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THE PSYCHOLOGICAL EFFECTS OF ANXIOLYTIC MUSIC/IMAGERY ON ANXIETY AND DEPRESSION FOLLOWING CARDIAC SURGERY

by

Sara Richardson Rose

M.H.D.L. University of North Carolina at Charlotte 1989
B.S. Salem College 1961

Dissertation Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Philosophy
Psychology

Walden University
February 2004

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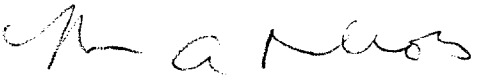

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ABSTRACT

THE PSYCHOLOGICAL EFFECTS OF ANXIOLYTIC MUSIC/IMAGERY ON ANXIETY AND DEPRESSION FOLLOWING CARDIAC SURGERY

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ABSTRACT

This study was developed to assess two common emotions, anxiety and depression, often present in patients undergoing cardiac bypass surgery. The researcher used two standard profile tests, the Spielberger State-Trait Anxiety Inventory (STAI) and the Beck Depression Inventory-II (BDI-II), as well as a Self-Evaluation Anxiety and Depression Questionnaire (administered presurgery). The BDI-II and STAI were administered pre- and post-surgery to 30 coronary artery bypass graft surgery patients. Fifteen patients were exposed to anxiolytic music/guided visualization imagery tapes administered pre-, during, and post-surgery; 15 patients in a control group were exposed to healing music tapes. A comparison of the anxiety and depression scores before and after surgery indicated the extent to which emotions such as anxiety and depression were positively affected by anxiolytic music/guided visualization imagery tapes.

There were no significant findings to suggest that anxiolytic music/guided visualization tapes were better than music alone in reducing anxiety and depression in cardiac surgery patients. However, there was a positive correlation between anxiety and depression, indicating that increased anxiety was associated with increased depression. Also, there was a negative correlation between age and anxiety, meaning that older patients tended to be less anxious while younger patients tended to be more anxious. However, no significant associations were found among marital status, employment status, educational status, job status, overall health, anxiety, and depression.

These findings suggest that music tapes alone may be effective in reducing anxiety and depression in cardiac surgery patients. In addition, there is a direct link in anxiety and depression scores and the effect of age on anxiety. A larger population would be necessary to ascertain the relationship of one to another. Moreover, the STAI and BDI-II tests were shown to be effective tools for evaluating anxiety and depression in a surgical setting.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

FIGURES PAGE

CHAPTER 1
INTRODUCTION TO THE STUDY

Introduction

Coronary heart disease, that is, disease of the arteries that supply blood to the heart, is the leading cause of death and disability in the United States. It has been the number one killer in the United States every year since 1918. On average, one American dies of coronary heart disease every 33 seconds. In 2001 the American Heart Association predicted that 1.1 million people would have a myocardial infarction in 2002 and 40% of them would die.

Traditionally, health care management of the patient with acute myocardial disease has focused largely on physiological factors (Buselli & Stuart, 1999). According to Allen and Scheidt (1996), researchers and practitioners in cardiac medicine have made a good start on reducing death and disability due to coronary heart disease. These two researchers reported that the extraordinary reductions in this disease in the United States over the past 35 years have resulted less from high-tech medical interventions than from lifestyle changes. Leading cardiologists such as Oz (1998), McDougall (1996), and Simon (1994), and their pioneering predecessors, Friedman and Rosenman (1974), recognized that standard physiological coronary risk factors such as age, gender, hyperlipidemia, elevated smoking, hypertension, and sedentary lifestyle are not completely reliable predictors of either the occurrence or recurrence of coronary heart disease. Other related research presented by Buselli and Stuart (1999)

confirmed that psychosocial factors can also adversely affect the health outcomes of coronary patients.

As a result of the effects of psychosocial factors on heart health, clinical psychology can play an important role in providing high quality health care to cardiac surgery patients. A number of studies have demonstrated that mortality following cardiac surgery can be significantly reduced by offering patients emotional support (i.e., counseling focused towards expressing emotions) and assistance in overcoming anxiety and depression (Ornish, 1978; Oz, 1998). Fernandez (1993) found (by comparative analysis of recent surveys) that depression was second only to anxiety as one of the best predictors of recurrent cardiovascular complications after a cardiac event. Furthermore, Fernandez suggested that depression typically is underdiagnosed and untreated in 44% of cardiac patients who suffer from depression severe enough to require psychiatric intervention.

During the 1990s Sotile, Director of Psychological Services at the Wake Forest University Cardiac Rehabilitation Program, led a call for clinical psychologists to enter the scientific investigation of cardiovascular disease (Eads, Sears, Sotile, & Conti, 2000). Psychologists now contribute to the health care of cardiac surgery patients at a few larger hospitals and many hospitals affiliated with medical schools (Barefoot et al., 1996; Oz, Whitworth, & Liu, 1998). At this time it is not clear whether this change has occurred in smaller suburban hospitals in the southern United States.

Historical Background

In 1628, William Harvey discovered the human circulatory system and might have been one of the first physicians to recognize that emotions, including anxiety and depression, greatly influence cardiac health, Harvey observed that "a mental disturbance provoking pain, excessive joy, hope or anxiety extends to the heart, where it affects temper and rate" (Harvey, 1928, p. 107).

In the late 1970s, Berkman and Syme (1979) discovered an inverse relationship between mortality and social interaction. The results of their study suggested that individuals experiencing rapid social changes in their communities and lacking social support or forced to live in poverty had significantly higher mortality rates than those who enjoyed strong social support. Berkman and Syme defined social support as the presence of stable social ties and relationships. In the early 1980s, Friedman and Ulmer (1984) developed a more psychodynamic model for the Type A behavior pattern, that is, a model that focused more directly on the mental and emotional processes underlying the behavior pattern and its motivation. Friedman and Ulmer determined that the center of Type A behavior pattern was insecurity and inadequate self-esteem. In 1987, Friedman et al. reported on their Recurrent Coronary Prevention Project (RCPP), at that time one of the nation's largest behavior modification programs for secondary prevention of coronary heart disease. The Friedman et al. study demonstrated that patients who received group counseling for Type A behavior pattern experienced a 44% reduction in second heart attacks. Burell et al. (1994)

attempted to replicate the Friedman et al. (1987) RCPP study and found that a group of postcoronary artery bypass graft (surgery) patients who were encouraged to reduce anger, impatience, annoyance, and irritation in their daily lives exhibited significantly decreased postsurgery mortality.

