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The Use of Music to Reduce Test Anxiety in Nursing Students

Janice Kaye Fuson
Gardner-Webb University

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RUNNING HEAD: MUSIC TO REDUCE TEST ANXIETY

THE USE OF MUSIC TO REDUCE TEST ANXIETY IN NURSING STUDENTS

by

Janice Kaye Fuson

A thesis submitted to the faculty of
Gardner-Webb University School of Nursing
in partial fulfillment of the requirements for the
Degree of Master of Science in Nursing

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Submitted by:

Janice Kaye Fuson

Date

Approved by:

Dr. Cindy Miller

Date

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Janice Kaye Fuson

ABSTRACT

The purpose of this study was to determine if listening to music at 60-80 beats per minute prior to testing would decrease anxiety. The following null hypotheses were presented,

1. There is no significant difference between the experimental and control group test STATE-TRAIT Anxiety scores. 2. There is no significant difference between

experimental and control group pretest STATE and TEST anxiety score and pulse rates.

3. There is no significant difference between experimental and control group post-test STATE and TEST Anxiety Score and pulse rate (Summers et. al 1990). A previous pilot study was used as a basis for additional research. Participants were randomly assigned to an experimental and control group they participated in Spielberger's State-Trait Anxiety Inventory (STAID-B) and performed a self-calculated pulse rate pre and post intervention, which was 30 minutes music over an elapsed time of 30 minutes. Results showed no statistical evidence that music had any effect on the experimental group, and there was no statistical evidence that pulse rate was effected by music in the experimental group.

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CHAPTER I

INTRODUCTION

Statement of the Problem

According to the Anxiety Disorder Association of America (2010), “Anxiety disorders are the most common psychiatric illness effecting children and adults. An estimated 40 million adult Americans suffer from an anxiety disorder. ” This has broad implication for educators, and more specifically nursing educators. Taking into account 40 million adults suffer from an anxiety disorder the likelihood that the student population is among that 40 million is very great. Then considering, “there is considerable evidence that nearly all nursing is stressful” (Kanji, White & Ernst 2006) and, primarily in nursing education, the stressors of examination and other forms of assessment procedures may cause anxiety (Sharif & Armitage 2004), educators are challenged to find interventions that can assist all students reduce anxiety.

The limbic system, which controls the emotional responses of the human brain, alerts the body when it is under stress. It also stores the emotional memories and replays them as information to relate to past experiences to the present. When the stressors are not relieved the repetitive signals from the limbic system break down the brains ability to make decisions and reasons, this in turn takes a positive coping process and makes it maladaptive (Sahley, n. d.).

Hospitalization, illness, role strain, testing, and the unknown can elicit an anxiety response. Since anxiety can be either a chronic mental illness or a normal human condition, nursing educators must be on the offensive when interacting with students to alleviate stressors whenever possible. It would be a reasonable assumption to infer

anxiety is a part of every nursing students experience during some part of their education, if not during the entire process itself.

Background

The American Music Therapy Association (AMTA) has cited the writings of Plato and Aristotle as the earliest ideas of music as a healing influence (American Music Therapy Association [AMTA], 1999). Ironically, both of these philosophers were renowned educators. Florence Nightingale wrote that songs like “Home Sweet Home or and Italian Aria can sensitively soothe the sick and have the power to restore the soul.” Additionally she wrote, “wind instruments, including the human voice, and stringed instruments, capable of continuous sound, have generally a beneficial effect. That it will sensibly soothe” (Biley 2000). A simple intervention used to elevate and calm the spirits of the “sick”. Nursing students are not ill, or are they?

“Anxiety is a normal reaction to stress. It helps one deal with a tense situation in the office, study harder for an exam, and keep focused on an important speech. In general, it helps one cope. But when anxiety becomes an excessive, irrational dread of everyday situations, it has become a disabling disorder” (“Anxiety disorders“, 2010, para. 1). Under certain conditions, students could exhibit a situational disorder. In a health care setting, an intervention would be provided to reduce the anxiety.

The evidence suggests the degree of anxiety nursing students experience may interfere with both classroom and clinical performance. In some cases, anxiety is so severe it may result in low performance on examinations. Data from the North Carolina Community College System (NCCS) reveal only 58 percent of those who enter Associate

Degree (ADN) programs graduated between the year 2003 and 2006. In 1988, a study compared 300 occupational groups of college students (nursing, firefighters, and police) with 515 general college students. Nursing students were found to have the highest state of anxiety of all groups. While many factors play into high attrition rates, addressing test anxiety in an interventional way could easily influence a part of the problem. Nursing educators must challenge themselves to implement strategies to reduce anxiety among their students (Sharif & Armitage 2004).

Components of nursing education are stressful, and the results of some of those stressors are severe anxiety resulting in low-test scores, which in turn can result in low self-esteem, and or dismal from nursing programs. Nursing education should consider what the ramifications of this type of long-term stress and anxiety has on students. It is possible we are teaching nursing students to have low self-esteem by not dealing with their anxiety while they are in the curriculum. The result of continual stress and poorer performance can have a double societal impact for graduate nurses who may suffer from low self-esteem and lingering anxiety traits under pressure, or for unsuccessful students who cannot practice and thus have no impact on the nursing shortage.

According to (Sharif & Armitage 2004 p. 384), literature indicates a direct relationship between anxiety and learning. Decreased learning occurs in the presence of high anxiety, and that low achievers experience higher anxiety, therefore attributing to poor study skills and ineffective study habits. This makes for a vicious cycle, and when taking into account nursing school has been perceived as one the highest anxiety-producing curriculum, one requires some sorts of intervention, especially if our desire is to decrease attrition and measure true understanding of the curriculum content.

