Desensitization, extinction, or exposure therapies mimic nature in eliminating a phobia. Combinations of behavioral and cognitive methods have been effective for some students (Allen, 1972).

Need for the Study

There are 23 advertisements recruiting nurses and several educational advertisements in the 32-page *Dakota Nurse Connection Magazine*, Spring 2012 edition (North and South Dakota State Boards of Nursing, 2012). The Arizona Nurses Association (2011) posted 33 advertisements for nurses in their 20-page newsletter, the *Arizona Nurse*, the August 2011 edition. "Nurses Wanted" and "Join Our Team" advertisements can be seen in most daily newspapers around the country. Some years the demand is greater than other years, but the need for registered nurses is constant in the United States, as well as abroad.

Students cannot become registered nurses unless they have been successful in passing the National Council Licensure Examination for Registered Nurses (NCLEX-RN®). Failure on this exam is extremely costly in several areas. First, there is the economic cost to the student. The first failure on this exam could cost the student approximately $10,000 in lost wages, tutoring, and re-examination fees. Another economic disadvantage is the students may have to start paying on student loans before

receiving salaries at a professional level. The third cost to the students may be in their loss of self-esteem and self-worth. It can affect their relationships with their family, friends, and colleagues. This failure can follow them into their career. Some State Boards of Nursing post students' failures on their web-sites. It may not be erased, even after the students are successful in passing the NCLEX-RN® exam.

Nursing educational programs also bear a cost when a student does not pass the NCLEX-RN® exam. The Schools of Nursing in North Dakota need to maintain a pass rate of at least 80% to continue their state teaching license. National Accreditation requires an even higher rate. The success rates of a cohort's first attempts at the NCLEX-RN® exam determine the pass rate of the cohort's school. Also, a school's reputation may be based in part on the pass rates of their students. Pass rates of the NCLEX-RN® exam can impact recruitment of qualified faculty, qualified students, grants, and other awards. Individual faculty may feel the stress and repercussions of student pass rates. Some faculties fear repercussions in career advancement, awards, and salary raises based on students' success or failures.

There is also an economic impact for the institutions that hire these graduate nurses. They have orientated these persons to become registered nurses, and when students fail the NCLEX-RN® exam, they are not qualified to be registered nurses and must be employed as certified nursing assistants. Therefore, nursing shortages can escalate as a result of student failures.

There are many reasons a student may fail the NCLEX-RN® exam. Sleep deprivation, sick children, arguing with a spouse, death in the family, traveling to the exam during a storm, being knowledge deficient, and having test anxiety rank among

the most common explanations. Most nursing students feel challenged and have some anxiety and fear of the NCLEX-RN® exam, because it is a high stakes test. When a person faces a challenge, it is not unusual to feel anxious and somewhat frightened. Some level of anxiety can motivate people to do their best, to prepare, and to study. When this level of anxiety gets either too low or too high, it can become a problem (Casbarro, 2005). Students with test anxiety go beyond this normal nervousness and feel threatened by the evaluation process. They may experience an abnormal fear and dread. This reaction causes the students to become self-absorbed with altered cognitive abilities such as reduced ability to concentrate, to remember, and/or to retrieve information. This loss of focus interferes with their test-taking abilities and lowers their performance (Benjamin, McKeachie, Lin, & Holinger, 1981; Casbarro, 2005; Cizek & Burg, 2006; Dusek, 1989; Elliot & McGregor, 1999; Hembree, 1988; Hill, 1972, Miller, 2010; Reitz, 1989; Rosenthal, 2005; Spielberger & Vagg, 1995a). This fear and dread can activate and organize the defensive responses in the autonomic nervous system. The brain responds to fear with fight (anger-like feelings), flight (fearful feelings), or freeze (inability to take action) defense mechanisms (Feinstein, Eden, & Craig, 2005, p. 22). These defense mechanisms can also be seen when a person either panics or chokes.

In one study, during the period before a performance evaluation, high test anxious students showed lower motivation and poor coping skills. They utilized task strategies that interfered with learning and performance (Goetz et al., 2008, p. 186). Dusek (1989) discovered that the high test anxious students had blocks in attention, were extremely concerned with autonomic and emotional self-cues, and had cognitive

deficits such as misinterpretation of information which interfered with both learning and responding in the testing situation.

During performance evaluations, high test anxious students were only able to focus on a narrow range of task cues used in cognitive task performance (Phillips, Pitcher, Worsham, & Miller, 1980). They were more preoccupied and self-focused on task-irrelevant conditions. Increased levels of anxiety absorbed part of students' cognitive abilities and decreased their capacity for attention, short-term memory, or problem solving; skills that may be required for successful completion of a cognitive task (Goetz et al., 2008, p. 187). Hill (1972) found that the high test anxious students took longer to complete performance evaluations, were less accurate in their answers, and cheated more than students who were not so anxious.

When individuals interpret a situation as vitally important and enter the situation under pressure, individuals may either choke or panic (Gladwell, 2005). When a person panics, the mind tends to go blank. The person may search his/her mind in trying to decide what to do, but nothing comes to mind. Stress wipes out short-term memory. Panic causes a perceptual narrowing of focus on the part of a student who subsequently will obsess on one thing. Without thought or emotional control, the physiological responses, the autonomic nervous system takes control. The person reverts to basic instincts. "People with lots of experience tend not to panic, because when the stress suppresses their short-term memory they still have some residue of experience to draw on" (Gladwell, 2009, p. 268).

When individuals mind moves away from quick processing and using intuition. He/she becomes concerned with the situation, feels pressure of stereotypic threat, and

fails instead of excelling. The explicit learning system takes over, and they rely on the rote learning system. They become cautious and start second guessing. One failure can build upon another. This can be referred to as choking.

Students demonstrate common test preparation and test-taking mistakes. In preparing for exams, students have not always taken the time to think about concepts. They have failed to determine the cause and effect of phenomena. Because test anxious students have sometimes used the coping mechanism of avoidance, they often have started to study later than other students. They frequently stay up all night cramming and consuming a lot of caffeine, instead of taking advantage of sleep as a learning tool. They come to exams exhausted, which lowers their ability to use their frontal cortex, the thinking brain. They may also be dehydrated from consuming caffeine (Casbarro, 2005; Cizeka & Burg, 2006; Medina, 2008; Rosenthal, 2005). This behavior could be interpreted as the "freeze" of fear or the "flight" away from danger, an autonomic nervous system defense response. Also, stress may produce high cortisol levels in the blood, which in turn stimulates the amygdalae (a pair of structures in the brain involved in emotions related to fear) creating more fear and making converting the working memory to long term memory more difficult, interfering with memory recall (Medina, 2008).

There are three common types of testing errors. The first error is reading questions too fast, therefore, missing words such as *not* or *always*, missing the meaning or concept of a question, or just misreading the question. This behavior could correspond to the flight defense mechanism or to Gladwell's (2009) panic response. Students view tests as dangerous, so they have to hurry to get out of this dangerous

situation. I had one student tell me that he hurried because he felt threatened and in immediate danger. All he wanted to do was get out of there.

The second most common error is arguing with the question. The student complains that there is not a correct answer, that it is a stupid question, and makes faulty assumptions. A student nurse in her first semester of nursing answered the question, "When giving medication to a patient, what is the first action of the nurse," by replying, "Pour water for the patient." She eliminated the answer, "Check the identification of the patient," because she said all nurses do three identifiers; therefore, the first action would be to give the patient water to take the pills. This test taking response to fear could portray the defense mechanism of fight or Gladwell's (2009) panic. While inexperienced students with a knowledge deficit may use the defensive mechanisms of fight, flight, or panic, their main tactic is avoidance (Gladwell, 2009). These are the students who may not come to the tutorial sessions, review session, or class, although they desperately need tutoring. In their attempts to avoid discomfort and dealing with the panic of possibly failing an exam, they frantically jump from one study technique or test taking tactic to another without understanding the concept behind each tactic. These are the students who say, "But last time I picked *C* for the answer, so this time I picked *D*." If one thing does not work, then try something else becomes the motto.

The third most common test taking error would be frequently changing answers. This would be related to the defense mechanism of freezing or Gladwell's (2009) choking. These students say, "I do not know why I have done so poorly on this test; I studied very hard." Indeed, they may have studied. They may be skilled students, but

they have lost confidence in themselves and have low self-efficacy. Their fear is blocking their use of instinct and intuition. Their knowledge and skill does not flow naturally. They have retreated back to the mechanical basics, their lowest level of competency.

Test anxiety, a cyclical or self-repeating process, has many ramifications for students, ranging from lower performances to self-concept issues. Anxiety can affect persons of every age, gender, and ethnic group. There is a tremendous cost associated with failing the NCLEX-RN® exam; therefore, test anxiety reduction skills need to be introduced to the students, along with knowledge acquisition, study, and test-taking skills.

Purpose of the Study

The first purpose of the study was to explore the correlation among factors such as stress, test anxiety, and student expectations that may be predictive of success or failure in passing the NCLEX- RN® exam and actual student success rates in passing the exam. The second purpose was to compare methods for reducing test anxiety, specifically: Emotional Freedom Techniques (EFT) and Guided Imagery to determine if such techniques might help increase student success in passing the NCLEX-RN® exam. Guided imagery made an ideal comparison because of acceptance and respect given to this relaxation technique.

Research Questions

Questions this study examined were:

1. Is there a statistically significant difference in the level of test anxiety noted in students before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment)?

    1a. Is there a statistically significant difference in the level of test anxiety in students – as recorded by the Test Anxiety Inventory (TAI) and the Westside Test Anxiety Scale – before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment) for students utilizing Guided Imagery?

    1b. Is there a statistically significant difference in the level of test anxiety in students – as recorded by the Test Anxiety Inventory (TAI) and the Westside Test Anxiety Scale – before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment) for students utilizing EFT?

    1c. Is there a statistically significant difference in the level of stress in students – as documented by blood pressure, the Stress Vulnerability Questionnaire, and the SA-45™ Symptom Assessment Questionnaire – before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment) for students utilizing Guided Imagery?

1d. Is there a statistically significant difference in the level of stress in students – as documented by blood pressure, the Stress Vulnerability Questionnaire, and the SA-45™ Symptom Assessment Questionnaire – before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment) for students utilizing EFT?

2. Is there an increase in productivity after treatment?

2a. Is there an observed significant difference in the pass rates of students taking the NCLEX-RN® exam between students utilizing Guided Imagery as a treatment for anxiety and students utilizing EFT as a treatment?

2b. Is there an observed significant difference in the pass rates of students taking the NCLEX-RN® exam between students utilizing Guided Imagery as a treatment for anxiety and students utilizing EFT as a treatment when students have scored below an 80% pass rate on the predictor exam?

2c. Is there an observed significant difference in the NCLEX-RN® pass rates of students utilizing Guided Imagery as a treatment for anxiety, students utilizing EFT as a treatment, and the school's five-year average pass rate?

3. Is there data communicated through the Personal Profile Data Sheets of students that may predict a student's potential for success or failure in passing the NCLEX-RN® exam?

3a. Is there an observed significant difference in the pass rates of students taking the NCLEX- RN® Exam between students with GPAs above 3.0 or below 3.0.

3b. Is there an observed statistically significant difference in the pass rates of students taking the NCLEX-RN® Exam between students with previous degrees and students without degrees.

3c. Is there an observed significant difference in the pass rates of student taking the NCLEX-RN® Exam between students who work less than 21 hours a week and students who work more than 20 hours per week.

4. Is there an observed significant difference in the perceptions of students regarding the effectiveness of treatments for anxiety?

4a. Is there an observed significant difference in the perceptions of students regarding the effectiveness of treatments for anxiety between students utilizing Guided Imagery as a treatment and students utilizing EFT as a treatment?

4b. Is there an observed significant difference in the perceptions of students regarding the effectiveness of treatments for anxiety and the number of times the students performed the treatments at home?

The rationale for this study was to investigate the utilization of test anxiety reduction tools such as Guided Imagery and Emotional Freedom Techniques (EFT) to increase the pass rates of students taking the NCLEX-RN® exam. With the reduction or

elimination of test anxiety, a student's true knowledge level or performance capabilities may be more accurately assessed.

By exploring methods for reducing test anxiety, the resulting knowledge can be used to prepare students for taking exams throughout their educational career to give students a gentler and more objective introduction into a nursing career. An understanding of stress reducing techniques might subsequently encourage nursing faculty to incorporate these techniques into their beginning classes and to continually reinforce these techniques throughout their preparatory curriculum.

Significance of the Study

This study is especially significant to nursing students, nursing faculty, administrators of nursing programs, colleges and universities, State Board of Nursing administrations, and administrations of health institutions. Because economic and emotional costs of not being successful in passing the NCLEX-RN® exam on the first attempt are so high, many programs are available to students to promote their success. Now may be the time to expand these programs to include test anxiety reduction tools.

Procedural Framework

This study utilized inferential statistics to analyze the statistical differences between a group of students using Guided Imagery and a group of students using Emotional Freedom Techniques. An independent samples *t*-test compared any predictive factors on the questionnaires and data sheets regarding the students passing the NCLEX-RN® exam. A paired samples *t*-test assessed treatment effectiveness on the questionnaires pre and post scores. The independent variables were Guided Imagery and Emotional Freedom Techniques. The dependent variables were the pre-treatment

and post-treatment scores on the questionnaires, Subjective Units of Disturbance Scale (SUDS) scores, blood pressure readings, and the constructs: knowledge of test anxiety, personal experience with test anxiety, application of treatments, and expectations.

Delimitations

1. The study involved only the University of Mary, Bismarck, North Dakota.
2. The study involved only nursing students enrolled in the class *Nursing 421, NCLEX Review*.
3. The students participated in the study on a voluntary basis.
4. Comparison of traditional to nontraditional students was not a factor in this study.
5. The third survey (Student Perception Survey 3) completed by participants after they took the NCLEX-RN® exam was anonymous, so each survey could not be correlated to success on the exam.
6. The study depended on student compliance in answering the questionnaires.
7. The study depended on the skill of the investigator as she wrote three of the survey questionnaires (Student Perception Survey 1, Student Perception Survey 2, and Student Perception Survey 3).
8. The study depended on the quality of survey questionnaires as to clarity of questions and consistency of interpretation.
9. Collection of research data took place over a six month period, February – July, 2012.

10. Due to student schedules, the first treatment session was about 25 minutes in duration and the second treatment session about 40 minutes.
11. There was limited time between sessions for a student to practice techniques learned from EFT or Guided Imagery sessions.
12. Techniques were presented and practiced in a group, so the investigator did not have time to work with students who did not understand the techniques or who were doing the techniques incorrectly.
13. Treatments and demonstration of techniques occurred over lunch which may have provoked distractions.

Definition of Terms

Anxiety – According to the Merriam-Webster online dictionary, anxiety is "a painful or apprehensive uneasiness of mind usually over an impending or anticipated ill" ("Anxiety," n.d., para. 1). It is a multi-system response to a perceived threat with the intensity disproportionate to the threat. It is vague, and the causes of this feeling are not always known.

Dyssequence – Sequence is the order in which things happen or occur. In a sequence, one thing follows another like *2* follows *1*. The prefix dys means bad, abnormal, difficult, or disordered. Dyssequence is a disruption of a learned pattern. The response does not follow the learned pattern. The sequence was not congruent; therefore, dyssequenced.

Emotional Freedom Techniques – An energy psychology technique (psychotherapeutic alternative medicine) created by Gary Craig in the 1990s, was developed as a simplification and improvement of Roger Callahan's Thought Field Therapy

(TFT) techniques. Emotional Freedom Techniques works by having an individual concentrate on a specific psychological issue while simultaneously tapping certain "meridian" points on the head and torso, top to bottom (Craig & Craig, 2013, para. 2).

Fear – Merriam-Webster.com defines fear as, "an unpleasant often strong emotion caused by anticipation or awareness of danger and accompanied by increased autonomic activity" ("Fear," n.d., para. 1). An event in the environment causes fear, and the body responds to this real threat. The intensity of the response of the autonomic nervous system is proportionate to the threat.

Guided Imagery – Guided Imagery is a powerful technique that utilizes directed and focused thoughts and imagination. It involves the whole body, all of the senses, and emotions. It is a relaxing tool which can promote self-healing (C.A.R.E. Channel®, n. d.; Health Journeys, 2009; Healthwise, Incorporated, 2009).

Perception – According to Dictionary.com, perception means "the act or faculty of apprehending by means of the senses or of the mind; cognition; understanding . . . immediate or intuitive recognition or appreciation, as of moral, psychological, or aesthetic qualities; insight; intuition; discernment: *an artist of rare perception*" ("Perception," n.d., paras. 1-2). The person's life experiences, information or misinformation, values, and attitudes can affect perception.

Productivity – Dictionary.com has this definition for productivity: "the quality, state, or fact of being able to generate, create, enhance, or bring forth goods and services" ("Productivity," n.d., para. 1). Productivity in this study would be characterized by the student passing the NCLEX-RN® exam.

Stress – Stress is a normal response to an external (outside the body) or internal (inside the body) threatening event. Individuals have their own definitions of stress, which usually includes feeling overwhelmed and questioning their coping skills. It can be mental, emotional, or physical tension, which throws the body into disequilibrium, or a state of imbalance, and can activate the autonomic defense mechanisms.

Test Anxiety – Test anxiety is a cyclical or self-repeating process that has many ramifications from lower performances to self-concept issues. It can affect persons of every age, gender, and ethnic group.

> Test anxiety involves a combination of physiological over-arousal, worry and dread about test performance and often interferes with normal learning and lowers test performance. It is prevalent amongst the student populations of the world and has been studied formally since the early 1950s (Mandler & Sarason, 1952, p. 166).

Traditional Student – A traditional student is a student who is 18-23 years of age.

Nontraditional Student – A nontraditional student is a university student who is 24 years of age or older.

List of Acronyms

ACEP – The Association for Comprehensive Energy Psychology is a non-profit organization of licensed mental health professionals and allied health practitioners around the world (Association for Comprehensive Energy Psychology, 2012).

CEHP – Certified Energy Health Practitioner. Certification is through the Association for Comprehensive Energy Psychology. This certification is for professionals

licensed in the allied health fields (e.g., acupuncturist, chiropractor, physician, nurse, or dentist).

CNM – Certified Nurse Midwife. Certification is through the American College of Nurse-Midwives (American College of Nurse-Midwives, 2010).

DCEP – Diplomate, Comprehensive Energy Psychology. Certification is through the Association for Comprehensive Energy Psychology. This certification is for licensed mental health professionals (e.g., psychologist, social worker, psychiatrist, certified drug & alcohol counselor).

EFT – Emotional Freedom Techniques is an energy psychology technique (psychotherapeutic alternative medicine) created by Gary Craig in the 1990s. Emotional Freedom Techniques works by mental activation of the psychological issue with a physical intervention of tapping meridian points on the head and torso, top to bottom.

GPA – Grade Point Average is an average of all grades received by a student throughout their educational experience. University of Mary has a 4-point grade point average with 4.0 = A, 3.0 = B, 2.0 = C, 1.0 = D, and below 1.0 = F.

HESI – stands for Health Education Systems, Inc., the organization that developed the HESI™ Exit Exam. HESI™ Exit Exam (E^2) is a 160-item comprehensive, standardized, predictor test. It assesses the students' readiness for the licensure NCLEX-RN® exam.

NCLEX – stands for National Council Licensure Examination. The NCLEX-RN® exam also known as the state board exam is the licensure exam for registered nurses.

PPDS – A Personal Profile Data (PPDS) Sheet was used to gather demographic information on participants in this study.

SA-45™ – stands for Symptom Assessment - 45. The SA-45™ Questionnaire is a brief, comprehensive, general assessment of psychiatric symptomatology.

SUDS – Subjective Units of Distress Scale (SUDS), also called the Subjective Units of Disturbance Scale, is a rating scale to determine the degree of discomfort (intensity of stress) an individual might be experiencing. This scale can be used to measure the effectiveness of any treatment.

TAI – Test Anxiety Inventory (TAI) frequently is a self-reporting psychometric scale which measures two key components of test anxiety, worry and emotionality.

TFT – Thought Field Therapy (TFT) is Dr. Callahan's meridian-based therapy.

CHAPTER II

REVIEW OF LITERATURE

The purpose of this chapter was to review current literature relevant to this study. An extensive review of literature included academic journals, dissertations, conferences, books, and a multitude of higher educational resources. Topics addressed were: what test anxiety is, how the brain reacts to fear, the effects of test anxiety on students, who has test anxiety, causes of test anxiety, a history of the study of test anxiety, research conducted on test anxiety and various therapeutic modalities, strategies to lower test anxiety in each phase of the test-taking process, and the need for test anxiety reduction tools.

Background

The researcher's experience in the nursing education profession, the need for improved NCLEX-RN® exam pass rates, and the effects of test anxiety on student learning and performance provided the impetus of this study. Test anxiety does not just happen during a testing or evaluation event; it also affects learning, self-concept, motivation, enrollment in courses, and career choices. It interferes with achievements in school or college and real-life situations (Goetz et al., 2008; Hembree, 1988). Current literature at the time of this study addressed the impact test anxiety had on student performance, methods to identify test anxiety, and strategies to lower test anxiety.

What is Test Anxiety?

Test anxiety can be a cyclical or self-repeating process, beginning with the challenge of a test. A student forms a perception about a test and his/her abilities in taking this test. If the student perceives the test to be a threatening situation or has entered an evaluation situation with a feeling that the test is a threatening event, the student may experience an unpleasant emotional state with physiological symptoms identical to fear. These physical, cognitive, and behavioral responses reduce the student's test performance. The outcome of a poor test performance confirms the student's perception of the threat of evaluation. The student brings these feelings to the next evaluation with an even stronger sense that the test is a threatening event. The student may experience an abnormal fear or dread. Fear is an appropriate response to a real threat (Casbarro, 2005; Cizek & Burg, 2006; Goetz et al., 2008).

How the Brain Reacts to Fear

Humans are hard-wired for fear and human information processing reflects this survival trait. All information comes to the human brain through the senses (sight, smell, sound, touch, and taste). This information first goes to the thalamus, where it is sorted and then transferred to the appropriate processing area in the brain. A thick band of neuronal tissue links the thalamus to the amygdala (Carter, 1998, p. 95). The amygdala registers potential dangers and generates a feeling of fear in the individual whenever a potential danger is present (Carter, 1998, p. 17). The amygdala does not convey concepts; it simply creates emotional feelings and stores the memories these emotions generate (Carter, 1998, p. 102; Medina, 2008, p. 40). This almond-shaped structure is part of the limbic system.

The limbic system is located deep within the brain, generating emotions and linking feelings of fear and anxiety to the appropriate stimuli. This system activates and organizes defensive responses in the body. The hypothalamus, another part of the limbic system, is the control center for many autonomic functions, constantly adjusting the body so that it can adapt to the environment (Carter, 1999, p. 16). The amygdala is closely linked to the hypothalamus and controls the body's fight or flight response.

For perceptions to be endowed with emotion as well as sensory content, a processing line runs from the limbic system (especially the amygdala and the hippocampus – involved in forming, storing, and processing memory) to the frontal lobe (also known as the frontal cortex). The frontal cortex (the thinking part of the brain) is where emotions are consciously registered. The limbic system (the brain's deeply buried unconscious cores) generates emotions (Carter, 1998, p. 82). There is a two-way communication between the limbic system and the frontal cortex. The unconscious impulses from the limbic system mold conscious thoughts and behavior, and the way we think and behave (our conscious thoughts) can also affect reactions of the unconscious brain (Carter, 1998, p. 82.).

The hippocampus stores recent conscious memories and dispenses those memories that are to become permanent to long-term memory. The hippocampus lays down conscious long-term memory. It may take three years before a memory is firmly lodged in the cortical long-term store area (Carter, 1998, p. 96). If the hippocampus has not matured, as in childhood or infancy, emotional memories may be stored in the amygdala (Carter, 1998, p. 22). Emotional, unconscious, and traumatic memories may also be stored in the amygdala, especially during stressful times. "During a trauma

attention is very narrowly focused and whatever happens to be the center of attention, whether it is relevant or incidental, will be laid down as a particularly sharp 'flashbulb' memory" (Carter, 1998, p. 95). Stressful events release hormones and neurotransmitters that make the amygdala more excitable affecting the processing of conscious memories. Memory burnt into the amygdala with enough force will excite emotional and bodily reactions. The person may re-experience a trauma with complete and full sensory stimuli. This can be witnessed in post-traumatic stress disorders, irrational fears, phobias, and anxiety panic attacks. Memories recalled from the amygdala are less precise and may be fragmented or incomplete as compared to memories processed by the hippocampus. One fear may easily flow into another fear, when stress hormones excite the amygdala. Amygdala based unconscious memory occurs without the corresponding conscious recollections of a specific event. This irrational fear may be vague, producing an anxiety or a sudden, intense feeling as in panic attacks. When a conscious stimulus provokes this feeling, it can become a phobia. Phobias have no survival value. The fear is beyond conscious control. A phobia does not involve the thinking part of the brain; therefore, it may prevent the person from acting sensibly (Carter, 1998, p. 91). The brain of a person suffering from post-traumatic stress disorder has lost the ability to suppress the terrifying and disturbing images related to the trauma. These images can return as a flashback (Restak, 2003, p. 77).

Nature is exceptionally adept at creating fears and phobias to keep us alive. Conditioned fears or phobias are tremendously challenging to extinguish (Carter, 1998). A phobia serves no survival purpose, so nature has created a time-honored method to eliminate phobias and conditioned fears. The object of a fear in an individual

is presented again and again to the individual until eventually new associations are made with the object. When the event is presented, and the object does not cause harm, the lateral nucleus (part of the thalamus) sends a message to the basal nucleus (any of four basal ganglion – gray masses of matter – present in each hemisphere of the brain – includes the amygdala), and says "remember this." The hippocampus stores the memory of the dyssequence. After a situation has presented itself 20, 30, or 40 times, the hippocampus sends a message to the basal nucleus and tells it that nothing harmful has happened in the last 20, 30, or 40 times the object was present. The basal nucleus checks this out with the prefrontal cortex (anterior part of the frontal lobes of the brain –responsible for cognitive processing, problem solving, and regulating behavior) and sends a message back to the lateral nucleus (part of the thalamus) to end this fearful reaction to the object. This does involve new learning. A cortically-based belief – that is, a memory stored by the hippocampus in long-term memory – can override the amygdala-based belief, but it cannot eradicate it (Carter, 1998). The old link between the cue and the fear stays strong and can be reactivated under certain circumstances. New learning takes place, and the prefrontal cortex favors this new learning over the other learning. This is how nature eradicates a phobia. This process is called extinction.

As Daniel Goleman (1995) points out in his book *Emotional Intelligence*, we have two minds, an emotional mind that feels, and a rational mind that thinks. Usually, these two minds work in accordance with one another, but when passion surges, the emotional mind takes control. When an "emotional emergency" (Goleman, 1995, p. 12) occurs, the higher thinking centers, the frontal cortex, will defer to the emotional center of the brain, the limbic system. In the center of the limbic system, the amygdala

engages the rest of the brain into action, stimulating a response before the thinking part of the brain, the neocortex (top layer of the brain – connected to the limbic system), can even realize what has happened or even calculate if this is the best action to take. Daniel Goleman (1995) calls this "hijacking" (p. 14). This hijacking can occur in an instant leaving the person wondering what has just happened. A high level of test anxiety can hijack a student causing panic attacks or physiological symptoms identical to fear (Casbarro, 2005).

Studies by Jersild and Holmes in the 1930s and Swinn in the 1960s differentiated fear from anxiety (Casbarro, 2005). Fear is caused by an event in the environment and the body responds to this real threat. The intensity of the response of the autonomic nervous system is proportionate to the threat. Anxiety is a response to a perceived threat with the intensity disproportionate to the threat. It is vague, usually general in nature, and causes of feelings of anxiety are not always known. Internal feelings usually start an anxiety. Anxieties can be persistent and can become chronic (Casbarro, 2005).

The Effects of Test Anxiety on Students

One of the main elements in test anxiety is fear of negative evaluation, and test-anxious students are highly motivated to avoid disapproval (Hembree, 1988, Phillips et al., 1980, p. 28). Two of the main components in test anxiety are cognitive and physiological in nature. The cognitive component consists of self-preoccupied worry. This can interfere with cognitive performance and serve as a trigger for physiological reactions. Physiological reactions result from the activation of the autonomic nervous system and manifest themselves as an elevated heart rate, sweating, nervousness,

anxiety, dizziness, nausea, and/or a feeling of panic. Emotionality, which is usually evidenced through the physiological responders, is the subjective awareness of the physiological, autonomic reactions resulting from anxiety. Leading symptoms found in students with test-anxiety may include: statements of fear or concern, difficulty sleeping, acting out, not wanting to go to school, not completing assignments, crying, or apathy. A student may exhibit any or all of these symptoms. They may be displayed before, during, and/or after an evaluation event (Casbarro, 2005).

Other factors such as negative thoughts may interfere with task accomplishments. Bruch, Juster, and Kaflowitz (1983) summarized work on this very subject by Galassi et al. (1981). Galassi et al.'s "results indicated that high- compared to low-test-anxious students emitted more negative self-statements, attached more negative meanings to tests, reported a more anxious mood, and reported more bodily sensations indicative of arousal" (Bruch et al., 1983, p. 528).

Unfortunately, test anxiety does not stop when the exam is over. It can cause increased levels of stress. Prolonged or severe production of stress hormones may inhibit or even damage the hippocampus (Carter, 1998, pp. 95-96) which can affect both short-term and long-term memory. One failure or poor result can build on another, reinforcing or inducing a poor self-esteem, poor or inaccurate self-evaluation, negative attitudes toward self, subject area, school, or the testing process. It can decrease academic motivation to learn in general. Test anxiety has had a debilitating impact on school performance, is associated with students dropping out of high school and/or college, placement of students in special programs, and graduation rates. Test anxiety

can have an effect on student personal relationships as well (Casbarro, 2005; Cassady & Johnson, 2002; Elliot & McGregor,1999).

Who Has Test Anxiety?

Students who feel more threatened by the evaluation process experience more test anxiety. If a student does not feel safe, either with a teacher or an environment, this student may not be able to perform satisfactorily. In a given classroom, the prevalence of test anxiety could be as low as 1% or as high as 40%. In a class size of 25, there could be 4 or 5 students with test anxiety (Cizek & Burg, 2006, p. 29). Females have higher levels of test anxiety across all ethnicity and age groups than do males (Cizek & Burg, 2006). Test anxiety is greatest in middle school, early high school and weakest in early elementary school and college. General anxiety levels do make a difference in test anxiety. The more anxious the student is in general, the more test anxiety the student will exhibit ($r = 0.56$, where r refers to the Pearson product-moment correlation coefficient or Pearson's r; Cizek & Burg, 2006, p. 64). A positive Pearson's r value indicates a linear relationship between two variables; that is, as the value of the independent variable anxiety level in a student increases, so will the value of the dependent variable test anxiety increase in a student (Mertler & Vannatta, 2005).

Higher socioeconomic status has a weak association with lower level of test anxiety ($r = -.013$; Cizek & Burg, 2006, p. 63). There is a strong relationship between the level of a teacher's anxiety and student anxiety. The stronger the teacher's anxiety, the greater a student's test anxiety ($r = 0.64$; Cizek & Burg, 2006, p. 65). Students with learning difficulties and school adjustment problems tend to be more test anxious (Phillips et al., 1980).

At risk students – students likely to fail academically because of circumstances beyond their control – have substantially higher levels of test anxiety (ES = 0.51) than students not considered at risk, where ES refers to effect size (Cizek & Burg, 2006, p. 65). Effect size refers to the strength of a relationship. The relationship between at risk students and levels of test anxiety in those students is fairly strong.

A student's perception as to the difficulty of a test does have a large impact on test anxiety (ES = 0.35; Cizek & Burg, 2006, p. 65). The format of a test also affects test anxiety. Matching and multiple choice formats have a negative effect on test anxiety (ES = -0.58; Cizek & Burg, 2006, p. 65). In other words, test anxiety in students tends to diminish when students know a test is going to have a multiple choice or matching format.

A student's "perception" of the difficulty of a subject, not the "actual" complexity or challenge of the subject area has an impact on increasing test anxiety. Study skills have an effect on test anxiety. If the student has better study skills, this will reduce test anxiety, r = -0.27 (Cizek & Burg, 2006, p. 65). As the student's self- esteem increases, text anxiety decreases, r = -0.42 (Cizek & Burg, 2006, p. 65). Personality also is an indicator of test anxiety. People showing the "feeling" style on the Myers-Briggs Type Indicator tend to have higher test anxiety than people showing the "thinking" style. Test anxiety usually is higher in average ability students versus high ability students, ES = 0.49 (Cizek & Burg, 2006, p. 64). Also, test anxiety is higher in low ability students as compared to average ability students, ES = 0.52 (Cizek & Burg, 2006, p. 64). There is a weak association of test anxiety with higher IQ, r = -0.23 (Cizek & Burg, 2006, p. 64). Also, there appears to be a correlation between higher

levels of test anxiety and lower GPAs seen in high school and college students (r = -0.12, high school; r = -0.29, college). This illustrates a strong negative relationship as shown by the effect size, ES = -.046 (college). In other words, as test anxiety goes up in students, GPA tends to go down (Cizek & Burg, 2006, p. 64).

Family structure appears to make a difference, as adolescent children living in divorced family environments report higher levels of test anxiety than do children living with intact families (Cizek & Burg, 2006, p. 100). Test anxiety increases in families with poor interpersonal relationships. Test anxiety increases as the degree of less stable relationships escalates. The higher the degree of anxiety a student experiences, whether it is outside school or school related, the more likely the student will experience test anxiety (Casbarro, 2005, P. 24).

School environment also has an impact on the level of test anxiety in students. Gifted students in a gifted peer-referenced group showed higher test anxiety than gifted students in a non-gifted peer-referenced group (Goetz et al., 2008). Cizek and Burg (2006) described three different types of students with test anxiety. The first classification would be the "true perceiver" (Cizek & Burg, 2006, p. 15). These individuals are anxious and for a good reason. They realize that they did not adequately prepare for an exam and do not have adequate skills to complete the test correctly. The second group would be the "unfocused" (Cizek & Burg, 2006, p. 15). In this situation, students have mastered the content, have adequate test-taking skills, but are easily distracted during the test. These students are not able to access their knowledge and apply their skills; therefore, the students' test performance suffers. The third group of students with test anxiety would be those who "misapprehend" (Cizek & Burg, 2006, p.

15). These students inaccurately believe that they possess adequate knowledge and have adequate test-taking skills. When they do poorly on a test, this contradictory information causes worry, confusion, and anxiety.

Causes of Test Anxiety

Most studies have focused on the processes occurring as test anxiety surfaces, evaluation tools to measure test anxiety, or effective treatments of test anxiety. There are few studies dealing with factors causing test anxiety, although, there are hypotheses regarding this phenomenon. There is generalized agreement that students perceive the testing situation or environment as a threat and react to that threat. The cyclical development of test anxiety is another theory that has wide acceptance. The history of an individual's successes and failures are crucial factors in development of test anxiety. Poor performance outcomes lead to increased anxiety that subsequently starts a vicious cycle with increased anxiety and decreasing performance (Dusek, 1989; Goetz et al., 2008; Spielberger & Vagg, 1995a).

Casbarro (2005) believed that there are two domains of influence regarding test anxiety. These would include the individual's characteristics and the environment where the individual lives, plays, and works. Individual characteristics built on past experiences would include such factors as feelings of self-worth as a student, level of confidence in specific subject areas, and the ability to regulate emotions when presented with uncertainty or high levels of stress. The environment would include the values that the school environment, teachers, parents, and community place on high-test scores.

The more stress or anxiety that students have in their lives in general will also increase their levels of test anxiety (Casbarro, 2005). Parental child rearing techniques can also produce test anxiety (Cizek & Burg, 2006; Casbarro, 2005). This would include parental practices such as not providing emotional support to a child in a problem-solving situation. Also, parental academic expectations or the value parents place on high test scores or grades can be a relevant factor in test anxiety (Casbarro, 2005). In a study done by Peleg-Popko and Klingman (2002), "Boys' levels of test anxiety were negatively related to the encouragement of personal growth they received from parents, whereas, no such relationship was found for girls" (Cizek & Burg, 2006, p. 101).

The environment is another factor which may contribute to test anxiety. Because of an attempt to raise the bars of academic excellence through state and national high-stakes testing, the school environment (at the time of this report) had the most stress-filled learning environment in United States history (Casbarro, 2005, p. xvi). Therefore, at the time of this study, students may no longer have been experiencing school as a safe and supportive environment. Because of the consequences of this high-stakes testing, teacher's, administrator's, and parent's anxieties also have increased. The transmission of these anxieties to students (though it may be unintentional) also increases student test anxiety. If administrators, parents, or teachers look or act frightened or panicky about a test, students will pick up on this fear (Casbarro, 2005).

The achievement level of the peer reference group is another predictor of test anxiety in high-ability students (Goetz et al., 2008). The average achievement of a class

has been shown to be positively related to test anxiety; on the other hand, individual achievement has been shown to be negatively related to test anxiety (Goetz et al., 2008, p. 193). Marsh and Parker's (1984) social framework model helps explain the effects of academic self-concept. Marsh and Parker describe students with high ability as big fish, and students with low ability little fish. A gifted classroom with many students have higher abilities was designated big pond, and a non-gifted classroom with average ability students, a little pond. A big fish in a little pond would have a better academic self-concept than a big fish in a big pond. In other words, a student with high ability in an average ability classroom may have a better self-image, and thus more confidence, than a student with high ability in a gifted classroom among peers. Also, test anxiety increases where there is teacher or peer pressure to do well. Teachers who are highly efficient with classroom time and give large volumes of material will increase the level of test anxiety in students (Cizek & Burg, 2006).

Many factors may contribute to a student's performance (e.g. frustration, fear, low maturational level, or low motivation). Competition and pop (or surprise) quizzes can also increase test anxiety. Norm-referenced tests (tests that compare a test score to a peer group who had previously taken the same test as in standardized tests), grading on a curve, and having students exchange papers can also increase test anxiety (Cizek & Burg, 2006, p. 108). These factors may all interfere with students learning new materials or skills. Student test anxiety will increase if students do not have accurate information about a test. There will be more apprehension if they do not understand the purpose of a test or the importance of information provided in a classroom.