In the 1990s, importance of Type A behavior began to decrease and less importance was placed on its role in medical treatments (Welin, Lappas, & Wilhelmsen, 2000). During the late 1990s cardiac specialists broke these categories down more definitively to include more pertinent categories such as anxiety and depression.

From 1987 to 1995, the effects of emotions and feelings on coronary health were investigated in three major clinical trials: the Lifestyle Heart Trial (Gould et al., 1995; Ornish et al., 1993; Ornish et al.,1990); Recurrent Coronary Prevention Project (Friedman et al., 1987); and Project New Life (Burell et al., 1994).

These three major clinical trials demonstrated that mortality associated with cardiovascular disease could be significantly reduced by helping patients with the psychosocial aspects of cardiovascular disease, including anxiety and depression, and by offering affected patients emotional support. The Lifestyle Heart Trial (Gould et al., 1995; Ornish et al., 1993; Ornish et al., 1990) found evidence that atherosclerosis, that is, the narrowing and sometimes blocking of arteries by plaque, could be reversed by lifestyle modification including stress management, exercise, yoga and meditation, vegetarian diet, and group support.

In 1994, Pelletier summarized previous studies relating to social support and mortality and found an inverse relationship between mortality associated with cardiovascular disease and the amount and kind of social interaction in which patients engaged. The results of Pelletier's study suggested that patients with low social networks, that is, those who lacked social support, had significantly higher mortality rates than those with high social networks, that is, those who enjoyed strong social support. Pelletier (1994) defined social support as a sense of belonging and connectedness to other people. Pelletier's study and others (Blazer, Kessler, McGonagle, & Swartz, 1994; Frasure-Smith et al., 2000; Oxman & Hull, 1997) provided the foundation of support for the concept that the enjoyment of strong social support is positively related to good health. In a study of elderly myocardial infarction patients, Berkman, Leo-Summers, and Horowitz (1992) found that lack of emotional support was associated with increased risk of death in the first 6 months after a heart attack (MI). Furthermore, after a 2-year study of 530 patients who experienced heart attacks, Case, Moss, Case, McDermott, and Eberly (1992) concluded that living alone was an independent risk factor for recurrent heart attacks or cardiac death.

Rozanski, Blumenthal, and Kaplan (1999) suggested offering individual counseling to cardiac patients along with weekly group meetings. The goal of the meetings was to reduce anger, hostility, and the impulse to hurry. Oz (1998) has used many different modalities to treat heart disease: music therapy, yoga, self-hypnosis, aromatherapy, therapeutic touch, self-meditation, massage, and

reflexology. Williams et al. (1999) suggested using the following methods with cardiac patients: counseling sessions in which the patient's individuality is valued and respected; group counseling; cognitive-behavior therapy in which patient's learn they are valued and unique; life-skills training; and group support which allows patients to connect with supportive people in their own community. Buselli and Stuart (1999) agreed with the usefulness of cognitive-behavioral interventions because learning how to rethink one's thought patterns draws attention to the relationship of mind, body, emotions, and behavior, and thereby adopting new patterns so that the patient becomes healthier. They also suggested helping patients learn new behavioral strategies such as anger management in responding to stressful situations. McCaffrey and Good (2000) and White (1999) have used music as an intervention that has had positive results in helping benefit the healing process with heart patients.

The previous discussion has revealed that the chief argument for studying the emotions and feelings of cardiac surgery patients has been that fewer cardiac surgery patients might die of heart disease if those patients' painful emotions such as anxiety and depression were reduced. To date, clinical trials have supported this argument (Burell et al., 1994; Frasure-Smith et al., 2000; Friedman et al., 1987; Ornish, 1990, 1993). Research findings during the last half century have pointed to the need for clinical psychologists to work as adjunct members of the cardiac patient's health care team (Blumenthal & Kaplan, 1999;

Blumenthal et al., 1997; Good, 1995; Oz, Lemole, Oz, Whitworth, & Lemole, 1996; Tusek, Cwynar, & Cosgrove, 1999; Williams et al., 1998).

Blumenthal et al. (1997), Good (1995), and a number of other researchers (Buselli & Stuart, 1999; Lehrer et al., 1993; Olson, 1998; Oz, Lemole, Oz, Whitworth, & Lemole, 1996; Purdie, 1997) have demonstrated that inpatients in clinical cardiac surgery settings can benefit from anxiety-relieving treatments that include soothing music and guided imagery visualization, yoga, prayer, acupuncture, massage, aromatherapy, hypnosis, meditation, therapeutic touch, and homeopathy. Of these researchers, perhaps the most influential has been Dr. Mehmet Oz, a cardiovascular surgeon at Columbia Presbyterian Medical Center in New York City. Oz et al. (1996, 1998) built their work on foundations erected by Ornish (1990), who used meditation and other relaxation techniques, as well as diet and exercise to reverse heart disease, and Friedman et al. (1987) of the Recurrent Coronary Prevention Project. The collective work of these researchers supports the use of clinical psychology for inpatients in a clinical cardiac surgery setting.

In medical circles, frequent debates have concerned the possible effects of psychological factors, such as anxiety, stress levels, and depression, on coronary heart disease. Learning more about how psychological factors affect cardiac surgery patients may provide a greater understanding of coronary heart disease. There remain unanswered questions over whether psychological factors affect the health of patients with heart disease (Allen & Scheidt, 1996).

This study explored a new trend in clinical psychology by linking psychological treatment plans with other medical treatments provided by the cardiac surgery patient's medical providers (i.e., cardiologist, primary care physician, nurse, ancillary personnel). In the field of psychology, acceptance of the potential benefits of incorporating clinical psychology into the care of patients with cardiac disease is gaining acceptance (Oz, 1998; Oz, Whitworth, & Liu, 1998; Rozanski, Blumenthal, & Kaplan, 1999; Sears et al., 1999).

Problem Statement

There appears to be a strong need to help cardiac surgery patients overcome anxiety and depression prior to surgery, during surgery, and after surgery. This researcher has worked for the past 10 years as a cardiac surgical patient's counselor. Because of this work a strong perception developed that there is a need to better evaluate and then to help patients who often experience anxiety and depression associated with cardiac disease.

Little has been found in the literature which discusses the utilization of music and imagery to assist in alleviating anxiety pre- and post-cardiac surgery. It needs to be determined if such a treatment modality can achieve positive results regarding depression in these patients.

Purpose of the Research

The primary purpose of this research was to focus on the effects of music/imagery on anxiety and depression pre-, during, and post-cardiac artery surgery bypass graft surgery. The research sought to determine the effectiveness of music/imagery tapes in helping (assisting) these patients alleviate anxiety and depression (e.g. lower their Beck II and STAI (S-scale) scores).