According to Wong (2010), who used a 1967 study by Liebert and Morris, which stated test anxiety, is a “combination of worry and emotionality”. Worry is the cognitive piece and emotionality consists of the autonomic reaction to the test reflected in measurable data such as heart rate (HR), Respiratory rate (RR) and Blood Pressure (BP). It is then possible to identify high-risk students by objective data and then intervene if appropriate in order to influence their level of anxiety.

Nursing educators are well equipped for this strategy because of the medical background needed in order to teach nursing curriculum; focusing students as an at risk group begs for nursing educators to implement interventions.

According to Chlan (2009), “Entrainment is a physics principle in which two objects vibrating at similar frequencies tend to cause a mutual response”(p. 178). Entrainment is achieved when music is used by directly impacting relaxation. Simply, our bodies keep time with the music. If music is fast and stimulating then we dance, if it is slow the body uses entrainment to slow down to the beat of the music. It is important to keep in mind physiological relaxation, as evidenced by decreased HR, RR, and BP, is “incompatible with anxiety” (Chlan, 2009, p. 178). Therefore music can soothe us by occupying channels in our brain by distracting us and tuning out external stimuli (Chlan, 2009).

There is much literature that shows a direct affect regarding music and its ability to reduce an anxiety state. In regards to nursing research there is beginning to be an emphasis on research in regards to anxiety and music therapy as an intervention in different patient care areas. Little research exists that looks at music therapy as an intervention to reduce test anxiety in nursing students. With a looming nursing shortage,

college funding decreasing, and the quality of nursing care examined from a multitude of agencies, it is time for nurse educators to assure the content they measure be a very accurate marker of success.

Purpose of Study

There is a saying that “music soothes the savage beast.” What if the savage beast is within us? The purpose of this research is to ask the question; can music “soothe”, or in this case reduce anxiety in nursing students prior to testing?

The primary focus group targeted for this research is first year nursing students at a two-year associate degree program. Objective data such as HR and pre/post self-reported anxiety via the Speilberger State-Trait Anxiety Inventory (STAI) have been evaluated.

Significance

“Stress is a particularly important issue in education because it has the potential to impede learning and performance”. Anxiety during an examination is most often disruptive and leads to decreased performance (Lai et al. 2008). The ultimate goal in nursing education is to produce competent practitioners; researchers are suggesting nurse educators employ methods to reduce anxiety, in doing so educators will be facilitating progression through the program. In two previous studies involving nursing students music was investigated *during* the testing process. This study will be aimed at pretest anxiety. By continuing to evaluate at what moment interventions are most successful educators may be able to isolate and treat the problem most effectively.

Research Hypotheses

1. There is no significant difference between the experimental and control group test STATE-TRAIT Anxiety scores.
2. There is no significant difference between experimental and control group pretest STATE and TEST anxiety score and pulse rates.
3. There is no significant difference between experimental and control group post-test STATE and TEST Anxiety Score and pulse rate.

(Summers et. al 1990)

Definition of Terms

Anxiety is defined as an “ Abnormal and apprehensive uneasiness often marked by physiological signs (sweaty palms, tension, increased pulse) usually over an impending or anticipated ill (Webster, 2011) The American Psychological Association (APA) defines anxiety as, “an emotion characterized by feelings of tension, worried thoughts and physical changes like increased blood pressure” (American Psychological Association website, 2010, para. 1).

Music Therapy is defined by the AMTA (1999), as the clinical evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship. Music by definition is an “artistic form of auditory communication incorporating instrumental or vocal tones in a structured and continuous manner” (WorldNet website, 2010, para. 1).

Trait anxiety is defined by Speilberger (1983), as a person's normal level of anxiety on a consistent basis. It is relatively stable and may be considered a personality characteristic. State Anxiety is the "emotional response fluctuates according to the situation the person is encountering " (Huston 2011, p6.). This emotional state exists at any given moment in time with a measurable level of intensity (Speilberger, 1983).

Theoretical Framework

This research will use the theoretical framework of Imogene King. Some consider the Theory of Goal Attainment a Grand Theory because it provides broad perspectives for nursing practice. Because King's theory is an open model theory with a broad conceptual framework there are many areas and ways the theory can be applied, and this seems to apply well with the concepts of music and anxiety, which both have vast implications in health care and education (Sieloff, 2006).

King (1986) describes the relationship between teaching and learning as being a "reciprocal" open relationship and indicated one influences the other. She goes further in stating, "complexities in teaching and learning arise from the educational environment of a community college...in which external factors can influence the teaching learning process" (King, 1986 p. 25).

"The central focus of King's framework is, man as a dynamic human being whose perceptions of objects, persons, and events influence his behavior, social interaction, and health" (Williams, 2001, p. 25). King defines education in (1986, p59), as "a social system within society that provides formal programs for individuals to acquire knowledge and skills" and "education should help individuals live a useful happy life". The most important characterization of education is this statement, "Education should

help persons learn how to solve problems and cope with stress and change” (King, 1986 p. 59).

The primary assumption of the Theory of Goal Attainment is the end results of a nurse client interaction, or in this case nurse educator and student, is transaction where both parties meet and react to each other based on individual perceptions, judgments, and actions. Mutual goals are set through interaction and transaction occurs when the goals are met (King, 1986). Nursing educators interact with students in an intimate environment where the goal is mutually set; the student will demonstrate knowledge of the content presented in the curriculum and the educator provides the content. This involves trust and consent from the student that they will be evaluated fairly. The nurse educator during the experiment assesses the situation both clinically and also uses the STAI anxiety scale. Using this information the instructor and student will agree on a mutually set goal if possible, which will be to provide music and reduce or maintain a reasonable anxiety level conducive for the student adaption to stressors. The research was conducted in this manner. Focus will be given to the interaction and transaction of King’s theory, in that, was there a reduction in anxiety?