When a student's level of test anxiety decreases, the student's grades may or may not show immediate improvement. Some anxiety can stimulate a student to improve performance. High-level anxiety, however, can devastate a student. Cizek and Burg (2006), avowed that moderate anxiety is best for the optimum performance of a student. They also indicated that for best performance, high level anxiety facilitates performance when a student thinks a task will be easy, and low level anxiety facilitates performance when a student thinks a task will be difficult (Cizek & Burg, 2006, p. 24). Cizek and Burg have also introduced a praise construct into the anxiety formula.

> . . . praising a student for his or her ability or intelligence had more negative consequences for the student's subsequent achievement motivation; praise for the student's effort had more positive consequences. . . . students' self-perceptions of low ability are a significant contributor to test anxiety. (Cizek & Burg, 2006, p. 108)

Enhancing a student's individual academic self-concept might reduce their test anxiety (Goetz et al., 2008).

History of the Study of Test Anxiety

Test anxiety has been a part of the human race for a long time. Fear and anxiety, documented in ancient Egypt, has been discussed in the Old Testament of the Bible and in Greek and Roman literature (Cizek & Burg, 2006). In the Old Testament, Judges 12:5-6 tells the story of how the Gileadites captured a ford (a crossing place) of the Jordan River opposite Ephraim, the northern portion of the ancient Hebrew kingdom of Palestine. When fugitives of Ephraim wanted to cross the river, the Gileadites inquired as to their citizenship. If they denied citizenship of Ephraim, the password "Shibboleth" had to be repeated. If repeated correctly, the individual could cross the river safely. Ephraimites could not pronounce the "H" letter sound, so they had a tendency to say

"Sibboleth". But extrusion from the group of fugitives crossing the river was the penalty for saying "Sibboleth." A total of 42,000 Ephraimites lost their lives for inappropriate pronunciation ("Master Study Bible," 1981, p. 267). It is likely this language test created some performance anxiety. Philosophers and theologians like Pascal in the 17th century and Kirkegaard in the 19th century laid the historical basis for most of the present concepts on anxiety (Spielberger & Vagg, 1995a).

Folin, Denis, and Smillie published the first empirical investigation of test anxiety in the *Journal of Biological Chemistry* in 1914. Folin et al. reported that one out of five medical students had glycosuria (elevated amounts of sugar in their urine) after stressful examinations. Only one student had sugar in his urine before the tests. Folin et al. speculated that emotional strain could produce temporary glycosuria in human beings. Cannon (1927) concluded, in his book *Bodily Changes in Pain, Hunger, Fear and Rage,* that academic examinations could be utilized to assess an individual's physiological reactions to life stress.

One of the first researchers to call attention to a student's personal, emotional reactions to the testing experience was a Russian physiologist, Alexander Luria. Students who became excited or disorganized during testing he called "unstable" and students who remained calm he called "stable." He recognized that examinations could induce strong emotional reactions in some unstable students and would induce "unmanageable stress" (Luria, 1932, pp. 71-76; Spielberger & Vagg, 1995a, p. 4).

In 1933, Neumann wrote the first book on test anxiety. This book and numerous other publications from German investigators were never translated into English and did not receive a wide review. These German researchers presented a psychoanalytic

theory conceptualizing test anxiety. Test anxiety resulted from traumatic childhood experience. Also in the 1930s and 1940s, C. H. Brown from the University of Chicago developed the first psychometric scale (Brown, 1938) for identifying test anxious students. They found that students with high scores on this scale were nervous before the test and did not do as well on the exam as calmer students (Spielberger & Vagg, 1995a).

McKeachie (1951) investigated ways to reduce the negative consequences of test anxiety. He found that students did better on multi-choice tests when they wrote comments about each question and thought this could be due to tension reduction. Lin and McKeachie (1970) also discovered that differences in abilities and inadequate study habits also contributed to the poor performance of test anxious students, especially in women.

Mandler and Sarason (1952) researched the differences in performance of high and low test-anxious students on intellectual tests. The low-anxious students out-performed the high-anxious students, both in scores and their variability. As learning continued through repeated testing, the differences between the scores of low-anxious and the high-anxious student tended to disappear.

Learned psychological drives became the focus of Mandler and S. B. Sarason's (1952) research. They described two kinds of psychological drives caused by test taking situations. Task-directed drives evoked behaviors in students to reduce anxiety by completing assigned tasks. Learned anxiety drives created two opposite and incompatible behaviors. The first behavior was "task-relevant" efforts, which reduced anxiety, because the behavior finished the task. The second behavior was the self-

directed, “task-irrelevant” responses, manifested by “feelings of inadequacy, helplessness, heightened somatic reaction, anticipations of punishment or loss of status and esteem, and implicit attempts to leave the testing situation” (Mandler & Sarason, 1952, p. 166). Persons with strong anxiety drives displayed more task-*ir*relevant behaviors, versus, low-anxious students who displayed more task-relevant behaviors. Mandler and Sarason believed that these behavioral constructs were highly correlated.

Sarason (1984) expanded on these concepts, finding the high-anxious students to be more self-critical and more likely to experience task-irrelevant worry responses which interfered with performance. Sarason reported that the high-anxious student did worse when emphasis was placed on achievement. High-anxious students did better with a testing situation designed to alleviate anxiety, but the low test anxious students did worse. Sarason developed The Reactions to Tests (RTT) Scale, which consisted of three components: worry, task-irrelevant thoughts, and emotionality.

Alpert and Haber (1960) renamed Mandler and Sarason’s behavioral constructs, labeling task-directed or task-relevant behavior as “facilitating” and self-directed or task-irrelevant behavior as “debilitating anxieties.” Alpert and Haber believed a person could carry within their personality a large number of anxieties independently of type – facilitating or debilitating. A person could have only facilitating anxiety or only debilitating anxiety and not the other type, one anxiety and not any of the others, or none at all. They developed a self-report instrument, The Anxiety Achievement Test (AAT), with subscales that addressed the renamed facilitating behavior construct (AAT+) and the debilitating construct (AAT-).

Endler and Okada (1975) created an interaction model which emphasized both trait and situational factors to be equally important. Endler and Okada thought that trait characteristics of an individual which interacted with specific situational stimuli combined to create test anxiety responses. Endler and Okada developed the S-R Inventory of General Trait Anxiousness to measure test anxiety from this philosophical point of view.

Liebert and Morris (1967) used factor analyses of the TAQ to shift the thinking of test anxiety towards a cognitive orientation. They renamed debilitating test anxiety to test anxiety and proposed that test anxiety was in itself bi-dimensional. The bi-dimensional components were worry and emotionality. Worry is any cognitive expression of concern about one's own performance, such as self-criticism or concern about the consequences of failure (Hembree, 1988, p. 48, Elliot & McGregor, 1999, p. 629). Worry would include the physiological and cognitive aspect of test anxiety, which incorporates verbalizing a negative or pessimistic expectation of the test. A student's preoccupation and focus with the consequences of doing poorly on a test or failing the test may occur before and during an exam (Cizek & Burg, 2006). Emotionality refers to autonomic reactions to a testing situation, for example, perspiration, accelerated heartbeat, or nervousness (Hembree, 1988, p. 48, Elliot & McGregor, 1999, p. 627). Emotionality is the observed physiological responses manifested in nervousness, pacing, pencil-tapping, forgetting, etc. (Cizek & Burg, 2006). Liebert and Morris found that worry interferes with performance. Emotionality does not affect performance except for persons who were low on the worry component.

Wine (1971) expanded on Liebert and Morris's theory in explaining how test anxious students divide their attention. Wine suggested test anxious students divide their attention between task-relevant activities and preoccupation with worry, self-criticism, and somatic concerns. This leaves less attention for task-relevant activities and decreases student performance. Covington (1984) also ascribed the poor performance of test anxious students to debilitating effects of the worry component. While taking a test, the test anxious student may worry they are falling behind other students or scold themselves for not knowing or forgetting the answers. They may remember previous tests situations where the ending result was failure. This worry can initiate autonomic responses.

Suinn, a behavioral therapist, took another view point on test anxiety. He developed an assessment tool based on the characteristics of the evaluation situation (the testing environment). Presuming that test anxiety was a "stimulus-bound phenomenon," Suinn developed the Suinn Test Anxiety Behavior Scale (STABS) to measure anxiety based on the philosophy that anxiety is stimulus-bound (Suinn, 1969).

Spielberger and Vagg took a more transactional process in which they distinguished between the stress associated with a testing situation (stressor), subjective interpretation of a test as varying degrees of threat (threat), and the emotional states which testing situations induce (S-Anxiety; Spielberger & Vagg, 1995a, p. 6). Spielberger and Vagg described two different aspects of anxiety. A-State Anxiety (S-Anxiety) is a transitory emotional state consisting of tensions, nervousness, and physiological arousal from activation of the autonomic nervous system. A-Trait Anxiety (T-Anxiety) is a chronic anxiety proneness which will react with and

sometimes trigger A-State characteristics in various stimulus situations (Cizek & Burg, 2006; Hembree, 1988, p. 48; Spielberger & Vagg, 1995a, p. 6). In Trait-State Theory, test anxiety is a trait anxiety, a type of T-Anxiety. Highly anxious people who have high levels of T-Anxiety respond to an evaluation or test situation with A-State reactions or emotionality, which triggers worry. This also activates error tendencies. "It is these self-centered, task irrelevant worry cognitions that interfere most directly with task performance" (Spielberger & Vagg, 1995a, p. 8). Lower performances are usually related to the worry component, whereas, the emotionality has little effect on performance.

In 1972, Allen used various behavioral methods to treat the symptoms of test anxiety. Early interventions included relaxation training and desensitization through counterconditioning or extinction. Test anxiety could be reduced by these interventions focusing on the emotional rather than the cognitive (worry) aspect of test anxiety. Improved performances, however, were not always evident. When cognitive modifications such as study counseling were added to behavioral interventions like desensitization performance increased and reductions in test anxiety were noted (Allen, 1972).

Some experts have challenged interference models of test anxiety. Interference models conceptualize that test anxiety interrupts the recall of prior learning, and therefore, decreases performance. Theories proposed by researchers such as Liebert and Morris (1967), Wine (1971), and Spielberger and Vagg (1995a) would be examples of interference models of test anxiety. Tryon (1980) challenged this concept. She found that anxiety treatments can reduce test anxiety, whereas, better performance does not.

In her theory of deficits model, she postulated that the low-test performance of a test anxious student is the result of poor study habits and a lack of test-taking skills. Test anxiety does not produce the lower performance, but, awareness of poor past performances causes the anxiety.

Hembree (1988) viewed test anxiety as a behavioral construct. The primary factors of test anxiety are: worry, which consists of cognitive concern about one's performance; and emotionality, which consists of the autonomic reactions resulting from a testing situation. Hembree viewed test anxiety as unidimensional in that emotionality triggers worry.

Sarason (1984) redefined test anxiety as consisting of four components: worry, test-irrelevant thoughts, tension, and bodily symptoms. Sarason developed a 40-item assessment tool, the Reactions to Tests (RTT) questionnaire or scale, with 10 items in each subscale used to measure each component.

Researchers in the 1990s continued to investigate different aspects of test anxiety. Naveh-Benjamin (1991) discovered that different treatment techniques would vary with the level of the client's information-processing skills. Many investigators continued to research theories and investigated the validity of concepts and testing measurements developed in earlier decades of the 1900s. Benson, Moulin-Julian, Schwarzer, Seipp, and El-Zahhar (1992) revised the Reactions to Tests (RTT) questionnaire making it only 20 items. They called it the Revised Test Anxiety (RTA) Scale. In 1992, Benson and Bandalos reported moderate to high correlations in RTA subscales addressing worry, tension, and bodily symptoms.

Since the 1970s until the early1990s, there were three main schools of thought regarding measurement of test anxiety. The phenomenon of test anxiety, itself, was not an issue; but rather the issue was how to measure it. The "trait" school of thought maintained that a student would develop test anxiety in all evaluation situations. It maintained a student's reactions to testing would consist of stable cross-situational characteristics of the test anxiety construct, emphasizing that every evaluation situation would trigger internal tensions and anxieties within a student. Test anxiety scales emerged based on a "trait" theoretical view-point to measure anxiety inherent in students and included the Test Anxiety Scale (TAS).

In contrast, the "stimulus bound" school of thought emphasized the situational determinate of test anxiety. Proponents of this theory believed that test anxiety was stimulus linked to the environment with little cross over in regard to traits inherent in an individual (Bedell & Marlowe, 1995, p. 36) and would utilize the Suinn Test Anxiety Behavior Scale (STABS) to measure test anxiety.

The interaction model (school of thought) considered both trait and situational factors to be equally important in measurements of test anxiety. In this theory, it would be the trait characteristics that would interact with specific situational stimuli and these together would create test anxiety. The S-R Inventory of General Trait Anxiousness could be utilized to measure test anxiety with this school of thought. There was no intermingling of research or theories between the differing schools of thought, which hampered comparative validity of test anxiety scales.

In the 1970s, an Australian psychiatrist, John Diamond, MD, created what he called "Behavioral Kinesiology." Utilizing affirmations, selected acupuncture points,

and other techniques, he started the development of meridian-based therapies (Diamond, 2001-2002). Dr. Roger Callahan, an American psychologist, refined the use of the procedure for emotional problems. He utilized a tapping procedure for emotional problems while the participant repeated key phrases out loud, which focused on, the immediate problem. Dr. Callahan originally called this technique "The Callahan Techniques" but later changed it to "Thought Field Therapy or TFT" (Callahan & Callahan, 2000). Dr. Callahan, renaming his meridian-based therapy to thought field therapy was based on his understanding of the concepts regarding how the brain integrates thoughts, behaviors, and emotions.

Dr. Callahan introduced Gary Craig, a Standford engineer and personal performance coach, to Thought Field Therapy (TFT). In the mid-1990s, Craig reduced the unnecessary complexity of TFT and introduced a simplified version of the TFT procedures. He modified the TFT method to include tapping on all 12 meridian end-points. He called his treatment Emotional Freedom Techniques (EFT). This emotional version of acupuncture propels off the EFT discovery statement, "The cause of all negative emotions is a disruption in the body's energy system" (Craig & Craig, 2013, section titled *The Discovery Statement*, para. 1). Craig further stated "Our unresolved negative emotions are major contributors to most physical pains and diseases" (Fink, 2013). Emotional Freedom Techniques treats anxieties, phobias, and a variety of other conditions.

In the late 1990s, behavioral and social scientists added new theories about human behavior, learning, and classroom management to the pool of literature. Bandura thought there were missing concepts in the theories at that time, so introduced his

concepts on self-efficacy. Perceived self-efficacy is a person's belief in their control over their own functioning and over the events that affect their lives (Bandura, 1994). There are four main sources of influences on an individual's sense of efficacy with the first being mastery experiences. A way to develop strong self-efficacy is through mastery of experiences. A person needs experience in overcoming obstacles if a resilient sense of efficacy is to be obtained. The second source of influence on an individual developing self-efficacy is seeing people similar to oneself handle tasks successfully through sustained effort. The third source of influence is social persuasion that one has the capabilities to succeed in given activities. The fourth influence is the inferences from somatic and emotional states, which indicate personal strengths and vulnerabilities.

Also in the late 1990s, Goleman (1995) introduced his theory on Emotional Intelligence. It may not be the intellectual IQ that determines whether a person succeeds in life, but rather the emotional intelligence of the person. Emotional intelligence is the ability to adapt and flourish in one's environment.

Dr. William Glasser (1965) introduced Reality Therapy to the public in the 1960s with his book by the same name. In1998, Glasser published another book called *Choice Theory*. Choice theory maintains that we are internally motivated, not externally motivated. The fulfillment of one or more of five basic needs, which are not hierarchal, drives behavior. These five needs include: survival, a sense of belonging, power, freedom, and fun. Survival is physical, and others are psychological varying in strength and intensity. According to this theory, the person chooses almost all of their behavior. This theory can better help us understand how a student with test anxiety, even a mild

case of “Post Traumatic Test Disorder” (Casbarro, 2005, p. 89) may behave. The simplest choice for a student with test anxiety would be avoidance.

In 2001, Cassady and Johnson (2002) renamed “worry” and called it cognitive test anxiety. Cassady and Johnson’s ideas showed the strongest connection yet between cognition based anxiety and test performance, and manifestations of this anxiety consisted of an individual’s internal dialogue before, during, and after a test.

An individual’s cognitive responses to a testing situation compose cognitive test anxiety. Cassady and Johnson (2002) recognized previous models in conceptualizing test anxiety. In the “cognitive interference model,” the test taker could not suppress competing thoughts. In the “information processing model,” the test taker had difficulty effectively processing and retrieving information. The student had a meta-cognitive awareness of their lack of preparation or ability. In the “additive model,” there were two factors affecting anxiety: the individual’s trait test anxiety and situation-specific variables. Factors that would trigger test anxiety responses could include low self-confidence (an individual trait), the exam seen as a high threat (a situation variable), and a feeling of being unprepared for the exam (a situation variable). Cassady and Johnson developed the Cognitive Test Anxiety Scale which measured only the cognitive component of test anxiety. It was a 27-item survey with a 4-point rating scale (Cassady & Johnson, 2002).

Casbarro believed that test anxiety is a total mind/body reaction to a perceived treat. He described test anxiety as a triangle consisting of three interrelating components: a physical component; an emotional component; and a mental/cognitions component. The physical component would include things such as body temperature

response, breathing response, muscular response, abdominal response, head/senses responses, cardiovascular responses, other responses such as skin rashes, changing eating patterns, increasing or decreasing activity level, sleep disorders, nightmares, phobias, night terrors, and an increase in the intake of alcohol, tobacco, or drugs use (Casbarro, 2005, p 75). The emotional component of test anxiety would include: (a) mood responses – dramatic changes in mood, (b) emotionally labile responses – crying or yelling easily, fragile moods, temperamental characteristics, mobilization contributions to a fight or flight response, (c) feelings of losing control – feelings of panic, an almost out-of-the body experience (Casbarro, 2005, p 78). The mental/cognition component would include: "irrational thinking, feelings of failure or rejection, forgetfulness or memory/loss, loss of concentration and focus" (Casbarro, 2005, p. 78). Casbarro recognized the post testing phase of test anxiety. A student would leave the testing area with a perceived feeling of failure. With the realization that these perceptions were true, this reinforced a vicious cycle, and anxiety problems would develop. This anxiety would become imprinted on a student's mind like an emotional, traumatic event. Casbarro termed this phenomenon as Post Traumatic Test Disorder. This can lead to chronic stress and test phobia.

Cizek and Berg (2006) utilized theoretical models already developed to help students with test anxiety. The first model they worked with was the "interference model" with key characteristics being test performance and test anxiety. They conceptualized that "interference anxiety" is responsible for insufficient memory, recall, information processing, etc., and how that interference lowers test performance, an observable phenomenon. Test anxiety, an unobservable phenomenon, occurs

because of emotionality and worry. Emotionality and worry are the two major components of test anxiety in Liebert and Morris's (1967) test anxiety model. The second type of anxiety model Cizek and Burg worked with was the "deficit model." In a deficit model, the test taker lacks some knowledge and or skill that is important to demonstrate their true ability. The detrimental effect of test anxiety causes a lack of study habits, self-efficacy, or test-taking skills. The third model Cizek and Burg studied was the "transactional model" of Charles Spielberger and Peter Vagg (1995a). The transactional model portrays test anxiety "as a process or cycle of thoughts, behaviors, and responses" (Cizek & Burg, 2006, p. 18).

Gladwell (2009) introduced more new terms when describing how a person responds during performance or test anxiety. Interventions needed to help test anxious students would be different depending upon if the individual choked or panicked. Explicit or implicit learning, which take place in different parts of the brain, formulate the bases of this theory. Explicit learning occurs with awareness, relying on a learning system. It is mechanical and deliberate. Implicit learning occurs outside awareness, partially residing in the basal ganglia of the brain. When a piece of information is learned using explicit learning, practice often has to occur over and over again to learn the information, but eventually, implicit learning will usually take over developing more skill and accuracy. The term choking, used often in sports, refers to a situation when a professional is under stress and their explicit learning system kicks in; the person becomes more deliberate and mechanical versus fluid and accurate. In panic, stress wipes out short term memory causing a body to rely on basic instincts. It also causes perceptual narrowing with a tendency to focus or narrow in on one thing.

"Choking is about thinking too much. Panic is about thinking too little. Choking is about loss of instinct. Panic is reversion to instinct" (Gladwell, 2009, p. 269). Panic is easier to explain and understand than choking. "If panicking is conventional failure, choking is paradoxical failure" (Gladwell, 2009, p. 275).

Claude Steele (2004), a psychologist at Stanford University, studied how certain groups performed under stress. Steele and Aronson (1995) discovered "stereotype threat" occurred in groups when negative stereotypes were common. Under pressure, students assumed the accuracy of the stereotype and performed less well. This is a form of choking, not panicking. They were trying to do their best and felt they were doing well, but they were not. Telling these students to study harder and/or take the test more seriously, would compound the problem. In choking, we need to be concerned about the situation and less about the performer.

Goetz et al. (2008) used a social frame or reference model to explain test anxiety. They proposed that self-perceptions obtained in the educational settings are largely formed by the process of social comparisons. In their Big Fish – Little Pond Effect theory, the achievement level of a peer reference group is a predictor of an individual's level of test anxiety. A student's academic self-concept is a mediator of the achievement and test anxiety relationship. The worry component of test anxiety is more affected by individual achievement than is the emotionality component. Worry, a cognitive area, focuses on the consequences of failure. Emotionality is the affective component of test anxiety and includes perceptions of autonomic reactions resulting from stress. Worry absorbs and depletes more cognitive resources than emotionality.

There is a stronger relationship between worry and academic achievement than there is between emotionality and academic achievement.

This review of the historical development of the study of test anxiety is not totally complete. It does not address the evaluation forms utilized in grade schools, middle schools, or high schools. There are other less common theories and evaluation tools that have not been presented in this paper. The historical development of the study of test anxiety, development of measurement forms, and various interventions can be found in Appendix A.

Research Relating to Test Anxiety

In 1972, Allen summarized 12 different studies of treatments, finding that all treatments reduced self-reported test anxiety. Therapists utilized behavioral methods in early attempts to treat test anxiety. Early interventions for treating test anxiety included "relaxation training and desensitization through counterconditioning or extinction" (Hembree, 1988, p. 49). Five of Allen's treatment groups did show an improvement in their performance compared to the non-treatment controls. Allen, Elias, and Zlotlow (1980), who reviewed 49 treatment studies, and Tryon (1980) who reviewed 85 studies came to the same conclusion. Test anxiety could be reduced by interventions which focused on the emotional rather than the cognitive (worry) aspect of test anxiety; however, improved performances were not always evident.

A combination of cognitive modifications, such as study counseling, and desensitization seem to work best for increased performance and reduced test anxiety (Allen, 1972). Hembree (1988, p. 72) reviewed 562 reports of research to determine relationships between test anxiety and various factors (behavior, performance, self-

image, etc.) and effects of test anxiety on those factors. Hembree found test anxiety and performance are significantly related only if a student perceives a test as difficult. This inverse relationship is stronger for worry than emotionality. The test anxiety and performance relationship is stronger for the average student than for the student with either low or high ability. Females exhibit higher test anxiety than males, but do not exhibit performance differences. There appears to be higher test anxiety in Hispanic students and later born students than white children or first-born children or children who are an only child in a family. TA [test anxiety] is directly related to fears of negative evaluation, dislike of tests, and less effective study skills. . . . HTA [high test anxious] students hold themselves in lower esteem than do LTA [low test anxious] students. They tend to feel unprotected and controlled by outside forces and are prone to negative qualities, such as other forms of anxiety." (Hembree, 1988, p. 73)
The student with high test anxiety experiences "more encoding difficulty when learning, more cognitive interference when tested, and more A-State [a transitory emotional state as opposed to A-Trait, a chronic emotional state] reactions to the testing situation" (Hembree, 1988, p. 73).

Behavioral treatments can reduce levels of general and A-Trait anxieties in students. Various behavioral and cognitive-behavioral treatments can reduce both the worry and emotionality of test anxiety. Testwiseness training produces a moderate relief in test anxiety for students low in test-taking skills. Group counseling to cope with worry and study skills training do not appear effective in reducing test anxiety. "Improved test performance and GPA consistently accompany TA reduction" (Hembree, 1988, p. 73).

> The mean effect of -0.48 reflects a test performance difference of about 6 points on a 100-point scale between HTA and LTA students. Thus, an improvement of about 6 points should be expected as results of TA treatment. For $\alpha = 0.05$ and a pooled standard deviation of 12, a 6-point difference requires experimental and control group sample sizes in the neighborhood of 30 before significance can be observed. (Hembree, 1988, p. 73)

In 1980, Mueller used an information processing model to investigate the effects of test anxiety on memory. This study showed debilitating effects of anxiety on encoding organization and retrieval. Expanding the work of Mueller and Benjamin et al. (1981) studied the test anxious student to investigate problems in information processing. Benjamin et al. broke Mueller's information processing model into three basic information processing components: input, processing, and output. Their subjects were students enrolled in the "Psychology of Aging" course at the University of Michigan, a second-level undergraduate course, offered during the winter of 1980. Students were given a questionnaire after their final exam with statements relating to: test anxiety, student difficulties with the course, study hours, and the student's GPA. Benjamin et al. concluded that high test anxious students did have poorer grades in the course as well as poor grade point averages. Benjamin et al. did an analysis of covariance using multiple-choice scores as the covariate and short-answer scores as the dependent variable. The high-anxiety students did worse on short-answer questions, $F(2, 141) = 4.84$, $p < .01$ (Benjamin et al., 1981, p. 819). Benjamin et al. also conducted an analysis of covariance using short-answer scores as the covariate and multiple-choice scores as the dependent variable. The high-anxiety student did not do any worse on multiple-choice questions than low-anxiety students, $F(2, 141) = .11$, $p > .05$ (Benjamin, 1981, p. 819). In multiple-choice questions, students only need to recognize

the correct answer; whereas, in short-answer questions, students need to recall information. These results supported Benjamin et al.'s hypothesis that high test-anxious students had problems with retrieval of information. They also discovered that students with high test anxiety reported significantly more problems in learning, reviewing, and remembering information, which supports hypotheses that relate high test-anxiety with:

1. problems in learning – specifically, encoding and organizing stages of processing, and
2. a deficit in the ability to retrieve information (Benjamin et al., 1981, p. 820).

In this study, high test-anxious students also reported that they spent more time in studying than low test-anxious students in all phases of the course. This trend was not statistically significant, however, and would not support the theory that students sometimes report less time studying than what they actually put into studying. A student might recognize that poorer test scores with a high degree of work output could implicate that they lacked ability or competence, and so refuse to admit they had put a lot of time into studying. It is more acceptable and less threatening to show a lack of effort contributed to poor scores on exams, than to admit to inability or incompetence.

In another study, Benjamin et al. (1981) investigated retrieval of information as the primary problem for test anxious students. Subjects were students enrolled in a "Psychology of Aging" course, during the spring of 1980. Forty-eight of sixty students completed the questionnaire immediately after their final exam. The questionnaire included statements about: (a) test anxiety, (b) difficulties in the course, (c) study hours, and (d) study habits. Components of the psychology course which were incorporated

into the study included weekly quizzes (5 to 10 multiple choice questions); a mid-term take-home exam (4 essay type questions); the final exam with four types of questions (12 multiple choice, 9 short answer, 3 long answer – short essay, and 1 essay question); grade point average; and overall grade in the course.

Grade point average and overall grade in the course were negatively related to reported test anxiety (Benjamin et al., 1981). Also, students with high test anxiety had significantly lower achievement levels on essay and short-answer questions. However, there was not a statistically significant difference on their performance on multiple-choice questions. The researchers concluded that their hypothesis was correct that high test anxious students have problems in the active retrieval stage as demonstrated by differences in performance of high anxious students between recall (short-answer) and recognition (multiple choice) questions. The high test anxious students had more difficulty and a lower level of achievement in the take home examination than low test anxious students. Retrieval of information should not have been a problem for the high-anxious student in this take home, where they could look up the answers in the textbook. The high-anxious student having trouble in the take home test led to the conclusion that high test anxious students may have additional problems in learning and organizing information, and not just with retrieval of information (Benjamin et al., 1981).

In addition to having problems in learning and organizing information, the high test anxious students reported more problems with study habits and work methods. The high test anxious student did more memorizing of terms without understanding the terms than low test anxious students. High anxious students also had more difficulty in

picking out important points in reading assignments. In this study, high test anxious students had more problems with level of encoding – learning rather than in study time organization. There was no difference between high test anxious students and low test anxious students, as reported by students completing the questionnaire, on "delay avoidance items" such as unplanned study and putting off the work. Benjamin et al.'s (1981) study suggested the information processing model was accurate in concluding that high test anxious students have problems in encoding information.

From the results of these two studies, Benjamin and his colleagues (1981) concluded that the high test anxious student not only had problems in the retrieval of information but also in learning (encoding) the information. The ability level of the high test-anxious student may be lower than their low anxious peers, which leads to anxiety about their ability to succeed. This anxiety then leads to less effective study habits, which would include repetitive reading and memorization. These types of learning techniques, in turn, translate into less effective processing of information and a poor test outcome. Also, the demands of anxiety and worry during an exam also produce a poorer test performance.

Bruch et al. (1983) conducted a study with 72 undergraduates (38 females and 34 males) enrolled in "Introductory Psychology" and "Educational Psychology" courses. When a student was taking a multiple-choice test, cognitive factors such as testing-taking strategies showed a significant increase in performance, whereas subjective anxiety did not (Bruch et al., 1983, p. 193). Using the Covert Thoughts Questionnaire (CTQ), self-statements, and the Subjective Units of Disturbance Scale (SUDS), Bruch et al. discovered that internal dialogues were significantly correlated

with general anxiety, but not with test performance. Teaching students effective test-taking strategies could be a primary form of treatment for improving test performances of test anxiety stricken students. Bruch et al. recommended that counseling techniques should focus on helping the student learn a variety of skills relevant to successful preparation and completion of classroom exams and not on anxiety reduction.

Elliot and McGregor (1999) studied 150 undergraduates (68 men and 82 women) enrolled in introduction level psychology courses at the University of Rochester. They utilized the 20-item revised state-trait anxiety inventory of Spielberger et al. (1980) to study achievement goals compared to exam performance. Achievement goals would include the following types of goals.

1. *Performance approach goals* where the student would strive to attain a positive outcome consistent with expected norms. This goal would elicit emotionality, but it would not be linked to worry components of test anxiety. Statements from the student to demonstrate the achievement goals performance approach would include “I am striving to demonstrate my ability relative to others in this class” (Elliot & McGregor, 1999, p. 631).
2. *Performance avoidance goals* is where the student tries to avoid a negative normative outcome. This goal does induce anxiety and is a positive predictor of state test anxiety. It focuses on the possibility of failure. A student would make a statement like “I just want to avoid doing poorly in this class” (Elliot & McGregor, 1999, p. 631).
3. *Mastery goals* – A third achievement goal is the mastery goal. In this goal, there is striving for improvement and task mastering. It does not involve

> test anxiety and is not found to be a reliable predictor of performance outcomes. The student would make a statement such as, "I desire to completely master the material presented in this class" (Elliot & McGregor, 1999, p. 631).

Elliot and McGregor (1999) utilized a basic regression model to test achievement of goals as a predictor of exam performance, state test anxiety, worry, and emotionality. They hypothesized a direct relationship between each type of achievement goal and each variable (performance, test anxiety, worry, and emotionality). They found that the performance avoidance goals showed a significant negative relation to exam performance $F(1, 137) = 7.92$, $p < .01$ ($\beta = -.25$; Elliot & McGregor, 1999, p. 631). Performance approach goals had a significant positive relationship to exam performance, $F(1, 137) = 5.68$, $p < .05$ ($\beta = .21$; Elliot & McGregor, 1999, p. 631). Mastery goals did not show any relationship to exam performance.

When Elliot and McGregor compared achievement goals to the mediator variables, regression of state test anxiety on the basic model showed a significant relationship to performance avoidance goals. Participants with performance avoidance goals experienced higher levels of anxiety during the exam, $F(1, 142) = 27.5$, $p < .0001$ ($\beta = .43$; Elliot & McGregor, 1999, p. 632). Performance approach goals and master goals were unrelated to state test anxiety (Elliot & McGregor, 1999, p. 632).

Elliot and McGregor (1999) also investigated regressing worry on the basic model. There was a significant relationship for performance avoidance goals. Students with performance avoidance goals did experience more worry during the exam, $F(1,$

138) = 10.83, $p < .005$ (β = .29). There was a positive relationship between performance avoidance goals and emotionality during the exam, $F(1, 139) = 16.73$, $p < .0005$ (β = .35; Elliot & McGregor, 1999, p. 632). Performance approach and mastery goals were unrelated to worry and emotionality. A meditational analysis of emotionality revealed that there was no significant relationship between emotionality and exam performance. Meditational analysis of state test anxiety, however, did show a significant relationship, $F(1, 135) = 10.43$, $p < .005$. (β = -.27). Students that experienced high levels of anxiety did worse on the exam (Elliot & McGregor, 1999, p. 632). The meditational analysis of worry did show a significant relationship between worry and performance; students with a high level of worry performed less well on the exam, $F(1, 136) = 33.68$, $p < .0001$ (β = -.43; Elliot & McGregor, 1999, p. 632).

Elliot and McGregor (1999) study demonstrated that state test anxiety is a mediator of the relationship between performance avoidance goals and multiple choice, short-answer essay questions, and overall exam performance. Worry, not emotionality, was the main mediator in this relationship. Test anxiety processes did not affect the relationship between performance approach goals and outcome variables (Elliot & McGregor, 1999, p. 633). Elliot and McGregor concluded that trait test anxiety and fear of failure are conceptually analogous constructs and are highly interrelated (Elliot & McGregor, 1999, p. 634). Elliot and McGregor's final conclusion was that mastery goals are positive predictors of long-term retention of information in students. Performance approach goals did not predict retention and performance avoidance goals had a negative relationship.

Another study, by Cassady and Johnson (2002), concentrated on two related goals. They wanted to design a new test anxiety measurement to assess only the cognitive component of test anxiety. They desired also to establish the reliability and validity of this new measurement. Their second goal was to investigate the relationship among cognitive test anxiety and (a) gender, (b) procrastination, (c) emotionality, and (d) student performance. The subjects of this research were 168 volunteers from an undergraduate educational psychology course at a large Midwestern University. The mean age was 21 (*SD* = 2.58) with 114 females, 53 males, and one gender not identified. They utilized several evaluation materials including the Test Procrastination Questionnaire. The Test Procrastination Questionnaire (TPQ) is a 4-point Likert-type scale on 10 items rating the students self-reports of their likelihood to procrastinate. Each item or statement can receive 1 to 4 points depending upon how a student responds to each statement. The points are totaled with a high score indicating higher levels of procrastination. Internal reliability of the TPQ is fairly high as shown by Cronbach's alpha value when testing the questionnaire for internal consistency (α = .92). In Cassady and Johnson's study, Cronbach's alpha value (the internal consistency of the TPQ) was even higher (α = .95; Cassady & Johnson, 2002, p. 276).

Cassady and Johnson (2002) also utilized Sarason's (1984) Reaction to Tests (RTT) questionnaire. Sarason rated the internal consistency of each of the four subscales in his questionnaire; the index of internal consistency (Cronbach's alpha) ranged from .68 to .81 (α = .68 to α = .81), with a total scale reliability of .78 (α = .78). Cassady and Johnson reported that, in their sample, the RTT total scale of internal consistency was .95 (Cassady & Johnson, 2002, pp. 276-277).

During development of their new measuring tool, Cassady and Johnson (2002) compared the Reaction to Tests (RTT) scale developed by Sarason, Spielberger's Test Anxiety Inventory (TAI), and Benson et al.'s Revised Test Anxiety (RTA) scale to their newly developed Cognitive Test Anxiety scale. Testing showed high correlations between the Cognitive Test Anxiety scale and existing measurement scales. The existing measurement tools were lacking questions on events that occurred prior to a testing situation. A final revised 27-item version of the newly developed Cognitive Test Anxiety scale showed an internal consistency of $\alpha = .91$, a high value indicating good internal consistency (Cassady & Johnson, 2002, p. 278).

During Cassady and Johnson's (2002) study, students took three multiple choice tests in their education psychology course and reported their scores on the Scholastic Aptitude Test (SAT) or American College Test (ACT). There were strong correlations between performance and levels of cognitive test anxiety as indicated by the Cognitive Test Anxiety scale and weak or inconsistent correlations between performance and the other measures of test anxiety or procrastination. Procrastination only appeared correlated to performance in the final exam of the course. Students receiving A or B grades in the course had less test anxiety, whereas students obtaining C or D grades were high-anxiety students. Varying levels of emotionality did not have an effect on Scholastic Aptitude Test scores ($p > .05$; Cassady & Johnson, 2002, p. 282). Analysis of variance tests disclosed that emotionality was a significant factor in performance across the three course examinations, $F(2, 150) = 4.15$, $MSE = 853.59$, $p < .02$ (Cassady & Johnson, 2002, p. 282). A Fisher's LSD (least significant difference) post hoc analyses revealed the students reporting average levels of emotionality performed

significantly better than the high-emotionality group for the second and third exam ($p <$ .01; Cassady & Johnson, 2002, p. 282). Analysis of variance examined the gender difference in cognitive test anxiety and emotionality. Females (M = 17.71; SD = 6.42) reported higher levels of emotionality than males (M = 15.62; SD = 4.62), $F(1, 165) =$ 4.50, MSE = 35.03, $p < .04$ (Cassady & Johnson, 2002, p. 283). Females (M = 70.33; SD = 13.17) also reported higher levels of cognitive test anxiety than males (M = 60.28; SD = 13.27), $F(1, 165) = 20.98$, MSE = 174.23, $p < .001$ (Cassady & Johnson, 2002, p. 283). There was, however, no gender difference in course examination performance, $F(1, 150) = .39$, MSE = 216.53 (Cassady & Johnson, 2002, p. 283). Cognitive test anxiety could account for approximately 7% to 8% of the variance in student performance on course examinations. This finding is indeed significant and supports "the conclusion that cognitive test anxiety exerts a significant, stable, and negative impact on academic performance measures" (Cassady & Johnson, 2002, p. 270).