In a search of the literature no studies were found which specifically link emotions and feelings of cardiac surgery patients to anxiety and depression scores. The literature and clinical trials in related areas support such research. Significant findings would suggest that music/imagery tapes (anxiolytic music) may be used during surgery as an intervention that would produce positive results in helping benefit the healing process with heart patients.

Theoretical and Conceptual Foundations of the Study

This study has its conceptual basis in past studies of cardiac patient treatments performed in the fields of clinical psychology, education, sociology, and alternative medicine. The basic theory underlying this research is by Oz (1998) in his theory of total patient healing, that is, adding another dimension to the standard medical treatment (surgery and drugs) by addressing the emotional changes associated with open heart surgery. Oz advocated using health care providers who had expertise in psychosocial issues to offer their services with

complementary therapies (soothing music and guided imagery visualization, meditation, hypnotherapy, simple yoga exercises, massage, and therapeutic touch) to patients. Four decades earlier, Friedman and Rosenman (1959) had similarly theorized that there was a relationship between the emotions and coronary heart disease and created the term Type A behavior pattern (TABP) to describe this phenomenon. They identified the following psychosocial factors as being most important: (a) anxiety, (b) depression, (c) Type A behavior pattern, (d) anger and hostility, (e) psychological stress, (f) job strain, (g) vital exhaustion, (h) social isolation and (I) cardiac denial. In the mid-1970s, Ornish (1978) also theorized that coronary atherosclerosis could be reversed by prescribing a comprehensive lifestyle approach. This included a vegetarian diet with less than 10% fat, moderate exercise three times a week, group therapy two times a week, and 1 hour of yoga and meditation daily.

Behind these three theories is the notion that--just as clinical signs can be compressed into two major dimensions, physiological and psychosocial--anxiety and depression can be compressed into a subset of behaviors. Anxiety and depression occur when patients are paired with specific situations, such as chronic cardiac insult (reoccurring heart problems) that end in cardiac surgery. Variables known to be important in heart disease include (a) depression, (b) anxiety, (c) psychological stress, (d) anger and hostility, (e) vital exhaustion, (f) social support, and (g) cardiac denial (Allen & Scheidt, 1996; Buselli & Stuart, 1999; Friedman & Rosenman, 1974; Rozanski, Blumenthal, & Kaplan, 1999).

Null Hypotheses

1. No correlations will be found among demographic factors and psychological traits as measured by the Medical History and Clinical Data Questionnaire and the Self-Evaluation Anxiety and Depression Questionnaire.

2. No differences will be found in anxiety levels pre- and post-surgery between the experimental and control groups as measured by the Spielberger State-Trait Anxiety Inventory (S-scale).

3. No differences will be found in depression levels pre- and post-surgery between the experimental and control groups as measured by the Beck Depression Inventory-II.

Significance of the Study

Introducing the skills of clinical psychologists into the diagnostic and treatment teams of such patients is one potential method for helping patients reduce the negative emotions harmful to recovery. The cost savings associated with reducing hospitalized patients' anxiety and depression may indicate that bringing the clinical psychologist into the cardiac surgery patient's health care team would have financial benefits to both patient and hospital.

Most importantly, however, could be the direct benefit to the patient's health. In humans, mind and body are connected. It is important not only to manage the physiological features of the patient's illness but also psychosocial factors, for example assessment of anxiety and depression scores.

In summary, monitoring anxiety and depression via the Spielberger State Anxiety Inventory and the Beck Depression Inventory II would be a valuable asset to the cardiac surgery patient's health care team because (a) certain psychosocial factors have been associated with the occurrence of cardiovascular disease; (b) certain psychosocial factors have been associated with the increased morbidity and mortality due to cardiovascular disease; (c) increased risk of physiologic arousal of anxiety, depression, and anger in cardiovascular disease patients may occur as a result of various stresses associated with cardiovascular disease and its treatment; and (d) certain untreated psychological symptoms have been associated with higher financial costs to the cardiovascular disease patient and the health care system (Ai, Peterson, & Bolling, 1997; Allison et al., 1995; Barefoot & Schroll, 1996; Ben-Zur et al., 2000; Blumenthal et al.,1997; Busselli & Stuart, 1999; Frasure-Smith, 2000; Hlatky et al., 1997). The mind-body connection in human beings can be accessed by clinical psychologists via various psychological interventions and assessment instruments (Allison et al., 1995; Buselli & Stuart, 1999).

Definition of Terms

Acute myocardial infarction (MI). Death of a portion of the heart muscle, usually caused by sudden occlusion (blockage) of a previously narrowed coronary artery (Miller & Keane, 1987).

Anxiety. A continuum of discomfort ranging from mild to panic level that may include breathlessness, a choking sensation, palpitations, restlessness, muscular tension, tightness in the chest, trembling, or flushing (Miller & Keane, 1987).

Anxiolytic music. Music that lowers stress hormones called beta-endorphins, causing a lowered pulse rate, lowered heart rate, and relaxation of the muscles, thereby reducing anxiety and tension (Fleming, 1999).

Cardiac event. A negative episode or happening pertaining to the heart (Miller & Keane, 1987).

Cardiac psychology. That branch of health psychology that identifies psychosocial risk factors for the development and perpetuation of cardiac heart disease and the psychological consequence (s*equelae*) of cardiac illness (Clay, 2001).

Cardiovascular disease. Disease (process having characteristic signs and symptoms) of the heart and blood vessels (Miller & Keane, 1987).

Coronary artery bypass graft surgery (CABG). Surgical treatment of coronary artery blockages that cannot be treated using drugs or angioplasty (Miller & Keane, 1987).

Coronary artery disease (CAD). Coronary heart disease (CHD), also known as coronary artery disease (CAD). Disease of the arteries that supply blood to the heart itself (Miller & Keane, 1987).

Depression. Feelings of intense sadness, dejection, or melancholy causing a lowering of functional activity (Miller & Keane, 1987).

Guided imagery visualization therapy. A guided practice of relaxation to help patients relax and decrease symptoms of anxiety, stress, anger and impatience, and hostility (Buselli & Stuart, 1999).

Music therapy. A varied and complex systematic process of intervention using soothing musical experiences to facilitate healing (Biley, 1999).

State anxiety. The process by which people respond to daily life at any given time (moment to moment) and level of intensity (Spielberger, 1983).

Trait anxiety. Differences between individuals in the way they usually respond to stressful situations (Spielberger, 1983).

Guidelines for and Assumptions of the Study

This study rested on certain health care guidelines, assumptions concerning the relationship of clinical psychology to cardiac surgery recovery, and assumptions about the sample population. The following paragraphs briefly describe the relevant guidelines and assumptions.