CHAPTER II

REVIEW OF LITERATURE

The following chapter will discuss relevant literature as it pertains to music and the reduction of anxiety. Using sources from independent portals and through the library resources at Gardner-Webb University, primarily, CINAHL, Sage and Google Scholar, a vast array of research was made available that brings a holistic approach to a subject that encompasses many populations. The literature review focuses on Nursing Research; however, other disciplines are utilized to bring a multidisciplinary approach to an issue that is more than nursing centered. The chapter will begin examining research that involves differing populations experiencing anxiety where music is introduced as a cognitive behavioral intervention. Next, literature will then be reviewed that examines student specific anxiety, where music is used as a cognitive behavioral intervention. Lastly, the paper will identify research specific to nursing student test anxiety where music used as a cognitive behavioral intervention.

Music and Decreased Anxiety Clinical Applications

(Lee, Chung, Chan & Chan, 2005) conducted a quantitative study including 64 ventilator patients using a randomized control design. Measurement tools utilized were the Chinese version of the State Trait Anxiety Inventory (C-STAI) by Spielberger and vital signs (heart rate, respiratory rate, and blood pressure). Music played at a rate of 40-60 beats per minute was introduced to this population of people and it was concluded there was a significant reduction of vital signs. It was determined the C-STAI was not

useful due to the illiteracy of the population and or the exhaustion of that particular population. Limitations of this study were the inability to interpret the C-STAI, which looks specifically at stated anxiety (Lee et al., 2005).

Music was introduced to twenty-four people suffering from Chronic Obstructive Pulmonary Disease (COPD) who reported dyspnea and anxiety while living at home. This mixed quantitative and qualitative design used repeated measures over a 5-week period. The quantitative aspect was the use of a single group, which had their anxiety and dyspnea measured over a five-week period after a baseline was established. The STAI by Spielberger was used as the tool to measure anxiety. The qualitative aspect involved the use of a diary to self-report the effects of music on the person's own dyspnea and anxiety (McBride, Graydon, Sidani, & Hall, L. 1999). Martha Rogers' science of unitary human beings was used as the conceptual framework for the study. The findings indicated a significant reduction in anxiety over the first week, but not over the entire 5-week period. Limitations noted were the small sample size, the need for a control group, and the inconsistent use of the diary (McBride et al., 2005).

In palliative care a quantitative study conducted in 2008 by Horne-Thompson and Grocke, music was found to have a significant effect on anxiety for a population who are facing death. Twenty-five subjects were selected for a randomized control study used the Edmonton Symptom Assessment System (ESAS), and heart rate to measure anxiety. Self-reported reduction in anxiety was significantly less in the experimental group than the control group. The heart rate was not significantly affected. The sample size was small due to difficulty in recruitment, and death. Another factor implicated was literacy, which is a fundamental portion of the anxiety assessment. Overall it was concluded

music provided anxiety reduction in this population of people (Horne-Thompson and Grocke, 2008).

In a study involving 86 patients over the age of 65 who were undergoing cardiac surgery the subjects were examined to see if music impacted postoperative anxiety. (Twiss, Seaver, & McCaffrey, 2006, p. 225) identified anxiety was linked to “poor outcomes in patients undergo cardiovascular surgery” based on conclusions from other studies. They took this concept and integrated it with the writings of Florence Nightengale and used them as the theoretical framework, which stated, “A therapeutic environment provides an integrative network of physical, spiritual and psychological factors have an additive effect on the creation of a healing or a healthy place” (Twiss et al., 2006, p. 225).

The means of selection for this study was by experimental randomized clinical trial and compared a non-treatment group to a treatment group. The tool used to collect data was the State portion of the Spielberger STAI, which is a widely used tool for measuring anxiety. Based on their data it was concluded music listening did reduce anxiety and reduced intubation time following surgery. Implications for further research is clearly stated citing that the sample size was small given a total of 26 subjects dropped out of the study leaving the total sample at 60 (Twiss et al., 2006). Still the data implied there is “strong evidence music maybe be used as a nursing intervention, and provides a healing environment to decrease anxiety (Twiss et al., 2006, p. 230).

Sixty-two patients who underwent open-heart surgery participated in a random control design over a six-month period in 2002. It was concluded patients who received musical therapy by listening to “sedative music” described as without words, and slow

(about 60-80 beats per minute) experienced 72% less anxiety, than the other two control groups. This study was aimed at reducing pain and anxiety during chair rest post-operatively. In this study, Dr. Voss measured activity, blood pressure, heart rate, anxiety, pain sensation and pain distress. Her study group was small and clearly calls for replication in larger institutions but her results are significant (Voss et. al, 2004).

Dunlap used Florence Nightengale's Environmental Theory of Nursing in a qualitative study in 2005. This study sought to contribute to the body of knowledge concerning the use of music and its effects on anxiety in patients. Using an open-ended questionnaire on 40 adult patients undergoing minor surgery, the results seemed to identify music as having a positive impact on overall patient satisfaction. The need for continued research was indicted (Dunlap, 2005).

Shluter, Hiratos, Cooke, & Chabolyer (2005) conducted a quantitative study with a population of people in day surgery. The question purposed was, would music have a statistical impact on the anxiety of patients about to have surgery? 180 patients participated in the randomized controlled trial, which used the STAI to measure stated anxiety. It was determined "listening to music statistically reduced mean anxiety scores compared with not listening to music" (Shluter et al., 2005, p 55). This study did not include a conceptual framework and it indicated further research was needed regarding clinical settings, and accounting for other physical or emotional ailments, like pain and frustration (Shluter et al., 2005).

In autistic children introduction to "entrainment inducing" music, identified as music played at a beat between 40-60 beats per minute, seemed to decrease anxiety related behavior. The study was limited due to the smallness of the sample group, which

were four residents. The study used randomized control design and used descriptive statistics to measure differences in behavior from a baseline over a 4-week time span. The results seem to show the experimental group showed less measured anxiety related behavior when compared to the control group. It was identified accommodation to the routine of the intervention may have also impacted behavior (Azelle and Laking, 2006).