Waite and Holder (2003) conducted a study on the effectiveness of Emotional Freedom Techniques (EFT) utilizing 119 university students. To test the effectiveness of EFT as a treatment for anxiety and fear, the researchers assigned each student to one of four independent groups (an EFT Group, a Group P, a Group M, and a Group C). The groups differed in the treatment each received. The EFT group followed procedures outlined in the EFT manual (Craig, 2011). Group P, a placebo type group, followed the same procedures as Group EFT, with the exception that the tapping points were not on the meridian points but located on a participant's arm. Group M utilized a modeling treatment. They followed the same procedure as Group EFT with the exception that treatment, the tapping, was applied to a doll. Group C, a control group,

constructed a paper toy. All groups used self-reporting by means of the Subjective Unit of Disturbance Scale (SUDS) before and after treatment. A one-way ANOVA revealed no difference in the mean baseline SUDS rating of fear across the groups $F(3, 115) = .34$, $p = .795$ (Waite & Holder, 2003, p. 24). Groups EFT, P, and M showed similar, significant decreases in self-reported SUDS measures of fear following post-treatment, $F(3, 115) = 3.61$, $p = 0.16$, partial $p = .09$ (Waite & Holder, 2003, p. 24) but Group C, the control group, did not show a difference. "Uneven sample sizes of the four groups made interpretation of two-way analyses problematic." (Waite & Holder, 2003, p. 25). A one-way ANOVA analyzed . . .

> . . . the difference scores between individual baseline and post-treatment 1 fear ratings. This ANOVA of the difference scores showed a significant effect of group, F(3,115)=3.61, *p*=0.16. Using the LSD to adjust for multiple comparisons, Group P (*p*=.003), and Group M (*p*=.008) differed from Group C. The difference between Group EFT and Group C approached, but did not quite reach, traditional levels of significance (*p*=.061). There were no differences between the three treatment groups, *ps*>.05. (Waite, 2003, p. 25)

To evaluate the treatment effect, the researchers used paired samples of *t*-tests on each group (adjusted alpha = .0125). The SUBS fear rating "decreased from baseline to post-treatment 1 for group EFT (*p*=.003), Group P (*p*<.001), and Group M (*p*<.001), but not Group C (p=.255)" (Waite & Holder, 2003, p. 25). There were 98 participants that received a second treatment (treatment 2). This second treatment session included repeated treatments and a breathing technique. A one-way ANOVA analyzed the scores "between individual baseline and post-treatment 2 fear rating scores. . . . The difference scores were similar across groups, F(3,94)=2.06, *p*=.11)" (Waite & Holder, 2003, p. 25).

This study showed that EFT was effective in decreasing fear, in a nonclinical population; however, EFT was no more effective than the placebo treatment or modeling treatment (Waite & Holder, 2003, p. 26). The researchers concluded that the benefits of EFT are not dependent on tapping meridian points. The effectiveness of EFT was systematic desensitization and distraction. (Waite & Holder, 2003).

Waite and Holder's (2003) study came under criticism by Gary Craig, the founder of EFT. He expressed concern that the researchers were not experienced practitioners of EFT. Craig suggested some of their research procedures did not utilize EFT properly, in the manner outlined in the EFT manual (G. Craig, personal communication, May, 16, 2008).

Sezgin and Özcan (2009) administered the Test Anxiety Inventory (TAI) to 312 high school students. Randomized control and experimental groups were chosen from 70 students that scored high for test anxiety in the worry and emotionality subscales. The control group received instructions on a Progressive Muscular Relaxation technique and the experimental group on Emotional Freedom Techniques. After two months of self-treatment at home, the groups were retested using the TAI. Repeated covariance analysis calculated the effect that Emotional Freedom Techniques and Progressive Muscular Relaxation had on mean TAI scores, as well as the two subscale scores. Statistical analysis incorporated the 32 students who completed all requirements of the study. There was a statistically significant decrease in test anxiety for both groups with the Emotional Freedom Techniques group having a greater decrease in test anxiety than the Progressive Muscular Relaxation group ($p < .05$; Sezgin, 2009, p. 23). The Emotional Freedom Techniques group scored lower on the Emotionality and

Worry subscales ($p < .05$; Sezgin, 2009). Both groups scored higher on test examinations after treatment, with students treated with Emotional Freedom Techniques scoring the highest. There was not, however, a statistically significant difference between the two groups improvement.

Benor, Ledger, Toussaint, Hett, and Zaccaro (2009) explored three different treatment modalities in the treatment of test anxiety. The researchers divided Canadian students with severe to moderate test anxiety into three groups. Each group was introduced to a different type of treatment: (a) one group was given a "wholistic hybrid derived from eye movement desensitization and reprocessing (WHEE)" method of treatment ($n = 5$), (b) one group was treated with Emotional Freedom Techniques (EFT) alone ($n = 5$), and (c) one group was treated with cognitive behavioral therapy (CBT; $n = 5$). Scheduling and availability became the criteria for assignment into the treatment groups. WHEE and EFT groups utilized two weekly sessions lasting 2 hours. Test anxiety reduction techniques were the main focus of the 5 two-hour sessions with the Cognitive Behavioral Therapy group. The Test Anxiety Inventory and the Hopkins Symptom checklists were used to determine the level of test anxiety in students. Qualitative demographic and personal history data was also collected and utilized. Students in each group took the Test Anxiety Inventory three times: the first time to form a baseline score, the second time was a pre-examination sitting, and the third time was a post-examination sitting. A mixed model repeated measure analysis of variance (ANOVA) evaluated the data. "The main effect for time of testing was significant ($F = 32.4$; $P < .001$). There was a decrease in anxiety from base (mean = 62.3, SD = 7.9) to pre-examination (mean = 52.5, SD = 7.1) to post-examination (mean = 42.7, SD = 9.4).

All pair-wise differences were statistically significant (P < .001)" (Benor et al., 2009, p. 339). The decrease in anxiety was similar across all three groups of students.

Benor and colleagues also examined decreases in anxiety separately for each treatment condition (Benor et al., 2009, p. 339). There was a statistically significant difference ($p < .05$) in test anxiety for the EFT and WHEE treated groups with a decrease in anxiety obtained after two sessions. There was not a statistically significant difference for the CBT treatment group at any point in time.

Students in each of the three groups completed the Hopkins Symptom Checklist-21 three different times: the first time to form a baseline score, the second time was a pre-examination sitting, and the third time was a post-examination sitting. A mixed model repeated measures ANOVA analyzed this data.

> The main effect for time was significant (F = 8.7; *P* < .001). There was a decrease in distress from base (mean = 50.3, SD = 12.9) to pre-examination (mean = 39.4, SD = 9.5) to post-examination (mean = 35.3, SD = 9.0). Decreases in distress from base to pre-examination and base to post-examination were statistically significant (*P* < .05), but distress scores at pre-examination and post-examination were the same (not significant). There was no treatment group x time interaction (F = 0.3, not significant). (Benor et al., 2009, p. 339)

The rate of decrease in distress was similar across all the three treatment conditions. The qualitative data was positive and similar across all the treatment conditions.

Goetz et al. (2008) conducted a study on 769 gifted Israeli students in Grades 4-9 to test the hypothesis "that the relationship between achievement and test anxiety is mediated by academic self-concept" (p. 185). The students completed a 12-item version of a Hebrew adaption of Spielberger et al.'s 1980 Test Anxiety Inventory (TAI). The findings were: "Emotionality subscales, showed satisfactory internal consistency (α =

0.86; *M* = 28.23, *SD* = 7.45), as did the Worry (α = 0.75; *M* = 12.64, *SD* = 3.91) and Emotionality (α = 0.83; *M* = 15.58, *SD* = 4.31) components" (Goetz et al., 2008, p. 190).

To study academic self-concept, Goetz et al. (2008) utilized a subscale based on Bracken's Multidimensional Self Concept Scale (MSCS; Bracken, 1992). This subscale was composed of 12-items of Likert-type questions. "The reliability of this scale was α = 0.85 (*M* = 28.23, *SD* = 7.45)" (Goetz et al., 2008, p. 190).

The researchers studied three basic school subjects (Mathematics, English Language, Biblical Literature) over a 2-year consecutive time span to determine scholastic achievement of students in the study. "Reliability of scholastic achievement was α = 0.81 (*M* = 526.09; *SD* = 41.12)" (Goetz et al., 2008, p. 190). When viewing the relationship between achievement and text anxiety, "individual achievement was significantly *negatively* (β = -0.16) related to test anxiety, while mean class achievement was significantly *positively* (β = 0.13) related to test anxiety" (Goetz et al., 2008, p. 191). This finding suggests differential effects of individual achievement and reference group class achievement on test anxiety. Academic self-concept had a negative effect on test anxiety (β = -0.37). When taking self-concept into account, the significant effects of achievement on test anxiety vanished (Goetz et al., 2008, p. 192). This outcome could be interpreted as academic self-concept mediating the achievement and test anxiety relationship (Goetz et al., 2008, p. 192).

Using the *Worry* component as a dependent variable, "individual achievement was significant and negatively (β = -0.21) related to Worry, while the relation between mean class achievement and Worry did not reach statistical significance" (Goetz et al.,

2008, p. 193). Academic self-concept, when integrated into the analysis, had a "significantly negative effect of this variable on Worry (β = -0.32)" (Goetz et al., 2008, p. 193). When taking self-concept into account, the significant effect of achievement at the individual level on Worry vanished. This could then be interpreted as academic self-concept mediating the achievement/Worry relationship.

Using the Emotionality component as a dependent variable, "individual achievement is *negatively* (β = -0.09; p = 0.05) related to Emotionality" (Goetz et al., 2008, p. 193). There was a positive relationship (β = 0.13) between mean class achievement and the Emotionally component of test anxiety (Goetz et al., 2008, p. 193). Using academic self-concept (individual level) in the analysis, Goetz et al. realized a negative effect of this variable (self-concept) on Emotionality (β = -0.34). This also suggests academic self-concept mediates the achievement and emotionality relationship (Goetz et al., 2008, p. 193).

Miller (2010) conducted a study with a sample size of 208 students, 122 females and 86 males. Participants were freshman attending a public university located in the southwest region of the United States and enrolled in a college orientation workshop. These students completed the "self-regulated learning subscale from Bandura's (1989) *Multidimensional Scales of Perceived Self-Efficacy*. . . . A coefficient alpha of .85 indicated good internal consistency reliability with this student sample" (Miller, 2010, p. 434). Miller analyzed student means and standard deviations for each subscale item. Participants reported "fairly high perceptions of motivation [competence M = 4.35 (1.53), autonomy M = 3.96 (1.77)] and self-regulated learning [5.14 (1.39)]" (Miller, 2010, p.). Pearson correlations were used to analyze relationships between motivational

components and self-regulated learning. “Both coefficients reached statistical significance, with about 14% and 10% of the variance shared between self-regulated learning and competence and autonomy, respectively” (Miller, 2010, p. 434). “Overall, students who reported higher levels of competency and autonomy also perceived themselves to be more capable of self-regulated learning” (Miller, 2010, p. 434).

Miller (2010) used the Worry-Emotionality Scale of Morris, Davis, and Hutchings (1981) to assess test anxiety. The internal consistency reliability ($\alpha = .89$) was acceptable. There was no statistically significant difference in this pair-wise comparison. Miller found that students who reported higher levels of competency and autonomy also perceived themselves as more capable of self-regulated learning. Therefore, Miller concluded that the motivation to self-regulated learning is not affected by test anxiety. “When students cognitively appraise their anxiety, as opposed to just relying on the anxiety feeling themselves, scholastic anxiety has little impact on capability beliefs” (Miller, 2010, p. 434).

Strategies to Lower Test Anxiety

Treatment programs developed over the years to reduce test anxiety include: behavioral treatment programs, biofeedback, desensitization, cognitive interventions, cognitive behavioral modifications, behavioral modification interventions, rational-emotive therapy, study skills training, and test-taking skills training (Cizek & Burg, 2006; Goetz et al., 2008; Spielberger & Vagg, 1995b; Wine, 1982). Combinations of behavioral and cognitive treatment methods have been effective for some students. Several strategies for lowering test anxiety are listed in Appendix B.

Techniques used to reduce the mental/cognitive symptoms of test anxiety could include positive self-talk. Irrational thinking and faulty logic, which can be symptoms of test-anxiety, increases stress, and lowers memory and concentration. Self-talk is having a conversation with oneself. First one needs to recognize what the conversation is about and the gist of the words. Second the individual needs to write down these statements and recognize faulty or mistaken beliefs within the statements. Finally, an individual writes down a positive but true statement to counter-act the faulty beliefs. These negative statements or flawed beliefs come from experiences of failures, rejection, or loss of control (Casbarro, 2005). Words can send powerful messages to the brain that have an effect on behavior. "Anxiety is a mind/body experience" (Casbarro, 2005, p. 169).

Desensitization, extinction, or exposure therapies utilize the same principle of healing. These therapies mimic nature in eliminating a phobia. They expose a person to the source of a phobia over and over again until the person can view the source without causing arousal. With enough persistence – exposure over 20, 30, or 40 times – the phobia can be cured (Feinstein, 2009).

Techniques such as progressive relaxation or diaphragmatic breathing can calm the lateral nucleus. If a stress is too strong, these techniques are not powerful enough to prevent hyper-arousal of the lateral nucleus. Emotional Freedom Techniques (EFT) works by (a) mentally activating attention of an individual on the psychological issue causing fear with (b) a physical intervention. Mental activation of the psychological issue (focusing on the source of a fear) is the same principle used in exposure therapies discussed in the previous paragraph. Research studies conducted at Harvard Medical

School found that stimulating certain acupressure points calmed the amygdala (Feinstein, 2009). The amygdala registers potential dangers and generates feelings of fear whenever a potential danger is present (Carter, 1998, p. 17). EFT stimuli intervene at the lateral nucleus immediately and are incompatible with hyper-arousal of the lateral nucleus. A therapist introduces the object or subject of fear to the individual with a phobia, and sends the EFT signal (the physical intervention) at the same time. Very quickly, the system of the individual with a phobia learns that this object is not dangerous, and messages flow physiologically in the brain to stop the phobia. What 12 or more exposure therapy sessions or many behavioral therapy sessions achieve, Emotional Freedom Techniques accomplishes in one session (Feinstein, 2009).

When it comes to reducing test anxiety, the educational environment, which includes classroom instruction, also needs to be evaluated. When a teacher is evaluating a student's performance on a test, it is best to use a student's individual frame of reference versus a social frame of reference, achievement criteria, or peer group related frames of reference (Goetz et al., 2008). Utilizing the individual frame of reference discourages students from making social comparisons. Also, test anxiety increases where there is peer pressure from either the teacher or the classmates to do well.

In a classroom where there are more opportunities for previewing and reviewing, there tends to be lower levels of test anxiety. Lessons, which include a high degree of explicit (clear, obvious, unambiguous) structure, tend to decrease test anxiety. High test-anxious students learn best with low stress instructions (Hembree, 1988). Students working in groups may reduce test anxiety. Open discussion about the role, types, characteristics, purposes, and consequences of testing while de-emphasizing

completion and grade orientation lower test anxiety. Students do better if a teacher is fair and open about testing and grade assignments. Grades should be used only as an indicator of achievement (Cizek & Burg, 2006). Students will do better in an environment where there are minimal distractions, they feel safe, and they are comfortable. This would include appropriate accommodations for students who need them. High test anxious students may learn best with background music, while this is a deterrent for low test anxious students (Hembree, 1988). Performance incentives are beneficial to all students regardless of their level of test anxiety.

Before the Test

Test results are indicative of two things: knowledge about a subject and test-taking skills. Pre-test activities should send positive and realistic messages to students about their abilities and knowledge levels. One strategy to reduce test anxiety is for a student to be adequately prepared for a test. This can be accomplished by over-learning the subject matter. The more secure students are in their knowledge of a subject, the more confident and less anxious they will become during the test. Therefore, the development of sound study habits and the utilization of effective study skills will reduce test anxiety in most students (Casbarro, 2005; Cizek, & Burg, 2006; Rosenthal, 2005).

The brain learns best through patterning, associations, and sensory integration (Casbarro, 2005; Medina, 2008). Brain-based effective study skills might include: graphic organizers, improving memory through rhymes and songs, visualizations, use of acronyms, and accessing other information and resources. Studying should be focused on understanding the concepts and not on memorization. Worry, however, can

interfere with a student's memory and learning processes. Emotions such as anger, depression, and lack of confidence can also impede learning and memory (Kesselman-Turkel, 1981). Students need to learn to recognize the symptoms of anxiety and utilize interventions to quiet worry and anxiety.

For maximum effectiveness, it is necessary to practice techniques to reduce anxiety before a performance. These techniques can enhance learning, as well as, the performance of a student. Techniques used to reduce emotional symptoms of test anxiety would include visualizations, mediation, Emotional Freedom Techniques, and development of self-expression (Casbarro, 2005; Craig, 2011). Mediation is more of a preventive technique, practiced so that there will not be panic attacks. Self-expression is a technique used to recognize and acknowledge anxiety and the need for help. Ways to increase self-expression would be talking or writing about the feelings, using surveys or questionnaires to identify the feelings, and discussion of feelings along with a plan to teach techniques to calm negative feelings. Techniques to reduce physical symptoms would include learning to relax, deep breathing, progressive muscle relaxation, and physical exercise such aerobic and stretching exercises (Casbarro, 2005). Physical exercise of all types helps in learning (Medina, 2008).

During the Test

Students do better on a test when they take the test in the same area where they have learned the information. Minimizing discomfort during testing can help student performance such as maintaining appropriate temperatures in a room, or if needed, have students dress for the temperatures. Adequate light and work space also helps a student feel less anxious and more secure and comfortable. Distractions also need to be

minimized. High test anxious students do better with background music, while low test anxious students do better when there is no music during the test (Casbarro, 2005; Cizek, & Burg, 2006; Rosenthal, 2005).

Test modifications need to be made as appropriate for the student. This might include accommodations in time, location, administration, and access. Access accommodations could be having access to word processors, calculators, etc. (Casbarro, 2005; Cizek, & Burg, 2006; Rosenthal, 2005).

It is during this actual testing phase that the symptoms' of test anxiety can be most acute. During the testing cycle, the student is in control. Irrational thinking, faulty logic, and negative self-talk can increase stress, lower memory, and lower concentration. Anxious students have a tendency to have more negative self-talk than low-anxious students. This negative self-talk can become a self-fulfilling prophecy (Cizek & Burg, 2006, p. 103). One strategy to reduce this mental/cognitive symptom could be teaching students about positive self-talk (Casbarro, 2005). Rosenthal (2005) suggested when students are prone to negative self-talk; they might wear a bracelet or a rubber band on the wrist. When students start with negative self-talk, they would snap the rubber band or bracelet against the wrist. This action serves to remind them to use the techniques of positive self-talk to stop this negative thinking.

Techniques utilized to help a student cope and alleviate some stress in the test taking phase need to be taught in the pre-test phase (Casbarro, 2005; Cizek, & Burg, 2006; Rosenthal, 2005). These learned calming strategies could include: positive self-talk, meditation, recalling peaceful memories, visualization, positive imagery, prayer, Emotional Freedom Techniques, progressive relaxation, diaphragmatic breathing, and

relaxation techniques. Relaxation techniques could include rest breaks, pauses, relaxation breathing, muscle stretching, rolling the head and neck, and arching the back and shoulders (Cizek & Burg, 2006).

Test-taking strategies can also be employed to assist the student in maximizing their performance. It is suggested by Rosenthal (2005) that students scan the entire test before answering questions. Next they should answer easier questions first, skipping over harder questions and then return to the difficult questions when easier questions have been completed. According to Casbarro (2005), this technique can build confidence and is necessary for the student to stay within time limits and to pace timed tests.

There are strategies for different types of questions (Casbarro, 2005: Rosenthal 2005). The multiple choice questions are recognition type questions. When a student takes a multiple choice test, it is crucial the student reads the entire question, underlines or circles key words in the question to determine what the question is asking, and then answers the question before looking at the multiple choice options. The student should look to see if the correct option is there, and if there, mark it. Answers chosen first are often the most correct. Then the student would proceed to read each option eliminating those choices that are believed to be incorrect. The student then should reread the question, and change the answer only if the question was misunderstood. A student should check periodically to see if the answer they are answering in the test booklet is the same number as the number on the computer answer sheet where they are marking their answer, if a computer answer sheet is being used for the test.

True and false items are also recognition questions. A student picks "true" unless a statement can be proven "false." All parts of the statement have to be true in order for the answer to be "true." It may be helpful if a student underlines or circles key words in a question and watches out for absolutes or qualified type questions. A student can always guess if there is not a penalty.

Matching, a recognition type of question, and "fill in the blank," a recall type of question, require logical thinking. A student must read the items and statements carefully, look for key words or concepts, and match the easiest items first. Students should also consider the grammar of the sentence. A student can always guess when there are only several matches left unless there is a penalty for guessing.

Another recall question is the essay-type item. Again, a student must read each question and focus on key words. Students should write a quick outline to identify the main points to cover in their answer; use graphic organizers for a visual framework. Students should open and close the essay with statements relating to the question, and if possible, use references and research to document their answers. Students should be conscious of the time and the technical piece of writing. They should write clearly and legibly and always proof read if time allows.

After the Test

How students perceive the success or failure of their performance and the anxiety symptoms associated with the test can determine if the cycle of test anxiety will continue (Casbarro, 2005; Rosenthal, 2005). If student expectations and perceptions are consistent with their actual test performance, anxiety levels might not be as affected. When performance is inconsistent with student expectations and perceptions, test

anxiety can increase. Test anxiety is a man-made emotion (Casbarro, 2005, p. 19). This anxiety can develop into a phobia, which can create additional problems for the students. Casbarro (2005, p.85) termed this phenomenon as Post Traumatic Test Disorder. This can lead to chronic stress and test phobia. In Post-Traumatic Stress Disorder (PTSD), it is not just the sensory system that can cause arousal. Post-Traumatic Stress Disorder (PTSD) can occur from memories, associations, from disassociated parts, from dreams, from other cues that send signals to the lateral nucleus to reactivate the threat response. These signals can re-traumatize the person daily (Feinstein, 2009).

A proactive strategy can assist test takers in exercising control over their emotional states. If a student has developed a Post Traumatic Test Disorder, therapies which utilize desensitization, extinction, or exposure are the best for eliminating such a phobia. Emotional Freedom Techniques is one of the energy psychology methods that have a proven record of rapid treatment success. Emotional Freedom Techniques works to eliminate a phobia from post-traumatic events (Feinstein, 2009).

Anxiety from test failures may be diminished by involving the student with planning and development of goals (Casbarro, 2005; Rosenthal, 2005). The student's focus can be redirected on what needs to be done in the here and now. Goals need to be explicit and written down (Casbarro, 2005, p 176). It does make a difference if a student panicked or choked on a test. Panicking is thinking too little, and they revert to basic instincts (Gladwell, 2009). These students need to develop their study skills, test taking-skills, and over-learn the content of the test. They also need to learn calming strategies to use during test-taking (Casbarro, 2005). Choking is about thinking too

much (Gladwell, 2009). The adage of just study harder would be the worst advice for these students. They need to learn and employ calming strategies during performance situations (Gladwell, 2009). Self-efficacy skills and academic self-concept needs to be enhanced (Bandura, 1994).

The Need for Test Anxiety Reduction Tools

Teachers, students, parents, and administrators need to be able to recognize test anxiety and be able to differentiate it from normal nervousness (Casbarro, 2005; Cizek, & Burg, 2006; Rosenthal, 2005). They also need to be alert to the factors connected with test anxiety and be able to provide appropriate interventions to combat those factors. Assistance needs to be given to students to help them take control of their fears so that their true levels of knowledge and skills can be measured appropriately. Students need to feel that they are worthwhile people regardless of the outcome of their performance on an exam (Casbarro, 2005; Cizek, & Burg, 2006; Rosenthal, 2005).

CHAPTER III

RESEARCH METHODOLOGY

The purpose of the study was to explore the correlation between factors such as stress, test anxiety, and student expectations that might predict success or failure in passing the NCLEX-RN® exam. This study conducted comparisons of Emotional Freedom Techniques (EFT) and Guided Imagery to evaluate their effect on reduction of test anxiety and success of students in passing the NCLEX-RN® exam. In this chapter, participants, instruments, setting, treatments, and methodology of the stud yare described.

Research Questions

The following research questions guided this study:

1. Is there a statistically significant difference in the level of test anxiety noted in students before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment)?
    1a. Is there a statistically significant difference in the level of test anxiety in students – as recorded by the Test Anxiety Inventory (TAI) and the Westside Test Anxiety Scale – before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment) for students utilizing Guided Imagery?

1b. Is there a statistically significant difference in the level of test anxiety in students – as recorded by the Test Anxiety Inventory (TAI) and the Westside Test Anxiety Scale – before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment) for students utilizing EFT?

1c. Is there a statistically significant difference in the level of stress in students – as documented by blood pressure, the Stress Vulnerability Questionnaire, and the SA-45™ Symptom Assessment Questionnaire – before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment) for students utilizing Guided Imagery?

1d. Is there a statistically significant difference in the level of stress in students – as documented by blood pressure, the Stress Vulnerability Questionnaire, and the SA-45™ Symptom Assessment Questionnaire – before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment) for students utilizing EFT?

2. Is there an increase in productivity after treatment?

2a. Is there an observed significant difference in the pass rates of students taking the NCLEX-RN® exam between students utilizing Guided Imagery as a treatment for anxiety and students utilizing EFT as a treatment?

2b. Is there an observed significant difference in the pass rates of students taking the NCLEX-RN® exam between students utilizing Guided Imagery as a treatment for anxiety and students utilizing EFT as a treatment when students have scored below an 80% pass rate on the predictor exam?

2c. Is there an observed significant difference in the NCLEX-RN® pass rates of students utilizing Guided Imagery as a treatment for anxiety, students utilizing EFT as a treatment, and the school's five-year average pass rate?

3. Is there data communicated through the Personal Profile Data Sheets of students that may predict a student's potential for success or failure in passing the NCLEX-RN® exam?

3a. Is there an observed significant difference in the pass rates of students taking the NCLEX- RN® Exam between students with GPAs above 3.0 or below 3.0.

3b. Is there an observed significant difference in the pass rates of students taking the NCLEX-RN® Exam between students with previous degrees and students without degrees.

3c. Is there an observed significant difference in the pass rates of students taking the NCLEX-RN® Exam between students who work less than 21 hours a week and students who work more than 20 hours per week.

4. Is there an observed significant difference in the perceptions of students regarding the effectiveness of treatments for anxiety?

    4a. Is there an observed significant difference in the perceptions of students regarding the effectiveness of treatments for anxiety between students utilizing Guided Imagery as a treatment and students utilizing EFT as a treatment?

    4b. Is there an observed significant difference in the perceptions of students regarding the effectiveness of treatments for anxiety and the number of times the students performed the treatments at home?

Participants

Participants of this quantitative study were nursing students enrolled in Nursing 421 (NCLEX Review) during the spring semester of 2012 at the University of Mary, Bismarck, North Dakota. These student volunteers were in the last semester of their nursing program and were eligible to take the NCLEX-RN® exam upon graduation. Forty of the forty-seven students enrolled in this class participated in the study. Thirty-seven students (100%) completed all components of the study except the last survey, Student Perception Survey 3.Five students (26%) in Group 1 completed this survey and ten students (53%) in Group 2 submitted this survey. One student in Group 2 did not take the NCLEX-RN® Exam within the time frame of the study.

Instruments

The instruments chosen to collect data for this study included a Personal Profile Data Sheet (PPDS; Appendix C) which included information on demographics and three student perception surveys (Appendices D, E, and F) developed by the principal

investigator. This study also utilized the Test Anxiety Inventory (TAI; Appendix G) developed by Charles Spielberger et al. (1980) and the Westside Test Anxiety Scale (Appendix H) by Richard Driscoll (2007) to collect data on test anxiety. The Stress Vulnerability Questionnaire (Appendix I) developed by L. H. Miller and A. D. Smith (as cited in Muskingum University – Center for Advancement of Learning, n. d.) and e SA-45™ Symptom Assessment Questionnaire (Appendix J) developed by Strategic Advantages, Inc. (2000) were used to collect data related to stress. The Subjective Units of Distress Scale (SUDS; Appendix K), developed by Joseph Wolpe (1969), was used to assess levels of distress regarding test anxiety present at a given time (the time the SUDS was filled out). The blood pressure readings (Appendix K) were collected before and after each treatment session to determine variations due to stress and anxiety. The HESI™ Exit Exam (E^2) developed by Health Education Systems, Inc., was used to predict success rates of students taking the NCLEX-RN® exam.

Personal Profile Data Sheets

Personal Profile Data Sheets were used to gather demographic information. Participants answered questions on gender, age, previously earned degrees, current GPA, hours the student worked per week while attending school, place of employment, number of hours the student drove to school or clinical agencies, and number of immediate family members. Personal Profile Data Sheets also included two open-ended questions regarding the students' perceived stress level and thoughts about taking the NCLEX-RN® exam. The researcher used information from these open-ended questions to assess if any factors described by participants in the open-ended questions could influence – assist or impede – success of students on passing the NCLEX-RN® exam.

Student Perception Surveys

After review of the literature and 40 years of teaching experience, the principal investigator felt qualified to develop three surveys. Student Perception Survey 1 (Appendix D) was designed to obtain students' understanding on test anxiety, their expectations regarding passing the NCLEX-RN® exam, and other factors that could relate to the success or failure of passing. Student Perception Survey 2 (Appendix E) was designed to gather students' impressions on effectiveness of treatments for anxiety they received before taking the NCLEX-RN® exam. Student Perception Survey 3 (Appendix F) was designed to: (a) obtain students' reactions to the NCLEX-RN® exam, and (b) obtain students' impressions after students completed the NCLEX-RN® exam on effectiveness of treatments received for anxiety during the study. Students completed Student Perception Survey 3 after they had taken the state board licensure NCLEX-RN® exam. Students used a computerized program known as SurveyMonkey® or a mail-in survey to complete Student Perception Survey 3.

Reliability of the 15 questions on the three Student Perception Surveys was determined by utilizing SPSS 20.0 to calculate Cronbach's alpha (α) value. Cronbach's alpha is an index that measures internal reliability. The value of α will tend to increase as intercorrelations of items on a survey increase. An α value > .7 is considered *adequate*, α > .8 equals *good*, and α = .9 means an instrument has *excellent* reliability. Cronbach's alpha value of the combined Student Perception Surveys was .525. Reliability refers to a survey's ability to produce comparable results when used repeatedly. These three surveys taken as a whole did not show adequate internal consistency.

Student Perception Survey 1 had seven questions that elicited responses using a Likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *neutral*, 4 = *agree*, and 5 = *strongly agree*). It also included two open-ended questions. Student Perception Survey 2 had three questions that used a Likert scale (1 = *not at all*; 2 = *it didn't do much for me*; 3 = *maybe, it helped a little*; 4 = *it reduced my anxiety, but the anxiety is not all gone*; 5 = *It really helped me. I feel my anxiety is all gone.*) and five open-ended questions. Student Perception Survey 3 had five questions that used a Likert scale and five opened-ended questions. Data from Student Perception Surveys included two independent variables – "Group 1 Guided Imagery" and "Group 2 EFT." Dependent variables were the four constructs: knowledge of test anxiety, personal experience with test anxiety, application of treatments, and expectations (Appendix L).

The following statements addressed the "knowledge of test anxiety" construct:

- Student Perception Survey 1, Question 1: Do you think that test anxiety is a real phenomenon?
- Student Perception Survey 1, Question 2: Do you think there are methods that can help a student with test anxiety?
- Student Perception Survey 3, Question 3: Do you think that test anxiety is a real phenomenon?

The following questions addressed the "personal experience with test anxiety" construct:

- Student Perception Survey 1, Question 3: Do you think you experience test anxiety?

- Student Perception Survey 3, Question 2: I was very nervous taking the NCLEX-RN® exam.
- Student Perception Survey 3, Question 4: Do you think you experience test anxiety?

The "application of treatments" construct included the following questions:

- Student Perception Survey 1, Question 4: Do you think that stress reduction technique can help you personally?
- Student Perception Survey 2, Question 1: How many times did you practice [your] assigned method to reduce test anxiety at home?
- Student Perception Survey 2, Question 2: These methods to reduce test anxiety worked for me.
- Student Perception Survey 2, Question 3: Did you find the interventions (in group) helpful for you?
- Student Perception Survey 3, Question 5: Guided Imagery/EFT helped me reduce my test anxiety and do better on the test.

The "expectations" construct included statements from:

- Student Perception Survey1, Question 5: I am confident that I will pass the NCLEX-RN® on the first try.
- Student Perception Survey 1, Question 6: I don't need outside help to pass the NCLEX-RN® exam.
- Student Perception Survey 1, Question 7: I dread taking the NCLEX-RN® exam.

- Student Perception Survey 3, Question 1: The NCLEX-RN® exam was (a = *very difficult*, b = *difficult*, c = *wasn't difficult or easy*, d = *easy*, e = *very easy*).

Test Anxiety Inventory (TAI)

Researchers use the Test Anxiety Inventory (TAI) frequently. This self-reporting psychometric scale can be completed in 8 to 10 minutes. Participants rate their specific symptoms of anxiety before, during, or after exams. This inventory uses a four-point scale, where 1 equals *almost never*, 2 equals *sometimes*, 3 is *often*, and 4 is *almost always*. See Appendix G for sample items. The TAI also measures two key components of test anxiety (worry and emotionality) as defined by Liebert and Morris (1967). Worry is a cognitive fretfulness about the consequences of failure; whereas, emotionality is the autonomic nervous system's reaction (sweating, elevated heart rate, nervousness, dizziness, etc.) to a stressful or threatening event.

In a study done by Taylor and Deane (2002), "the Cronbach alpha reliability coefficient for the 20-item TAI was .93" (p. 132). Spielberger et al.'s (1980) alpha coefficients for college students completing the TAI (taken three weeks apart) were .80 both times the TAI was completed (p. 17). The Test Anxiety Inventory (TAI) includes factors such as somatic impairments (factors that affect the physical body) as well as worry which made the TAI a valuable tool for this study.

Westside Test Anxiety Scale

The Westside Test Anxiety Scale is an instrument intended to identify students who may profit from an anxiety-reduction intervention (Appendix H). This self-assessment scale covers items relating to (a) impairment from anxiety and (b)

cognitions which can impede test performance. A Likert scale ranks 10 items: 5 is *extremely or always true*, 4 is *highly or usually true*, 3 is *moderately or sometimes true*, 2 is *slightly or seldom true*, and 1 is *not at all or never true* (Driscoll, 2007). The scale addresses two main characteristics of debilitating anxiety – performance impairment and intrusive thoughts – and ignores physiological distress, because physiological distress is considered as only a minor factor affecting test performance. The Westside scale includes six items on impairment, four items on worry and dread, and no items on physiological over-arousal (Driscoll, 2007). Cognitive items are similar to items in Cassady and Johnson's (2002) Cognitive Test Anxiety Scale. Items relating to impairment are similar to items found on Alpert and Haber's (1960) Debilitative Anxiety Scale. Validating criteria included correlations between anxiety-reduction as measured by the Westside Test Anxiety Scale and improvements in test performance (Driscoll, 2007).

Driscoll's (2007) study included 25 anxious college students and 34 anxious fifth grade students with each sample of students divided into an intervention group and a control group. Intervention groups received anxiety reduction training; control groups did not. Researchers obtained anxiety scores prior to anxiety reduction training and after the intervention. Westside Test Anxiety Scale scores correlated with test gains were .49 for the college students and .40 for the fifth grade students. The average correlation was $r = .44$. These are high values for correlation coefficients and appear to indicate a strong correlation between anxiety-reduction and test gains. The Westside Test Anxiety Scale contains factors relating to reduced cognitive processing during

exams and impaired thinking on exams, making this a valuable instrument for this study.

The Stress Vulnerability Questionnaire

The Stress Vulnerability Questionnaire was developed by L. H. Miller and A. D. Smith, two psychologists at Boston University Medical Center (Appendix I). It is reproduced by the SCI Noble Counseling Center of Caldwell, Ohio, and available online at Muskingum University's Center for Advancement of Learning (Muskingum University – Center for Advancement of Learning, n. d.). This 20-item self-reporting questionnaire uses a Likert scale of 1 = *always*, 2 = *most of the time*, 3 = *sometimes*, 4 = *almost never*, and 5 = *never*. This self-assessment allows individuals to see their role and responsibility in stress reactions. Stress is an interactional process with three different points of reference, the environment, the mind, and the body. The environment is what is happening external to the body. The mind is what the person is thinking about the stressor. The body is the physical reaction to the stressor. This study utilized the Stress Vulnerability Questionnaire to see if stress factors, such as life style, could be interfering with passing the HESI Exit Exam or the NCLEX-RN® exam.

The SA-45™ Symptom Assessment Questionnaire

The SA-45™ Symptom Assessment Questionnaire is a comprehensive, general assessment of psychiatric symptomatology (Appendix J). It provides two measures of overall psychological distress; the Global Severity Index represents a sum of numerical values in participant responses to items on the questionnaire, and the Positive Symptom Total is a sum of the number of times a respondent answered an item with a response other than "not at all" (Strategic Advantages, Inc., 2000, p. 2). The SA-45 has a

multidimensional configuration measuring nine symptom domains. The nine symptom domain scales include: anxiety, depression, hostility, interpersonal sensitivity, obsessive-compulsive, paranoid ideation, phobic anxiety, psychoticism, and somatization (Strategic Advantages, Inc., 2000, p.s1). The questionnaire asks participants to rate their symptoms using a 5-point Likert scale: 1 = *Not at all*, 2 = *A little bit*, 3 = *Moderately*, 4 = *Quite a bit*, 5 = *Extremely* (Strategic Advantages, Inc., 2000, p. 11).

In a study described in the SA-45 technical manual, internal consistency of the nine symptom domain scales in the SA-45 questionnaire was tested. The sample population consisted of 748 adult females, 328 adult males, 321 adolescent females, and 293 adolescent males. This population sample included employees of a large, national behavioral healthcare company and their family members plus approximately 300 adolescents from a Midwestern suburban high school (Strategic Advantages, Inc., 2000, p. 27). Cronbach's alpha coefficient was used to estimate internal consistency and reliability of each of the SA-45™ Symptom Assessment Questionnaire's nine scales. The alpha coefficients for adults ranged from .71 (psychoticism scale) to .92 (depression scale). A one to two week test–retest for reliability among the non-patient adult sample reported a coefficient generally in the 0.80s (Strategic Advantages, Inc., 2000, p. 49). The Symptom Assessment – 45 Questionnaire provided information to determine if other mental health conditions such as generalized anxiety or depression may be interfering with passing the NCLEX-RN® exam.