The professional and personal goals of the clinical psychologist must emphasize an inclusive definition of health that extends beyond restrictive definitions linked to cost. In this study, research was performed and recommendations were offered in conformance with "best possible medical care"

as this term was defined in the 1994 guidelines published by the World Health Organization (WHO).

The WHO charter (1994) states that "enjoyment of the highest standard of attainable health is one of the fundamental rights of every human being without distinction or race, religion, political belief, economic or social condition."

Assumption #1: Patients will or may have anxiety and depression prior to surgery.

Assumption #2: Health care is not a privilege but a fundamental human right.

Assumption #3: The study sample will accurately represent the general population of men and women presently being treated in a hospital in a southern city of the United States.

Assumption #4: The methods used to select the sample population will produce an accurate sample and that the sample size will be adequate to determine results.

Assumption #5: The study sample will represent typical profiles of the cardiac surgery patient.

Assumption #6: The personal medical records used to gather information about the patients in the study sample will be assumed to be satisfactory for the collection of medical data.

Assumption #7: Cardiac medications will not significantly affect the study results.

Limitations of the Study

This study was subject to certain limitations. Anxiety and depression in cardiac surgery patients were measured using the STAI, BDI-II and the Self-Evaluation Anxiety and Depression Questionnaire. However, these anxiety and depression assessment tools were used on subjects having different primary care physicians, treatment plans, and medications. These limitations may exert minor unknown effects on the results of the study.

This study examined only a small portion of cardiac surgical recovery and focused only on the time frame when the patient is admitted to the hospital for cardiac surgery. The severity of cardiac disease or specific differential diagnoses may influence the levels of anxiety or depression to a positive or negative degree.

This was not a retrospective study and was time-bound to the 5 days the patient was actually in the hospital for coronary artery bypass graft surgery. Specific influence of music/imagery on patients who have experienced long-term anxiety and depression is not known. This study is modeled after other studies where anxiety and depression are scored without consideration for the length of time the patient has exhibited the scores found.

Often, psychological counselors will study a small number of subjects through extensive--and often prolonged--investigations to develop patterns and relationships of meaning (Dossey, Keegan, & Guzzetta, 2000; Williams et al.,

1997). In this study, one cardiovascular surgery team in one southern United States hospital was used as a model.

Patient anxiety and depression were monitored using standardized tests that were administered before and after cardiac surgery. The interval between administrations of these standardized tests was limited to three days, an interval that corresponds clinically to the maximum time spent as an inpatient following cardiac surgery.

Summary

Coronary heart disease is the leading cause of death and disability in the United States. Oz (1998), McDougall (1996), and Simon (1994), and their predecessors Friedman and Rosenman (1974), recognized that standard coronary risk factors, such as age, gender, smoking, hypertension, and sedentary lifestyle, are not completely reliable predictors of coronary heart disease in an individual or of recurrence of the disease.

Historically, the health care management of the patient with heart disease has mostly focused on physiological factors (Buselli & Stuart, 1999). However, researchers and practitioners are now focusing more on psychosocial factors such as depression, anxiety, anger, social isolation, and stress as related to disease and death from cardiac disease (Buselli & Stuart, 1999).

Major clinical trials from 1987 to 1995 evaluated the effects of emotions and feelings on heart disease. Three major trials were the Lifestyle Heart Trial (Gould

et al., 1995), the Recurrent Coronary Prevention Project (Friedman et al., 1987), and Project New Life (Burell et al., 1994). These trials showed that cardiovascular disease can be significantly reduced by offering patients interventions dealing with the negative psychosocial aspects of the disease. Research which links clinical psychology to the study of anxiety and depression found in the majority of cardiac surgery patients is warranted. Furthermore, the clinical research to date in this specific category is limited.

Blumenthal et al. (1997), Good (1995), and other researchers have demonstrated that inpatients in cardiac surgery settings can benefit from anxiety-relieving treatments that include soothing music and guided imagery visualization. The collective work of these researchers supports linking clinical psychology to patient treatment plans and other medical treatments provided by the cardiac surgeon and health care team.

In summary, many individuals who experience coronary artery bypass surgery exhibit emotional trauma with symptoms of anxiety and depression. Careful review of the background history suggests that currently there appears to be confusion in the psychological and medical models of treatment. Chapter 1 states that usually only the physiological health of patients is addressed while their psychosocial issues are neglected. Doctors often focus on the medical model of care and ignore the psychological disruptions of the patient. The emotional trauma associated with coronary artery bypass graft surgery often leads to feelings of anxiety and depression and is usually not identified by physicians.

This researcher proposed that the physiological trauma of experiencing open-heart surgery seriously influences the physiological health of the patient.

The literature review found in chapter 2 explores standardized tests designed to assess anxiety and depression scores. It explores the proposition that anxiolytic music/ guided visualization imagery tapes administered pre-, during, and post-surgery is rooted in holistic medicine in which the emotional health of the patient is treated as well as the physical health. Chapter 2 provides clarification of the multiple topics (anxiety, depression, awareness during anesthesia, music therapy, and guided imagery) associated with cardiac surgery patients. Chapter 3 describes the methodology used, the Beck Depression Inventory, the Spielberger State-Trait Anxiety Inventory, the self evaluation instruments used for demographic data, the data validity and reliability test levels, and data analysis methods and their relationships to this research study. Chapter 4 provides analysis and interpretation of the data from the methodologies described above. Tables and figures are used to illustrate these results. Finally, chapter 5 begins with a summary of the findings of this study, followed by conclusions and recommendations that are a result of these findings.

CHAPTER 2
REVIEW OF THE LITERATURE

Introduction

This chapter will address two common psychological problems, anxiety and depression, that occur as a result of coronary artery bypass graft surgery (CABG). Some patients have experienced surgical awareness that has contributed to long-term psychological distress (Adams et al., 1998). In collaboration with the use of medications for surgery, complementary medical techniques will be discussed. The use of positive suggestions by playing music/imagery tapes while under anesthesia will be explored.

Also included in this chapter is information concerning music therapy and types of music most appropriate for use with surgical patients and the background of music designed to reduce anxiety. Guided imagery and the ways that it can be helpful for cardiac surgical patients are defined. The subject of medical ethics surrounding patient education and informed consent is discussed.