Music and Anxiety: Academic/Performance Considerations

A quantitative study by Smith (2008) measured the State Anxiety of a workplace environment. Using the STAI in a randomized control design indicated music significantly reduced anxiety in the treatment group as compared to the control group. The sample size was 80 workers and it was identified taking gender and personal differences were not examined and would need to be addressed in further studies. Still it was reported music was beneficial in the work place to reduce anxiety and prevent illness.

Anderson, Carnagey, & Eubanks (2003), examined the effects of violent songs on trait hostility scores. They performed five quantitative studies, which involved over 500 college students in a randomized control design. The results indicated students exposed to aggressive music responded aggressively on Caprara's Irritability Scale compared to those who listened to more soothing music. This study had limitations due to the number of studies that were conducted and the samples were not obtained in the same manner, however there seems to be strong indication music can have a positive or a negative impact on mood and performance (Anderson et al., 2003).

A quantitative study performed in 2007 evaluated the use of self-selected music to relieve “stress” in fifty-six college students. The randomized study was conducted after a stressful test was induced and the STAI by Spielberger was used to measure anxiety. The results of the study indicated exposure to music after a stressor significantly reduces anxiety scores; the only exclusion was in the category of “heavy metal” type music, which seemed to increase anxiety. The music that had the greatest reduction of anxiety was classical music, and it was suggested the length of exposure also had significant findings. Inferences can be made that exposure prior to the stressor could be beneficial to students. The sample size was predominately female, with 42 of the 56 students being women, and while this may be a general limitation to the study is not so when examining the nursing population. Another limitation identified was the self-selection of music, which gives the study-limited control related to entrainment (Labbe, Babib, Schmidt & Pharr, 2007).

A study conducted at the University of West Virginia examined test anxiety in math students and used music in background prior to testing. 160 students enrolled in Math 126 were selected in a random controlled experimental design, using an abbreviated version of the Mathematics Anxiety Rating Scale (MARS) to evaluate response to the intervention. The present study found a significant decrease between pre- and post-exam MARS scores for students that studied to music 10 minutes prior to an exam. Limitations to the study were discussed as differing teaching styles, time constraints to pre testing interventions, and environmental factors of the room. This study strongly supports the use of further research in pre testing music therapy (Haynes, 2003).

Nursing Student, Test Anxiety, and Music

A cross-sectional study included 357 nursing students in Spain identified three types of stressors, one of which was academic. The data collection occurred over an 8-month period between 2004-2005. This was a quantitative study, which utilized a descriptive cross-sectional design, and Benner's Novice to Expert Theory as a conceptual model. Examining nursing students through all three years, it was found third year students indicate more academic stressors than their counter parts, and nurse educators need to incorporate means to deal with stress and how it relates to academic performance (Jimenez, Navia-Osorio & Diaz, 2010). Although intervention was not introduced, it is important to identify anxiety as a defined and reproducible phenomenon in nursing students, where music therapy could have benefit. The limitations of this study were determined to be that a longitudinal rather than cross-sectional sample would have given more insight into the growth and differentiation of stress, and stressors (Jimenez, et al., 2010).

(Lai, et al., 2008) in a quantitative study with thirty-eight students, used music in the examination setting to affect test anxiety directly. Students were separated into a two groups, one group had music one week, and then silence, the other group was inverted to have silence one week and then music. This was described as a randomized crossover design. The Speilberger STAI was utilized to measure State anxiety and the results suggested music was effective in reducing anxiety. Heart rate, respiratory rate and finger temperature were physiological measures used as anxiety indicators. The music used was lento music, which is music is between 40- 60 beats per minute, and it was played during the examination in the experimental groupings. There was a significant reduction in heart

rate, increased in finger temperature was also recorded. Limitations to the study include, some students found the music loud and distracting during the examination, sample size was small, and the self-selection of music may have falsely induced relaxation (Lai, et al., 2008).

The last study reviewed was conducted in 1990 using 45 junior baccalaureate-nursing students. This was a quantitative study using randomized control design. A baseline STAI was administered 3 weeks prior to testing and a baseline heart rate was obtained. Music was played during the exam and the measurements were repeated pre and post testing. The results were not significant, except for a mild difference in heart rate indicating some slowing secondary to the music tempo. Limitations of the study were not directly addressed, the study cited single exposure to the intervention might not be as effective, and test anxiety might be too severe for beneficial intervention (Summers, Hoffman, Neff, Hanson & Pierce, 1990). Although this study did not prove its hypothesis, it will be used as an aide in replication, with the exception that based on literature; music will be used as a pre-test intervention instead of during the test procedure. It is not thoroughly proven all students suffer from test anxiety; thereby music played during testing may induce anxiety.

Summary

The literature would reflect music has a place in decreasing overall anxiety regardless of the setting and the stressor. It also gives weight that academic stress in regards to performance ie. "Testing" could be affected with non-invasive, non-medical treatment, and thereby enhances overall performance. The length and type of exposure seem to have some bearing on efficacy, and all studies indicate need for further research.

CHAPTER III

METHODOLOGY

A pre and post-test randomized control design was used to study whether students who listen to music prior to testing have significantly lower anxiety levels and physiological parameters than students who have no structured interventions.

Prior to conducting the interviews, permission was obtained from the Internal Review Board (IRB) for Gardner-Webb University and the College where the study was performed. Consent from the participants was gained prior to data collection and each participant was assigned a number was randomly drawn from a computer-generated program and the odd numbers were assigned the control group. Eligibility for the study included first year nursing students enrolled in Nursing 111, at least 18 years of age, and able to read and understand English.