Subjective Units of Distress Scale

The Subjective Units of Distress Scale (SUDS; Appendix K) is a rating scale to determine the "degree" or intensity of discomfort an individual may be experiencing (from stress or anxiety) at the time the SUDS is completed. This scale, originally developed by psychologist Joseph Wolpe (Stone, 2008), can be used to measure the effectiveness of any treatment. To complete the SUDS survey, an individual selects some issue. A disturbing memory, an emotional reaction, a physical reaction, a habit or thought, or a pattern of behavior (Feinstein et al., 2005) could be addressed as an issue. Once the issue is selected, a person rates the distress that occurred from the issue on a scale of 0 (*no distress*) to 10 (*extreme distress, or the worse*). These ratings taken at the beginning and again at the end of any treatment determines if there has been any progress in resolving the issue selected. In this study, the Subjective Units of Distress Scale was used to reveal a treatment's (EFT's or Guided Imagery's) effectiveness.

Blood Pressure

Stress, anxiety, and lifestyle affect blood pressure (BP) readings. Over time, these stressors can contribute to hypertension and cardiovascular disease (CVD) Church, Yount, & Brooks, 2012). Rainforth et al. (2007) conducted a meta-analysis to evaluate blood pressure changes and different stress reduction techniques. They reviewed 107 studies on stress reduction and BP. They evaluated 17 randomized controlled trials with 23 treatment comparisons and 960 participants (Rainforth et al., 2007, p. 520). Utilization of meta-analysis estimated the mean BP change (Rainforth et al., 2007, p. 525). Their findings regarding blood pressure changes for biofeedback, relaxation-assisted biofeedback, progressive muscle relaxation, and stress management

training was statistically non-significant. A Transcendental Meditation program revealed a statistically significance reduction in blood pressure readings from before treatment and after treatment with a mean change in blood pressure readings of -5.0/-2.8 mm Hg (P = 0.002/0.02; Rainforth et al., 2007, p. 527). For the study in this report, blood pressures taken before and after EFT and Guided Imagery treatments determined if there were any changes in physiological responses due to treatments.

HESI™ Exit Exam (E^2)

The HESI™ Exit Exam (E^2) is a 160 item comprehensive, standardized, predictive test and assesses students' readiness for the licensure NCLEX-RN® exam. There have been eight validity studies on the predictive ability of the HESI™ E^2 and its ability to check for RNs' accuracy, benchmarking, remediation, and testing practices (Young & Langford, n. d.). In the first seven studies, the predictive value of the HESI™ was between 93.36% and 99.2% for RN programs included in the studies (Young & Langford, n. d.). Sample populations for these studies included over 41,000 students at more than 150 academic institutions in the United States.

In the eighth study, there were sixty-six participating schools with a total of 4,134 students. Young and Langford found that the predictive success of the HESI™ exam – that students who scored above 900 on the HESI would pass the NCLEX on their first attempt – was 98.3%. As the HESI™ Exit Exam (E^2) scores decreased, so did NCLEX pass rates. Some academic institutions allowed their students to retake the HESI Exit Exam utilizing a Version 2 of the exam. Predictive ability of Version 1 of the HESI™ Exit Exam (E^2) was greater than predictive ability of Version 2 of the HESI exam (P^2 = 12.266, df = 2, p = .002). The nursing faculty of the university in this

report decided to use the HESI™ Exit Exam (E^2) as a predictive assessment of their students' ability to pass the NCLEX-RN®.

Treatments

The two treatments used in this research were based on the connectedness of mind and body and encompasses the whole body, mind, memories, emotions, and senses of an individual. There are not any known side effects or risks for administering either Guided Imagery or Emotional Freedom Techniques (EFT). These techniques can bring up previous memories or traumatic past events which may be disturbing, but will not create any new emotional problems (Feinstein et al., 2005, p. 54). Both techniques are gentle, but powerful. Almost anyone can perform these procedures (Craig, 2011; Health Journeys, 2009).

Guided Imagery

Guided Imagery is a right brain activity delivering many encoded messages through symbols. It guides the imagination toward a relaxed, focused state; the body believes images created in the mind, whether they are real or imaginary. When relaxed, the unconscious mind is more amenable to new learning, healing, creativity, or performance. Guided Imagery can also create the sensation of being in control. Feeling in control can empower the person and reduce stress and anxiety. A study by Iglesias et al. (2005, p. 29-30) found that their stress management program (SMPP), which included Guided Imagery, reduced anxiety in study participants and emotional coping capacity of participants increased. The Guided Imagery procedure used in this study is described in Appendix M (*Guided Imagery Script: Writing an Exam*; Inner Health Studio, n. d.).

Emotional Freedom Techniques (EFT)

Emotional Freedom Techniques (EFT), also called "Tapping", was developed from the Chinese meridian energy system used in acupuncture and is a needleless form of acupuncture. A connection between the meridian system and the nervous system is not firmly established, although understanding of interactions between the meridian system and the biochemical and physical sites of the human body is becoming more apparent with modern technology like Functional Magnetic Resonance Imaging - FRMI (Church, Yount, & Brooks, 2012; Feinstein et al., 2005). According to Feinstein et al. (2005), the hypothesis behind the effectiveness of EFT is:

> Stimulating specific electromagnetically sensitive points on the skin while bringing a psychological problem or goal to mind can help a person overcome the problem or reach that goal by changing the chemistry in the amygdala and other areas of the brain. (p. 23)

Tapping, a neurobiological based therapy, works through sensory stimulation and activation of affect (Ruden, 2010, p. 3). When a thought, memory, or emotion excites a fear response, glutamate, an excitatory amino acid, floods the area of the brain where memory is stored. Memory storage and retrieval requires glutamate. The proposed theory is that tapping increases serotonin in both the prefrontal cortex and the amygdala (Ruden, 2010), and serotonin causes GABA release. GABA, an inhibitory amino acid, impedes fear conditioning and the release of the amino acid glutamate. GABA and serotonin inhibit glutamate from reinstating the fear response; these glutamate areas harden, which inhibits protein synthesis and breaks the link between the fear stimulus and activation of the amygdala, giving tapping therapy permanence

(Ruden, 2010). The location and sequence of where tapping should occur has become one of the major controversies in the field of Energy Psychology.

On June of 2010, the research committee of the Association for Comprehensive Energy Psychology (ACEP) met on a veranda in San Diego, California. John Freedom, chair of the research committee, was conducting the meeting when a lively discussion ensued about utilization of the Nine Gamut Procedure (also called the Gamut Point Procedure) when conducting research. After a few minutes of discussion, this author communicated to the person sitting next to her that she did not know this was an issue and was unsure of how to conduct her research. Sitting next to this person was Dr. A. Harvey Baker, co-chair of the research committee. After several heated exchanges regarding whether the Gamut Point Procedure should be included or not included in future research, one of the committee members suggested that we ask the expert. Everyone focused attention on Dr. A. Harvey Baker. He stated that there had been several research studies conducted using the Gamut Point Procedure, as well as studies conducted which did not use the Gamut Point Procedure. Research could be done either way. Then he turned this author and said, “Marie, you can use the Gamut Point Procedure if you want. You do not have to use it. It is your decision.” He then turned his attention to the group and said, “I am cold. I am going to take a nap before dinner.” He left the meeting. It caused no alarm when Dr. Baker did not appear for dinner. The next day, however, when he did not appear for the research presentation, John Freedom decided to make a security check. Dr. Baker had died sometime during the night or early morning. His advice to me was the last advice he gave to his fellow researchers.

The Gamut Point Procedure is part of EFT and is included in descriptions of EFT (Appendices N, O, and P). The Gamut Point Procedure involves activating various areas in the brain. It triggers the right hemisphere through humming and stimulates the left hemisphere through counting. Closing the eyes activates the nonvisual parts of the brain, while the visual parts of the brain respond when the eyes are open. This study included the Gamut Point Procedure, because the field of nursing utilizes both the art and science of healthcare. Both hemispheres of the brain store information necessary for nursing. The right hemisphere processes visually and intuitively, similar to the parallel processes in a computer (Taylor, 2008). The left hemisphere, the center for language, processes in logical and sequential order. It is similar to the serial processes in a computer (Taylor, 2008). The direction of the eye gaze at the time of trauma determines the memory storage location of the trauma in the brain (Stone, 2008, p. 298).

The scientific study of EFT is an emerging field. Dr. David Feinstein, Ph.D., and John Freedom, a Certified Energy Health Practitioner (CEHP), compiled a list of current research in the field of EFT. They entitled their report, *Energy Psychology: A Hierarchy of Evidence*, and it is reprinted in Appendix Q.

Church et al. (2012) studied changes in cortisol levels and psychological distress symptoms using a sample size of 83 people. Participants were divided into three groups using random selection. Groups included an EFT group, a psychotherapy group (participants received a supportive interview), and a no treatment group. The SA-45™ Symptom Assessment Questionnaire was used to assess psychological distress symptoms, and salivary cortisol assays were used to document levels of cortisol in

participants. After one treatment, “The EFT group showed statistically significant improvements in anxiety (-58.34%, $p < 0.05$), depression (-49.33%, $p < 0.002$), the overall severity of symptoms (-50.5%, $p < 0.001$), and symptom breadth (-41.93%, $p < 0.001$)” (Church et al., 2012, p. 891). The cortisol levels dropped significantly in the EFT group, but there were no significant changes in cortisol levels in other groups ($p < 0.03$). “The decrease in cortisol levels in the EFT group mirrored the observed improvement in psychological distress” (Church et al., 2012, p. 891).

Methodology

The Institutional Review Boards of the University of North Dakota and the University of Mary granted approval of this project prior to the researcher conducting research. The chair of the Department of Nursing, University of Mary, and the Professor teaching Nursing 421 (NCLEX Review) during the spring semester of 2012 consented to allow their students to participate in this study. Explanations of consent forms, confidentiality, and the voluntary nature of the study occurred before data was collected or treatments were administered (see Appendices R, S, T). The study presented minimal risks. There was one incentive drawing for students who completed the study.

All students enrolled in Nursing 421 received an invitation letter (Appendix U) to participate in the study before attending a recruitment session. During this recruitment session, all students enrolled in Nursing 421 indicated that they would be interested in participating in this study. Students were listed in alphabetical order according to their last name and received a number corresponding to their rank on the list. The researcher used a software program called Research Randomizer to randomly

divide students into two groups. Research Randomizer is a free service to students and researchers available on the Internet (Urbaniak & Plous, 2011).

Data Collection

Session 1 started with an explanation of the study. Consent forms were handed out, and students were assigned to their randomized groups. After the students had signed their consent forms, they completed the following questionnaires: Test Anxiety Inventory (TAI), Westside Test Anxiety Scale, Stress Vulnerability Questionnaire, and SA-45™ Symptom Assessment Questionnaire, Personal Profile Data Sheet, and Student Perception Survey 1.

The students met in their assigned groups for Session 2. They completed their SUDS rating and had their blood pressure taken and recorded before and after a treatment session, which lasted about 20 minutes. The principal investigator conducted the treatment sessions. Group 1 received the handout *Guided Imagery Script: Writing an Exam* (Appendix M; Inner Health Studio, n. d.). Group 2 received the handouts, *Emotional Freedom Techniques Handout* (Appendix N) and *Emotional Freedom Techniques (EFT) Treatment Points* (Appendix O). Both groups received the handout *Strategies to Lower Test Anxiety* (Appendix B).

The two groups met on separate days for Session 3, after having taken the HESI™ Exit Exam. Session 3 began with students taking their SUDS rating and blood pressure readings. The principal investigator conducted a treatment which lasted approximately 20 minutes. Following the treatment, the students completed their SUDS rating and blood pressure reading, Test Anxiety Inventory (TAI), Westside Test Anxiety Scale, Stress Vulnerability Questionnaire, and Student Perception Survey 2.

Group 1 received a Guided Imagery CD, consisting of four tracks: preparing for a test, taking a test, know yourself, and the narrated Guided Imagery script on writing an exam (Appendix M; Inner Health Studio, n. d.). Group 2 received a demonstration EFT CD with three parts: tapping for test anxiety, tapping for remaining test anxiety, and tapping for test anxiety with phrases (Appendix P). The principal investigator developed and narrated these CDs. Mark Timbrook at Minot State University produced the CDs. The last action during Session 3 was the researcher gave students a copy of Student Perception Survey 3, a stamped envelope, and a letter explaining when and how to complete this survey. Students were given a choice of how to take the survey; they could either complete the survey online using SurveyMonkey® or send it in by postal mail.

Treatment of the Data

Inferential statistics and descriptive statistics procedures were utilized to analyze the data to determine:

1. Is there a statistically significant difference in the level of test anxiety noted in students before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment)?
2. Is there an increase in productivity after treatment?
3. Is there data communicated through the Personal Profile Data Sheets of students that may predict a student's potential for success or failure in passing the NCLEX-RN® exam?
4. Is there an observed significant difference in the perceptions of students regarding the effectiveness of treatments for anxiety?

Data analysis used the statistical procedures in IBM's *SPSS Statistics 20* analytical software to generate information on reliability, frequencies, variance, and correlations.

The next chapter contains demographic data from the Personal Profile Data sheet and the survey constructs. This chapter portrays an analysis of the qualitative data from the open-ended questions on the survey. Also, included are the inferential statistics analyses for each research question.

CHAPTER IV

PRESENTATION OF THE DATA

The purpose of this study was to identify and explore correlations that may exist between factors such as stress, test anxiety, and student expectations that may be predictive of student success or failure in passing the NCLEX-RN® exam. This study also compared effectiveness of Emotional Freedom Techniques (EFT) to Guided Imagery as potential treatments for reducing test anxiety and increasing student success in passing the NCLEX-RN® exam. This chapter includes a description of the demographic characteristics of the students who participated in the study, a statistical analysis of each research question, and an analysis of reliability, internal consistency, or homogeneity of the surveys constructs. The following research questions guided this study:

1. Is there a statistically significant difference in the level of test anxiety noted in students before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment)?
    1a. Is there a statistically significant difference in the level of test anxiety in students – as recorded by the Test Anxiety Inventory (TAI) and the Westside Test Anxiety Scale – before students were treated for test anxiety (pre-treatment) and after students were

treated for test anxiety (post-treatment) for students utilizing Guided Imagery?

1b. Is there a statistically significant difference in the level of test anxiety in students – as recorded by the Test Anxiety Inventory (TAI) and the Westside Test Anxiety Scale – before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment) for students utilizing EFT?

1c. Is there a statistically significant difference in the level of stress in students – as documented by blood pressure, the Stress Vulnerability Questionnaire, and the SA-45™ Symptom Assessment Questionnaire – before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment) for students utilizing Guided Imagery?

1d. Is there a statistically significant difference in the level of stress in students – as documented by blood pressure, the Stress Vulnerability Questionnaire, and the SA-45™ Symptom Assessment Questionnaire – before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment) for students utilizing EFT?

2. Is there an increase in productivity after treatment?

2a. Is there an observed significant difference in the pass rates of students taking the NCLEX-RN® exam between students utilizing

Guided Imagery as a treatment for anxiety and students utilizing EFT as a treatment?

2b. Is there an observed significant difference in the pass rates of students taking the NCLEX-RN® exam between students utilizing Guided Imagery as a treatment for anxiety and students utilizing EFT as a treatment when students have scored below an 80% pass rate on the predictor exam?

2c. Is there an observed significant difference in the NCLEX-RN® pass rates of students utilizing Guided Imagery as a treatment for anxiety, students utilizing EFT as a treatment, and the school's five-year average pass rate?

3. Is there data communicated through the Personal Profile Data Sheets of students that may predict a student's potential for success or failure in passing the NCLEX-RN® exam?

3a. Is there an observed significant difference in the pass rates of students taking the NCLEX- RN® Exam between students with GPAs above 3.0 or below 3.0.

3b. Is there an observed significant difference in the pass rates of students taking the NCLEX-RN® Exam between students with previous degrees and students without degrees.

3c. Is there an observed significant difference in the pass rates of students taking the NCLEX-RN® Exam between students who work

less than 21 hours a week and students who work more than 20 hours per week.

4. Is there an observed significant difference in the perceptions of students regarding the effectiveness of treatments for anxiety?

   4a. Is there an observed significant difference in the perceptions of students regarding the effectiveness of treatments for anxiety between students utilizing Guided Imagery as a treatment and students utilizing EFT as a treatment?

   4b. Is there an observed significant difference in the perceptions of students regarding the effectiveness of treatments for anxiety and the number of times the students performed the treatments at home?

Demographic Characteristics of Participants

Student volunteers were in their last semester of nursing and enrolled in Nursing 421 (NCLEX Review) during the spring semester of 2012 at the University of Mary, Bismarck, North Dakota. Forty students participated in the study. Group 1 included 21 students; Group 2 included 19 students. In Group 1, 19 students attended all of meetings, completed all the necessary surveys, and took the NCLEX-RN® exam; 2 students attended two out of the three meetings. In Group 2, 18 students attended all the meetings, completed all the necessary surveys, and took the NCLEX-RN® exam; one student completed all of the stages of research except the NCLEX-RN® exam.

There were three males who participated in the study and 34 females. Randomization placed the three males into Group 1. Table 1 portrays the demographic frequencies for students' gender.

Table 1

Gender of Participants

	Frequency	Percent
Males in Group 1	3	8%
Females in Group 1	16	43%
Males in Group 2	0	0%
Females in Group 2	18	49%
Total	37	100%

N = 37

The majority of the study participants were between the ages of 18 and 24. Two students were between the ages of 25 and 31 with one participant in this age category in each group. Group 1 had one participant whose age fell between the ages of 39 and 45. Table 2 depicts the demographic frequencies for student's ages.

Table 2

Ages of Participants

	Group 1 Frequency	Group 2 Frequency	Totals	Percentage
18-24 years	17	17	34	92%
25-31 years	1	1	2	5%
32-38 years	0	0	0	0%
39-45 years	1	0	1	3%
Over 46 years	0	0	0	0%
Totals	19	18	37	100%

N = 37

Reliability Analysis

In 1951, Lee Cronbach, at the University of Illinois, Urbana, developed his alpha theory. This statistical calculation determines internal consistency or

homogeneity of an instrument. SPSS 20 software calculated the reliability of combined questions in the three Student Perception Surveys (Appendices D, E, and F) used in this study. On Cronbach's alpha scale a value > .7 is considered *adequate* reliability, > .8 equals *good*, and = .9 means an instrument has *excellent* reliability. The reliability statistic of the combined Student Perception Surveys was a Cronbach Alpha of .525 (mean = 47.53, *SD* = 4.22). Reliability refers to a survey's ability to yield consistent results. The combined Student Perception Surveys showed weak internal consistency.

Twenty-one students in Group 1(110%) and nineteen students in Group 2 (105%) completed Student Perception Survey 1 during the first session of the study. Nineteen students in Group 1(100%) and nineteen students in Group 2 (105%) completed Student Perception Survey 2 during the third session of the study. Students completed Student Perception Survey 3 either on SurveyMonkey® or on a paper survey they mailed in after completing the state board exam, the NCLEX-RN®. Five students (26%) in Group 1 completed this survey and ten students (53%) in Group 2 submitted this survey.

This research study focused on four constructs: knowledge of test anxiety, personal experience with test anxiety, application of treatments, and expectations (Appendix L). The reliability statistics for the *knowledge of test anxiety* construct was calculated Cronbach's alpha of .390 (mean = 12.6, *SD 1.298*). This construct showed weak reliability. Responses to Student Perception Survey 1, Question 1, "Do you think that test anxiety is a real phenomenon," resulted in a mean value of 4.28 for Group 1 and 4.22 for Group 2. Responses to Student Perception Survey 1, Question 2, "Do you think there are methods that can help a student with test anxiety," resulted in a mean

value of 4.38 for Group 1 and 4.20 for Group 2. Responses to Student Perception Survey 3, Question 3, "Do you think that test anxiety is a real phenomenon," resulted in a mean value of 4.20 for Group 1 and 3.80 for Group 2. Ratings or mean values of responses to Student Perception Survey 3, Question 3 were lower for both groups than previous ratings (mean n values) of the identical question from Student Perception Survey 1, Question 1 (Appendix V). Group 1 (Guided Imagery) continued to feel that test anxiety was a real phenomenon, more than Group 2 (EFT). Group 2 (EFT) showed a sharper decrease in thinking that test anxiety was a real phenomenon the NCLEX-RN® Exam.

The *personal experience with test anxiety* construct was addressed by three questions. First, from Student Perception Survey 1, Question 3, "Do you think you experience test anxiety," responses from Group 1 resulted in a mean score of 3.57 and responses from Group 2 resulted in a mean score of 3.44. Responses to Student Perception Survey 3, Question 2, "I was very nervous taking the NCLEX-RN® exam," resulted in a mean score of 4.00 for Group 1 and 3.50 for Group 2. Responses to Student Perception Survey 3, Question 4, "Do you think you experience test anxiety," resulted in a mean score of 4.20 for Group 1 and 2.70 for Group 2. Student Perception Survey 3, Question 4 was identical to Student Perception Survey 1, Question 3 (Do you think you experience test anxiety?). The second time students answered this question, mean scores increased for Group 1 and decreased for Group 2. Cronbach's alpha score for the *personal experience with test anxiety* construct of -.380 (mean = 9.07, *SD* = 1.438). The Cronbach's alpha score showed weak reliability. (Appendix W). Group 1 (Guided Imagery) felt they had more test anxiety and were more nervous about taking

the NCLEX-RN® Exam than Group 2 (EFT). After the NCLEX-RN® Exam, Group 1 mean scores of test anxiety increased while the mean score for Group 2 declined.

Five questions addressed the *application of treatments* construct. From Student Perception Survey 1, Question 4, "Do you think that stress reduction technique can help you personally," Group 1 answered with a mean of 3.80, while Group 2 responses showed a mean of 4.00. Student Perception Survey 2, Question 1 stated, "How many times did you practice [your] assigned method to reduce test anxiety at home?" Group 1 responses showed a mean of 1.88. Group 1 practiced a little more than Group 2. Group 2's responses showed a mean value of 1.72. Student Perception Survey 2, Question 2 stated, "These methods to reduce test anxiety worked for me." Group 1 responses showed a mean value of 3.06. Group 2 responses showed a mean value of 2.72. Group 1's higher means response value indicates that, on average, Group 1 felt more strongly that treatments for test anxiety "worked" for them. Responses to Student Perception Survey 2, Question 3, "Did you find the interventions (in group) helpful for you," showed Group 1 with a mean value of 3.06 appreciated the interventions more than Group 2, with a mean response value of 2.89. The final question to address the *application of treatments* construct was from Student Perception Survey 3, Question 5, and "Guided Imagery / EFT helped me reduce my test anxiety and do better on the test." Group 1 responded to this question with a mean response value of 2.80, while Group 2's mean response value was 3.00. The Cronbach's alpha score for the *application of treatments* construct was .395 (mean = 14.33, *SD* = 1.988). Cronbach's alpha coefficient showed a weak relationship with internal consistency. (Appendix X). Group 1 (Guided Imagery) felt the treatments helped them more before the NCLEX-

XRN® Exam and when practiced in a group. After taking the NCLEX-RN® Exam, Group 2 (EFT) felt their treatments reduced their anxiety more effectively.

The *expectations* construct was addressed in statements from Student Perception Survey 1, Question 5, and "I am confident that I will pass the NCLEX-RN® on the first try." Group 1 felt a little less confident with a mean response value of 3.24 than Group 2 with a mean response value of 3.41. On Student Perception Survey 1, Question 6, "I do not need outside help to pass the NCLEX-RN® exam," Group 1 indicated they felt they needed less outside help, as shown by a greater agreement with the statement with a mean response value of 4.14; Group 2's mean response value was 4.05, indicating slightly less agreement with the statement. Student Perception Survey 1, Question 7, "I dread taking the NCLEX-RN® exam," produced a mean response value for Group 1 of 3.95, while Group 2 responses yielded a mean value of 3.73. The final question addressing the *expectations* construct included Student Perception Survey 3, Question 1, "The NCLEX-RN® exam was [a = *very difficult*, b = *difficult*, c = *wasn't difficult or easy*, d = *easy*, e = *very easy*]," where *a* would have a value of 1, *b* would have a value of 2, *c* would have a value of 3, and so on. Group 1 thought the NCLEX-RN® exam was less difficult, with a mean response score of 3.8, than Group 2; Group 2 had a mean response score of 3.9. Cronbach's alpha score was $\alpha = .071$ (mean = 11.53, *SD* = 1.642). This construct showed weak internal consistency (Appendix Y). Group 1 (Guided Imagery) felt a little less confident in taking the NCLEX-RN® exam, felt they needed more outside help, and dreaded taking the NCLEX-RN® more than Group 2 (EFT). After taking the NCLEX- RN® exam, Group 1 (Guided Imagery) felt it was less difficult than Group 2 (EFT) reported.

Research Question 1

Research Question 1 asked: "Is there a statistically significant difference in the level of test anxiety noted in students before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment)?" This question is answered by Research Sub-Questions 1a, 1b, 1c, and 1d and related to answers on surveys: (a) given to the students in Session 1, before they were treated for anxiety (pre-treatment), and (b) also given to the students in Session 3, after they were treated for anxiety (post- treatment).

Research Sub-Question 1a

Research Sub-Question 1a asked: "Is there a statistically significant difference in the level of test anxiety in students – as recorded by the Test Anxiety Inventory (TAI) and the Westside Test Anxiety Scale – before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment) for students utilizing Guided Imagery?" For the Test Anxiety Inventory (TAI), a paired samples *t*-test compared the mean of the pre-treatment scores to the mean of the post-treatment scores. Mean scores of the TAI subjected to a *t*-test included: mean scores of the total score, mean scores of a worry subscale, and mean scores of an emotionality subscale. The mean score on the TAI before treatment for the "total" subscale was 40.05 (SD = 10.73). The mean score on the TAI after treatment for the "total" subscale was 38.47 (SD = 8.87). No statistically significant difference was found between the pre-treatment mean score and the post-treatment mean score on the TAI "total" subscale ($t(18) = 1.01$, $p > .05$).

The mean of the TAI worry subscale scores before treatment was 15.16 (*SD* 4.48). The mean of the TAI worry subscale scores after treatment was 13.84 (*SD* = 3.75). No statistically significant difference was found between pre-treatment mean and post-treatment mean on the worry subscale ($t(18) = 1.95$, $p > .05$).

The mean of the TAI emotionality subscale scores before treatment was 16.42 (*SD* = 4.21). The mean of the TAI emotionality subscale scores after treatment was 16.48 (*SD* = 4.06). No statistically significant difference was found between pre-treatment mean and post-treatment mean on the emotionality subscale ($t(18) = -.215$, $p > .05$).

The Westside Test Anxiety Scale was also used to measure test anxiety in students before and after treatment. A paired samples *t*-test compared the mean score of the pre-treatment Westside Test Anxiety Scale scores to the mean score of the post-treatment scores. Mean scores of the Westside Test Anxiety Scale subjected to a *t*-test included: means of the total score, mean scores of an incapacity subscale, mean scores of a worry subscale, and mean scores of a physiological symptoms subscale. The mean score on the Westside Test Anxiety "total" subscale before treatment was 2.83 (*SD* = .562). The mean score on the Westside Test Anxiety "total" subscale after treatment was 2.72 (*SD* = .405). No statistically significant difference was found between pre-treatment mean score and post-treatment mean score on the Westside Test Anxiety "total" subscale ($t(18) = 1.20$, $p > .05$).

The mean score of the Westside Test Anxiety incapacity subscale before treatment was 16.16 (*SD* = 3.79). The mean score of the Westside Test Anxiety incapacity subscale after treatment was 15.47 (*SD* = 2.67). No statistically significant

difference was found between pre-treatment and post-treatment means on the Westside Test Anxiety incapacity subscale ($t(18) = 1.01$, $p > .05$).

The mean score for the Westside Test Anxiety worry subscale before treatment was 9.74 ($SD = 1.79$). The mean score for the Westside Test Anxiety worry subscale after treatment was 9.58 ($SD = 1.54$). No statistically significant difference between pre-treatment and post-treatment means was found on the Westside Test Anxiety worry subscale ($t(18) = .512$, $p > .05$).

The mean score for the Westside Test Anxiety physiological symptoms subscale before treatment was 2.37 ($SD = 1.12$). The mean score for the Westside Test Anxiety physiological symptoms subscale after treatment was 2.16 ($SD = .90$). No statistically significant difference was found between pre-treatment and post-treatment means on the Westside Test Anxiety physiological symptoms subscale ($t(18) = .809$, $p > .05$).

Research Sub-Question 1b

Research Sub-Question 1b asked, "Is there a statistically significant difference in the level of test anxiety in students – as recorded by the Test Anxiety Inventory (TAI) and the Westside Test Anxiety Scale – before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment) for students utilizing EFT?" A paired samples *t*-test compared the mean pre-treatment scores of the Test Anxiety Inventory to the mean post-treatment scores. Scores of three subscales were evaluated: mean scores of the TAI total score, mean scores of the worry subscale, and mean scores of the emotionality subscale. The mean on the TAI before treatment for the "total" subscale was 40.10 ($SD = 12.8$). The mean on the TAI after treatment for the "total" subscale was 38.47 ($SD = 8.86$). No statistically significant

difference was found between the pre-treatment mean and the post-treatment mean on the TAI "total" subscale ($t(18) = .339$, $p > .05$).

The mean of the TAI worry subscale scores before treatment was 14.76 (*SD* = 4.39). The mean of the TAI worry subscale scores after treatment was 14.94 (*SD* = 4.56). No statistically significant difference was found between pre-treatment mean and post-treatment mean on the TAI worry subscale ($t(18) = -.255$, $p > .05$).

The mean of the TAI emotionality subscale scores before treatment was 16.68 (*SD* = 6.06). The mean of the TAI emotionality subscale scores after treatment was 16.26 (*SD* = 5.12). No statistically significant difference was found between pre-treatment mean and post-treatment mean on the TAI emotionality subscale ($t(18) = .480$, $p > .05$).

A paired samples *t*-test compared the mean pre-treatment scores of the Westside Test Anxiety Scale to the mean post-treatment scores for Research Sub-Question 1b. Subscales inherent in the Westside Test Anxiety Scale that were tested included: total score, incapacity subscale, worry subscale, and physiological symptoms subscale. The mean score on the Westside Test Anxiety "total" subscale before treatment was 2.54 (*SD* = .683). The mean score on the Westside Test Anxiety "total" subscale after treatment was 2.61(*SD* = .631). No statistically significant difference was found between pre-treatment mean score and post-treatment mean score on the Westside Test Anxiety "total" subscale ($t(18) = .672$, $p > .05$).

The mean score of the Westside Test Anxiety incapacity subscale before treatment was 14.0(*SD* = 4.10). The mean score of the Westside Test Anxiety incapacity subscale after treatment was 15.10 (*SD* = 3.75). There was a significant

decrease in mean score from pre-treatment scores to mean score of post-treatment scores on the Westside Test Anxiety incapacity subscale ($t(18) = -2.18$, $p < .05$).

The mean score of the Westside Test Anxiety worry subscale before treatment was 9.36 ($SD = 2.50$). The mean score of the Westside Test Anxiety worry subscale after treatment was 8.94 ($SD = 2.15$). No statistically significant difference between pre-treatment and post-treatment means was found on the Westside Test Anxiety worry subscale ($t(18) = 1.17$, $p > .05$).

The mean score of the Westside Test Anxiety physiological symptoms subscale before treatment was 7.94 ($SD = .77$). The mean score of the Westside Test Anxiety physiological symptoms subscale after treatment was 2.05 ($SD = 1.07$). No statistically significant difference was found between pre-treatment and post-treatment mean scores on the Westside Test Anxiety physiological symptoms subscale ($t(18) = -.399$, $p > .05$).

Research Sub-Question 1c

Research Sub-Question 1c asked, "Is there a statistically significant difference in the level of stress in students – as documented by blood pressure, the Stress Vulnerability Questionnaire, and SA-45™ Symptom Assessment Questionnaire – before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment) for students utilizing Guided Imagery?" A paired samples *t*-test compared the mean of the pre-treatment blood pressure to the mean of the post-treatment blood pressure. The mean of the pre-treatment systolic readings on the first treatment day was 116.31 ($SD = 9.02$). The mean of the post-treatment systolic readings on the first treatment day was 115.41 ($SD = 10.00$). No statistically significant difference was found between pre-treatment and post-treatment

mean systolic readings on the first day students received treatment for anxiety ($t(38) = .612$, $p > .05$). The mean of the pre-treatment diastolic readings on the first treatment day was 70.21 ($SD = 8.5$). The mean of the post-treatment diastolic readings on the first treatment day was 69.1 ($SD = 9.09$). No statistically significant difference was found between pre-treatment and post-treatment mean diastolic readings on the first day students received treatment for anxiety ($t(38) = .837$, $p > .05$).

The mean of the pre-treatment systolic readings on the second day of treatment was 116.21 ($SD = 9.7$). The mean of the post-treatment systolic readings on the second day of treatment was 113.16 ($SD = 10.16$). There was a significant decrease difference from pre-treatment to post-treatment mean systolic readings during the second day of treatment ($t(37) = 3.111$, $p < .05$). The mean of the pre-treatment diastolic readings during the second day of treatment was 71.18 ($SD = 10.00$). The mean of the post-treatment diastolic readings on the second day of treatment was 67.05 ($SD = 10.11$). There was a significant decrease difference from pre-treatment to post-treatment mean diastolic readings during the second day students received treatment for anxiety ($t(37) = 4.14$, $p < .05$).

A paired samples *t*-test compared the mean of pre-treatment scores of the Stress Vulnerability Questionnaire to the mean of the post-treatment scores. The mean of the Stress Vulnerability Questionnaire scores before treatment was 40.68 ($SD = 9.26$). The mean of the Stress Vulnerability Questionnaire scores after treatment was 39.47 ($SD = 10.71$). No statistically significant difference was found between pre-treatment and post-treatment mean scores from the Stress Vulnerability Questionnaire ($t(18) = .862$, $p > .05$).

In the methodology of this study, the SA-45™ Symptom Assessment Questionnaire was to be administered pre-treatment only. Time did not permit a post-treatment administration of this instrument. A Pearson correlation was calculated to examine the relationship between NCLEX-RN® exam pass rates and the subscales on the SA-45™ Symptom Assessment Questionnaire. There was a weak correlation that was not significant between the anxiety subscale on the SA-45™ Symptom Assessment Questionnaire and the mean pass rate on the NCLEX-RN® exam ($r(3) = .024$, $p > .05$).

Change in mean blood pressure readings taken before and after the second treatment was significant, but all other items in this research question were not significant.

Research Sub-Question 1d

Research Sub-Question 1d asked, "Is there a statistically significant difference in the level of stress in students – as documented by blood pressure, the Stress Vulnerability Questionnaire, and the SA-45™ Symptom Assessment Questionnaire – before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment) for students utilizing EFT?" A paired samples *t*-test compared the mean of the pre-treatment blood pressure to the mean of the post-treatment blood pressure. The mean of the pre-treatment systolic readings on the first treatment day was 117.2 ($SD = 6.112$). The mean of the post-treatment systolic readings on the first treatment day was 117.11 ($SD = 7.33$). No statistically significant difference was found between pre-treatment and post-treatment mean systolic readings on the first day students received treatment for anxiety ($t(17) = .085$, $p > .05$). The mean of the pre-treatment diastolic readings on the first treatment day was 69.67 ($SD =$

8.49). The mean of the post-treatment diastolic readings on the first treatment day was 66.83 (*SD* = 8.22). No statistically significant difference was found between pre-treatment and post-treatment mean diastolic readings on the first day students received treatment for anxiety ($t(17) = 1.76$, $p > .05$).

The mean of the pre-treatment systolic readings on the second treatment day was 115.95 (*SD* = 9.94). The mean of the post-treatment systolic readings on the second treatment day was 114.26 (*SD* = 9.87). No statistically significant difference was found between pre-treatment and post-treatment mean systolic readings on the second day students received treatment for anxiety ($t(18) = 1.181$, $p > .05$). The mean of the pre-treatment diastolic readings on the second day of treatment was 71.21 (*SD* = 8.92). The mean of the post-treatment diastolic readings on the second day of treatment was 66.47 (*SD* = 10.8). There was a significant decrease difference from pre-treatment to post-treatment mean diastolic readings during the second day of treatment ($t(18) = 3.89$, $p < .05$).

A paired samples *t*-test compared the mean of pre-treatment scores of the Stress Vulnerability Questionnaire to the mean of post-treatment scores. The mean of the Stress Vulnerability Questionnaire scores before treatment was 43.47 (*SD* = 8.69). The mean of the Stress Vulnerability Questionnaire scores after treatment was 41.89 (*SD* = 11.39). No statistically significant difference was found between pre-treatment and post-treatment mean scores from the Stress Vulnerability Questionnaire ($t(18) = 1.011$, $p > .05$).

The SA-45™ Symptom Assessment Questionnaire was not scheduled to be given post-treatment. Due to schedule time conflicts, there was not time to give the SA-

45™ Symptom Assessment Questionnaire to students after the treatments for anxiety were administered. An independent samples *t*-test compared the mean scores of: the anxiety subscale from the SA-45™ Symptom Assessment Questionnaire given to students before treatment, the "total" subscale from the Westside Test Anxiety Scale given before treatment, the "total" subscale from the Westside Test Anxiety Scale given after treatment, the "total" subscale from the TAI given before treatment, and the "total" subscale from the TAI given after treatment. No statistically significant difference was found ($t(38) = .964$, $p > .05$).

Research Question 2

Research Question 2 asked, "Is there an increase in productivity after treatment?" This research question, answered by Research Sub-Questions 2a, 2b, and 2c is related to the pass rates of students who took the NCLEX-RN® exam.

Research Sub-Question 2a

Research Sub-Question 2a asked, "Is there an observed significant difference in the pass rates of students taking the NCLEX-RN® exam between students utilizing Guided Imagery as a treatment for anxiety and students utilizing EFT as a treatment?" Frequencies and percentages were used to analyze this question. Results showed that the pass rate for students in Group 1, the group treated with Guided Imagery, had a 100% pass rate; while students in Group 2, the group treated with EFT, had an 89% pass rate. Figure 1 illustrates this statistic.