It was not until the late 1950s that the relationship between psychological variables and coronary heart disease was scientifically investigated. In that study, Friedman and Rosenman (1959) observed that cardiac patients exhibited a behavior pattern of free-floating hostility and time urgency, which they termed Type A behavior pattern. This "free floating hostility" behavior pattern is manifested with the interaction of emotion and action. In other words, an individual experiences intense feelings of time urgency which bring about changes that affect that individual's personality and lifestyle. The free-floating

hostility was demonstrated by individuals who pushed ruthlessly to achieve more and more in less time while finding rational excuses for their intent without being actually aware of their real purpose, which was recognition for their accomplishments. In the mid-1970s, a number of researchers, including Friedman, published the findings of the first large-scale investigation of Type A behavior pattern (Rosenman et al., 1975).

In two studies performed in the 1980s, Hayes and Feinleib (1982) and Hayes, Feinleib, and Kannel (1980) sought to verify the relationship between Type A behavior pattern and cardiac heart disease. In the second of these studies, now widely known as the Framingham Heart Study, Hayes, Feinleib, and Kannel (1980) found that Type A behavior was a significant risk factor for cardiac heart disease. A group of 1674 individuals who had no heart disease were involved in the study between 1965 and 1967 and were followed over an 8-year period to see if coronary disease developed. Men exhibiting Type A behavior pattern were twice as likely to develop coronary disease ($p<0.05$).

The results of the Lifestyle Heart Trial (Gould et al., 1995; Ornish et al., 1990, 1993) raised the question of whether extreme lifestyle changes were essential to delay the progression of atherosclerosis. In 1992, Schuler et al. reported that atherosclerosis progressed at a significantly slower rate in patients who made modest recommended lifestyle changes than in patients who did not make such changes. These changes included eating a low-fat diet consisting of less than 20% of calories from fat, maintaining a low cholesterol diet of less than 200 mg.

daily, exercising 3 hours a week with social interaction to discuss personal problems after exercise if they chose, and four group meetings a year. The focus of these group meetings was social interaction to alter emotional attributes such as anxiety and depression.

In a meta-analysis examining the role of social support and coronary artery disease, Anderson, Deshaies, and Jobin (1996) concluded that social support plays as vital a role in recovery from coronary artery disease as primary and secondary prevention measures. Since Pelletier's 1994 study, the relationships between coronary heart disease and psychosocial factors have been the subjects of study (Blumenthal et al., 1997; Januzzi, Stern, Pasternak, & DeSanctis, 2000). Januzzi et al. (2000) explored a number of psychological factors of cardiac disease patients, including (a) depression, (b) anxiety, (c) Type A behavior pattern, (d) anger and hostility, (e) psychological stress, (f) job strain, (g) vital exhaustion (a state of physical and emotional debilitation), (h) social isolation, (i) lack of social support, and (j) cardiac denial (a defense mechanism in which one refuses to believe a present reality concerning his/her heart) (Allan & Scheidt, 1996; Buselli & Stuart, 1999; Rozanski, Blumenthal, & Kaplan, 1999). As a result of these studies, many innovative methods are being introduced into today's health care industry to reduce anxiety and depression among cardiac disease patients.

Krantz, Sheps, Carney, and Natelson (2000) conducted a review of the literature and found that stressors such as frustration, sadness, anger,

depression, and tension are detrimental to cardiac surgery patients. Their findings suggest that psychosocial treatment could be used as a preventative measure with these patients in alleviating progression of their disease. Whitworth, Burkhardt, and Oz (1998) identified different types of complementary care (mind-body techniques) which might assist patients undergoing surgery or their recovery. Modalities such as hypnosis, prayer, aromatherapy, therapeutic touch, yoga, and audiotapes have been integrated into their program at the Complementary Care Center at Columbia-Presbyterian Medical Center in New York (Whitworth, Burkhardt, & Oz, 1998). Whitworth, Burkhardt, and Oz developed the program so that they could research the use of nonpharmalogic treatments for this group of patients. The long-term outcome of cardiac surgery patients depends on aggressive reduction of risk factors for coronary artery disease (Ali, Peterson, & Bolling, 1997; Krantz et al., 2000).

Coronary artery bypass graft (CABG) surgery is one of the most frequently performed surgeries in the United States, and total cardiovascular disease mortality ranks as the leading cause of death (American Heart Association, 2001; Kubzansky & Kawachi, 2000). The long-term clinical efficacy of coronary artery bypass graft surgery has been established with respect to relieving symptoms.

Recent research findings in psychoneurobiology are increasing knowledge of how emotions and mental stress impact the cardiovascular system (Williams et al., 1999). This study identifies anxiety and depression as two of the most common psychological problems which patients encounter. The literature about

Type A behavior pattern as a risk factor for heart disease is included for foundation and historical value. Welin, Lappas, and Wilhelmsen (2000) and Sullivan, LaCroix, Baum, Grothaus and Katon (1997) suggested that major depression has been found to be a better predictor for the development of heart disease than Type A personality. A 10-year study by Welin, Lappas, and Wilhelmsen consisted of patients (*N*=275) who had experienced a heart attack. A multivariate analysis found that, along with signs of left ventricular failure and ventricular dysrhythmias, high depression scores were significantly associated with mortality. A 1-year prospective study by Sullivan et al. consisted of 198 patients who underwent heart catherization. Self-reported physical function was significantly associated with anxiety and depression at the time of catherization, as well as 1 year later.

Kornfield (1965) was one of the first physicians to suggest that there are changes in the emotional reactions of patients undergoing cardiac surgery, including anxiety and depression. Williams et al. (1999) and Sullivan et al. (1997) also reported that there are multiple psychological variables involved in patients suffering from heart disease and they identified depression and anxiety as two of these factors.

In their pursuit of treatments that might prove useful to the recovery of cardiac patients, Oz et al. (1996) and Oz (1998) examined such alternative medical practices as prayer, hypnosis, self-meditation, yoga, music therapy, massage therapies, relaxation techniques, vegetarian diet, vitamin therapy, and

reflexology. Oz concluded that we not only have a physical heart, but also a "psychological heart," "emotional heart," and "spiritual heart" (Oz, 1998). Recently, Rozanski, Blumenthal, and Kaplan (1999) reported that studies they examined showed that psychological factors do contribute to coronary artery disease. Rozanski et al. (1999) examined psychosocial factors such as (a) depression, (b) anxiety, (c) personality factors and character traits, (d) social isolation, and (e) chronic stress. Rozanski et al. established an imperative for enhancing behavioral interventions among individuals prone to coronary artery disease.

A second group of theories important to this study originated in a body of research concerning the healing effects of music (Alexander, 2001; White, 1999; Zimmerman, Nieveen, Barnason, & Schmaderer, 1996; Miaskowski, 1996; Bolwerk, 1990; Updike, 1990; Guzzetta, 1989; Kaempt & Amodei, 1989; Davis-Rollans & Cunningham, 1987).