Prior to interviewing the students who agree to participate in the study, informed consent was obtained. The informed consent form details the purpose of the study and the student's rights for participating in research. Each participant had the opportunity to read and have explained the information on the consent form. At any time during the study the participant could decline to participate in the study. A copy of the consent form was given to all participants at the time of the initial interview. The form provided the participant with contact numbers of the primary investigator (PI) and the Internal Review Board (IRB) at Gardner-Webb University. The detailed consent provided information concerning the potential risks and benefits of the study.

The data collection questionnaire had three sections: demographic data, vital signs (heart rate only) The State Anxiety Scale (S-Anxiety Scale) consists of 20 statements that evaluate anxiety experienced at a particular time. The Trait Anxiety Scale (T-Anxiety Scale) contains 20 statements that evaluate anxiety experienced in general (Spielberger & Sideman, 1994, Chapter 13). The instrument consists of 20 self-descriptive statements to which the individual responds on a four-point scale of intensity. Each questionnaire takes approximately 10 minutes to complete. The range of possible scores was 20–80 for both the S-Anxiety and the T-Anxiety scales, with each scale score derived by summing weighted responses across items (Spielberger & Syderman, 1994, Chapter 13).

Students were asked to come in one-hour prior their nursing examination. The groups were divided and placed side by side in identical rooms, and both groups received a pre-intervention survey. In addition both groups manually took their radial pulse and recorded it on their survey sheet.

The experimental group listened to instrumental guitar music that was within 60–80 beats per minute (bpm) for 30 minutes and allowed to interact within the room. The music was provided by the CD system within the classroom. The control group did not listen to music and conducted themselves as they chose to for 30 minutes within the room.

Post intervention both groups took the STAI posttest and retook their radial pulse and recorded it on their sheets. The experimental group then went into the control group room for the examination.

CHAPTER IV

RESULTS

The sample group was 42 first year nursing students in an Associate Degree Program in a community college. 4% of the group was male, 96% of the group was female. From that sample 26 consents were obtained bring the percentage of male to female 8 % to 92% respectively. On the day of the experiment 21 participants arrived 100 female.

The groups were divided by random selection by assigned number leaving 9 participants in the control group and 12 in the experimental. The average age in the control group was 38 years of age. The average age in the experimental groups was 31, with one person not indicating age. Overall average age 36

Table 1

Two-sample T for Pre-State Control vs. Pre-State Experimental as grouped by condition

| Condition | <i>n</i> | <i>M</i> | <i>SD</i> | <i>SE Mean</i> |
|--------------|----------|----------|-----------|----------------|
| Pre-State | | | | |
| Control | 9 | 48.0 | 10.9 | 3.6 |
| Experimental | 12 | 34.83 | 7.86 | 2.3 |
| Pre-Trait | | | | |
| Control | 9 | 38.78 | 8.81 | 2.9 |
| Experimental | 12 | 38.0 | 10.3 | 3.0 |
| Pre-Total | | | | |
| Control | 9 | 86.8 | 15.0 | 5.0 |
| Experimental | 12 | 72.8 | 17.4 | 5.0 |

*Table 2**Two-sample T for Post-State Control vs. Post-State Experimental as grouped by condition*

| Condition | <i>n</i> | <i>M</i> | <i>SD</i> | <i>SE Mean</i> |
|-------------------------|----------|----------|-----------|----------------|
| Post-State Control | 9 | 40.78 | 9.71 | 3.2 |
| Post-State Experimental | 12 | 43.0 | 12.5 | 3.6 |
| Post-Trait Control | 9 | 37.22 | 9.24 | 3.1 |
| Post-Trait Experimental | 12 | 41.3 | 11.2 | 3.2 |
| Post-Total Control | 9 | 78.0 | 15.0 | 5.0 |
| Post-Total Experimental | 12 | 84.3 | 21.8 | 6.3 |

*Table 3**Two-sample T for Pre-Pulse Control vs. Pre-Pulse Experimental as grouped by condition*

| Condition | <i>n</i> | <i>M</i> | <i>SD</i> | <i>SE Mean</i> |
|-------------------------|----------|----------|-----------|----------------|
| Pre-Pulse Control | 9 | 81.3 | 10.5 | 3.5 |
| Pre-Pulse Experimental | 12 | 76.08 | 8.76 | 2.5 |
| Post-Pulse Control | 9 | 79.6 | 10.9 | 3.6 |
| Post-Pulse Experimental | 12 | 81.83 | 9.99 | 2.9 |

CHAPTER V

DISCUSSION

The purpose of this study was to determine if listening to low tempo music reduced test anxiety in nursing students. Participants completed the Speilberger (1983) State- Trait Anxiety Inventory (STAI) immediately prior to having a test administered. Students also recorded their pulse rate pre and post intervention.

Significance

No significant differences were noted between the experimental and control groups in this study. Pre-test data for both the State and Trait Anxiety Scales indicated that the two groups were similar and there was also not a statistical difference in the pulse rates of both groups. One pulse rate was indicated to be differentially low (60) in the pretest experimental group, which could be an error on the part of the pulse taker. Students took their own pulses and documented the results.

The p value ($>.415$) indicates that there is a 41.5% or greater chance that the 2 samples came from the same group. This indicates that the null hypotheses have been proven. The Anderson Darling (AD) values were all below 1 when graphed which again indicate the values are considered normal for both groups.

Implications

Test anxiety, and anxiety in general have been linked by literature to have impact on health and on self-esteem. Many nursing student indicate an extreme volume of stress that impact their learning and put them at risk for maladaptive coping behaviors. This

study is valuable because it adds to the overall research that has been done in this field but limited in the area of nursing education. Two other studies have been found in literature both with limited significance, but by narrowing down the variable perhaps it may add to pinpointing the interventional point.