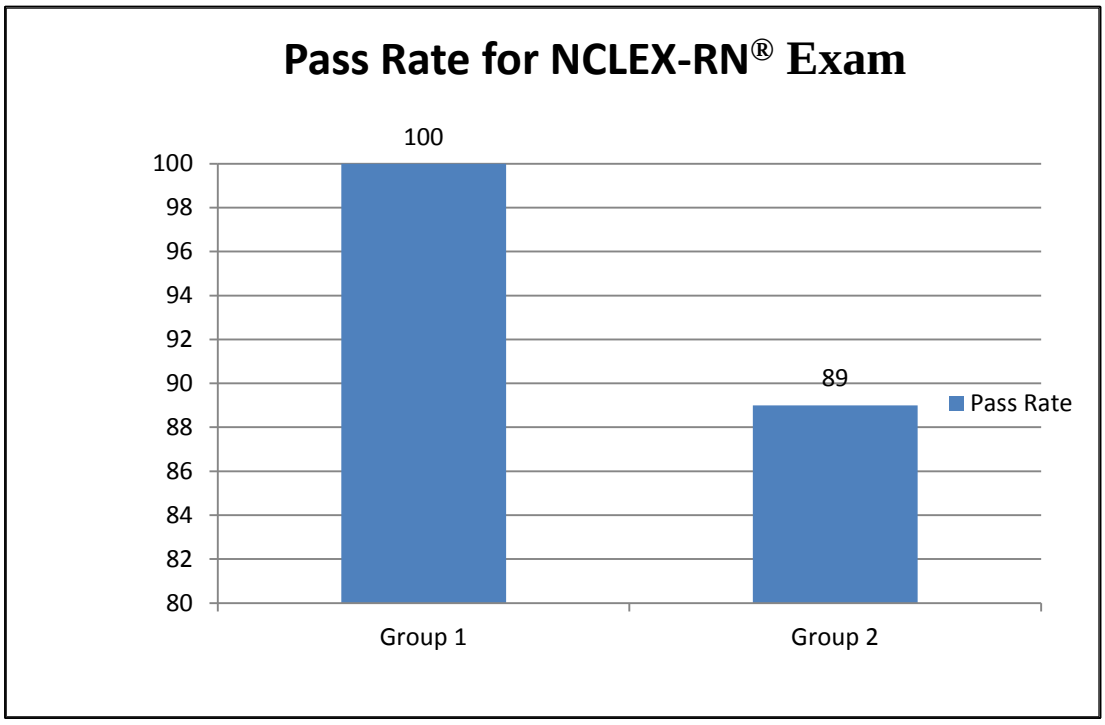

Figure 1. Pass Rates for the NCLEX-RN® Exam.

Research Sub-Question 2b

Research Sub-Question 2b asked, "Is there an observed significant difference in the pass rates of students taking the NCLEX-RN® exam between students utilizing Guided Imagery as a treatment for anxiety and students utilizing EFT as a treatment when students have scored below an 80% pass rate on the predictor exam?" Descriptive statistics using frequencies and percentages were used to analyze the results. None of the students in the Guided Imagery group scored below 700 (80%) on the predictor exam (HESI™ Exit Exam). Two students in the EFT group scored below 700 (80%) in retakes of the HESI Exam. Both students' scores on the retake of the HESI Exam were lower than their scores the first time they took the HESI Exam. These two students did not pass the NCLEX-RN® exam on their first attempt. This resulted in a 100% failure

rate for students in this study who scored below 80% on the HESI Exam. Figure 2 depicts the percentage of students who scored above or below 80% on the HESI Exit Exam.

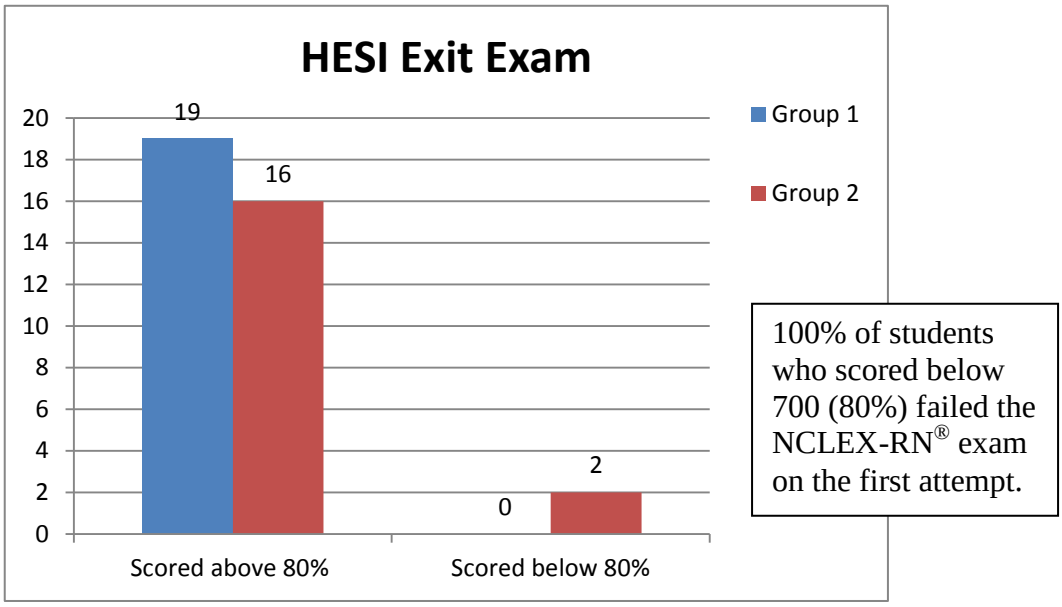

Figure 2. Percentage of Students Who Ranked Above or Below 80%.

Research Sub-Question 2c

Research Sub-Question 2c asked, "Is there an observed significant difference in the NCLEX-RN® pass rates of students utilizing Guided Imagery as a treatment for anxiety, students utilizing EFT as a treatment, and the school's five-year average pass rate?" Descriptive statistics and frequencies and percentages were utilized to analyze these differences. Group 1, the group treated with Guided Imagery, had a 100% pass rate, and Group 2, the group treated with EFT, had an 89% pass rate. Both pass rates were higher than the 5-year average pass rate. The pass rate for 2012, the year which included students participating in this study, was higher than the four previous years,

and the EFT group. Figure 3 portrays the 5-year average of the NCLEX- RN® exam pass rates.

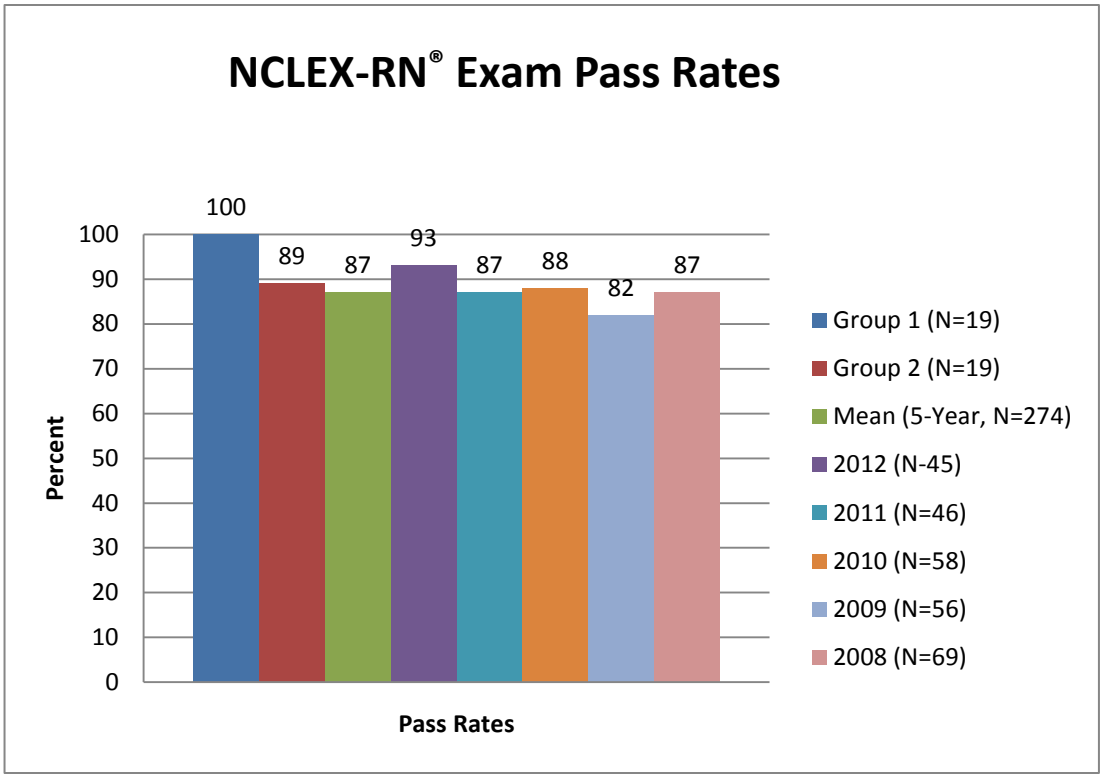

Figure 3. NCLEX-RN® Exam Pass Rates.

Research Question 3

Research Question 3 asked: "Is there data communicated through the Personal Profile Data Sheets of students that may predict a student's potential for success or failure in passing the NCLEX-RN® exam?" This research question is answered by Research Sub-Questions 3a, 3b, and 3c.

Research Sub-Question 3a

Research Question 3a asked: "Is there an observed significant difference in the pass rates of students taking the NCLEX- RN® Exam between students with GPAs

above 3.0 or below 3.0." The Personal Profile Data Sheets revealed that the GPA average of participants was 3.37; the highest GPA was 3.97 and the lowest was 2.77. Figure 4 shows the percentage breakdown of GPAs of participants.

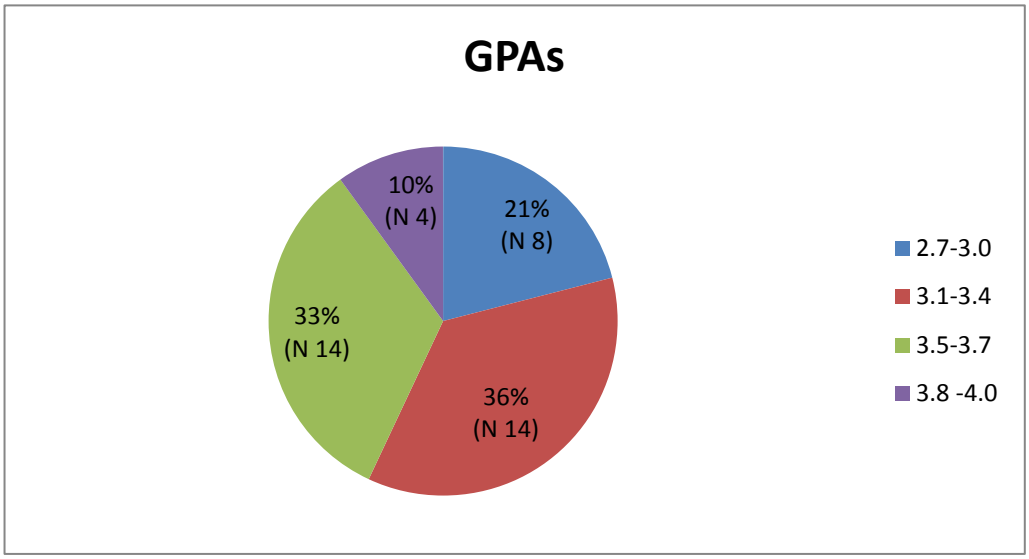

Figure 4. GPA's of Participants.

The Personal Profile Data Sheets also revealed that 30 students with a GPA at or above 3.0 and 5 students with a GPA below 3.0 passed the NCLEX-RN® exam. Two students with a GPA at or above 3.0 failed the NCLEX-RN® exam. There were no students with a GPA below 3.0 that failed the NCLEX-RN® exam. Figure 5 show the breakdown of GPAs with the pass rate of the NCLEX-RN® exam.

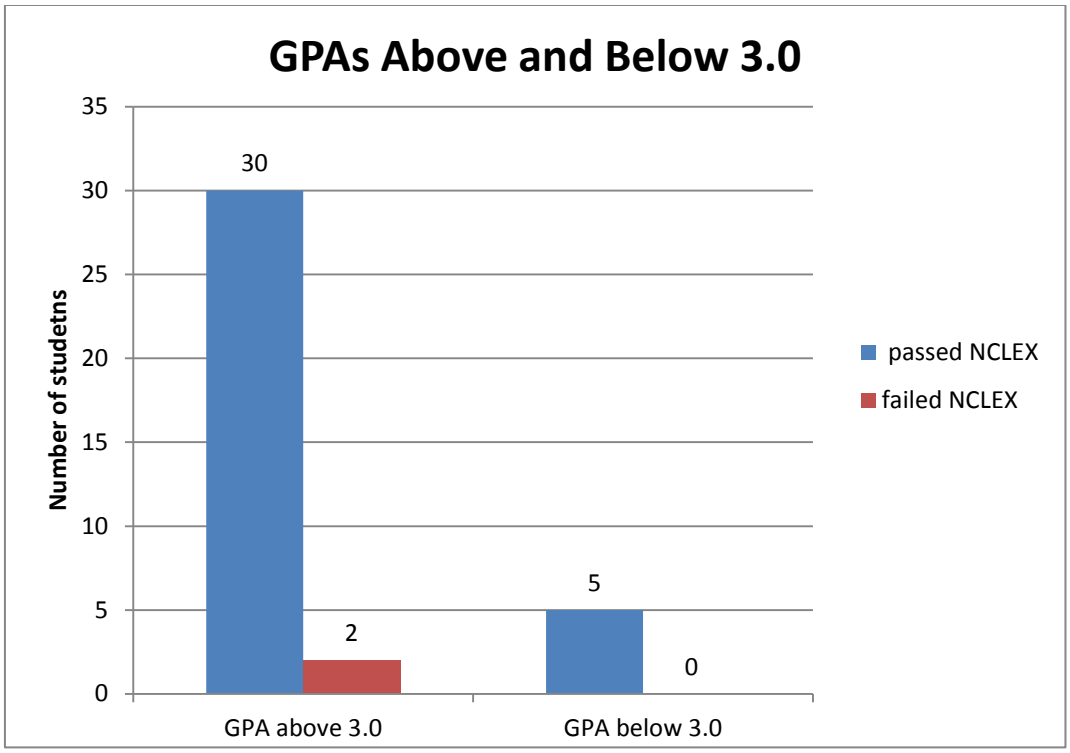

Figure 5. GPA's of Participants Who Ranked Above or Below 3.0.

Research Sub-Question 3b

Research Question 3b asked: "Is there an observed significant difference in the pass rates of students taking the NCLEX-RN® Exam between students with previous degrees and students without degrees". The majority of students in this study did not hold previous degrees. Eight students had associate degrees and three students had Bachelor of Science degrees. Figure 6 shows the percentages of previously held degrees.

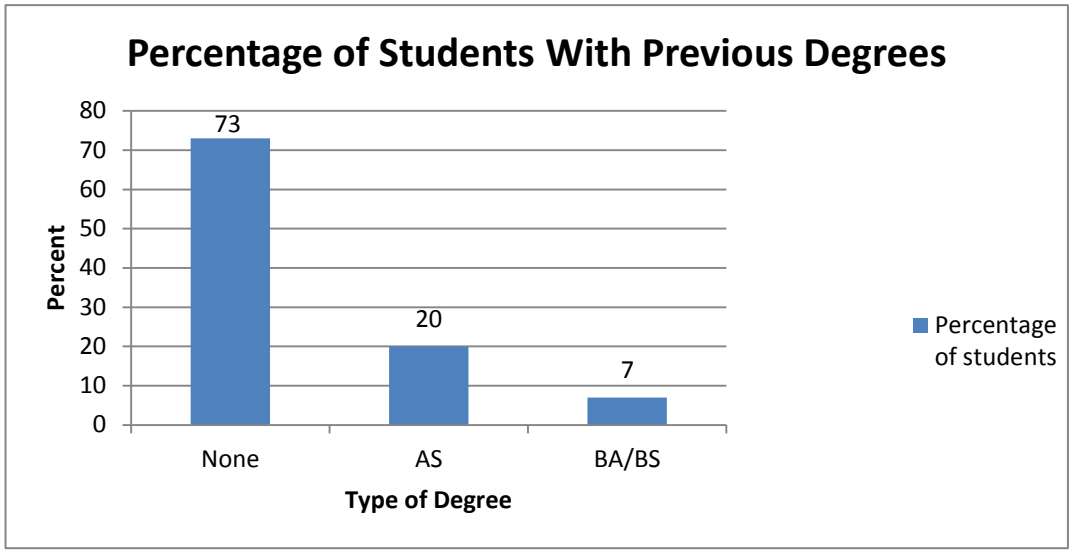

Figure 6. Percentage of Students with Previous Degrees.

The Personal Profile Data Sheets also revealed that one student with a previous BS degree failed the NCLEX-RN® Exam. Figure 7 show the percentage of students with previous held degrees with the pass rate of the NCLEX-RN® exam.

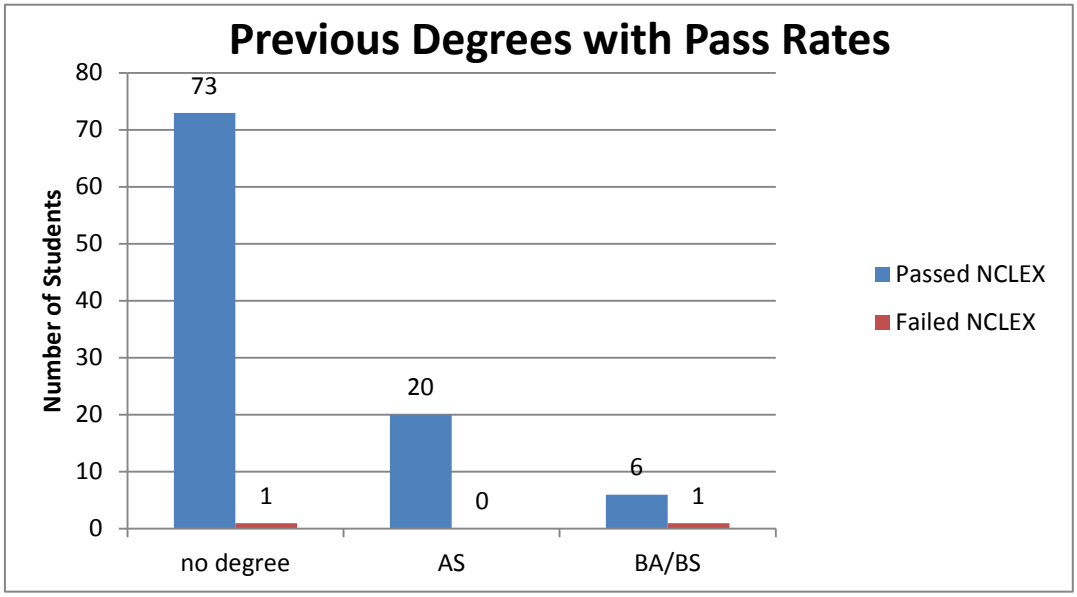

Figure 7. Percentage of Students with Previous Held Degrees with the Pass Rate of the NCLEX-RN® exam.

Research Sub-Question 3c

Research Question 3c asked: "Is there an observed significant difference in the pass rates of students taking the NCLEX-RN® Exam between students who work less than 21 hours a week and students who work more than 20 hours per week". The Personal Profile Data Sheets addressed hours students worked in a week and where they worked. Students who work over 20 hours a week are likely to have more difficulty studying and preparing for exams. This can be a predictor of success or failure. The majority of students participating in this study worked 11 to 20 hours per week. Two students worked 31 to 40 hours per week, and no student worked over 40 hours. Six students who worked from 21 to 30 hours per week had GPAs ranging from 2.83 to 3.97. Five of the students met the HESI™ benchmark on the first attempt, and the other student met the HESI benchmark on the second attempt. All of these students passed the NCLEX-RN® exam on the first attempt. The two students who worked 31-40 hours had GPAs of 3.5. They both met the HESI™ benchmark and passed the NCLEX-RN® exam on the first attempt. The two students who failed the NCLEX-RN® exam worked 20 hours or less per week. Figure 8 displays the number of hours the students worked.

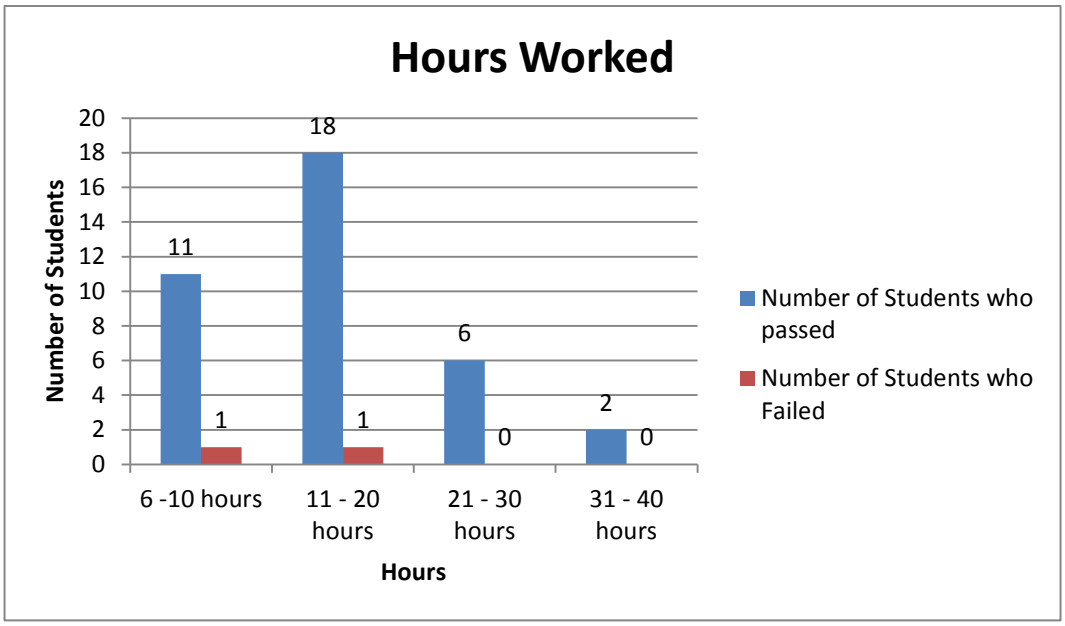

Figure 8: Number of Hours Students Worked Per Week.

Twenty-seven participants worked in a medical facility, three worked in a non-medical facility, and five worked in both medical and non-medical agencies. All students were single. One student had two children and another one had one child. There did not seem to be any predictive data which would indicate either success or failure in passing the NCLEX-RN® exam on the Personal Profile Data Sheets.

Research Question 4

Research Question 4 asked, "Is there an observed significant difference in the perceptions of students regarding the effectiveness of treatments for anxiety?" Research Sub-Questions 4a and 4b answer these questions.

Research Sub-Question 4a

Research Sub-Question 4a asked, "Is there an observed significant difference in the perceptions of students regarding the effectiveness of treatments for anxiety between students utilizing Guided Imagery as a treatment and students utilizing EFT as

a treatment?" Responses to Student Perception Surveys attempted to answer this research question. Beginning with Student Perception Survey 1, the mean for Group 1 on Survey 1, Question 1 was 4.27 (*SD* = .575). The mean for Group 2 on Survey 1, Question 1 was 4.22 (*SD* = .548). The mean score for Group 1 on Survey 1, Question 2 was 4.38 (*SD* = .607). The mean score for Group 2 on Survey 1, Question 2 was 4.38 (.501).The mean for Group 1 on Survey 1, Question 3 was 3.6 (*SD* = .907). The mean for Group 2 on Survey 1, Question 3 was 3.44 (*SD* = .921). The mean for Group1 on Survey 1, Question 4 was 3.83 (*SD* = .707). The mean for Group 2 on Survey 1, Question 4 was 4.0 (*SD* = .485). The mean for Group 1 on Survey 1, Question 5 was 3.28 (*SD* = .958). The mean for Group 2 on Survey 1, Question 5 was 3.44 (*SD* = .705). The mean for Group 1 on Survey 1, Question 6 was 4.28 (*SD* = .575). The mean for Group 2 on Survey 1, Question 6 was 4.11 (*SD* = .758). The mean for Group 1 on Survey 1, Question 7 was 2.00 (*SD* = 1.09). The mean for Group 2 on Survey 1, Question 7 was 2.28 (*SD* = .895).

Results of mean scores for each question on Student Perception Survey 2 are included in this paragraph. The mean rating or score for Group 1 on Survey 2, Question 1 was 1.78 (*SD* = .73). The mean for Group 2 on Survey 2, Question 1 was 1.72 (*SD* = .461). The mean score for Group 1 on Survey 2, Question 2 was 2.83 (*SD* = .985). The mean for Group 2 on Survey 2, Question 2 was 2.72 (*SD* = .752). The mean for Group 1 on Survey 2, Question 3 was 2.83 (*SD* = .924). The mean for Group 2 on Survey 2, Question 3 was 2.89 (*SD* = .758).

Results of mean scores for each question on Student Perception Survey 3 are included in this paragraph. The mean score for Group 1 on Survey 3, Question 1 was

3.8 (*SD* = 1.09). The mean for Group 2 on Survey 3, Question 1 was 3.8 (*SD* = .447). The mean for Group 1 on Survey 3, Question 2 was 4.00 (*SD* =.000). The mean for Group 2 on Survey 3, Question 2 was 3.4 (*SD* = .548). The mean score for Group 1 on Survey 3, Question 3 was 4.2 (*SD* = .447). The mean score for Group 2 on Survey 3, Question 3 was 3.8 (*SD* = .837). The mean for Group 1 on Survey 3, Question 4 was 3.8 (*SD* = .837). The mean for Group 2 on Survey 3, Question 4 was 3.8 (*SD* = .447). The mean score for Group 1 on Survey 3, Question 5 was 3.2 (*SD* = 1.30). The mean score for Group 2 on Survey 3, Question 5 was 3.4 (*SD* = .548). Therefore, there is no difference in the perceptions of students regarding effectiveness of treatments for anxiety between students utilizing Guided Imagery and students utilizing EFT.

Research Sub-Question 4b

Research Sub-Question 4b asked, "Is there an observed significant difference in the perception of students regarding the effectiveness of treatments for anxiety and the number of times the students performed the treatments at home?" A paired samples *t*-test compared the mean of the pre-treatment SUDS rating to the mean of the post-treatment SUDS rating. The mean score of the pre-treatment SUDS rating during the first treatment session was 6.46 (*SD* = 1.97). The mean score of the post-treatment SUDS rating during the first treatment session was 5.26 (*SD* = 2.099). There was a statistically significant difference between pre-treatment and post-treatment mean SUDS ratings during the first treatment session ($t(38) = 5.53$, $p < .05$). The mean score for the pre-treatment SUDS rating during the second treatment session was 7.03 (*SD* = 1.91). The mean score for the post-treatment SUDS rating during the second treatment session was 4.87 (*SD* = 2.03). There was a statistically significant difference between

the pre-treatment mean rating and the post-treatment mean rating ($t(37) = 6.9$, $p < .05$). The students experienced a decrease in test anxiety from both sessions of treatments.

A Pearson correlation was calculated to examine the relationship between Survey 2, Question 1, "How many times did you practice [your] assigned method to reduce test anxiety at home," and the mean SUDS rating post-treatment in the first session. A weak negative relation that was not significant was found ($r(2) = .247$, $p > .05$). A Pearson correlation was calculated to examine the relationship between Survey 2, Question 1, "How many times did you practice [your] assigned method to reduce test anxiety at home," Survey 2, Question 2, "These methods to reduce test anxiety worked for me." A weak positive correlation that was not significant was found ($r(2) = .429$, $p > .050$). A Pearson correlation was calculated to examine the relationship between Survey 2, Question 1, "How many times did you practice [your] assigned method to reduce test anxiety at home," and Survey 2, Question 3, "Did you find the interventions (in group) helpful for you?" A strong positive correlation was found ($r(2) = .600$, $p < .05$), indicating a significant linear relationship between the two variables.

In summary, factors such as stress, test anxiety, and student expectations did not predict the success or failure of students passing the NCLEX-RN® exam. Scoring below an 80% predictor score did seem to have an impact on the pass rate of the NCLEX-RN® exam. Obtaining a lower score on a retake of the HESI Exit Exam seemed to be a significant factor in predicting a failure rate on the NCLEX-RN® exam. There was a statistically significant difference in the student reported mean SUDS rating before treatment versus the mean SUDS rating after treatment, indicating that the

treatment had some effect on lowering student distress levels. Blood pressure readings showed a significant decrease in systolic and diastolic readings in the Guided Imagery group after the second treatment. The diastolic blood pressure showed a significant decrease after the second treatment in the EFT group. There was a statistically significant difference in the Westside Test Anxiety incapacity subscale pre-treatment versus post treatment for students in Group 2 (EFT). Group 2 (EFT) showed a decrease in thinking that test anxiety was a real phenomenon; whereas, Group 1 (Guided Imagery) reported a consistent value to the question of whether test anxiety was a real phenomenon. Group 2 (EFT) reported a substantial decrease in their test anxiety while Group 1 (Guided Imagery) increased slightly. Both groups reported they thought the treatments were somewhat effective; however, only practiced the techniques a few times at home.

Qualitative Results

The qualitative data was rich in detail and provided students' perceptions regarding the NCLEX-RN® exam, test anxiety, and reactions to treatments for test anxiety. Class observations, open-ended questions in the Personal Profile Data Sheets, and Student Perception Surveys provided the qualitative data. Forty students answered the Personal Profile Data Sheet questions. The questions on the Personal Profile Data Sheet included:

9. Do you feel you are overloaded and need to slow down?
10. What are your thoughts about taking the NCLEX-RN® exam?

Forty students answered questions on Student Perception Survey 1. Nine of these students did not answer two or more questions on this survey, but all forty

students answered some of the questions. The open-ended questions in this survey were:

1. Do you use any techniques to control test anxiety? If so, what techniques?
2. Please describe your expectations regarding stress reduction techniques.

Thirty-eight students answered some of the questions on Student Perception Survey 2. Five of the students did not answer two or more of the questions. The open-ended questions on Student Perceptive Survey 2 were:

1. Please comment on what you liked and did not like.
2. Please comment on what you found helpful or worked for you and did not find helpful or did not work for you.
3. Please comment on why you did or did not practice the test anxiety reduction technique at home.
4. Did you use these techniques for other reasons besides test anxiety?
5. Have you noticed any other effects in other areas of your life?

Five students (26%) in Group 1 and ten students (53%) in Group 2 completed Student Perceptive Survey 3. The open-ended questions on Student Perceptive Survey 3 were:

1. Please comment on what you found helpful.
2. Please comment on what you did not find helpful.
3. Did you use these techniques (EFT or Guided Imagery) for other reasons besides test anxiety?
4. Have you noticed any other effects in other areas of your life?

5. Do you think this technique of test reduction (EFT or Guided Imagery) should be added to the curriculum?

After transcription of the data and identification of reoccurring responses, coding occurred (Figure 9).

Responses from this research fell into groups of related words and were coded as, “stressed,” “overloaded,” “nervous,” “anxious,” “Not know enough,” “confident,” “prepared.” These codes helped generate Category 1, “Some students felt unprepared, nervous, worried about test taking and NCLEX.” The males in the class did not feel stressed or overloaded, while the females reported more stress and felt overloaded. Both males and females reported that they were nervous about taking the NCLEX RN® exam. The females reported higher levels of nervousness, scared feelings, and anxiety than the males. There were a limited number of males and females who felt prepared and confident about taking the NCLEX RN® exam. This category generated Theme 1, “Test anxiety can be provoked by many things.”

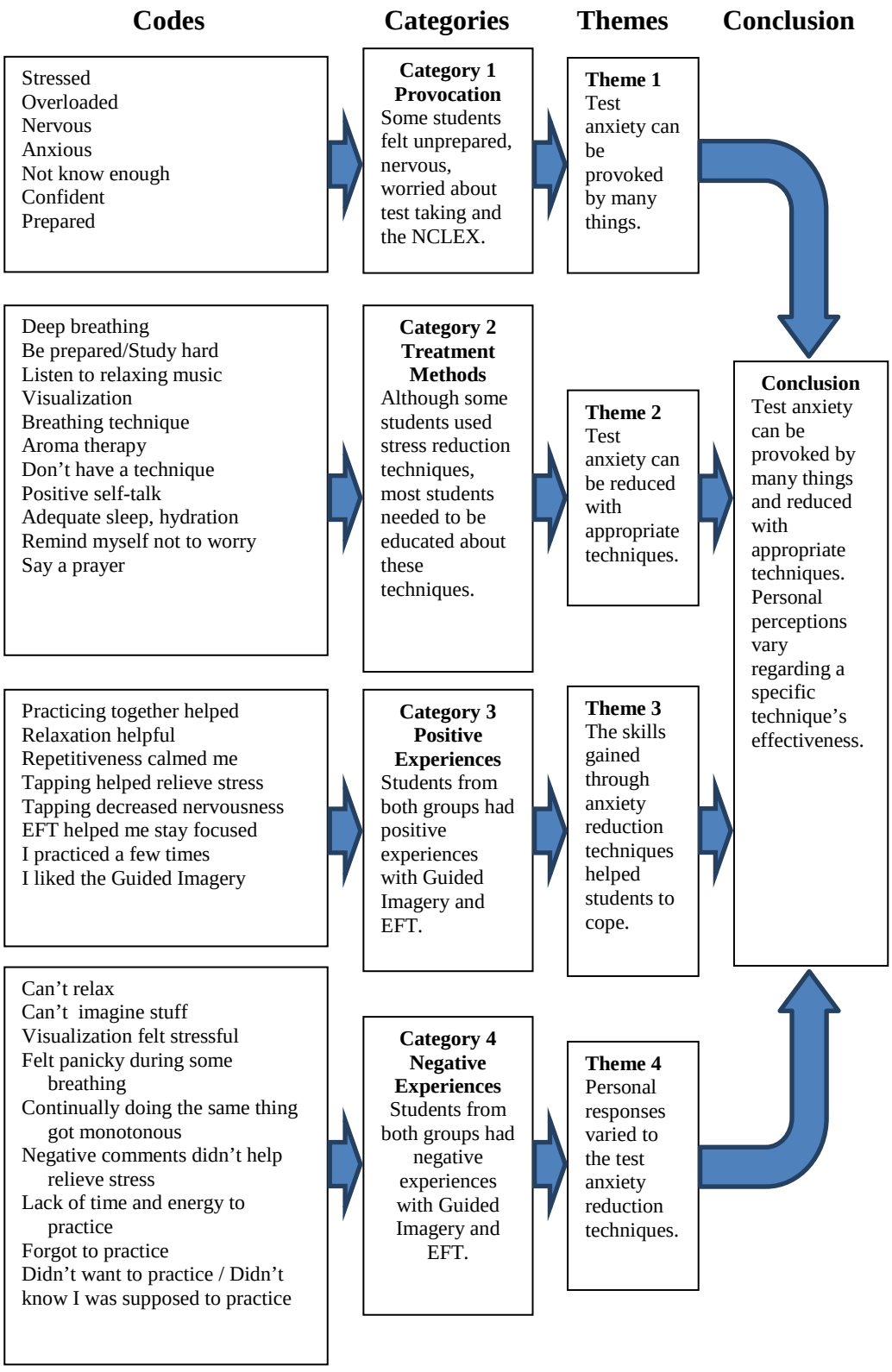

Figure 9. Qualitative Data Analysis Chart (see Appendices AA, AB, AC, & AD).

The following codes also emerged from data analysis from the study and generated another grouping or category: “Deep breathing,” “Be prepared/study hard,” “listen to relaxing music,” “Visualization,” “Breathing Techniques,” “Aroma Therapy,” “Don’t have a technique,” “Positive self-talk,” “Adequate sleep, hydration,” “Remind myself not to worry,” “Say a prayer.” This category, Category 2, was “Although some students used stress reduction techniques, most students needed to be educated about these techniques.” Category 2 generated Theme 2, “Test anxiety can be reduced with appropriate techniques.”

The following codes created Category 3: “Practicing together helped,” “Relaxation helpful,” “Repetitiveness calmed me,” “Tapping helped relieve the stress,” “Tapping decreased nervousness,” “EFT helped me stay focused,” “I practiced a few times,” and “I liked the Guided Imagery.” Category 3 was, “Students from both groups had positive experiences with Guided Imagery and EFT.” One student reported that she was sleeping better at night, and a few said they were more relaxed and calm. Category 3 generated Theme 3, “The skills gained through anxiety reduction techniques helped students to cope.”

The following codes generated Category 4: “Can’t relax,” “Can’t imagine stuff,” “Visualization felt stressful,” “Felt panicky during some breathing,” “Continually doing the same thing got monotonous,” “Negative comments didn’t help relieve stress,” “Lack of time and energy to practice,” “Forgot to practice,” “Didn’t want to practice,” and “Didn’t know I was supposed to practice.” Category 4 was, “Students from both groups had negative experiences with Guided Imagery and EFT. One student in Group 2 (EFT group) did not want to say any negative statements. She

would not tap on the correct points even after review of each point. There was a time she just sat in the class room and did not participate. She was the only participant whose SUDS ratings were higher after a treatment than before a treatment. She stated some negative statements made her feel more stressed than saying positive comments. One of the students who failed the NCLEX-RN® exam stated that there was not time to do the treatment, because it took away from study time. There were students from both groups with negative experiences with Guided Imagery and EFT. This led to Theme 4, "Personal responses varied to the test anxiety reduction techniques."

These themes need to be considered when applying stress and test anxiety reduction tools to a classroom. Students need to be educated about these techniques and given the opportunity to try them, if they wish. Test anxiety can be provoked by many aspects of a student's life style and environment and reduced with appropriate techniques. Personal perceptions vary regarding a technique's effectiveness. Figure 9 depicted a qualitative data analysis flowchart that visually displays codes, categories, themes, and a conclusion resulting from the qualitative analysis of this study. In chapter V the rich data derived from these qualitative questions and the potential use of this data is discussed.

CHAPTER V

SUMMARY AND DICUSSION OF FINDINGS, CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS

As discussed in previous chapters, failure to pass the NCLEX-RN® Exam on the first attempt may have devastating effects. There are many reasons a student may fail, ranging from life stressors, knowledge deficient, and test anxiety to name a few of the causes. This study explored the correlation between factors such as stress, test anxiety, and student expectations that may be predictive of success or failure in passing the NCLEX- RN® exam. This study also compared the effectiveness of Emotional Freedom Techniques (EFT) and Guided Imagery regarding the reduction of test anxiety and success of students in passing the NCLEX-RN® exam. Included in this chapter are the following: a summary and discussion of the findings, conclusions based on the findings, and recommendations regarding for nursing education and further research.

Summary and Discussion of Findings

Participants consisted of 37 nursing students enrolled in Nursing 421 (NCLEX Review) during the spring semester of 2012 at the University of Mary, Bismarck, North Dakota. This class prepared students to take the NCLEX-RN® Exam, a high-stakes test. Students who feel threatened by this exam may experience more test anxiety and the "perception" of difficulty can increase test anxiety (Cizek & Burg, 2006, p 65). Test Anxiety can "hijack" (Goleman, 1995) the thinking brain which may interfere with

cognitive performance. Therapeutic interventions may be necessary to help these students succeed (Allen, 1972; Casbarro, 2005; Gladwell, 2009). All 37 students responded to the questionnaires, surveys, measurement tools, and treatments that focused on the reduction of test anxiety, increase in productivity, and increase in the perception of treatment effectiveness.