Alexander (2001) found that there was little written about music and healing in family medicine literature. Alexander suggested that music has a clinical application for patients in surgery, pain control, for women in labor and after delivery, and dental patients. He described how music can be prescribed by family doctors as a therapeutic intervention along with medical care. Alexander also provided a list of appropriate music and books for medical patients.

White (1999) conducted research with cardiac patients to determine the effects of relaxing music on their anxiety. Forty-five heart patients participated in the study.

> According to 1-way ANOVA'S for changes in state anxiety among groups differed significant immediately (F[2,42]=12.65, P<.001) and 1 hour (F[2,42]=10.77, P<.001) after the intervention. ...reduction in state anxiety scores immediately and 1 hour after the intervention was significantly greater in the experimental group than in the attention and the control groups. (White, 1999, p. 228)

Zimmerman, Nieveen, Barnason, and Schmaderer (1996) examined the effect of music interventions on pain and sleep in 96 coronary artery bypass patients after surgery. Patients in the music group had significantly lower scores on pain ($F[2,93] = 4.74$, $p<0.05$) than the control group.

Miaskowski (1996) and observed that the data from Zimmerman's (1996) study showed how nurses could use music as an "adjunct analgesic" for a variety of patients with problems with acute pain. She stated that there seemed to be no side effects from interventions with music in contrast to using some pharmacologic medications and that music appeared to be safe and effective.

To ascertain if music would reduce patient anxiety, Bolwerk (1990) examined 75 patients who were hospitalized with a heart attack. Results indicated a significantly greater decrease in mean anxiety scores for patients who listened to relaxing music compared to those who did not listen to music.

Updike (1990) conducted research with 20 coronary and surgical patients in intensive care and compared differences in the mean arterial pressure (MAP)

and the double product index (DPI). Results of paired samples *t* test physiologic parameters (*N*=20) were as follows:

> significant (MAP) and (DPI) reduction demonstrated the decreased arterial pressure and oxygen consumption of the heart in the relaxation state (Updike, 1990, p. 40)

Mean arterial pressure (MAP) before music therapy was 94.3 and after music therapy was 75.7. Standard deviation of MAP before music therapy was 12.2 and post music therapy was 8.8. The mean of the double product index (DPI) before music therapy was 114.1 and after music therapy was 106.3. The standard deviation of the DPI before music therapy was 33.8 and after music therapy was 28.3. This showed a change in the patient's mood from that of worry, anxiety, sadness, and focus on pain to calmness, relaxation, and less focus on pain.

Guzzetta (1989) examined the effects of relaxation and music therapy in reducing stress in 80 patients in a cardiac unit. Both relaxation therapy and music therapy were significantly better than no intervention in reducing apical heart rates and increasing peripheral temperatures. In addition, music therapy was found to be more effective than relaxation therapy in increasing peripheral temperatures.

Two research studies have provided support for the use of music before and during surgery. Kaempf and Amodei (1989) studied 33 outpatients who were going to have arthroscopic orthopedic surgery. The mean differences between scores before music therapy and after for the control and experimental groups were as follows: systolic blood pressure for the control group was -4.30; the

experimental group was -3.10 with a t-value of 0.43 and p-value of .840; diastolic blood pressure for the control group was -.38, experimental group -1.60, t-value 0.38 and p-value .354; pulse rate for the control group was 0.63; the experimental group respiration rate was -0.63 and the State Trait Anxiety Inventory for the control group was -2.76 and for the experimental group -3.29, with a t-value of 0.28 and p-value of .390 (Kaempf & Amodei, 1989). The results of the study showed that both vital signs and anxiety decreased for both groups but did not always have statistically significant results. Statistical significance in decreased anxiety was evident in both the experimental and control groups.

Davis-Rollans and Cunningham (1987) studied 24 patients hospitalized with heart conditions in the coronary intensive care unit. The purpose of the study was to determine the effect of classical music on heart rate, rhythm, and respiratory rate of preoperative and postoperative patients. Davis-Rollans and Cunningham (1987) also studied these patient's psychological responses to the music. A portable cassette tape player was used with the patients. A short multiple-choice questionnaire was used to collect psychological data and included the patients' musical education, how often they listened to music, the main feeling they experienced before and after listening to the music, if any of the selections had special meaning, and if they had any hearing impairment. The design of the study was as follows:

> Patients were continuously monitored for two 42-minute periods in the same day. These two periods will be referred to as the music period and the control period. The music period included a 5-minute baseline period before the music was started and the playing of three musical pieces,

> each approximately 12 minutes in length. The control period of background CCU noise, as heard through silent headphones, was identical in length to the music period. (Davis-Rollans & Cunningham, 1987, p. 372)

There were no changes in the specified physiological variables during music periods that were statistically and clinically significant. This finding demonstrated that CCU patients encountered no adverse affects from the music. The data also demonstrated that patients benefited psychologically from the music.

The results of these studies suggest that music therapy is an effective approach for reducing stress and anxiety and can be used to elicit psychophysiological relaxation responses such as calming the body so that blood pressure and heart rate are lowered.

According to Alexander (2001), music diverts sound stimuli in the operating room and provides the patient with comfort and a feeling of relaxation during the surgical procedure. According to McCaffrey and Good (2000), soft, soothing music (light classical to light jazz) can help patients feel more comfortable in a strange environment and can distract them from painful and fear-provoking experiences. Chlan and Tracy (1999) found music therapy to be an effective intervention for reducing anxiety and managing stress in different clinical settings including critically ill adult patients. Watkins (1997) noted that, in most studies of music therapy in the fields of nursing and medicine, music has been used as an anxiety reducing (anxiolytic) intervention for patients experiencing stress. Watkins suggested that music therapy may be useful in a wide range of clinical settings because it can cause reductions in anxiety, blood pressure, and heart

rate. Chlan and Tracy found that music therapy is an intervention that patients thoroughly enjoy and readily accept.

A third body of studies important to this study has shown that patients undergoing surgery with the aid of local and regional anesthesia have reduced need for sedatives when they are exposed to soothing music and positive suggestion during surgery (Alexander, 2001; Frandsen,1990; Wolfe & Millett, 1960). Frandsen used music with her surgery patients as an anxiolytic before, during, and after a surgical procedure. She used music either with pharmacological sedation or as an alternative to sedation and found that it helped reduce anxiety. Frandsen found that patients who had surgery with local or regional anesthesia and listened to music did not require as much sedation. Alexander (2001) concluded that patients who listen to music while under local and regional anesthesia during surgery have reduced need for sedatives. Wolfe and Millett (1960) suggested that the possible beneficial effects of positive suggestion made to patients under anesthesia include reductions in analgesic requirements and in the number of postoperative days in the hospital.