This study examined the pretesting scenario as opposed to interventions during the testing procedure. Students were not chosen by their interpretation of test anxiety, but based on the assumption that all students are anxious. In retrospect this does not lend itself to Imogene Kings Theory of Goal Attainment, where mutual goal setting is the pivotal point in order to achieve transaction.

Limitations

Limitations to the study as indicated by statistics and also stated in other studies, is sample size. Twenty-one people are a very narrow sample especially when they are split into a control and experimental group. The groupings came from the same school, and it would be better to have a cross sample from many different schools of nursing to examine a larger sample and for universal application. The music intervention was brief. Thirty minutes may not be the adequate length of time to have effect on hemodynamic conditions. Having the students take their own pulses added a variable of competence in pulse taking to the study, and was indicated statistically from the outlier of a very low pulse rate pretest. Lastly, a limitation would be there was no measurement to ascertain whether anxiety was indeed a problem in this population of students. Therefore, it could be assumed the groups would be neutral.

Recommendations for Future Research

Future research is recommended based on the literature review, and based on incidental remarks post testing from students who request music before testing since the study was completed. The school has begun having a meditation room prior to testing for students who chose to engage in lento music therapy. Continuing to narrow the variables would indicate if the intervention is effective.

- First identifying students with self-stated test anxiety to participate in control and experimental testing.
- Longer periods of time that music is introduced.
- Cross Sectional studies done using more than one nursing program.

Addressing these issues would lend more information to tailor to the needs of students who are at risk.

Importance of the Finding for Nursing

Any study; whether the findings prove or disprove assumptions add to the overall body of knowledge. This study, while showing no significance did have implications in those students have stated lento music has assisted their study. Educators listening to the needs of their students and responding with evidence based practice will only impact students as they move forward in practice with patients. Utilizing a conceptual framework assisted in the interpretation of the results, had there not have been research involving mutual goal attainment theory then there would not have been the discovery that a lack of significance could be attributed to all students do not have test anxiety and thereby intervention may not necessary. It could be that the students that are now

seeking out music as therapy have transacted and are now using the music as a method to achieve their goal of decreased anxiety.

In conclusion continued investigation of cost effective means to reduce anxiety is important in every facet of nursing and should continue to be researched. Nurse educators can use research from clinical resources to advocate and offer to students when dealing with disabilities. In fact empirical research has transcendence in nursing education more so than many other fields of study and further duality can be beneficial to the future health of the profession.

References

- America Music Therapy Association (1999). *Frequently asked questions about music therapy*. Retrieved July 22, 2009, from [http://www. musictherapy. org](http://www.musictherapy.org)
- Anderson, C. A., Carnagey, N. L. & Eubanks, J. (2003). Exposure to violent media: The effects of songs with violent lyrics on aggressive thoughts and feelings. *Journal of Personality and Social Psychology*, 84(5).
- Azbell, E. and Laking, T. (2006). *The short-term effects of music therapy on anxiety in autistic children*, UW-La Crosse Journal of Undergraduate Research, 9 pp.1–9.
- Anonymous. (2009, August 27). Community College System. NCpedia. Retrieved January 15, 2012 from <http://ncpedia.org/education/community-colleges>
- Biley, F.C. (2000) The effects on patient well-being of music listening as a nursing intervention: A review of the literature. *Journal of Clinical Nursing* 9, 668-677.
- Chlan, L. (2009). A review of the evidence for music intervention to manage anxiety in critically ill patients receiving mechanical ventilatory support. *Archives of Psychiatric Nursing*, 23(2), 177-179. Retrieved from [www. sciencedirect. Com](http://www.sciencedirect.com)
- Dunlap, J. (2005). *The effects of music therapy on surgical patients*. Retrieved March 28, 2010, from [http://www,nursinglibrary. org](http://www.nursinglibrary.org)
- Fwu-Mei Chang; Hui-Kuan Chang; Chia-Jung Chen; Pin-Wen Chen; Hui-Ling Lai; Tai-Chu, P. g. (n. d). Randomized crossover trial studying the effect of music on examination anxiety. *Nurse Education Today*, 28(8), 909.
- Haynes, S. E. (2003). The effect of background music on the mathematics test anxiety of college algebra students. (Doctoral dissertation, West Virginia University). *Dissertation Abstracts International*, 65 (05), 1708A.

- Horne-Thompson, A. & Grocke, D. (2008, November 4). The effect of music therapy on anxiety in patients who are terminally ill. *JOURNAL OF PALLIATIVE MEDICINE*, 11, 582-590.
- Huston, K (2011). *The effect of listening to music on musicians' performance anxiety*. (Masters thesis). Retrieved from Permalink:http://rave.ohiolink.edu/etdc/view?acc_num=osu1306855815
- Jimenez, C., Navia-Osorio P. M. & Diaz C. V. (2010). Stress and health in novice and experienced nursing students. *Journal of Advanced Nursing* 66(2), 442–455.
- Kanji, N., White A., & Ernst E. (2006). Autogenic training to reduce anxiety in nursing students: randomized controlled trial. *J Adv Nurs*. 53(6): 729-735.
- King, I. M. (1986). *Curriculum and instruction in nursing: Concepts and process*. Norwalk, Conn.: Appleton-Century-Crofts.
- Labbé, E. , Schmidt, N. , Babin, J. , & Pharr, M. (2007). Coping with stress: The effectiveness of different types of music. *Applied psychophysiology and biofeedback*, 32, 163-168.
- Lee, O. A. , Chung, Y. L. , Chan, M. F. , & Chan, W. M. (2005). Music and its effect on the physiological responses and anxiety levels of patients receiving mechanical ventilation: a pilot study. *Journal of Clinical Nursing*, 14 609-620.
- McBride, S. , Graydon, J. , Sidani, S. , & Hall, L. (1999). The therapeutic use of music for dyspnea and anxiety in patients with COPD who live at home. *Journal of holistic nursing official journal of the American Holistic Nurses Association*.
- Schluter, P. , Hiratos, M. , Cooke, M. , & Chabolyer, W. (2005). The effect of music on preoperative anxiety in day surgery. *Journal of Advanced Nursing*, 52(1), 47-55.