Collection of data ensued through various questionnaires: Test Anxiety Inventory (TAI), Westside Test Anxiety Scale, Stress Vulnerability Questionnaire, SA45™ Symptom Assessment Questionnaire, Personal Profile Data Sheet, and 3 Student Perception Survey. The students also completed SUDS rating scales and blood pressure reading before and after each treatment session.

The following pages discuss each research question, as well as the self-reported student perceptions. The dialogue includes presentation of the statistical analysis of the data and comparison of existing research cited previously.

Research Question 1: Is there a statistically significant difference in the level of test anxiety noted in students before students were treated for test anxiety (pre-treatment) and after students were treated for test anxiety (post-treatment)?

Early interventions used to treat test anxiety included “relaxation training and desensitization through counterconditioning or extinction” (Hembree, 1988, p 49). There are limited research studies conducted utilizing Guided Imagery and Emotional Freedom Technique as the treatment modality. One uncontrolled outcome study conducted by Benor, Ledger, Toussaint, Hett, and Zaccaro (2009) found Emotional Freedom Technique reduced test anxiety after two sessions. While Benor et al (2009) explored wholistic hybrid derived from eye movement desensitization and reprocessing

(WHEE), Emotional Freedom Techniques (EFT), and cognitive behavioral therapy, this research project studied the effects of the treatment, Guided Imagery and Emotional Freedom Techniques, pre-treatment and post-treatment scores on questionnaires, blood pressure readings, SUDS scores.

Both groups recorded a decrease in their SUDS rating after treatment sessions indicating a decrease in test anxiety occurred after both types of treatment. Data collected indicated that there was not a statistical significant difference between pre-treatment mean scores and post-treatment mean scores on the Stress Vulnerability Questionnaire. One of the students who failed the NCLEX- RN® exam scored "vulnerable to stress" on the Stress Vulnerability Questionnaire while the other student scored "not vulnerable to stress." Both students who failed the NCLEX- RN® exam scored high for test anxiety in both the Test Anxiety Inventory (TAI) and the Westside Test Anxiety Scale. Group 1 (Guided Imagery) had a decrease in blood pressure after the second treatment session in both systolic and diastolic readings (-3.05/-4.13). Group 2 (EFT) had a reduction in blood pressure after the second treatment session in diastolic readings (-4.74). Group 2 (EFT) also showed a statistically significant difference in mean scores of the Westside Test anxiety incapacity scale pre-treatment as compared to post-treatment.

There was overlap in results of the Test Anxiety Inventory (TAI) and Westside Test Anxiety Scale which indicated three students in the Guided Imagery group scored high for test anxiety and five students scored moderately high test anxiety on the Westside Test Anxiety ("total" subscale). All students in Group 1, who scored high or moderately high on the Westside Anxiety Scale and scored high on the Test Anxiety

Inventory (TAI) identified themselves as having test anxiety on the Student Perception Survey. Six students in Group 2 (EFT) were identified as having test anxiety by either the Test Anxiety Inventory (TAI) or Westside Test Anxiety Scale. These six students also reported they had test anxiety on Student Perception Surveys.

One student in group 2 (EFT) stated that doing the tapping (a part of EFT therapy) made her more stressed. She did not tap on the correct points even after instruction. She was present for all of the treatments, but several times she did not participate in the treatment. Her scores on the Westside Test Anxiety Scale went from normal average test anxiety before treatments were administered to moderately high test anxiety after treatment sessions. Her score on the Test Anxiety Inventory (TAI) went up three points, but stayed in the high normal range for test anxiety. Her SUDS rating scale went from 6 to 7 during the first treatment session and 4 to 5 during the second treatment session.

Two students (Group 2) that failed the NCLEX-RN® exam ranked high in test anxiety. Both their scores on the pre-treatment versus post-treatment Test Anxiety Inventory (TAI) and Westside Test Anxiety Scale decreased, but still remained in the high to moderately high range of test anxiety. Their SUDS rating scale went from 10 to 7 and 7 to 7 during the first treatment session. The SUDS rating scale during the second treatment session went from 10 to 5 and 9 to 7. The number of treatments administered in this study was not enough for these students to resolve their test anxiety issues.

Students who scored moderately high to high on the test anxiety scales did identify themselves as having high anxiety on the Student Perception Surveys;

however, other students also identified themselves as high in test anxiety and did not score in the appropriate range on the TAI or Westside Test Anxiety Scale to be classified with test anxiety. These factors indicate a need for student services with the nursing programs to provide test anxiety identification and teach appropriate interventions.

Through the Student Perception Surveys, Group 1 (Guided Imagery group) self-reported that their test anxiety had increased after taking the NCLEX-RN® exam. Group 2 (EFT group) self-reported that their test anxiety had decreased after taking the NCLEX-RN® exam. Group 1 (Guided Imagery) self-reported that test anxiety was a real phenomenon, and this belief remained constant from the first Student Perception Survey until after students took the NCLEX-RN® exam. Group 2 (EFT) self-reported that test anxiety was a real phenomenon, but this belief decreased after students had taken the NCLEX-RN® exam, as shown by responses to Student Perception Survey 3. Group 1 (Guided Imagery) rated their nervousness at a higher level when taking the NCLEX-RN® exam than Group 2 (EFT). Group 2 (EFT) rated the difficulty of the NCLEX-RN® exam just slightly higher than Group1 (Guided Imagery).

Comments to open-ended questions on Student Perception Surveys presented a mixed review regarding how the students considered effectiveness of treatments. Some students reported that they felt the repetition of the tapping calmed them while others reported this repetition as monotonous. Some students wrote that they felt treatments caused more anxiety and panic, whereas others reported that it helped calm them and helped them stay focused. Some of the students did not like the negative comments associated with EFT and preferred more positive comments. The majority of students

liked the group activity of doing the treatments, but this activity also resulted in both positive and negative comments. The majority of students did not notice any other effects in other areas of their lives. There were, however, some reports of students sleeping better and being more relaxed with life and daily activities.

Research Question 2: Is there an increase in productivity after treatment?

Results observed in this sample showed that the pass rate for students in Group 1 (Guided Imagery) and Group 2 (EFT) was higher than the pass rate of the 5-year average (2008-2012). Information about student scores below 80% on the predictor exam during previous years was not available. Professor Molly Nolan, the professor teaching Nursing 421 (NCLEX Review), stated that students during the year of this study (2012) scored higher on the HESI predictor exam than students did the previous year. She further stated that of students who did not meet the benchmark score (scored below 80%) on the HESI Exit Exam, the class's lowest score on the predictor exam at the time of this study (2012) was higher than the highest score from the previous year. During this research students who scored below 80% on the HESI predictor exam, had a 100% failure rate on the NCLEX-RN® exam.

There was observed in the sample a significant difference between pass rates of students using Guided Imagery and students using EFT taking the NCLEX-RN® exam. There was a 100% pass rate for students in Group 1 (Guided Imagery), whereas, a pass rate of 88.89% was evident in Group 2 (EFT). Multiple factors could produce these results.

There was also observed in the sample a significant difference between pass rates of students taking the NCLEX-RN® exam who used Guided Imagery and students

taking the exam who used EFT when students scored below 80% on the HESI Exit Exam. Every student in Group 1 (Guided Imagery) scored above 80% on the predictor exam. Two students scored below 80% on the predictor exam in Group 2 (EFT). Both students who scored below 80% were identified as having high test anxiety. Both students found the group EFT treatments helpful, but it did not take their SUDS rating down enough to reduce or eliminate their test anxiety. Neither one of these students continued to practice this technique at home. They both stated that they "didn't think about doing it." Both of these students had a lower score on their retake of the HESI Exit Exam than they did the first time they took the exam. One student had a score of 710 on the first exam and 599 on the second. The other student had a score of 675 on the first exam and 671 on the retake. Knowledge deficit and test anxiety could be entwining factors relating to their failure on the NCLEX-RN® exam.

There was a difference between NCLEX-RN® pass rates of students in the research study and pass rates of graduates from previous years. Of the years included in this study (2012, 2011, 2010, 2009, 2008) graduates of this nursing program had the lowest pass rate in 2009, which was 82%. The highest pass rate included in this study for past graduates of the NCLEX-RN® licensure exam was 88% and occurred in 2010. Group 1 (Guided Imagery) scored a 100% pass rate and Group 2 (EFT) scored an 88.89% pass rate. These factors could suggest that Guided Imagery and EFT treatments helped reduce test anxiety of students in this study and helped increase the success of students in this study taking the NCLEX-RN® exam. Data collected in this research study indicated that obtaining a lower score on a retake of the HESI™ Exit Exam and

scoring below an 80% predictor scale had an impact on the pass rate of students taking the NCLEX-RN® exam.

Research Question 3: Is there data communicated through the Personal Profile Data Sheets of students that may predict a student's potential for success or failure in passing the NCLEX-RN® exam?

Male students in the research study reported that they did not feel stress or overwhelmed. They also reported that they did not have test anxiety. This would be congruent with the literature which conveyed that higher levels of test anxiety appear to occur in females (Cizek & Burg, 2006). All of the males in this study passed the NCLEX-RN® licensure exam on the first attempt. Factors such as stress, gender, age, previous degrees, GPA, hours worked per week and feeling of being overwhelmed did not predict success or failure for either group being treated for test anxiety in this study.

Research Question 4: Is there an observed significant difference in the perceptions of students regarding the effectiveness of treatments for anxiety?

There was no significant difference between Group 1 (Guided Imagery) and Group 2 (EFT) in their perception of effectiveness of treatment techniques. Both groups had positive as well as negative comments to make about the techniques they used. What one person found helpful another person found distracting or found it generated anxiety. Personal perceptions varied regarding effectiveness of techniques.

There was observed in the sample a significant difference in student perceptions of the effectiveness of treatment and the number of times they practiced their assigned technique at home. The mean pre-treatment SUDS rating compared to the mean post-treatment SUDS rating decreased after both treatment sessions. These self-reported

SUDS values would indicate that the level of distress from test anxiety had decreased after treatments administered in both treatment sessions. There was a strong positive correlation indicating a significant linear relationship between Student Perception Survey 2, Question 1 addressing how many times students had practiced their assigned technique at home and Student Perception Survey 2, Question 3 asking the students if they found treatment helpful when done in a group. Students did not practice these techniques regularly at home. On Student Perception Survey 2, Question 1, "How many times did you practice [your] assigned method to reduce test anxiety at home," where 1 specified *I do not use it* (meaning *not at all*) and 2 signified *I practice once or twice*, Group 1 (Guided Imagery) reported a mean of 1.88 and Group 2 (EFT) reported a mean slightly lower at 1.72.

Group 1 (Guided Imagery) felt their test anxiety had increased (+.53, a 13% increase) after taking the NCLEX-RN® exam; whereas, Group 2's (EFT group's) test anxiety rating had decreased (-.74, a 22% decrease). Group 1 (Guided Imagery) responses indicated that they were more nervous than Group 2 (EFT) when taking the NCLEX-RN® exam. Group 1 (Guided Imagery) felt their treatment for anxiety was more effective than Group 2 (EFT) perceived their treatment to be, after the second treatment session. Group 2 (EFT), however, felt the treatment was more effective than Group 1 (Guided Imagery), after taking the NCLEX-RN® exam.

The qualitative data supports the quantitative data in this study. Both groups had improved outcomes on the NCLEX-RN® exam as compared to the 5-year average for the school. Students with higher scores on test anxiety questionnaires appeared to benefit the most from treatments. All students except one recorded a decrease in

distress (SUDS ratings) after treatments. Group 1 (Guided Imagery), self-reported a slight increase in test anxiety after the NCLEX-RN® exam. Group 2 (EFT) self-reported slightly lower test anxiety after the NCLEX-RN® exam. Group 2 (EFT) also recorded a decrease in their belief that test anxiety was a real phenomenon after the NCLEX-RN® exam.

Conclusions

The conclusion that can be drawn from this data is there were statistically significant differences between pre-treatment anxiety levels as compared to post-treatment anxiety levels noted in some students. Two sessions of treatment were not sufficient to reduce the test anxiety enough. Individualized and more treatment sessions need to be conducted to assist these students achieve their full potential.

There is recognition among teachers, students, administrators, and researchers regarding the impact that test anxiety has on obtaining true evaluations of a student's knowledge. Many universities assist students who have difficulty with anxiety through their counseling centers. Most nursing curricula do not have a formal process to identify students suffering from test anxiety and students who do receive help are mainly self-diagnosed. This leaves many students suffering from test anxiety without appropriate interventions

Limitations

Six limitations of the study were evident. The first limitation of this study relates to the demographics of the participant population. The student volunteers were from the University of Mary, Bismarck, North Dakota. The group was not diverse in age, marital status, educational status, ethnic orientation, or from geographic areas

other than the Midwest. Completing another study with a larger participant population and a more diverse population from different universities through the country would enhance, expand, and possibly validate the conclusions drawn from this research study.

A second limitation was the number of surveys (Student Perception Survey 3) returned after the NCLEX-RN® exam was taken. Group 1 (Guided Imagery) had only a 26% return rate, and Group 2 (EFT) had a 56% return rate. While Group 2's return rate may be representative of the opinions of that group, it is difficult to predict the value of Group 1's return rate as descriptive of the group's opinions.

A third limitation relates to the Student Perception Surveys. This survey did not show internal consistency and did not address all possible constructs. Expansion of the *application of treatments* construct could include attitudes regarding alternative therapies. There is also the risk that some students may not have interpreted all questions on Student Perception Surveys according the intended meaning of the questions.

A fourth limitation was the time constraints which restricted the operations of the study. Due to schedule conflicts, the treatment sessions occurred over the noon hour. Lunch reduced treatment time and also could have been a distraction. The student volunteers had been in class all day and also had class following these sessions. Fatigue may have been a factor in understanding and continuing to practice the treatments at home. Because there had been no extra time before, during, or after each treatment session, individual questions may have remained unasked or unanswered.

A fifth limitation may be that students with high test anxiety need individual treatment time to address individual aspects of their anxiety. The classroom was not an

ideal place to conduct treatments. There were many peculiarities in the classroom that could impede reduction of test anxiety.

The sixth limitation is that research questions should have addressed a sub group of students who have test anxiety. Ideally, the study population should be large enough and include only students with documented test anxiety. The research questions should have addressed the pre-treatment scores as compared to the post-treatment scores of students with documented test anxiety.

Recommendations

The first recommendation would be to establish a service within nursing educational programs to help students identify test anxiety and then initiate appropriate interventions for those students. This service could be incorporated into a faculty member's workload; ideally, faculty member interested in this subject would provide the service.

The second recommendation would be that test anxiety theory and interventions be introduced to the students the first semester of their program. Early interventions may increase effective learning and increase knowledge acquisition, thus reducing the knowledge deficits that sometimes appear to be present at graduation.

The third recommendation would be to utilize test anxiety reduction tools within classrooms. These techniques might be practiced before each test the first two semesters of the nursing program. After that time, the students would have the knowledge needed for practical application of anxiety reduction techniques, and they could carry on with these techniques as they wished.

Finally, additional research needs to be conducted in the area of test anxiety and in techniques for reducing test anxiety. Ideally, this research would rectify the limitations identified in this study and be expanded to include a control group as well as therapy groups of Emotional Freedom Techniques (EFT), Guided Imagery, and other alternative therapies. Analyzing test anxious students as a separate group may give a more accurate picture of the effectiveness of treatment. A longitudinal study could assess the effectiveness of these treatments over time.

APPENDICES

APPENDIX A

TEST ANXIETY – THEORETICAL MODELS, MEASUREMENT FORMS, AND INTERVENTIONS

Year	Researchers	Theory	Measurement Forms/ Interventions
1914	Folin et al.	One out of five students showed glycosuria after stressful exams; of all students tested, only one showed a trace of glycosuria before the exam.	
1927	Cannon	Academic exams provided a means to study physiological reactions of stress.	
1932	Luria	Individual differences in the emotional reactions of students during testing.	
1933	Neumann	Psychoanalytic theory: Test anxiety results from traumatic childhood experiences.	
1938 1942 1944 1949	C. H. Brown, The Chicago Group	Investigated individual differences in test anxiety.	Developed first psychometric scale for identifying test anxious students.
1951	McKeachie	• Found ways to reduce the impact of test anxiety on a student's performance. • Test-anxious students performed better on multiple-choice questions. • Differences in ability and inadequate study habits contributed to poor performance in test anxious students.	Modified the test situation to help students reduce anxiety during a test.

Appendix A. Cont.

Year	Researchers	Theory	Measurement Forms/ Interventions
1952	Mandler and Sarason	Students categorized as high or low test anxious students. Learned psychological drives 1. Task-directed drives 2. Learned anxiety drives a. Task-relevant efforts b. Self-directed, task-irrelevant responses	Used Test Anxiety Questionnaire (TAQ) to assess self–oriented cognitions; physiological reactions; before, during, and after IQ tests and examinations.
1958	I. G. Sarason	High test anxious students performed more poorly when achievement was emphasized.	Test Anxiety Scale (TAS) based on TAQ, a 37-item test, true and false format.
1960	Alpert and Haber	Bi-Dimensional Theory - Renamed task-directed behavior as facilitating and task irrelevant behavior as debilitating anxieties.	Anxiety Achievement Test facilitating (AAT+) debilitating (AAT-)
1962	Endler and Okada	Interaction model considered both trait and situational factors to be equal in measuring test anxiety.	S-R Inventory of General Trait Anxiousness
1967	Liebert and Morris	Cognitive orientation renamed. Debilitating anxieties – *Test Anxiety*. Test anxiety is bi-dimensional. Tested states not traits. Components: Worry: "any cognitive expression of concern about one's performance" Emotionality: "any autonomic reactions to the test situation"	Worry-Emotionality Questionnaire (WEQ) Composed two scales to measure: Worry, and Emotionality. Took 10 items from TAQ put on 5-item WEQ Worry and Emotionality Scales.
1969	Suinn	Focused on stimuli in an evaluation situation that elicits test anxiety.	Suinn Test Anxiety Behavior Scale (STABS)

Appendix A. Cont.

Year	Researchers	Theory	Measurement Forms/ Interventions
1971	Wine	Cognitive Orientation – Test anxious persons divide their attention between task-relevant activities and worry, self-criticism, and somatic concerns.	
1972	Spielberger	Trait-State Theory Distinguished between two aspects of anxiety. A-State (S-Anxiety) – "A transitory emotional state of tension and nervous reaction" A-Trait (T-Anxiety) – Chronic anxiety proneness in a wide range of situations. Test Anxiety is a situation-specific form of T-Anxiety. Components: Worry Emotionally	Test Anxiety Inventory (TAI), 1980 – 20-item self- report scale TAS's 37-items revised. Measured: individual differences in test anxiety as a situation-specific personality trait. Assessed: T-Anxiety with the State-Trait Anxiety Inventory. Responded to a 4-point frequency rating scale. Eight subscales for assessing worry and emotionality.

Appendix A. Cont.

Year	Researchers	Theory	Measurement Forms/ Interventions
1972	Allen	Behavioral methods were used to treat symptoms of test anxiety. Early interventions included: relaxation training and desensitization through counterconditioning or extinction, and cognitive modifications such as study counseling and desensitization	Test anxiety could be reduced by these interventions which were focused on the emotional rather than the cognitive (worry) aspect of test anxiety. Improved performances were not always evident. To increase performance and reduce test anxiety, the combination of cognitive modifications such as study counseling and desensitization seemed to work best.
1980 1985	Tryon	Deficits Model Treatment can reduce test anxiety. Better grades do not reduce test anxiety. Inadequate study habits or deficient test-taking skills lead to lower performance. Test anxiety is caused by an awareness of poor past performance.	
1984	Covington	Poor performance of test anxious students due to worry component.	

Appendix A. Cont.

Year	Researchers	Theory	Measurement Forms/ Interventions
1988	Hembree	Test anxiety is composed of two primary factors: 1. Worry (cognitive concern about one's performance), 2. Emotionality (autonomic reactions to a testing situation). Test anxiety is unidimensional – emotionality triggers worry. Test anxiety is a behavioral construct. High test anxious students experience more: 1. encoding difficulty when learning, 2. cognitive inferences when tested, 3. A-State reactions to testing situations.	1. Behavioral treatments can reduce the levels of general and A-Trait anxieties. 2. Various behavioral and cognitive-behavioral treatments can reduce worry and emotionality components of test anxiety and can reduce them to A-State levels during a test. 3. Testwiseness training produces a moderate relief in test anxiety for students low in test-taking skills. 4. Group counseling to cope with worry and study skills training are not effective in reducing test anxiety.
1984 1988	I. G. Sarason	Test Anxiety has four components: 1. Worry, 2. Test-irrelevant thoughts, 3. Tension, and 4. Bodily symptoms. Low Test Anxiety – plunge into task. High Test Anxiety – plunge into self. High Test Anxiety – fail to interpret information and cues.	Reaction to Tests (RTT) Scale – 40-item, 10 items to assess each component. Alpha coefficient rating of the four subscales ranged from .68 to .81 with a total scale reliability of .78.

Appendix A. Cont.

Year	Researchers	Theory	Measurement Forms/ Interventions
1987	Naveh-Benjamin et al.	Deficient performance of high-anxious students might be due to problems in: 1. Learning the information, 2. Organizing the information (while reviewing before the test and retrieving it in the test). Treatment techniques would vary depending on a student's information-processing skills.	
1991	Naveh-Benjamin	Test-anxious students differentiated on their information processing skills. The level of a student's information processing skills makes a difference on the effectiveness of treatment techniques.	
1992	Benson et al.	Four dimensions of test anxiety: 1. Worry, 2. Test-irrelevant thoughts, 3. Tension, and 4. Bodily symptoms	Revised Reaction to Tests (RTT) Scale to Revised Test Anxiety (RTA) Scale. RTA had 20-items.
1992	Benson and Bandalos	Reported moderate to high correlations in the RTA subscales of Worry, Tension, and Bodily Symptoms.	

Appendix A. Cont.

Year	Researchers	Theory	Measurement Forms/ Interventions
1989 to 1994	Bandura	Perceived self-efficacy as a persons' belief in their control over their own functioning and over events that affect their lives. Four main sources of influence: 1. mastery experiences, 2. seeing people similar to oneself manage task demands successfully, 3. social persuasion that one has the capabilities to succeed in given activities, 4. inferences from somatic and emotional states indicative of personal strengths and vulnerabilities.	Bandura's Multidimensional Scales of Perceived Self-Efficacy (MSPSE). Reliability: Cronbach's alpha reliability coefficient of 0.92 (Williams, 1996, p. 6) Divergent Validity: Coefficients ranging from 0.13 (academic achievement – Parental Support subscales) to 0.56 (self-regulated learning- Other's Expectations subscales; Williams, 1996, p. 47)
1995	Goleman	Emotional Intelligence – The ability to adapt to one's environment.	Key set of characteristics: "being able to motivate oneself and persist in the face of frustrations; to control impulse and delay gratification; to regulate one's moods and keep distress from swamping the ability to think; to empathize and to hope." (Goleman, 1995, p. 34)

Appendix A. Cont.

Year	Researchers	Theory	Measurement Forms/ Interventions
Mid 1990	Craig	Emotional Freedom Techniques ** "The cause of all negative emotions is a disruption in the body's energy system" (Craig & Craig, 2013) ** "Our unresolved negative emotions are major contributors to most physical pains and diseases" (Fink, 2013)	Modified the Thought Field Therapy (TFT) method to include tapping on all 12 of the meridian end-points.
1998	Glasser	Choice Theory We are internally not externally motivated. Behavior is driven by the fulfillment of one or more of five basic needs which are not hierarchal. 1. Survival 2. A sense of belonging 3. Power 4. Freedom 5. Fun Survival is physical; other basic needs are psychological and vary in strength and intensity. Need satisfying memories, called a quality world. Almost all behavior is chosen.	Ten Axioms of Choice Theory. 1. "The only person whose behavior we can control is our own." 2. "All we can give or get from other people is information. How we deal with that information is our or their choice." 3. "All long-lasting psychological problems are relationship problems." 4. "The problem relationship is always part of our present lives." 5. "What happened in the past that was painful has a great deal to do with what we are today, but revisiting this painful past can contribute little or nothing to what we need to do now: improve an important, present relationship."

Appendix A. Cont.

Year	Researchers	Theory	Measurement Forms/ Interventions
1998	Glasser (Continued)	Choice Theory (Continued)	Ten Axioms of Choice Theory. 6. "We are driven by five genetic needs: survival, love and belonging, power, freedom, and fun." 7. "We can satisfy these needs only by satisfying a picture or pictures in our quality worlds. Of all we know, what we choose to put into our quality worlds is the most important." 8. "All we can do from birth to death is behave. All behavior is total behavior and is made up of four inseparable components: acting, thinking, feeling ,and physiology." 9. "All total behavior is designated by verbs, usually infinitives and gerunds, and named by the component that is most recognizable. For example, I am choosing to depress or I am depressing instead of I am suffering from depression or I am depressed." 10. "All total behavior is chosen, but we have direct control over only the acting and thinking components. We can, however, control our feelings and physiology indirectly through how we choose to act and think." (Glasser, 1998, pp. 332-336)

Appendix A. Cont.

Year	Researchers	Theory	Measurement Forms/ Interventions
1999	Elliot and McGregor	Developed a hierarchical model of approach and avoidance achievement motivations. Constructs: 1. The achievement motive approach 2. The achievement goal approach Achievement motives needed for achievement and fear of failure.	Goals: 1. "A performance-approach goal (focused on the attainment of competence relative to others). 2. "A performance-avoidance goal (focused on avoiding incompetence relative to others)." 3. "A mastery goal (focused on the development of competence and task mastery)." (Elliot & McGregor, 1999, p. 628).
2000s	Steele	"stereotype threat": Under pressure a student assumes the accuracy of a stereotype and performs less well.	
2001	Cassady and Johnson	Renamed "worry" to "cognitive test anxiety." 1. Composed of an individual's cognitive responses to a testing situation. 2. Consists of an individual's internal dialogue (before, during, and after a test). Their ideas showed the strongest connection yet between cognition based test anxiety and performance.	The Cognitive Test Anxiety Scale - Measures only the cognitive component of test anxiety - A 4-point rating scale - 27-items - Internal consistency (α = .91) (Cassady & Johnson, 2002, p. 277)

Appendix A. Cont.

Year	Researchers	Theory	Measurement Forms/ Interventions
2005	Casbarro	Test anxiety is a total mind/body reaction to a perceived threat with components all interrelating. Test Anxiety Triangle: 1. Physical component 2. Emotional component 3. Mental/Cognition component Post Traumatic Test Disorder * ”a disorder that arises out of the emotional trauma associated with the aftermath of a test that a student feels he/she has failed” (Casbarro, 2005, p. 85). * Post traumatic test disorder is a vicious cycle. * If not broken will lead to chronic stress and test phobia.	
2006	Cizek and Burg	Worked with existing models of test anxiety: 1. Interference models a. ”Test performance (observed) is depressed because of interference with memory, recall, information processing, and so on.” b. “Test anxiety (unobserved) occurs because factors such as worry and emotionality (unobserved) interfere with normal performance.” (Cizek & Burg, 2006, p. 18)	

Appendix A. Cont.

Year	Researchers	Theory	Measurement Forms/ Interventions
2006	Cizek and Burg (Continued)	Worked with existing models of test anxiety: 2. Deficit models a. "Test takers lack some knowledge or skill that is important for demonstrating his or her true level of ability." b. "Lack good study habits, self-efficiency, test-taking skills, and so on." 3. Transactional model a. "Test anxiety is best thought of as a process or cycle of thoughts, behaviors, and responses." b. "An attempt to bring together background characteristics of students, elements of the testing situation, and what is known about how humans process information." (All quotes from Cizek & Burg, 2006, p. 18)	
2009	Gladwell	Choking: 1. about thinking too much 2. about the loss of instinct Panic: 1. about thinking too little 2. reversion to instinct	

Appendix A. Cont.

Year	Researchers	Theory	Measurement Forms/ Interventions
2008	Goetz et al.	Big Fish – Little Pond Effect Achievement level of a peer reference group is a predictor of an individual's level of test anxiety. Bi-dimensional nature 1. worry component highly reactive to the effects of individual achievement 2. emotionality component Academic self- concept mediates the relationship between achievement and anxiety.	
2010	Miller	1. Students with higher levels of competency and autonomy also perceive themselves as more capable of self-regulated learning. 2. The motivation to self regulate learning is not affected by test anxiety.	

APPENDIX B

STRATEGIES TO LOWER TEST ANXIETY

Before the Test	During the Test	After the Test
1. Send positive messages a. About their ability b. About their knowledge level 2. Enhance student's individual academic self-concept a. The more secure in content, the less anxious b. Think positive thoughts or anticipate a positive outcome c. Fight negative and fearful thoughts with behavioral principle of thought stopping 3. Adequately prepare for a test. a. Over-learning b. Familiarity with parameters of the test c. Get to the test room on time. Running late increases anxiety.	1. Environment a. Same room where learning occurred b. Comfortable with adequate lighting, temperature, and work space c. No distractions d. Safe environment 2. Appropriate accommodations 3. Recognize anxiety and use interventions. a. Learned calming strategies b. EFT c. Progressive relaxation d. Diaphragmatic breathing e. Relaxation techniques f. Positive imagery g. Visualization/ recalling peaceful memories h. Prayer i. Muscle stretching j. Rolling head and neck, arching back and shoulders k. Positive self-talk	1. Student involved with development of goals. a. Explicit goals b. Written down 2. Panicked a. Study skills b. Test-taking skills c. Over learn the content d. Learn calming Strategies 3. Choked a. Employ calming strategies b. Self-efficacy skills c. Academic self-concept enhancing skills d. Concerned about situation/ environment 4. Development of Post Traumatic Test Disorder a. Desensitization b. Extinction c. Exposure d. Emotional Freedom Techniques.

Appendix B. Cont.

Before the Test	During the Test	After the Test
4. Development of good study habits a. Adequate studying b. Understanding test material c. Anticipatory planning d. Time management e. Organization skills 5. Utilization of effective study skills a. Classroom note taking skills b. Focus on understanding the concepts, not memorization c. Review notes d. Graphic organizers e. Improving memory • Rhymes & songs • Visualization • Acronyms • Accessing information & resources f. Brain learns best through patterning and associations. g. Use tutoring h. Take practice tests	4. Test taking strategies a. Scan the entire test b. Answer easier questions first, and then return to answer more difficult questions. c. Keep track of time, if timed test 5. Multiple choice a. Read the entire question b. Underline or circle key words c. Ask what question is asking d. Answer the questions before looking at the options e. Circle the option that matches your choice f. Read each option and eliminate incorrect responses g. Reread each question h. Change answers only if you misunderstood the question i. Check periodically that answers are aligned with computer answer sheet 6. True and False a. Pick true unless can prove statement false b. All parts of statement true c. Underline or circle key words d. Watch for absolutes or qualified-type statements e. Guess if no penalty	

Appendix B. Cont.

Before the Test	During the Test	After the Test
6. Recognize anxiety and use interventions. a. Biofeedback b. Meditation c. Desensitization, extinction, or exposure d. Use practice tests to prepare students – parallel to the use of systematic desensitization e. Emotional Freedom Techniques f. Relaxation techniques g. Progressive relaxation h. Diaphragmatic breathing i. Positive imagery j. Visualization k. Self-Expression / Positive self-talk l. Physical exercise m. Be careful of drinking caffeine, sugar levels, diet supplements	7. Matching and fill in the blank questions a. Read the items and statements carefully b. Look for key words or concepts. c. Match the easiest items first. d. Consider the grammar of the sentence. e. Think and use logic f. Guess when there are only several matches left unless there is a penalty for guessing. 8. Essay-type a. Read each question and focus on key words. b. Use an outline to identify main points. c. Use graphic organizers d. Open and close the essay with statements relating to the question e. Use references and research to document the answers f. Concern the technical piece of writing g. Write clearly and legibly h. Always proof read if you have time i. Be conscious of the time	

Appendix B. Cont.

Before the Test	During the Test	After the Test
	8. Essay-type j. Read each question and focus on key words k. Use an outline to identify main points l. Use graphic organizers m. Open and close the essay with statements relating to the question n. Use references and research to document the answers o. Concern the technical piece of writing p. Write clearly and legibly q. Always proof read if you have time r. Be conscious of the time	

APPENDIX C

PERSONAL PROFILE DATA SHEET (PPDS)

Name_____ Date_____

Email address_____

1. Male or female

2. Age
   a. 18-24 b. 25-31 c. 32-38 d. 39-45 e. over 46

3. What degrees do you have (not including present nursing degree)?
   a. AS (2 year degree) b. BS in ____ c. MS in ____ d. postgrad in ____

4. What is your current GPA?
   a. 2.0 – 2.5 b. 2.6 – 3.0 c. 3.1 – 3.5 d. 3.6 – 4.0

5. While you were attending nursing school, how many hours per week did you work?
   a. 0 – 10 b. 11 – 20 c. 21 – 30 d. 31 – 40 e. over 40 hrs

6. Where were you employed when you were in nursing school?
   a. In a hospital, nursing home or other medical related facility
   b. In a non-medical place (outside the medical field)

7. How many hours did you drive for school or clinical (round trip)?
   a. 0 – 1 b. 2 – 3 c. 4 – 5 d. 6 – 7 e. over 7 hours

8. How many members in your immediate family (spouse and children)?
   a. None b. 1 – 2 c. 3 – 4 d. 5 – 6 e. over 6

9. Do you feel you are overloaded and need to slow down?

10. What are your thoughts about taking the NCLEX-RN® Exam?

APPENDIX D

STUDENT PERCEPTION SURVEY 1

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Do you think that Test Anxiety is a real phenomenon?	1	2	3	4	5
Do you think there are methods that can help a student with test anxiety?	1	2	3	4	5
Do you think you experience test anxiety?	1	2	3	4	5
Do you think that stress reduction technique can help you personally?	1	2	3	4	5
I am confident that I will pass the NCLEX-RN® on the first try.	1	2	3	4	5
I don't need outside help to pass the NCLEX-RN® Exam.	1	2	3	4	5
I dread taking the NCLEX-RN® Exam.	1	2	3	4	5

Do you use any techniques to control test anxiety? If so what techniques?

Please describe your expectations regarding stress reduction techniques.

APPENDIX E

STUDENT PERCEPTION SURVEY 2

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
How many times did you practice [your] assigned method to reduce test anxiety at home?	I do not use it. 1	I practiced once or twice 2	I practiced three or four times. 3	I practiced two or three times a week. 4	I practiced almost every day. 5
These methods to reduce test anxiety worked for me.	No not at all. 1	It didn't do much for me 2	Maybe, It helped a little. 3	It reduced my anxiety, but the anxiety is not all gone. 4	It really helped me. I feel my anxiety is all gone. 5
Did you find the intervent-ions (in group) helpful for you?	No not at all. 1	It didn't do much for me 2	Maybe, it helped a little. 3	It reduced my anxiety, but the anxiety is not all gone. 4	It really helped me. I feel my anxiety is all gone. 5

Please comment on what you liked and did not like.

Please comment on what you found helpful or worked for you and did not find helpful or did not work for you.

Please comment on why you did or did not practice the test anxiety reduction technique at home.

Did you use these techniques for other reasons besides test anxiety?

Have you noticed any other effects in other areas of your life.

APPENDIX F

STUDENT PERCEPTION SURVEY 3
(Post NCLEX-RN® Exam)

1. The NCLEX-RN® Exam was:
   a. Very difficult
   b. Difficult
   c. Wasn't difficult or easy
   d. Easy
   e. Very easy

2. I was very nervous taking the NCLEX-RN® exam.
   a. So anxious I almost threw up
   b. Anxious
   c. Nervous, but not real anxious
   d. Not nervous or anxious
   e. Relaxed

3. Do you think that test anxiety is a real phenomenon?
   a. Strongly Agree
   b. Agree
   c. Neutral
   d. Disagree
   e. Strongly Disagree

4. Do you think you experience test anxiety?
   a. Strongly Agree
   b. Agree
   c. Neutral
   d. Disagree
   e. Strongly Disagree

5. EFT/Guided Imagery helped me reduce my test anxiety and do better on the test?
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree

6. Please comment on what you found helpful?

7. Please comment on what you did not find helpful?

8. Did you use these techniques (EFT or Guided Imagery) for other reasons besides test anxiety?

9. Have you noticed any other effects in other areas of your life?

10. Do you think this technique of test reduction (EFT or Guided Imagery) should be added to the curriculum?

APPENDIX G

SAMPLE ITEMS FROM THE TEST ANXIETY INVENTORY

Grading scale:
1 = Almost never
2 = Sometimes
3 = Often
4 = Almost Always

TAI Emotionality subscale questions

1. While taking examinations, I have an uneasy upset feeling.
2. I feel very panicky when I take an important test.

TAI Worry Subscale

1. Thinking about my grade in a course interferes with my work on tests.
2. During examinations, I get so nervous that I forget facts I really know.

TAI Total Score

1. During important tests, I am so tense that my stomach gets upset.

NOTE: The researcher had to get permission to show the five questions above from the Test Anxiety Inventory because the questionnaire is under copyright protection. Permission letter is shown on the next page.

www.mindgarden.com

To whom it may concern,

This letter is to grant permission for the above named person to use the following copyright material;

Instrument: ***Test Anxiety Inventory***

Author: ***Charles D. Spielberger, Ph.D.***

Copyright: ***1980 Consulting Psychologists Press, Inc.***

for his/her thesis research.

Five sample items from this instrument may be reproduced for inclusion in a proposal, thesis, or dissertation.

The entire instrument may not be included or reproduced at any time in any other published material.

Sincerely

Vicki Jaimez
Mind Garden, Inc.
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APPENDIX H

WESTSIDE TEST ANXIETY SCALE

Name Date

Rate how true each of the following is of you, from <u>extremely or always</u> true, to <u>not at all or never</u> true. Use the following 5 point scale.