The findings of this study are expected to contribute to the body of knowledge concerning two psychosocial factors, namely, anxiety and depression, which have been shown to influence the health of patients with cardiovascular disease. Some of these studies were conducted by Frasure-Smith, Lesperance, and Talajic (1995); Januzzi, Stern, Pasternak, and DeSanctis (2000); Kaempf and Amodei (1989); Ludwig, Roll, Breithardt, Budde, and Borggrefe (1994); and

Kawachi, Sparrow, Pantel, Vokonas, and Weiss (1994). Depression, anxiety, gender, years of education, and occupation have been demonstrated to influence mortality resulting from cardiovascular disease (Buselli & Stuart, 1999; Iribarren et al., 2000; Krantz et al., 2000; Rozanski et al., 1999), but the relationships between patients' test scores for anxiety and depression and patients' recovery from cardiac surgery have not yet received sufficient research attention.

Only a few studies have examined the possible value of music therapy on the comfort and recovery of patients in clinical settings (Chlan, Evans, Greenleaf, & Walker, 2000; Olson, 1998; Purdie, 1997). Chlan et al. (2000) used soothing music to reduce the anxiety and discomfort of outpatients undergoing flexible sigmoidoscopy, that is, direct examination of the interior of the sigmoid colon. Olson (1998) concluded that soothing music can be helpful to patients during pregnancy, childbirth, and in neonatal care and surgery. Purdie (1997) examined the usefulness of music therapy and neurorehabilitation, that is, therapeutically restoring one's ability to live as normally as possible after learning difficulties have occurred, for example, as a result of Parkinson's disease, stroke, Huntington's disease, or traumatic brain injury. Purdie (1997) reported that the literature showed that music therapy may be beneficial to these patients and encouraged more scientific research that validates the intervention.

The researcher believes that there is a need for research focused specifically on the potential usefulness of music therapy/guided imagery therapy in cardiac bypass graft surgery (CABG) recovery. Tusek, Cwynar, and Cosgrove (1999)

conducted a study with 100 patients undergoing a variety of cardiovascular surgeries and reported that guided imagery significantly decreased their length of stay (5.6 days) as compared to the control group (7.4 days, p=0.002). There was a significant decrease in the anxiety scores for those who listened to the tapes with a mean change of -6% (SD=84) (Tusek, Cwynar, & Cosgrove). Pain scores both before surgery and after surgery were significantly different. The control group experienced a mean increase in their pain score of 627% (SD=276) while the control group had a mean increase of 218% (SD=153, p=0.001). Tusek, Cwynar, and Cosgrove showed that guided imagery could provide patients with a sense of self-worth, hope, comfort, and tranquility.

In a study by Allison et al. (1995) consisting of 381 patients, there was a significantly higher rate of rehospitalization with those cardiovascular disease patients who exhibited higher rates of depression, social isolation, and psychological stress while hospitalized and those patients who did not. Symptoms measured were somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoia, and psychoticism. Patients exhibiting more psychological stress were likely to be readmitted to the hospital for a recurrent cardiovascular event within 6 months after discharge (2.39, p<0.05) (Allison et al., 1995). In addition, cardiovascular disease patients who experienced psychological stress as depression, anxiety, pessimism, anger, or social isolation had significantly higher hospitalization costs than those patients who do not suffer from psychological stress (Allison et al.,

1995; Hlatky et al., 1997). In the Allison et al. study, mean hospital costs for a patient experiencing psychological stress was $9,504 versus $2,146 for a patient who did not suffer psychological stress. Allison et al. also found that depressed, socially isolated, anxious, angry, and pessimistic individuals were less motivated to make lifestyle changes to reduce their health-risk factors.

As pointed out by several authors (Allison et al., 1995; Buselli & Stuart, 1999; Eads et al., 2000; Oz, 1998), the clinical psychologist has available many psychological interventions for managing the care of the cardiovascular disease patient, including (a) using the relaxation response to diminish patient anxiety, (b) using cognitive restructuring techniques to alter patient stress perception, and (c) using music and guided imagery visualization therapy to enhance relaxation and empathetic listening. Developing a greater understanding of how the clinical psychologist can work as part of the cardiac surgery patient's health care team could enhance that patient's chances of recovery and decrease mortality.

Anxiety

Kubzansky and Kawachi (2000) and Sullivan et al. (1997) noted that cardiovascular disease frequently coexists with psychiatric disorders. The co-morbidity of psychiatric and cardiovascular disease can be attributed to the co-occurrence of two independent illnesses as well as to the development of cardiac disease as a complication of emotional or psychiatric problems. Conversely, the

development of psychiatric disorders can occur as complications of cardiovascular disease.

Rozanski, Blumenthal and Kaplan (1999) and Welin, Lappas, and Wilhelmsen (2000) reported that there is increasing evidence linking anxiety to coronary artery disease. Anxiety disorders are being linked to the development of cardiac events in the general population. Moreover, Ben-Zur, Rappaport, Ammar, and Uretzky (2000) and White (1999) suggested that just the cardiac event itself causes anxiety levels to become elevated in those who experience it and that surgery frequently causes anxiety.

Buselli and Stuart (1999) agreed that patients recovering from heart surgery are at particular risk for increased levels of anxiety during their hospitalization. Thomas (1995) and Ruiz, Dibbie, Gilliss, and Gotner (1992) cited some of the factors contributing to patient anxiety as anticipation of heart surgery, physical discomfort, unfamiliar procedures, unanticipated trauma, unfamiliar environment, altered communication patterns, experiences of loss, uncertainty of outcome, doubts about progress in recovery and resumption of a normal life. Kaempf and Amodei (1989) suggested that waiting time for the surgery may be more traumatic than the anticipated surgery.

Patient manifestation of increased anxiety can include increased perception of pain (Good et al., 1999). Good et al. reported that the combination of relaxation and music significantly decreased pain during periods of walking and rest on the first 2 postoperative days following abdominal surgery. These findings supported

the acute pain management theory by Good and Moore (1996) that both nonpharmacological and pharmacological methods are needed.

Byers and Smythe (1997) reported that anxiety can heighten sensitivity to noise resulting in an increased autonomic response such as sensory overload and sleep deprivation. Bowman (1992) suggested that patients who experience anxiety may also experience development of delirium.