- Sharif F, Armitage P. (2004). The effect of psychological and educational counseling in reducing anxiety in nursing students. *J Psychiatr Ment Health Nurs* 11: 386–392.
- Siedliecki, S. L. , & Good, M. (2006, January 13). Effect of music on power, pain, depression and disability. *Journal of Advanced Nursing*, 54, 553-562.
- Smith, M. (2008). The Effects of a Single Music Relaxation Session on State Anxiety Levels of Adults in a Workplace Environment [online]. *Australian Journal of Music Therapy*, Vol. 19, 45-66. Availability:
<http://search.informit.com.au/documentSummary;dn=566436047272311;res=IE LHEA> ISSN: 1036-9457. [cited 25 Jan 12].
- Smith, M. , Casey, L. , Johnson, D. , Gwede, C. , & Riggan, O. (2001). Music as a therapeutic intervention for anxiety in patients receiving radiation therapy. *Oncology Nursing Forum*, 28(5), 855-862. Retrieved from Retrieved from CINAHL with Full Text database
- Spielberger, C. D. , & Syderman, S. J. (1994). State-Trait Anxiety Inventory and State-Trait Anger Expression Inventory. In (Ed.), *The use of psychological testing for treatment planning and outcome assessment* (pp. 292-321). Retrieved from <http://dionysus.psych.wisc.edu/Lit/Articles/SpielbergerC1994a.pdf>
- Sieloff, C. L. (1995). Imogene Kings: Systems framework and theory of goal attainment. In A. Marriner-Tomey & M.R. Alligood (Eds.), *Nursing theorists and their work* (6th ed.) (pp.297-317). St. Louis, MO: Mosby.
- Stuhlmiller, D. F. , Lamba, S. , Rooney, M. , Chait, S. , & Dolan, B. (2009). Music reduces patient anxiety during interfacility ground critical care transport. *Air Medical Journal*, 20(2), . Retrieved from <http://www.nursingconsult.com>

Summers, S. , Hoffman, J. , Neff, J. , Hanson, S. , & Pierce, K. (1990). The effects of 60 beats per minute music on test taking anxiety among nursing students. *Journal of Nursing Education*, 29(2), 66-70.

Twiss, E. , Seaver, J. , & McCaffrey, R. (2006). The effect of music listening on older adults undergoing cardiovascular surgery. *Nursing in Critical Care*, 11(5), 224-231.

Voss, J. A., Good, M., Yates, B., Baun, M.M., Thompson, A., & Hertzog, M. (2004). Sedative music reduces anxiety and pain during chair rest after open-heart surgery. *Pain* 112, 197-203.

Wong, S. (2010). The effect of mood induction on performance test anxiety. *University of Florida Journal of Psychological Science*, 1(Fall), 3-21.

Appendix A: Consent for Study

The Use of Music to Reduce Test Anxiety in Nursing Students

You are being asked to take part in a research study of how music may affect test anxiety in nursing students. I am asking you to take part because you are a nursing student. Please read this form carefully and ask any questions you may have before agreeing to take part in the study.

What the study is about: The purpose of this study is to see if listening to 20 minutes of music at 40- 60 beats per minute will have any effect on test anxiety or test scores.

What we will ask you to do: Student will listen to music for 20 minutes prior to testing. This music will be at 40-60 beats per minute and a survey will be given pre and post intervention. Those in the non-music listening group will be tested pre and post without intervention for consistency.

Risks and benefits:

I do not anticipate any risks to you participating in this study other than those encountered in day-to-day life.

There are no benefits to you. I hope to learn more about students and test anxiety.

Compensation: There is no compensation for participation.

Your answers will be confidential. The records of this study will be kept private. In any sort of report we make public we will not include any information that will make it possible to identify you. Research records will be kept in a locked file; only the researchers will have access to the records.

Taking part is voluntary: Taking part in this study is completely voluntary. You may skip any questions that you do not want to answer. If you decide not to take part or to skip some of the questions, it will not affect your current or future relationship with Davidson County Community College. If you decide to take part, you are free to withdraw at any time.

If you have questions: The researchers conducting this study are Janice Kaye Fuson Rn, BSN. My Faculty Sponsor at Gardner-Webb University is Dr. Cindy Miller. Please ask any questions you have now. If you have questions later, you may contact Janice Kaye Fuson at Jkfuson@davidsonccc.edu or at 336-870-0377. You can reach Dr. Miller at mlmiller@gardner-webb.edu or 704-406-4364. You will be given a copy of this form to keep for your records.

Statement of Consent: I have read the above information, and have received answers to any questions I asked. I consent to take part in the study.

Your Signature _____ Date _____

Your Name (printed) _____

This consent form will be kept by the researcher for at least three years beyond the end of the study and was approved by the IRB on [date].