5	**4**	**3**	**2**	**1**
extremely or always true	highly or usually true	moderately or sometimes true	slightly or seldom true	not at all or never true

1) __ The closer I am to a major exam, the harder it is for me to concentrate on the material.
2) __ When I study, I worry that I will not remember the material on the exam.
3) __ During important exams, I think that I am doing awful or that I may fail.
4) __ I lose focus on important exams, and I cannot remember material that I knew before the exam.
5) __ I finally remember the answer to exam questions after the exam is already over.
6) __ I worry so much before a major exam that I am too worn out to do my best on the exam.
7) __ I feel out of sorts or not really myself when I take important exams.
8) __ I find that my mind sometimes wanders when I am taking important exams.
9) __ After an exam, I worry about whether I did well enough.
10) __ I struggle with writing assignments, or avoid them as long as I can. I feel that whatever I do will not be good enough.

_____ Sum of the 10 questions

_____ Divide the sum by 10. This is your Test Anxiety score.

What does your test anxiety score mean?

1.0—1.9 Comfortably low test anxiety
2.0—2.5 Normal or average test anxiety
2.5—2.9 High normal test anxiety
3.0—3.4 Moderately high (some items rated 4=high)
3.5—3.9 High test anxiety (half or more of the items rated 4=high)
4.0—5.0 Extremely high anxiety (items rated 4=high and 5=extreme)

Scale Rationale.
The SCALE picks up the three major features of debilitative anxiety—performance impairment, intrusive thoughts, and physiological distress.

Incapacity (memory loss and poor cognitive processing) — Items #1, 4, 5, 6, 8 & 10

Worry (catastrophizing) — Items #2, 3, 9

Physiological symptoms — Item #7

The SCALE is constructed to measure anxiety impairments, with most items asking directly about performance impairment or about worrying, which interferes with concentration. Simple indications of physiological stress are found to be relatively weak indicators of performance impairment.

Recommendations.
We have found that students who score at least 3.0 or more on our scale (moderately high anxiety) tend to benefit from anxiety reduction training, experiencing lower anxiety on tests and achieving better grades.

APPENDIX I

STRESS VULNERABILITY QUESTIONNAIRE

This stress vulnerability questionnaire was developed by two psychologists at Boston University Medical Center, L. H. Miller and A. D. Smith, and is reproduced by the SCI Noble Counseling Center of Caldwell, Ohio. To complete the questionnaire, read each statement carefully and reflect upon your typical behaviors. Then write the appropriate number indicating how often the statement applies to you using the following scale.

Always	Most of the Time	Sometimes	Almost	Never
1	2	3	4	5

___ I eat at least one hot balanced meal a day.
___ I get seven to eight hours of sleep at least four nights a week.
___ I give and receive affection regularly.
___ I have at least one relative within 50 miles on whom I can rely.
___ I exercise to the point of perspiration at least twice a week.
___ I smoke less than half a pack of cigarettes a day.
___ I take fewer than five alcoholic drinks per week.
___ I am the appropriate weight for my height.
___ I have an income adequate to meet basic needs.
___ I get strength from my religious beliefs.
___ I regularly attend club or social activities.
___ I have a network of friends and acquaintances.
___ I have one or more friends to confide in about personal matters.
___ I am able to speak openly about my feelings when angry or worried.
___ I have regular conversations with the people I live with about domestic problems such as chores, money, and daily living issues.
___ I do something for fun at least once a week.
___ I am able to organize my time effectively.
___ I drink fewer than three cups of coffee (or tea or cola) a day.
___ I take quiet time for myself during the day.
___ I am in good health, including eyesight, hearing, dental health, etc.

Now add up your scores for each statement. Scores will range from 20 to 100. If your score is less than 50, you are not vulnerable to stress at this time. Any score over 50 indicates vulnerability to stress. Evaluate the reasons for the stress and identify strategies for dealing with it. Periodically monitor your progress toward reducing stress.

A score between 70 and 95 indicates a serious vulnerability to stress. Drastic lifestyle changes may be necessary to avoid the detrimental effects of stress. A score over 95 indicates extreme vulnerability to stress. Intervention and assistance from outside sources such as counselors may be necessary.

REFERENCE:

Obtained from . . .

Muskingum University – Center for Advancement of Learning. (n. d.). Stress Vulnerability Questionnaire (Learning Strategies Database). Retrieved January 28, 2008, from http://www.muskingum.edu/~cal/database/general/stressquest.html

APPENDIX J

SA-45™ SYMPTOM ASSESSMENT QUESTIONNAIRE FORM

Below is a list of problems and complaints that people sometimes have. Please read each question carefully. After you have done so, indicate how much that problem has bothered or distressed you on a 1 to 5 scale during the past 7 days, including today. Please do not skip any items. How much have the following bothered or distressed you during the past 7 days, including today.

1 Not at all 2 A little bit 3 Moderately 4 Quite a bit 5 Extremely

1 2 3 4 5	10. Suddenly scared for no reason
1 2 3 4 5	20. Having to check and double-check what you do
1 2 3 4 5	21. Difficulty making decisions
1 2 3 4 5	25. Your mind going blank
1 2 3 4 5	28. Trouble concentrating
1 2 3 4 5	38. Spells of terror or panic

Dear Marie Mohler,

You may cite up to 6 items from the SA-45™ Symptom Assessment Questionnaire in your dissertation. You are not permitted to include the full list of test questions.

On the attached application, please indicate which 6 items or less you wish to include.

Regards,
Khira Ray|***Translations & Legal Documentation Specialist***

APPENDIX K

SUBJECTIVE UNITS OF DISTRESS SCALE (SUDS)/
BLOOD PRESSURE READING

	Worst 10
	9
	8
	7
	6
	5
	4
	3
	2
	1
	0

Name _____

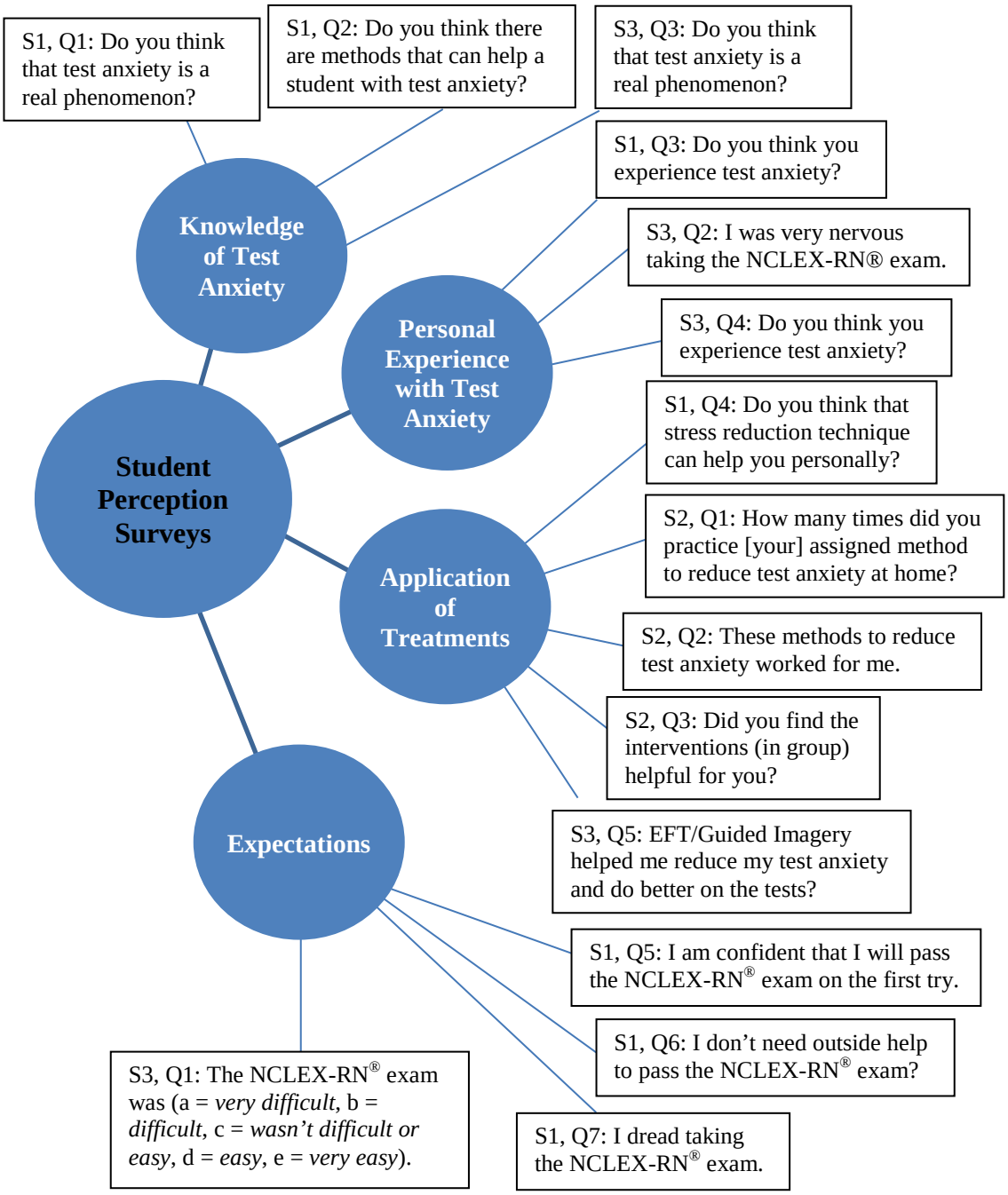
Date _____

Time _____ BP _____ SUDS _____

Time _____ BP _____ SUDS _____

APPENDIX L

CONSTRUCTS FOR RESEARCH PROJECT



APPENDIX M

GUIDED IMAGERY SCRIPT: WRITING AN EXAM

This guided imagery script will allow you to visualize the process of studying for and writing an exam. Visualizing success will promote increased confidence, concentration, and memory. Relaxation can also improve the ability to learn by eliminating some of the anxiety that interferes with taking in new information.

Begin by becoming very relaxed. Make yourself comfortable, finding a relaxed position in an environment free of distractions.

Start to relax your body, taking a deep breath in.... and out.

Breathe in again.... and exhale fully.

Breathe in.... and out.

In.... out.

Keep breathing, letting each breath relax you.

Notice some key areas in your body where tension tends to build. Your shoulders, hands, back, neck, and jaws. Focus first on your shoulders. See how your shoulders relax as soon as your attention is focused on them. Feel the muscles loosening, and your shoulders lowering... relaxing.

Let your jaws relax, letting your lower jaw drop slightly, leaving a space between your upper and lower teeth. Feel the muscles of your face becoming smooth, loose, and relaxed.

Turn your attention to your neck. See how you can let the tension go, relaxing the muscles of your neck. Let the relaxation continue down the length of your spine, relaxing all the muscles. Feel the relaxation in your neck and back.

Now focus on your hands. Open and close your hands a few times, wiggle your fingers, and then relax. Let your hands be limp and loose, resting in your lap or at your sides.

Scan your body now for any other areas that are tense. For each one, imagine directing your breath to that area. Imagine breathing in relaxation.... and breathing out tension. Breathing in a feeling of relaxation, and exhaling all the tension. Feel your muscles relaxing with each breath.

Continue to scan your body, relaxing each area that feels tense.

(pause)

Now you are feeling calm and relaxed. Your whole body feels relaxed and heavy.

Begin to visualize now the process of preparation for writing an exam. The first stage is motivation. Imagine how it would feel to be filled with motivation and drive, feeling compelled to study and write an exam.

Fully imagine this feeling, and allow yourself to experience it completely. Feel motivation.

(pause)

You are so eager to write an exam.

Imagine now the preparation leading up to writing an exam. Picture yourself studying... infested, motivated, eager, enjoying the process of assimilating new information. You are confident and capable. See yourself studying, remembering the material, and feeling energized by this process.

See yourself studying several times, reading, writing, speaking... reviewing the information you need and committing it to memory.

(pause)

Now see yourself in your mind's eye... you have studied and are prepared for the exam. You are feeling a bit excited to write an exam and share your knowledge.... but at the same time you are feeling calm and confident about the prospects of writing an exam.

Imagine yourself during the examination. See how easy it is to recall the information you studied. Picture yourself confidently writing an exam, easily drawing upon your knowledge, answering every question, and knowing you have it right.

Some of the questions are easy, and you answer them quickly. Some questions are difficult, requiring intense thought. You were expecting this, and you are prepared. Imagine yourself as you write an exam, taking a moment to breathe deeply, slowly, calmly.... feeling your body relax and allowing your mind to become calm. In this state of calm, you are able to focus... and you answer the difficult questions thoughtfully. You experience mental clarity and concentration.

Take a few moments now to imagine the process of writing an exam, feeling calm and confident, and seeing yourself answering questions successfully.

(pause)

Picture now, that you have finished the exam. See yourself feeling confident and gratified, though you have not yet received the results. You are feeling proud of yourself for your accomplishments of studying and writing an exam. You feel calm and confident while you wait for the exam results. You may find out soon how you did, or may have to wait.

Imagine getting the exam results. Feeling confident and excited.... and seeing the results: you passed! You receive an excellent grade, exactly what you were hoping for. This feeling of success and accomplishment is so wonderful, you want to write another exam just to experience it all again.

Enjoy the feelings of success.

(pause)

Take a moment to reflect upon the process of writing an exam - motivation, preparation, writing an exam, and finding out the results. Reflect upon this process feeling calm and interested.

(pause)

Now you have completed this visualization experience.... feeling mentally prepared for the process of preparing for and writing an exam. You may even find that completing this guided imagery exercise helps you to feel motivated. You may find that immediately after this session, you pursue one of the steps for writing an exam... perhaps you feel inclined to prepare and study.... or maybe to write the exam itself. You can anticipate success in whatever stage you are at. You are calm, confident, and in control.

Begin to wake up your mind and body.... returning your awareness to the present.

Wiggle your fingers, feeling your hands and arms reawakening.

Wake up your feet and legs by wiggling your toes.

Shrug your shoulders... turn your head from side to side.... feel your body waking up.

When you are feeling awake and alert, you can return to your usual activities, feeling energized, motivated, and confident.

REFERENCE:

Inner Health Studio. (n. d.). *Guided Imagery script: Writing an exam*. Retrieved February 14, 2012, from http://www.innerhealthstudio.com/writing-an-exam.html

APPENDIX N

EMOTIONAL FREEDOM TECHNIQUES HANDOUT

Basic Procedure
1. The Setup
2. The Sequence
3. The 9 Gamut Procedures
4. The Sequence

1. The Setup
Repeat three times this affirmation while rubbing (rub to the left) the sore spot or tapping the karate chop point.

"Even though I have this _____, I deeply and completely accept myself."

2. The Sequence
Tap about seven times on each of the energy points while repeating the reminder phrase at each point.

Tap sequence: eyebrow, outside edge of eye, under eye, under nose, chin, collar bone, below nipple, under left arm, thumb, index finger, middle finger, little finger, karate chop.

3. The 9 Gamut Procedure
Continuously tap on the gamut point while performing each of these nine actions: (a) eyes closed, (b) eyes open, (c) eyes hard down right, (d) eyes hard down left, (e) roll eyes in circle – clockwise, (f) roll eyes in other direction – counterclockwise, (g) hum two seconds of a song, (h) count to five, and (i) hum two seconds of a song.

4. The Sequence (Again)
Tap about seven times on each of the following energy points while repeating the reminder phrase at each point.

Tap sequence: eyebrow, outside edge of eye, under eye, under nose, chin, collar bone, below nipple, under left arm, thumb, index finger, middle finger, little finger, karate chop.

Subsequent rounds, the Setup affirmation and the reminder phase are adjusted to reflect that you are addressing the remaining problem.

"Even though I ***still*** have ***some*** of this _____, I deeply and completely accept myself.

Reminder Phrase:

remaining _____

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Craig, G. (2011). *EFT: Emotional Freedom Techniques, the EFT manual* (2nd ed.). Santa Rosa, CA: Energy Psychology Press.

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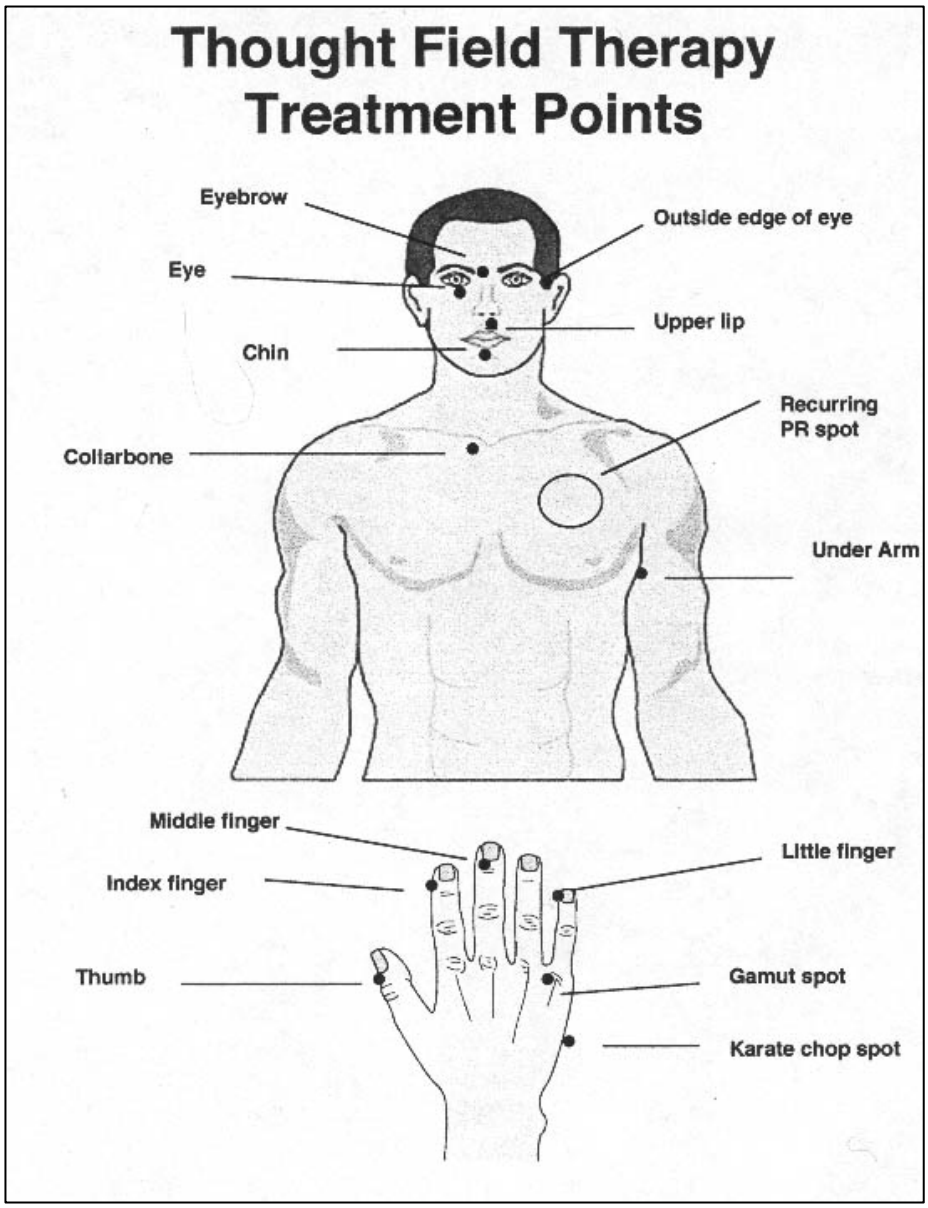
APPENDIX O

TREATMENT POINTS FOR EFT



Permission to use picture titled *Thought Field Therapy Treatment Points* in Appendix O is listed below.

Hi Marie. It's ok to use the image you requested in your dissertation.

Thanks for checking. Good luck with the project.

Bill

Bill Wisneski
Producer
Palomar College Television
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APPENDIX P

TEST ANXIETY EFT SCRIPT

1. The Setup... Repeat three times this affirmation:

   Sore Spot (circle clockwise) "Even though I have this _____ (anxiety about taking important tests), I deeply and completely accept myself."

2. The Sequence... Tap about seven times and breathe on each of the following energy points while repeating the reminder phrase at each point.

   EB – Beginning of Eye Brow

   "I feel overwhelmed at all the things I have to do."

   SE – Side of Eye

   "I feel angry when I do not know an answer to a question on important tests."

   UE – Under Eye

   "During important tests, I feel tense and sometimes anxious."

   UN – Under Nose

   "I would be embarrassed if I didn't do well on this test."

   CH – Chin

   "I worry about whether I will meet other people's expectations."

   CB – Collar Bone

   "I can't stop thinking about the mistakes I have made."

BN – Below Nipple (6")

"I am never satisfied with what I do."

UA – Under Arm

"When taking an important test, I have an upset feeling."

TH – Thumb

"I feel sometimes I never get it right."

IF – Index Finger

"During the test, I think about the consequences of failing this important exam."

MF – Middle Finger

"During important tests, I feel others may do better than I do."

LF – Little Finger

"I become panicked when I take important tests."

KC – Karate Chop

"During important tests, I think I may fail."

3. The 9 Gamut Procedure... Continuously tap on the Gamut Point (base of $4^{th}/5^{th}$ knuckle) while performing each of these nine actions: (a) eyes closed, (b) eyes open, (c) eyes hard down right, (d) eyes hard down left, (e) roll eyes in circle, (f) roll eyes in other direction, (g) hum two seconds of a song, (h) Count one to five aloud, (i) hum two seconds of a song.

4. The Sequence (Again)… Tap about seven times on each of the following energy points while repeating the reminder phrase at each point: EB, SE, UE, UN, CH, CB, BN, UA, TH, IF, MF, LF, KC.

5. Ask, "What came up?" "How are you feeling?" "What number are you?"

6. If subsequent rounds are needed because SUDS are too high, the setup affirmation and the reminder phrase are adjusted to reflect the fact that you are addressing the remaining problem.

   "Even though I have some remaining _____, I deeply and completely accept myself" (three times)

   Tap sequence on "Remaining _____"

APPENDIX Q

ENERGY PSYCHOLOGY: A HIERARCHY OF EVIDENCE

Below you will find definitions and a current list of studies and review articles in the field of Energy Psychology, arranged in ascending order of increasing scientific rigor, from anecdotal reports through Randomized Controlled Studies with Strong Generalizability.

Anecdotal Report: An informal report describing outcomes after applying a psychological method with a single individual.

Systematic Observation: An informal outcome report describing the course of treatment using a single therapeutic approach with multiple clients.

Case Study: A formal report which uses established pre- and post-intervention assessments with a specific client and details multiple treatment variables.

Uncontrolled Outcome Study: A formal study using established pre-and post-intervention assessments with multiple clients, but lacking randomization or a control/comparison group.

Randomized Controlled Study with Limited Generalizability: A formal study using established pre- and post-intervention assessments with multiple clients, including randomization and at least one control/comparison group, but lacking follow-up, "blinding," and/or rigor in design and execution.

Randomized Controlled Study with Potentially Strong Generalizability: A formal study using established pre- and post-intervention assessments with multiple clients, including randomization, follow-up, and at least one control/comparison group with means for "blinding" those assessing the outcomes from knowledge of which subjects were in which group. These studies are well-designed and administered so that the effects of each treatment condition can be reliably compared and generalizations to specified populations can be anticipated with reasonable confidence.

Randomized Controlled Study with Strong Generalizability: As above, with two additional requirements: 1) at least one of the control groups utilizes a treatment approach whose efficacy has been empirically established with the population being studied, and 2) the investigators be disinterested rather than advocates or practitioners of the treatment being studied.

Theoretical and Review Articles: Scholarly articles which discuss theoretical considerations and plausible mechanisms of action for a treatment approach, review existing research studies, and/or discuss clinical applications based on these studies.

Anecdotal Reports: There are several thousand anecdotal reports re: positive effects reported from Energy Psychology techniques. See: www.emofree.com, www.EFTUniverse.com, and www.remarkablerecoveries.com.

Systematic Observational Reports:

Callahan, R. (2001a). Raising and lowering HRV: Some clinical findings of Thought Field Therapy. *Journal of Clinical Psychology, 57*(10), 1175-86. (Published , but not peer reviewed).

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Yancey, V. (2002). The use of Thought Field Therapy in educational settings. *Dissertation Abstracts International, 63* (07), 2470A. (UMI No. 3059661)

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Swack, J. (2009, September). Elimination of Post Traumatic Stress Disorder (PTSD) and other psychiatric symptoms in a disabled Vietnam veteran with traumatic brain injuries (TBI) in just six sessions using Healing from the Body Level Up methodology, an Energy Psychology approach. *International Journal of Healing and Caring*, *9*(3).

Uncontrolled Outcome Studies:

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Randomized Controlled Trials with Limited Generalizability:

Andrade, J., & Feinstein, D. (2004). Preliminary report of the first large-scale study of Energy Psychology. This research, which was initiated in the late 1980s and included various studies over a 14-year period, was published in 2004 in an appendix to David Feinstein's *Energy Psychology Interactive: Rapid Interventions for Lasting Change*. Ashland, OR: Innersource.

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Waite, L. W., & Holder, M. D. (2003). Assessment of the Emotional Freedom Techniques: An alternative treatment for fear. *The Scientific Review of Mental Health Practice, 2*(1), 20-26.

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Baker, A. Harvey. (2010). Emotional Freedom Techniques (EFT) reduces intense fears: A partial replication and extension of Wells et al. (2003). *Energy Psychology: Theory, Research, & Treatment*, *2*(2).

Church, D. (2009). The effect of EFT (Emotional Freedom Techniques) on athletic performance: A randomized controlled blind trial. *The Open Sports Sciences Journal, 2*, 94-99.

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Fitch, J. (2011). The efficacy of Primordial Energy Activation and Transcendence (PEAT) for public speaking anxiety. *Energy Psychology: Theory, Research, & Treatment*, *3*(2).

Karatzias, T., Power, K., Brown, K., McGoldrick, T., Begum, M., Young, J., . . . Adams, S. (2011). A controlled comparison of the effectiveness and efficiency of two psychological therapies for Posttraumatic Stress Disorder, Eye Movement Desensitization and Reprocessing vs. Emotional Freedom Techniques. *Journal of Nervous and Mental Disorders*, *199*(6), 372-378. doi: 10.1097/NMD.0b013e31821cd262

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Kober, A., Scheck, T., Greher, M., Lieba, F., Fleischhackl, R., Fleischhackl, S., . . . Hoerauf, K. (2002, September). Prehospital analgesia with acupressure in victims of minor trauma: A prospective, randomized, double-blinded trial. *Anesthesia & Analgesia*, *95*(3), 723-727.

Middleton, T., & O'Donnell, E. (2011). The efficacy of EFT delivered by phone vs office visits: A randomized controlled trial. *Energy Psychology: Theory, Research, & Treatment*, *3*(2).

Salas, M., Brooks, A., & Rowe, J. (2011). The immediate effect of a brief Energy Psychology intervention (Emotional Freedom Techniques) on specific phobias: A pilot study. *Explore, 7*, 155-161.

Schoninger, B., & Hartung, J. (2010). Changes on self-report measures of public speaking anxiety following treatment with Thought Field Therapy. *Energy Psychology: Theory, Practice, & Research, 2*(1), May 2010.

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Stapleton, P., Sheldon, T., Porter, B., & Whitty, J. (2010). A randomized clinical trial of a meridian-based intervention for food cravings with six month follow-up. *Behaviour Change, 28*(1), 1-16.

Stein, P., & Brooks, A. (2011). Efficacy of EFT provided by coaches versus licensed therapists in veterans with PTSD. *Energy Psychology Journal: Theory, Research, & Treatment, 3*(1).

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Theoretical and Review Articles

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Church, D., & Brooks, A. (2010). Application of Emotional Freedom Techniques. *Integrative Medicine: A Clinician's Journal*, 2010, August/September, 2010.

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Feinstein, D. (2008). Energy psychology in disaster relief. *Traumatology, 141*(1), 124-137.

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Lane, J. (2009). The neurochemistry of counterconditioning: Acupressure desensitization in psychotherapy. *Energy Psychology: Theory, Research, & Treatment, 1*(1), 31-44.

Mollon, P. (2007, December). Thought Field Therapy and its derivatives: Rapid relief of mental health problems through tapping on the body. *Primary Care and Community Psychiatry*, *12*(3-4), 123-127.

Rubik, B. (2002). The biofield hypothesis: Its biophysical basis and role in medicine. *Journal of Alternative and Complementary Medicine, 8*, 703-717.

Ruden, R. A. (2005). A neurobiological basis for the observed peripheral sensory modulation of emotional responses. *Traumatology, 11*(3), 145-158.

This list was compiled by David Feinstein and John Freedom. If you have additions or updates to this list, please email research_comittee@energypsych.org. Thank you.

APPENDIX R

INFORMED CONSENT

TITLE: Utilization of Emotional Freedom Techniques (EFT) to Reduce Test Anxiety in High Stakes Testing

PROJECT DIRECTOR: Marie Mohler

PHONE NUMBER: 701-720-7585

DEPARTMENT: Teaching and Learning

INTRODUCTION:
You are invited to participate in a research study. Research studies are designed to gain scientific knowledge that may help other people in the future. You may or may not receive any benefit from being part of the study.

STATEMENT OF THE RESEARCH:
A person who is to participate in the research must give his or her informed consent to such participation. This consent must be based on an understanding of the research and knowing the risks of the research. This document provides information that is important to this understanding. This research study includes only subjects who choose to take part. Please take your time in making your decision as to whether to participate. If you have questions at any time, please ask.

WHAT IS THE PURPOSE OF THIS STUDY?
You are invited to participate in a study to analyze factors such as test anxiety, stress, and any other predictive factors relating to success on the HESI Exam and the NCLEX-RN® exam. You are selected because you are in your last semester of your program and you are eligible to take the NCLEX- RN® exam upon graduation.

This research has two goals: 1) See whether there is any correlation between factors such as stress, test anxiety, or expectations that may be predictive of success or failure in passing the NCLEX- RN® exam; 2) Compare methods of EFT to Guided Imaginary regarding the reduction of test anxiety and success in passing NCLEX-RN® exam.

HOW MANY PEOPLE WILL PARTICIPATE?
Approximate 25 – 45 people will take part in this study at the University of Mary, Bismarck, ND.

Date _____
Subject initial's _____

HOW LONG WILL I BE IN THIS STUDY?

Your participation in this study will last from February 2012 until July 2012. You will meet in a group for 3 sessions, each session lasting 1 hour. After completion of the NCLEX RN® exam you will be asked to complete a short survey via computer.

WHAT WILL HAPPEN DURING THE STUDY?

If you decide to participate:

- You will sign consent forms:
  - Consent to Participate in Research Study (this form)
  - HIPAA Consent Form
  - Consent to release GPA of nursing courses, HESI exam score, and NCLEX-RN® exam score
- You will complete various measurements tools. Although we would like you to answer all questions, you do not have to answer all of the questions.
  - Subjective Unit of Distress form (every meeting)
  - Blood Pressure (every meeting)
  - Test Attitude Inventory (TAI) (first and third meeting)
  - Westside Test Anxiety Scale (second and third meeting)
  - Stress Vulnerability Questionnaire (second and third meeting)
  - Personal Profile Data Sheet (first meeting)
  - SA- 45, Symptom Assessment (first meeting)
  - Student Perception Survey Form #1 (first meeting)
  - Student Perception Survey #2 (third meeting)
  - A short survey completed via computer after you have taken the NCLEX RN® exam
- Participate in an intervention to reduce test anxiety. Guided Imagery and Emotional Freedom Techniques (EFT) are the interventions. Emotional Freedom Techniques involves touching a series of acupressure points on the head, upper chest under the arm, and hand. You do not need to perform any technique that is uncomfortable to you. These techniques will be explained and practiced in the second and third meetings. You will be asked to perform these techniques at home for about 5 minutes each day until you have taken the exams or feel that you no longer need these techniques.
- You will be selected for the test anxiety reduction intervention by a randomization process.

WHAT ARE THE RISKS OF THE STUDY?

There could be some risks from being in this study. Such risks are not viewed as being in excess of "minimal risk." These risks include, but are not limited to: frustration when completing a test anxiety inventory, becoming upset due to questions that may seem sensitive to you, and fatigue during the sessions. To date, research confirms that there are no known immediate or long-term physical, psychological, or social risks caused by Emotional Freedom Techniques.

Date _____

Subject initial's _____

If, however, you become upset by questions in the questionnaires or surveys, you may choose not to answer that question. If you would like to talk with someone about your feelings, in regards to this study, you are encouraged to contact the Counseling Services at your institution. You can make an appointment at the student development office or call 355-8145. I also will be available at any time for questions and concerns. You can withdraw your comments and discontinue participation at any time. You can withdraw from the study by stating, "I no longer want to continue."

WHAT ARE THE BENEFITS OF THIS STUDY?
A potential benefit is improving your psychological and physiological functioning, especially if you have test anxiety. You may not benefit personally from being in this study, however, other people might benefit from this study. This study will:

- Examine predictor factors which influence the outcome of the NCLEX-RN® exam pass rate.
- Analyze the role that test anxiety, stress, and other factors have in the success rates of the NCLEX-RN® exam.
- Assess treatment efficacy regarding the use of EFT and Guided Imagery.

ALTERNATIVES TO PARTICIPATING IN THIS STUDY
Instead of choosing to be part of this study, you can choose to discuss your symptoms with a primary care physician, psychiatrist, or other mental health professionals.

WILL IT COST ME ANTHING TO BE IN THIS STUDY?
You will not have any costs for being in this research study. All the study costs, including any procedures related directly to the study, will be paid for by the study. Costs for your regular medical care, which are not related to this study, will be your own responsibility.

WILL I BE PAID FOR PARTICIATING?
You will not be paid for being in this research study. There will be an incentive drawing for students who complete the study.

WHO IS FUNDING THIS STUDY?
The University of North Dakota and the research team are receiving no payment from other agencies, organization, or companies to conduct this research study.

CONFIDENTIALITY
The records of this study will be kept private to the extent permitted by law. In any report about this study that might be published, you will not be identified. Your study record may be reviewed by Government agencies, the UND Research Development and Compliance office and the University of North Dakota Institutional Review Board.

Date _____
Subject initial's _____

Any information that is obtained in this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Confidentially will be maintained by keeping copies of consent forms in a different locked cabinet than the data from the study. All data and consent forms will be kept in a locked cabinet.

Those who have access to the data and consent forms include the project director (Marie Mohler), my student adviser (Dr. Lars Helgeson), dissertation committee members, and research staff. After three years, at the end of the study, all the data will be destroyed.

If we write a report or an article about this study, we will describe the study results in a summarized manner so that you cannot be identified.

IS THIS STUDY VOLUNTARY?
Your participation is voluntary. If you choose not to continue, please notify the principal investigator, Marie Mohler. You can withdraw at any time by stating, "I no longer want to continue." You may discontinue your participation at any time without penalty or loss of benefit to which you are otherwise entitled. Your decision whether or not to participate will not affect your current or future relations with your institution.

CONTRACTS AND QUESTIONS?
The researcher conducting this study is Marie Mohler. You may ask any questions you have now or later. If you have questions, concerns, or complaints about this research please contact: Marie Mohler at 701-720-7585 (cell phone).

If you have questions regarding your rights as a research subject, or if you have any concerns or complaints about the research, you may contact the University of North Dakota Institutional Review Board at 701-777-4279. Please call this number if you cannot reach research staff, or you wish to talk with someone else.

Your signature indicates that this research study has been explained to you, that your questions have been answered, and that you agree to take part in this study. You will receive a copy of this form.

Date _____
Subject initial's _____

My signature below acknowledges my voluntary participation in this research project. Such participation does not release the researcher, the University of Mary, or other agencies from their professional and ethical responsibilities to me. Potential risks from participation in this research project have been disclosed to me. I acknowledge that unforeseeable and/or unknown risks or discomforts may occur. In the event that medical treatment occurs as a result of normal participation in this research project, the University of Mary, or other agencies will not be responsible for my medical costs or other damages incurred in the absence of fault on their behalf.

Subjects Name: _____

_____ _____
Signature of Subject Date

I have discussed the above points with the subject.

_____ _____
Signature of Person Who Obtained Consent Date

APPENDIX S

HIPPA CONSENT FORM

AUTHORIZATION (CONSENT) TO PERMIT THE USE AND DISCLOSURE OF IDENTIFIABLE MEDICAL INFORMATION (PROTECTED HEALTH INFORMATION) FOR RESEARCH PURPOSES

STUDY TITLE: Utilization of Emotional Freedom Techniques (EFT) to reduce Test Anxiety in High Stakes Testing

PARTICIPANT'S NAME: _____

1. What is the purpose of this form?

The research study in which you are participating may help researchers learn more about the causes, or how to prevent and treat certain conditions. Researchers would like to use your health information for research. This information may include data that identifies you. Please carefully review the information below. If you agree that researchers can use your personal health information, you must sign and date this form to give them your permission.

By signing this document, you will authorize Marie Mohler and her research team to access your protected health information.

2. **What personal health information do the researchers want to use?**

The researchers want to use the portions of your personal profile data sheet (PPDS), psychological questionnaires, SUDS scale, and blood pressure that they will need for their research. If you enter a research study, information that will be used and/or released may include (but not limited to) the following:

- Specific information about the treatments you received,
- Information about other mental or physical conditions that may affect your treatment or success rate on the HESI Exam and NCLEX-RN® exam,
- Information about personal data that may affect your treatment of success rate on the HESI exam and NCLEX- RN® exam.

Your Initials _____

Date _____

3. **Why do the researchers want your personal health information?**

   It is the intention of this study to see if EFT and Guided Imaginary can be used to treat any of the distress symptoms that test anxiety or stress might exhibit.

4. **Who will be able to use your personal health information?**

   Marie Mohler, RN, MN, CNM, PhD student at University of North Dakota will have access to the data that includes protected health information.

   Marie Mohler of University of North Dakota will use your health information for research. The records of this study will be kept private to the extent permitted by law. As part of this research, the below listed groups may have access to your information. Your study record may be reviewed by

   - Government agencies
   - UND Research Development and Compliance office
   - University of North Dakota Institutional Review Board
   - Student adviser and dissertation committee members
   - Research staff

If you feel your health information has not been adequately protected, you may contact or visit the University of North Dakota Institutional Review Board at 701-777-4279.

5. **How will information about you be kept private?**

   Only researchers will have access to your information. The information will be kept in a locked cabinet separate from your consent form. We will not release personal health information about you to others except as authorized or required by law and institutional policy. However, once your information is given to other organizations that are not required to follow federal privacy laws, we cannot assure that the information will remain protected.

6. **What happens if you do not sign this permission form?**

   Taking part in a research study is completely voluntary and there is no penalty if you choose not to participate. If you decide not to sign this permission form you will not be able to take part in the research study for which you are being considered. This will not affect your rights as an employee, student, or eligibility for benefits.