Appendix B: STAI Form Y-1 Sample

For use by Janice Fuson only. Received from Mind Garden, Inc. on November 20, 2011

SELF-EVALUATION QUESTIONNAIRE STAI Form Y-1

Please provide the following information:

Name _____ Date _____ S _____

Age _____ Gender (Circle) M F T _____

DIRECTIONS:

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel *right now*, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

- | | | | | | |
|--|---|------------|----------|---------------|--------------|
| | | NOT AT ALL | SOMEWHAT | MODERATELY SO | VERY MUCH SO |
| 1. I feel calm | 1 | 2 | 3 | 4 | |
| 2. I feel secure | 1 | 2 | 3 | 4 | |
| 3. I am tense | 1 | 2 | 3 | 4 | |
| 4. I feel strained | 1 | 2 | 3 | 4 | |
| 5. I feel at ease | 1 | 2 | 3 | 4 | |
| 6. I feel upset | 1 | 2 | 3 | 4 | |
| 7. I am presently worrying over possible misfortunes | 1 | 2 | 3 | 4 | |
| 8. I feel satisfied | 1 | 2 | 3 | 4 | |
| 9. I feel frightened | 1 | 2 | 3 | 4 | |
| 10. I feel comfortable | 1 | 2 | 3 | 4 | |
| 11. I feel self-confident | 1 | 2 | 3 | 4 | |
| 12. I feel nervous | 1 | 2 | 3 | 4 | |
| 13. I am jittery | 1 | 2 | 3 | 4 | |
| 14. I feel indecisive | 1 | 2 | 3 | 4 | |
| 15. I am relaxed | 1 | 2 | 3 | 4 | |
| 16. I feel content | 1 | 2 | 3 | 4 | |
| 17. I am worried | 1 | 2 | 3 | 4 | |
| 18. I feel confused | 1 | 2 | 3 | 4 | |
| 19. I feel steady | 1 | 2 | 3 | 4 | |
| 20. I feel pleasant | 1 | 2 | 3 | 4 | |

Appendix C: STAI Form Y-2 Sample

For use by Janice Fuson only. Received from Mind Garden, Inc. on November 20, 2011

SELF-EVALUATION QUESTIONNAIRE

STAI Form Y-2

Name _____ Date _____

DIRECTIONS

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

- | | ALMOST NEVER | SOMETIMES | OFTEN | ALMOST ALWAYS |
|--|--------------|-----------|-------|---------------|
| 21. I feel pleasant..... | 1 | 2 | 3 | 4 |
| 22. I feel nervous and restless..... | 1 | 2 | 3 | 4 |
| 23. I feel satisfied with myself..... | 1 | 2 | 3 | 4 |
| 24. I wish I could be as happy as others seem to be | 1 | 2 | 3 | 4 |
| 25. I feel like a failure..... | 1 | 2 | 3 | 4 |
| 26. I feel rested..... | 1 | 2 | 3 | 4 |
| 27. I am "calm, cool, and collected" | 1 | 2 | 3 | 4 |
| 28. I feel that difficulties are piling up so that I cannot overcome them | 1 | 2 | 3 | 4 |
| 29. I worry too much over something that really doesn't matter..... | 1 | 2 | 3 | 4 |
| 30. I am happy..... | 1 | 2 | 3 | 4 |
| 31. I have disturbing thoughts..... | 1 | 2 | 3 | 4 |
| 32. I lack self-confidence..... | 1 | 2 | 3 | 4 |
| 33. I feel secure..... | 1 | 2 | 3 | 4 |
| 34. I make decisions easily | 1 | 2 | 3 | 4 |
| 35. I feel inadequate..... | 1 | 2 | 3 | 4 |
| 36. I am content..... | 1 | 2 | 3 | 4 |
| 37. Some unimportant thought runs through my mind and bothers me..... | 1 | 2 | 3 | 4 |
| 38. I take disappointments so keenly that I can't put them out of my mind..... | 1 | 2 | 3 | 4 |
| 39. I am a steady person..... | 1 | 2 | 3 | 4 |
| 40. I get in a state of tension or turmoil as I think over my recent concerns and interests..... | 1 | 2 | 3 | 4 |

Appendix D: IRB Facility Approval

(10/31/2011) Janice Fuson - IRB Request - Approved

Page 1

From: Mark Puterbaugh
To: Janice Fuson
Date: 10/31/2011 11:59 AM
Subject: IRB Request - Approved

Hello Kaye,

After examining your documents, I am approving your study regarding listening to music to determine what effect it has on test anxiety or test scores. Your study has been given IRB approval under the "Exempt" status.

Good luck with your study, and let me know if you have any questions.

-Mark

Mark Puterbaugh
Coordinator, Institutional Research Services
Davidson County Community College
P. O. Box 1287
Lexington, NC 27293-1287
336-249-8186, extension 6764
336-249-0088 (FAX)
markput@davidsonccc.edu

Appendix E: Fax of Gardner- Webb IRB Approval

Oct 10 11 04:06p

GWU NURSING

704-406-3919

p.1

**Gardner-Webb
University**

School of Nursing
Phone 704-406-3887
Fax 704-406-3919

Facsimile Cover SheetDATE: 10/10/11TO: Janice Kaye TusonFIRM: Davidson CCC Briggs Technology BuildingFAX NO: 336-249-9060FROM: Lesley MillerTRANSMITTING 2 PAGES INCLUDING COVER PAGECOMMENTS: IRB pending faculty approval

Gardner-Webb University
School of Nursing
PO Box 7268
110 S. Main Street
Boiling Springs, NC 28017

Oct 10 11 04:06p

GWU NURSING

704-406-3919

p.2



THE INSTITUTIONAL REVIEW BOARD
of
GARDNER-WEBB UNIVERSITY

This is to certify that the research project titled
The Use of Music to Reduce Test Anxiety in Nursing Students
being conducted by Gancee Kaye Givens
has received approval by the Gardner-Webb University IRB. Date 10/4/11

Exempt Research

Signed Cindy Miller
Department/School/Program IRB Representative
Richard Rich - D. Ed
Department/School/Program IRB Member

Expedited Research

Signed _____
Department/School/Program IRB Representative

Department/School/Program IRB Member

IRB Administrator or Chair or Institutional Office

Non-Exempt (Full Review)

Signed _____
IRB Administrator

IRB Chair

IRB Institutional Officer

Expiration Date _____

IRB Approval:

☒ Exempt ☐ Expedited ☐ Non-Exempt (Full Review)

Revised 3/10

Pending faculty approval