 Your Initials _____

Date _____

7. **If you sign this form, will you automatically be entered into the research study?**

   No, you cannot be entered into any research study without further discussion and a separate consent. After discussion, you may decide to take part in the research study. At that time, you will be asked to sign a specific research consent form.

8. **What happens if you want to withdraw your permission?**
   You can change your mind at any time and withdraw your permission to allow your personal health information to be used in the research. Beginning on the date you withdraw your permission, no new personal health information will be used for research.

   If you sign this form and enter the research study, but later change your mind and withdraw your permission, you will be removed from the research study at that time. This will not affect your rights as an employee, student, or eligibility for benefits.

   To withdraw your permission, please contact the principal investigator at the number listed below. The study team will make sure your request to withdraw your permission is processed correctly.
   Marie Mohler, RN, MN, CNM, 10917 W. Minnezona Ave. Phoenix, Arizona 85037
   Cell phone: (701) 720-7585

9. **How long will this permission last?**

   If you agree by signing this form that researchers can use your personal health information, this permission has no expiration date OR will expire at the end of the research study which is usually one year.

10. **What are your rights regarding access to your personal health information?**
    You have the right to refuse to sign this permission form. You have the right to review and/or copy records of your personal health information kept by Marie Mohler RN, MN, CNM. You do not have the right to review and/or copy records kept by the study sponsor or other researchers associated with the research study.

 Your Initials _____

Date _____

Signatures

You agree that your personal health information may be used for the research purposes described in this form.

_____ _____
Signature of Participant Date

_____P
rinted Name of Legal Representative (if applicable)

_____ _____
Printed Name of Person Obtaining Permission Date

Test Anxiety - HIPPA Page 4 Your Initials _____

Date _____

APPENDIX T

ACADEMIC CONSENT FORM

AUTHORIZATION (CONSENT) TO PERMIT THE USE AND DISCLOSURE OF IDENTIFIABLE ACADEMIC INFORMATION PROTECTED FOR RESEARCH PURPOSES

Study Title: Utilization of Emotional Freedom Techniques (EFT) to reduce Test Anxiety in High Stakes Testing

1. **What is the purpose of this form?**

   The research study in which you are participating may help researchers learn more about the causes, predicative factors, and interventions regarding success rates in passing the HESI exam and NCLEX-RN® exam. Researchers would like to use your academic information (nursing GPA, HESI exam scores, and if you passed or failed the NCLEX-RN® exam). This information may include data that identifies you. Please carefully review the information below. Signing and dating this form allows researchers to use your personal academic record.

2. **Why do the researchers want your personal academic information?**

   It is the intention of this study to see if EFT and Guided Imagery can be used to treat any of the distress symptoms that test anxiety or stress may exhibit. Also this study's intention is to asses if there are any predicative factors regarding the success in passing the HESI exam and the NCLEX-RN® exam.

3. **Who will be able to use your personal academic information?**

   Marie Mohler, RN, MN, CNM, PhD student at University of North Dakota will have access to the data that includes protected academic information.

Your Initials _____
Date _____

Marie Mohler of University of North Dakota will use your academic information for research. The records of this study will be kept private to the extent permitted by law. As part of this research, the below listed groups may have access to your information. Your study record may be reviewed by

- Government agencies
- UND Research Development and Compliance Office
- University of North Dakota Institutional Review Board
- Student adviser and dissertation committee members
- Research staff

If you feel your academic information has not been adequately protected, you may contact or visit the University of North Dakota Institutional Review Board at 701-777-4279.

4. How will information about you be kept private?

Only researchers will have access to your information. We will not release any information about you to others except as authorized or required by law and institutional policy. However, once your information is given to other organizations that are not required to follow federal privacy laws, we cannot assure that the information will remain protected.

5. **What happens if you want to withdraw your permission?**

You can change your mind at any time and withdraw your permission to allow your personal academic information to be used in the research. Beginning on the date you withdraw your permission, no new personal academic information will be used for research.

If you sign this form and enter the research study, but later change your mind and withdraw your permission, you will be removed from the research study at that time. This will not affect your rights as an employee, student, or eligibility for benefits.

To withdraw your permission, please contact the principal investigator at the number listed below. The study team will make sure your written request to withdraw your permission is processed correctly.
Marie Mohler, RN, MN, CNM, 10917 W. Minnezona Ave., Phoenix, Arizona 85037 Cell phone: (701) 720-7585

Your Initials _____
Date _____

SIGNATURES

You agree that your personal academic information (nursing GPA, the score obtained on HESI exam, and if you passed or failed the NCLEX-RN® exam) may be used for the research purposes described in this form.

_____

Signature of Participant Date

_____P

rinted Name of Legal Representative (if applicable)

_____

Printed Name of Person Obtaining Permission Date

APPENDIX U

INVITATION LETTER

Utilization of Emotional Freedom Techniques to Reduce Test Anxiety in High Stakes Testing: Invitation to Join Research Study

Dear Nursing Student,

You are being asked to participate in a research study to help identify if test anxiety or other stress factors may be interfering with being successful in passing the HESI exam and the NCLEX-RN® exam. Also, you are offered a form of treatment which may be helpful in reducing test anxiety and stress.

In order to identify factors that may be interfering with your testing success, you are being asked to complete 3 short questionnaires at the beginning and the end of the program. The questionnaires are the:

1. Test Anxiety Inventory
2. Westside Test Anxiety Scale
3. Stress Vulnerability Questionnaire

Also, there are several short surveys completed only once.

1. SA-45™ Symptom Assessment Questionnaire to determine if conditions other than anxiety may be interfering with passing. This is only at first session.
2. Personal Profile Data Sheet to determine if other factors could interfere with passing. This is only at the first session.
3. Student Perception Survey, Form 1. Completed only at the first session.
4. Student Perception Survey, Form 2. Completed in the third session.
5. Student Perception Survey, Form 3. Completed after you have taken the NCLEX-RN® exam. This will be done by an online survey.

The Subjective Units of Distress (SUDS) form, similar to the pain scale and the Blood Pressure readings will be done before and after treatments on the second and third meeting.

Although I would like you to answer all questions, you do not have to answer all of the questions. All of your responses will be kept confidential. If any of the data from the

study is used for publication, you will not be identified in any way. Results of the questionnaires will be stored in a locked file in the home of Marie Mohler. At the end of the study, your questionnaires will be destroyed. If you would like to receive feedback on the results of your questionnaires/surveys, you can contact Marie Mohler at 701-720-7585.

If you wish to join the research study you will be randomized into two groups, either Guided Imagery or Emotional Freedom Techniques. Gary Craig built Emotional Freedom Techniques upon a substantial body of research utilizing acupuncture points and meridian lines from Chinese medicine. Emotional Freedom Techniques (EFT) uses the end points of the acupuncture meridians by lightly tapping on the points while engaging in specific cognitive thinking patterns and saying certain affirmations. This action calms the fear centers in the brain and reduces anxiety. Guided Imagery also calms fear centers so that the student can think more clearly, and thus, achieve a more accurate measurement of the student ability.

Your participation in this research study is voluntary. You can withdraw from the study at any time just by saying, "I no longer wish to participate." Refusal to participate or withdrawal from the study will not affect your status at the University in any way.

After e-mail discussions with Professor Nolan, we have outlined the following schedule. I am open to the schedule as far as time and dates, so if the class wishes and it fits with everyone's schedule, the schedule could be modified.

1. Session 1: Feb 9th from 4:30 PM until 5: 30 PM. This is open to all students in Nursing 421 whether you wish to join the research study or not. I will describe the study, as well as explain about testing errors frequently made by students. There will be snacks provided. Coming to this session does not mean you are part of the study. Those who wish to become part of the study will sign consent forms and complete short surveys. There will be short surveys/questionnaires to fill out and bring to next meeting. Bring in sealed envelope which will be provided. Please put your name on the sheets.

2. Session 2: February 16th. We will be divided into two groups. Group A will meet from 12:00 (noon) until 12:30 PM. Group B will meet from 12:30 PM until 1:00 PM. Lunch will be provided.

3. Session 3: Will be divided into two groups on two different days.

    a. Group A, March 8th from 4:30 PM until 5:25 PM. Snacks will be provided. Group B can come and get snacks, but then will have to leave.

    b. Group B, March 12th from 12:00 (noon) until 12:55 PM. Lunch will be provided. (Group A can get lunch but then will have to leave).

c. At 12:55 PM. There will be one incentive drawing of $300 for the people who have completed the study.

I am looking forward to working with you. I have helped students pass NCLEX-RN® exam when they have failed their board and also students preparing for boards for the first time. I have had extreme success with the students passing after I have helped them. I know my methods work, and the students have proven it. Check with your student contacts from Minot State University to verify what I have said. It is my sincere wish for you that there will be no retakes on the HESI exam or on the NCLEX-RN® exam.

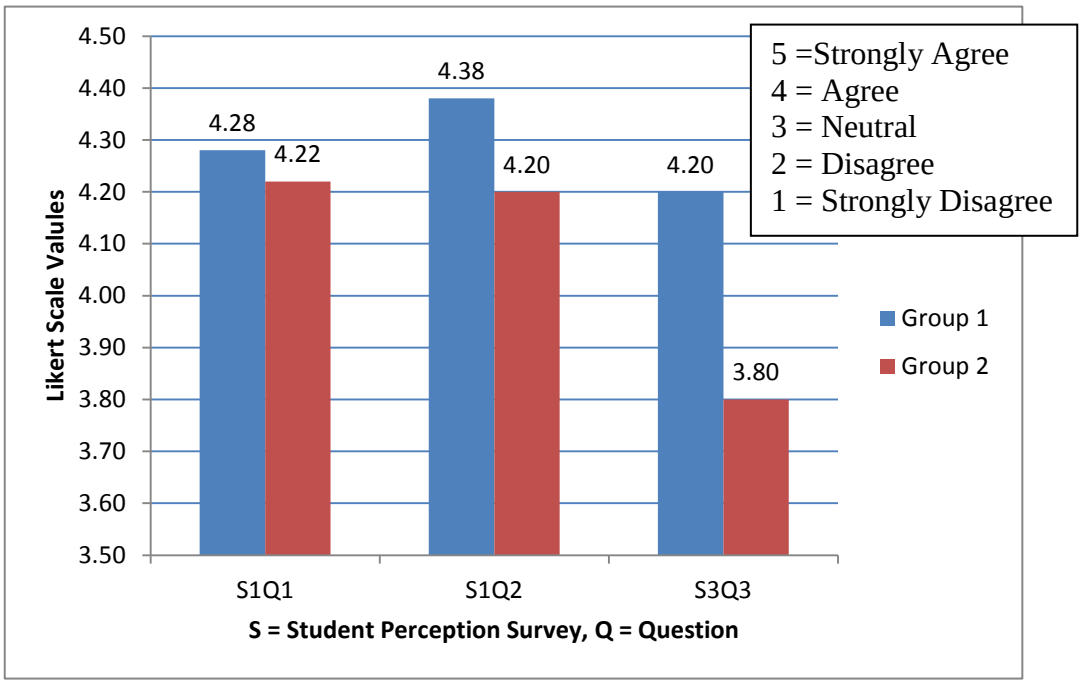
Yours Truly,

Marie Mohler

Marie Mohler, PhDc, RN, MN, CNM

APPENDIX V

"KNOWLEDGE OF TEST ANXIETY" CONSTRUCT – MEAN RESPONSES



Note: means are based on all participant data

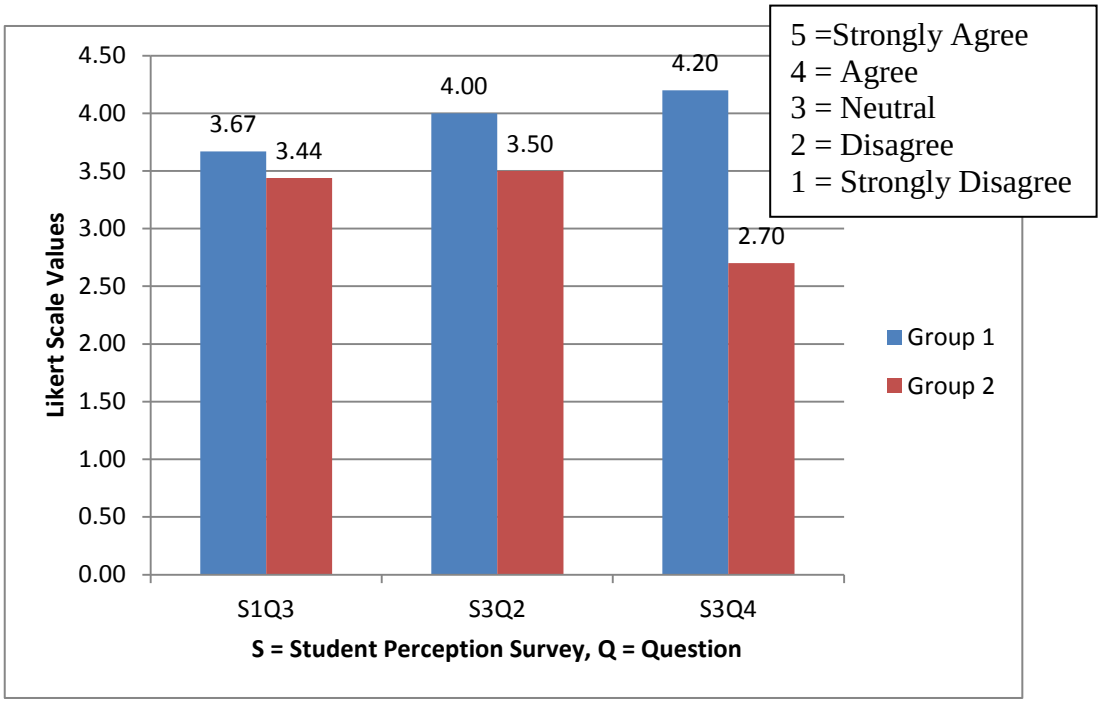
Survey 1, Question 1: This shows Group 1, with a mean of 4.28, feels test anxiety is a real phenomenon. Group 1's mean response was similar to Group 2's response with a mean of 4.22. The question stated, "Do you think that test anxiety is a real phenomenon?"

Survey 1, Question 2: This shows Group 1, with a mean 4.38, felt that there were methods available that can help students with test anxiety. Group 2, with a mean of 4.20, thought the same way. The question stated, "Do you think there are methods that can help a student with test anxiety?"

Survey 3, Question 3: This shows Group 1, with a mean of 4.20, continued to feel that test anxiety was a real phenomenon, more than Group 2, with a mean of 3.80. Group 1 values were comparable to the same question asked weeks earlier. Group 2 showed a sharper decrease in thinking that test anxiety was a real phenomenon. The question stated, "Do you think that test anxiety is a real phenomenon?"

APPENDIX W

"PERSONAL EXPERIENCE WITH TEST ANXIETY" CONSTRUCT – MEAN RESPONSES



Note: means are based on all participant data

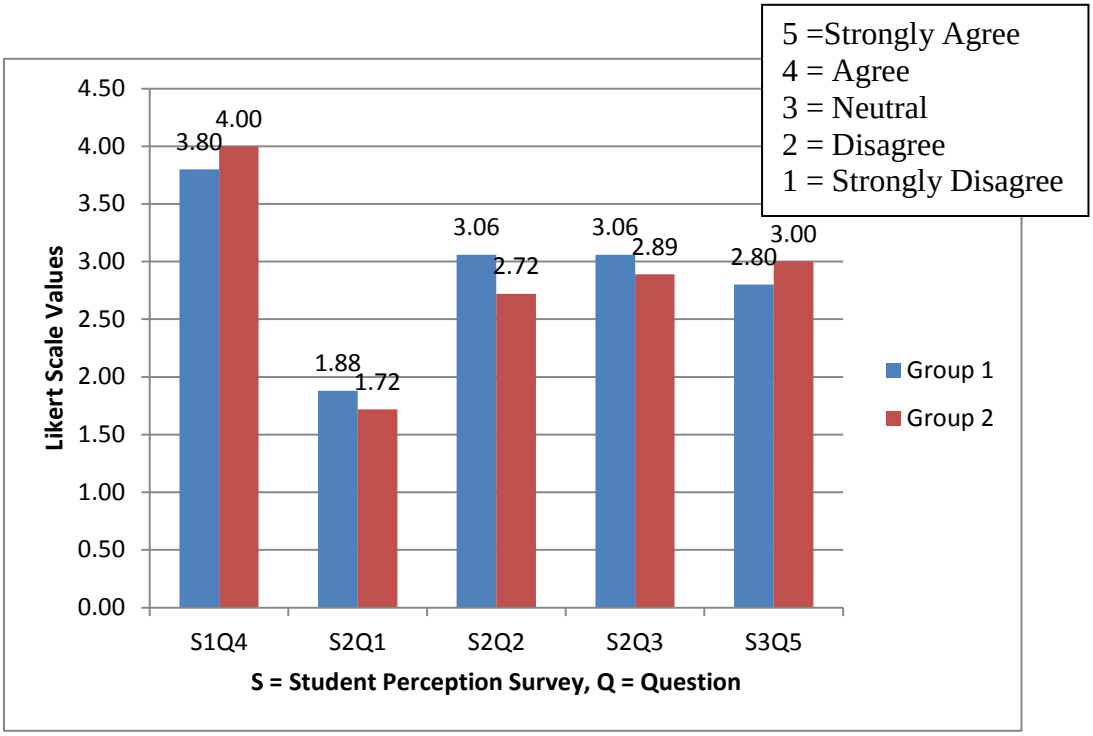
Survey 1, Question 3: This shows Group 1 with a mean of 3.67; they experienced more test anxiety than Group 2 with a mean of 3.44. The question stated, "Do you think you experience test anxiety?"

Survey 3, Question 2: This shows Group 1 with a mean of 4.00. Group 1 felt more anxious when taking the NCLEX-RN® exam than Group 2 with a mean of 3.50. The question stated, "I was very nervous taking the NCLEX-RN® exam?"

Survey 3, Question 4: This shows Group 1, with a mean of 4.20, continued to feel that they experienced test anxiety to a greater degree than Group 2, with a mean of 2.70. Compared to mean scores from an identical question in Student Perception Survey 1, the mean score in Group 1 rose higher in Student Perception Survey 3, while the mean score in Group 2 declined. The question asked, "Do you think you experience test anxiety?"

APPENDIX X

"APPLICATION OF TREATMENTS" CONSTRUCT – MEAN RESPONSES



Note: means are based on all participant data

Survey 1, Question 4: This shows Group 1 with a mean of 3.80. They thought stress reduction techniques could help them less effectively than Group 2 with a mean of 4.0. The question stated, "Do you think you think that stress reduction technique can help you personally?"

Survey 2, Question 1: Responses to this question, showed Group 1, with a mean of 1.88, practiced a little more than Group 2, with a mean of 1.72. The question stated, "How many times did you practice [your] assigned method to reduce test anxiety at home?"

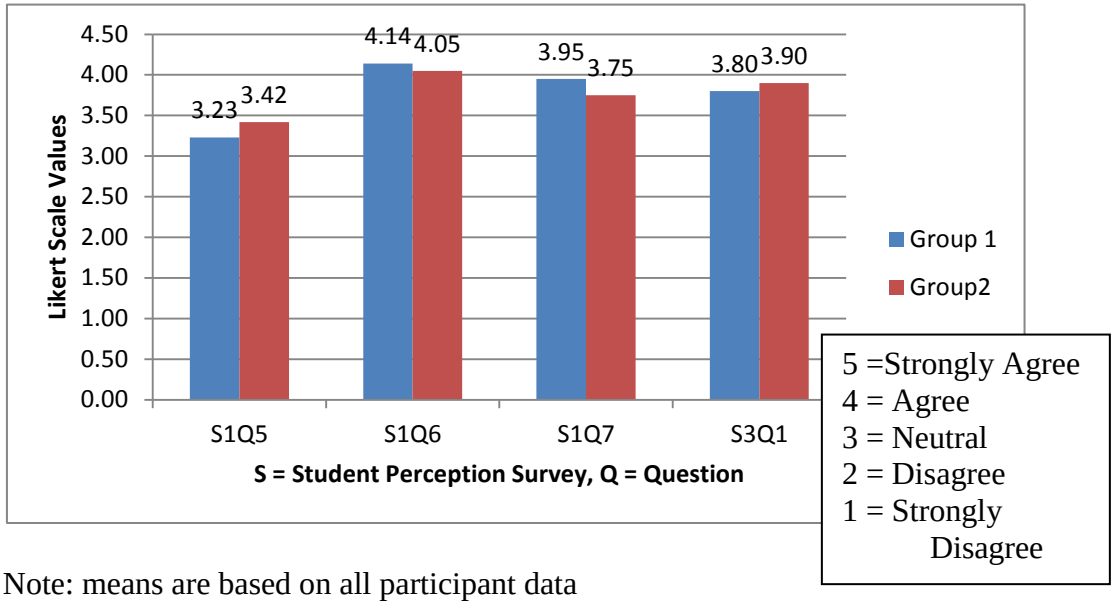
Survey 2, Question 2: This shows Group 1, with a mean of 3.06, felt this method reduced their test anxiety slightly more than Group 2, with a mean of 2.72. The question stated, "These methods to reduce test anxiety worked for me."

Survey 2, Question 3: Responses to this question, showed that Group 1, with a mean of 3.06, felt that Guided Imagery was a little more effective than Group 2, with a mean of 2.89, viewed the effectiveness of EFT. The question asked, “Did you find the interventions (in group) helpful for you?”

Survey 3, Question 5: Group 1 (Guided Imagery) felt that their method of treatment to reduce test anxiety was slightly less effective for them (mean of 2.80) than Group 2 (EFT; mean was 3.0) viewed the effectiveness of their treatment. The survey question asked, “Guided Imagery/EFT helped me reduce my test anxiety and do better on the test.”

APPENDIX Y

"EXPECTATIONS" CONSTRUCT – MEAN RESPONSES



Note: means are based on all participant data

Survey 1, Question 5: Responses to this question showed that Group 1 was a little less confident, with a mean score of 3.23, than Group 2, with a mean score of 3.42, that they would pass the NCLEX-RN® exam. The question stated, "I am confident that I will pass the NCLEX-RN® exam on the first try."

Survey 1, Question 6: Responses showed that Group 1, with a mean of 4.14, felt they needed more outside help than Group 2, with a mean of 4.05. The question stated, "I don't need outside help to pass the NCLEX-RN® exam."

Survey 1, Question 7: Responses showed that Group 1 (mean = 3.95) dreaded taking the NCLEX-RN® exam slightly more than Group 2 (mean = 3.73). The question stated, "I dread taking the NCLEX-RN® exam."

Survey 3, Question 1: Responses showed that Group 1 (mean = 3.80) felt the NCLEX-RN® exam was slightly less difficult than Group 2 (mean = 3.90). The question asked, "The NCLEX-RN® exam was (a = *very difficult*, b = *difficult*, c = *wasn't difficult or easy*, d = *easy*, e = *very easy*).

APPENDIX Z

PERSONAL PROFILE DATA SHEETS – QUALITATIVE DATA

Question	Group 1 Females	Group 1 Males	Group 2
Do you feel you are overloaded and need to slow down?	➢ Yes. Sometimes, I feel not enough time in a day. ➢ Sometimes ➢ Yes ➢ Sometimes ➢ Yes ➢ Sometimes ➢ Yes, most days ➢ At times, yes ➢ Overloaded, I need more time. ➢ Yes ➢ No ➢ Yes ➢ Sometimes ➢ Yes	➢ No. I like to be busy. ➢ No ➢ No	➢ At times. Usually on the weekends I work. ➢ Yes, but feel once I graduate nursing school, things will slow down. ➢ Yes ➢ Yes ➢ Yes ➢ At times ➢ Occasionally ➢ Yes ➢ Some days, yes ➢ Yes ➢ Yes ➢ At times, yes ➢ Sometimes, hard having school & 12 hour clinicals at the same time ➢ No ➢ No ➢ I feel at times I am overloaded, but I am driven to finish in May 2012 ➢ Yes

Appendix Z (continued)

	Group 1 Females	Group 1 Males	Group 2
What are your thoughts about taking the NCLEX-RN® exam?	➢ Nervous, I won't be prepared ➢ Nervous, just want to pass ➢ Nervous, but confident ➢ Yikes. Very nervous. ➢ Nervous ➢ Sometime feel won't pass ➢ Frightening, NCLEX possibility of not passing the 1st disappointing embarrassing ➢ Very nervous and wish it over ➢ Nervous, how will I study ➢ Anxious ➢ Eager to get over with ➢ I'm nervous I'm going to fail ➢ Nervous ➢ Nervous and anxious ➢ Very nervous, feel not pass not know NCLEX, feel that I am never going to pass, that I do not know enough. ➢ I am very nervous.	➢ Want to pass 1st time ➢ Nervous, feel a lot riding on test ➢ Not too worried	➢ Very nervous and worried ➢ Confident ➢ Stressful, exciting nervous ➢ Very nervous and scared ➢ Scared ➢ Nervous ➢ Nervous, feel like lot of studying ➢ Nervous ➢ Anxious ➢ Nervous ➢ Nervous ➢ Feel prepared ➢ Little nervous ➢ Nervous ➢ Nervous ➢ Nervous yet confident ➢ Nervous ➢ Very nervous and worried

APPENDIX AA

STUDENT PERCEPTION SURVEY 1 – QUALITATIVE DATA

Question	Group 1 / Guided Imagery	Group 2 / EFT
Do you use any techniques to control test anxiety? If so what techniques?	✓ No, not really, no. ✓ Study so I know everything. ✓ Remind myself not to worry, positive self-talk. Stop, put pencil down, close eyes & take deep breath. ✓ Deep breathing. Try to relax, close mind mentally. ✓ Take a deep breath before starting. Sometimes, I stop and close my eyes for a bit. ✓ Listen to relaxing music. ✓ Deep breathing before taking the test & say a prayer. ✓ Study & be as much prepared as I could possibly before the exam. ✓ I don't allow myself to cram the material 1 hour before the test and I take deep breaths before. ✓ Telling myself it doesn't matter as long as I pass. ✓ Deep breaths. ✓ I prepare, get sleep, hydrate & if I am anxious I do a visualization/breathing technique. ✓ Study hard, work out before exam. ✓ Breath slowly, drink tea. ✓ I don't use any techniques to control test anxiety.	✓ Deep breathing. Tell myself "I know the material" and to relax. ✓ Listen to music while studying, reading over material night before going to bed previous night. Take a deep breath before starting test. ✓ Deep breathing, chewing gum. ✓ No! I usually don't have test anxiety. ✓ Being well prepared. Getting at least 6 hours of sleep. ✓ No. ✓ No. ✓ Yes, I do breathing techniques. I take a deep breath before starting an exam. I also try to use positive talking and tell myself I will do good. ✓ No. ✓ Breathe slowly. Study to understand the material. ✓ I try to calm down and only think about one question at a time while taking the test. While studying I remind myself that I am working as hard as I can.

Appendix AA (continued)

Question	Group 1 / Guided Imagery	Group 2 / EFT
Do you use any techniques to control test anxiety? If so what techniques? (Continued from previous page)	✓ Sometimes, in the middle and/or before tests, I shut my eyes and take a deep breath. Sometimes, I use aroma therapy (mostly the night before to help relax) like lavender, peppermint, and herbal teas. ✓ I don't let myself study the hour before a test. ✓ None in particular. ✓ I don't have a techniques. My biggest problem with tests is the night before a test I get no sleep. I stay up all night. I tried to sleep and can't, so I just keep studying.	✓ Try to relax & remind myself that worrying won't help. I always make it through. Remind myself that I studied & prepared adequately for the exam & I will do fine. ✓ Deep breathing, self-talk. ✓ No. ✓ Telling myself that I can do it, or I will pass, Believing that no matter what happens life will go on. ✓ Try breathing exercises. ✓ Deep breathing, try to calm myself. Stop for a few seconds during the test.
Please describe your expectations regarding stress reduction techniques.	✓ Help relax and focus. ✓ Calms. ✓ That they will be useful & helpful. ✓ I hope they'll help. ✓ I expect I will have less anxiety and more confidence while taking tests. ✓ Hope to see it improve my test taking skills. ✓ I hope to come in less stressed. ✓ That I will be able to think more clearly. ✓ Learn relaxing techniques. ✓ I hope I'm in the pressure point class so I can learn that techniques. Otherwise, I hope that I learn something new about visualization. ✓ Learn different techniques.	✓ Study techniques that may help me feel more confident while I'm studying. Be able to feel calm while taking tests. Good test taking strategies. ✓ Take tests stress free, use these tactics to handle other stresses in my life. ✓ I will feel less stressed prior to/during the exam. I will be able to use techniques anywhere and throughout career. ✓ I want to feel more relaxed and confident with stress reduction techniques. ✓ Reduce stress in everyday life. ✓ Decreased stress anxiety & improve scores.

Appendix AA (continued)

Question	Group 1 / Guided Imagery	Group 2 / EFT
Please describe your expectations regarding stress reduction techniques. (Continued from previous page)	✓ Something to calm my nerves and help me focus on the test. ✓ I hope to learn techniques to decrease anxiety. ✓ I want to learn about stress reduction techniques, and gain ideas that can help me and I can take away and try. ✓ No expectations, just here to learn. ✓ I would like to be able to sleep the night before a test. I think lack of sleep is a huge problem with my test grades.	✓ I expect to feel less stressed out before & during tests. ✓ I would like to feel relaxed. I get extremely nervous before tests that I can actually hear my heart pounding. Once I start the test I seem to relax but if I don't know a few answers, I get very heavy. I also get an upset stomach before exams. ✓ I'll calm down and the info will come back to me. ✓ I hope that they can help me feel more confident and believe in myself while testing. ✓ Stress reduction techniques should relax a person so they can freely concentrate on the material on the test. ✓ Learn ways to cope with stress and relax before taking an exam. ✓ To do better on NCLEX. ✓ I do not have any expectations at this time, however, I hope it is affective in helping me reduce test anxiety. ✓ I think they would help for me. Putting time into techniques also uses up study time. ✓ Calm me down a little bit.

APPENDIX AB

STUDENT PERCEPTION SURVEY 2 – QUALITATIVE DATA

	Group 1 / Guided Imagery	Group 2 / EFT
Please comment on what you liked and did not like.	▪ Should be done before the test. ▪ I didn't know about this meeting. Also classroom chairs aren't comfortable. ▪ The counting with breathing needs to be more organized. ▪ The counting while breathing got confusing. ▪ Felt panicky during some breathing exercises & lightheaded. It made me more nervous. ▪ The breathing part and close my eyes really helped. ▪ I liked the deep breathing, but after a long period of time I get panicky. ▪ I liked that it didn't take too much time. ▪ It was relaxing until I thought of the test. ▪ I think it is a good concept. I use visualization – but my own method which works for me. ▪ I liked the technique even though it did not help much. ▪ I wished we had done it the day of test. ▪ I liked the Guided Imagery.	▪ I liked the group activity and doing it together. I sometimes felt I was anxious not because I was thinking about a test, but because I was thinking about homework I had to do. ▪ Doing interventions in class together. ▪ I liked the positive talk to myself. ▪ Liked the relaxation move – I felt that taking of deep breath helps me the most. ▪ Like easy to do. Didn't like I felt more anxious afterwards. ▪ Would be helpful if actually before an important test verse pretending it is. ▪ This made me more stressed. ▪ Did not like the negative comments; like the positive ones. ▪ I didn't like when we said the negative comments because I had never thought about half the things we said. ▪ Talking to self to boost confidence in studying. ▪ Relaxing and makes you release your fears and anxiety.

Appendix AB (continued)

Question	Group 1 / Guided Imagery	Group 2 / EFT
Please comment on what you liked and did not like. (Continued from previous page)		▪ I liked the way it made me feel relaxed. I didn't like saying the negative ones. ▪ Doing it in class helped. ▪ I liked the intervention.
Please comment on what you found helpful or worked for you and did not find helpful or did not work for you.	▪ Can't relax and imagine stuff. ▪ Deep breathing. ▪ Actually practicing together helped. ▪ The classroom is distracting at times with others coughing etc. ▪ Needs more time to relax. ▪ Needed more time. ▪ The video was more consistent. The same tone of voice seems to work better. ▪ Breathing and visual breaths is good. ▪ The breathing but too long. ▪ I liked that we get incentives to continue with the study. ▪ The visualization exercises caused me to feel stressful. Some of the things said on the visualization made me sad. ▪ Relaxing and closing my eyes helped. ▪ Stopping and taking a deep breath and saying, "I can do this." ▪ Relaxation helped.	▪ I can't really say exactly what helped, it may have been the repetitiveness that calmed me a bit. ▪ Continually doing the same things got monotonous. ▪ I just didn't quite understand how/why it works. More edu prior to beginning. ▪ When we talked positive and tapped worked better than the neg stuff. ▪ The emotional phases sometimes made me anxious, but the tapping helped relieve the stress. ▪ I thought the tapping on the forehead really helped me to relax. ▪ The negative statements didn't help relieve anxiety. ▪ It was an easy technique but didn't help me. ▪ Worked to decrease nervousness, I felt more calm. Didn't like that it wasn't before actually taking a test.

Appendix AB (continued)

Question	Group 1 / Guided Imagery	Group 2 / EFT
Please comment on what you found helpful or worked for you and did not find helpful or did not work for you. (Continued from previous page)	▪ It was helpful before a test, and while practicing, but when it came to the test, I had difficulty practicing the techniques during the exam when I grew anxious. ▪ Listening to the one online helped the most. ▪ Imaging wasn't very helpful but body relaxation was helpful.	▪ It would have been nice to know what area when with what. ▪ Negative comments made the anxiety much worse. ▪ I liked when we said the positive comments. ▪ Negative comments regarding anxiety did not work for me. ▪ Made me think about my test anxiety & how I deal with it. ▪ When we do the positive talking vs the negative. ▪ Doing it in class helped. ▪ I did not like intervention practiced too many times.
Please comment on why you did or did not practice the test anxiety reduction technique at home.	▪ Not enough time. ▪ Didn't know didn't want to. ▪ I didn't know we were supposed to. ▪ Because I am too busy and forgot. I do breathe deep during tests. ▪ I practiced it before HESI. ▪ Time constraint. ▪ I guess I am not sure. I used breathing technique and felt times which I think helped. ▪ No time and spring break. ▪ Time for not practicing and forgot. ▪ Visualizing the test made me more nervous. ▪ I didn't know I was suppose to. I do not feel test anxiety unless I am unprepared. I believe preparation is all I need.	▪ I forgot a lot of the times. Too much other homework to worry about this was last on my mind. It would help to have instructors do this before class. ▪ Didn't think of it. ▪ Lack of time and energy. I know it only takes 5 min, but I would fall asleep before getting started. ▪ Did a couple of times in shower. ▪ I practiced because I wanted to get the full effect. ▪ Time – did not think about it with what I was doing. ▪ I haven't, but I plan to in the future. I believe it helps me relax. ▪ Forgot didn't have time.

Appendix AB (continued)

Question	Group 1 / Guided Imagery	Group 2 / EFT
Please comment on why you did or did not practice the test anxiety reduction technique at home. (Continued from previous page)	▪ I don't get worked up or anxious as much at home. ▪ Anything to try help take a test is beneficial. ▪ I needed someone to read it to me. ▪ I practiced because I have done this before, and because I was anxious before the HESI and one of my unit exams, and was a coping mechanism wanted to explore. ▪ It didn't occur to me to practice. I just jumped into studying forgetting I had the technique. ▪ I practiced a few times before bed.	▪ It didn't feel like it was working. ▪ Hard to remember during the day. ▪ I have little/no time. Too stressed to think about remember to do it. ▪ Forgot. ▪ I forgot to. ▪ Forgot & lack of time. ▪ I didn't have a lot of time & I forgot to do it. ▪ Time & forgot about it. ▪ Forgot about it. Didn't think about it. ▪ I worry about the time.
Did you use these techniques for other reasons besides test anxiety? Have you noticed any other effects in other areas of your life.	▪ No. (11 responses) ▪ I used to use them for sports, which helped back them in that situation. ▪ Relaxation. ▪ No not yet. ▪ To help me fall asleep when I am stressed and can't sleep. ▪ No. (12 responses) ▪ I think if I think about having no obligations while doing the exercise it helps relax good too. ▪ Seem more relaxed. ▪ No, not at this point, but will consider now that it is mentioned. ▪ Not yet.	▪ No, but in class while doing this, it helped my anxiety for the day in general. ▪ Stress at work. ▪ No. (13 responses) ▪ Yes sort of. ▪ Not yet. ▪ No, mostly test anxiety. ▪ Not really at this time. ▪ Somewhat slightly less stress. ▪ Not yet. ▪ No. (11 responses) ▪ Not yet. ▪ No, because I forgot to do it. ▪ No, but it did help reduce test anxiety.

APPENDIX AC

STUDENT PERCEPTION SURVEY 3 – QUALITATIVE DATA

Question	Group 1 / Guided Imagery	Group 2 / EFT
Please comment on what you found helpful.	❖ I kept repeating to myself "I'm smart I can do this" and "God please help me pass this test!" ❖ Deep breathing. ❖ The relaxation technique.	❖ EFT helped me stay more focused. ❖ Breathing techniques. ❖ Studying in short periods throughout the day. ❖ A way to deal w test anxiety. ❖ Just taking deep breaths and being aware that you need to take a break for yourself.
Please comment on what you did not find helpful.	❖ Too long a video. ❖ Cramming, worrying too much about having to know everything.	❖ Studying for hours and hours continuously. ❖ I did not think that tapping myself was helpful. ❖ Pressure to "stay calm," comments such as "I'm sure you did fine." ❖ Pounding an certain spots of my body and telling myself I'll fail and people may judge me caused more anxiety. ❖ Over time. The movements became monotonous & the effectiveness decreased.
Did you use these techniques (Guided Imagery/EFT) for other reasons besides test anxiety?	❖ No. (3 responses) ❖ Stress. ❖ Sometimes it can help me fall asleep.	❖ No. (9 responses)

Appendix AC (continued)

	Group 1 Guided Imagery	Group 2 EFT
Have you noticed any other effect in other areas of your life?	❖ No. (3 responses) ❖ I'm more relaxed with life.	❖ No. (8 responses) ❖ Sleeping better more relaxed in daily activities.
Do you think this technique of test reduction (Guided Imagery/ EFT) should be added to the curriculum?	❖ No. (2 responses) ❖ Yes. (2 responses) ❖ Maybe as an elective or seminar.	❖ Yes. ❖ No. ❖ I don't think it would help or hurt. ❖ Maybe for someone to try if they suffer from significant test anxiety. ❖ It could be an addition to a day of class. But would not be beneficial to be added in the core curriculum.

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