Boeke, Duivenvoorden, Verhage, and Zwaveling (1991) stated that anxiety can lead to an increased length of hospitalization. Furthermore, Johnston (1980) found that anxiety among surgical patients did not diminish greatly during the postoperative period. This implies the need to re-examine reducing preoperative anxiety and decreasing anxiety throughout the hospital experience.

The association between anxiety and sudden cardiac death has been addressed in the Normative Aging Study (Kawachi, Sparrow, Pantel, Vokonas, & Weiss, 1994), the Health Professionals Follow-up Study (Kawachi et al., 1994), and the Northwick Park Heart Study (Haines, Imeson, & Meade, 1987). Anxiety was identified as a risk factor in fatal coronary heart disease among patients with panic disorder, phobic anxiety and other anxiety disorders (Kawachi et al., 1994).

Depression

In one of the earliest studies on depression, Cassem and Hackett (1973) found that depression is often a precursor of coronary heart disease and often accompanies recovery. They found depression in 38 (76%) of 50 randomly

selected patients in a cardiac care unit. Welin, Lappas, and Wilhelmsen (2000) conducted a study showing that prognosis after a myocardial infarction is strongly influenced by depression and a lack of social support. Sullivan et al. (1997) reported that over a 6 month period following a heart attack, patients with major depression appeared to have five times the risk of dying compared to similar nondepressed patients. The heart patient may experience depression because heart disease poses a threat to life and may cause severe disability. There is also the threat of changes in life patterns (lifestyle changes) (Griego, 1993). Fernandez (1993) noted that depression is one of the best predictors of poor adherence to lifestyle change and recurrent cardiovascular complications after a cardiac event. He suggested that depression is typically underdiagnosed and untreated. Griego (1993) suggested other feelings of loss are related to physical vigor, employment, sexual function, role status, and self-esteem.

Cohan, Pimm, and Jude (1998) stated that depression afflicts up to one third of all heart surgery patients in the weeks and months following their operations. Depression is often masked. Instead of feeling despondent, patients who experience depression after surgery commonly experience poor appetite; difficulty sleeping; lethargy; trouble with thinking, concentrating, and remembering; and an assortment of physical ailments that are complicated to diagnose. Musselman, Evans, and Nemeroff (1998) suggested that treating patients with depression improved their sadness and other signs and symptoms of depression, improved their quality of life and might even increase longevity.

Ludwig, Roll, Breithardt, Budde, and Borggrefe (1994) studied 552 male survivors who had experienced acute heart attacks to ascertain their depression status and found the degree of depression positively related to angina pectoris and maintenance of smoking habits and negatively related to return to work in 6 months. Inversely, Scheier et al. (1989) found that those individuals who could envision their desired outcomes as attainable prior to surgery were better able to meet their goals both in returning to work and in improved quality of life 6 months after heart-bypass surgery.

Awareness during Anesthesia

Many ancillary problems have been experienced by surgical patients including pain, anxiety, and complications of surgery and anesthesia (Klafta & Roizen, 1996; Petty, 1997). Halliburton (1998) conducted a study with cardiopulmonary bypass surgery patients. The results of the study suggested that patients who receive anesthesia for cardiac surgery recall both auditory and kinesthetic events. Oz et al. (1996) reported that patients who undergo open-heart surgery may be more subconsciously aware of occurrences during surgery because open-heart surgery requires anesthetic techniques that are less depressing to heart function and do not suppress the subconscious mind to the same degree. He suggested using cassette tapes before, during and after surgery.

These patients reported experiencing fear, anxiety, and panic due to the inability to communicate; a feeling of suffocation; an intense feeling of

helplessness and sometimes unbearable pain and an overwhelming fear of dying (Osterman et al., 1998; Easton, 1997). Therefore, in addition to the routine management before surgery, many additional supportive interventions have been advocated and tested. Intraoperative suggestions have been shown to improve parameters after surgery (Good et al., 2001).

It is estimated that 0.2% to 1% (30,000 to 150,000) of the approximately 15 million patients who undergo general anesthesia each year may experience awareness (Osterman, Bessel, & van der Kolk, 1998; McLeskey & Aitkenhead, 1994). This problem can be difficult for clinicians to detect because patients are often given neuromuscular blocking drugs to prevent movement during surgery (Easton, 1997). When medications such as Versed (benzodiazepines) are used, they do not afford protection from awareness (Moerman, Bonke, & Oosting, 1993). Ghoneim and Weiskopf (2000) suggested that the incidence of awareness during anesthesia and surgery is best estimated by formally interviewing patients postoperatively. Osterman, Bessel, and van der Kolk (1998) suggested assessment for awareness should begin in the recovery room with the patient being asked if he or she recalled any experiences during surgery.

Easton (1997) and Moerman, Bonke, and Oosting (1993) indicated that anesthesiologists should talk to patients about the potential for awareness or use measures such as earplugs and audiocassette earphones that play music or positive therapeutic suggestions. After reviewing a series of cases of awareness,

Cobcroft and Forsdick (1993) reported that in most cases, understanding the phenomenon and managing it by medical personnel was poor or lacking.

Research as early as Levinson (1965) supports the notion that subconscious hearing occurs under anesthesia. Patients who have experienced surgical awareness (the unintentional regaining of consciousness during a surgical procedure while under general anesthesia) suffer significant, long-term psychological consequences as posttraumatic stress disorder (Osterman, Bessel, & van der Kolk, 1998). More recent psychiatric and neurobiology studies support the theory of awareness during surgical procedures (Quelette & Simpson, 1998; Ranta, Laurila, Saario, Ali-Melkkila, & Hynynen, 1998). It also appears that intraoperative suggestions for a good recovery improve various postoperative parameters (Good, 1996; Good et al., 2001).

Furlong and Read (1993) conducted a study with surgical patients (*N*=108) undergoing gynecological surgery or mastectomies. They investigated whether it was possible to improve psychological and physical recovery by playing a tape of therapeutic suggestions with music during anesthesia. Using the Spielberger State-Trait Anxiety Inventory, state scores did not differ for the suggestion/music group versus the control group. However, the suggestion/music group showed a decrease in trait anxiety, with no significant change in the control group.

This reinforced the theory that patients retain some level of information-processing while under anesthesia. The findings of Spielberger et al. (1973) that patients retain some level of information processing while under anesthesia are

accepted by this researcher. The findings in the study conducted by Furlong and Read (1993) offer some encouragement to persist in studying the mysterious phenomenon of cognitive processing under anesthesia and responsiveness to suggestions.

The fact that patients can hear sounds during general anesthesia is a reality (Bennett, 1993). Jones and Konieczko (1986) confirmed that any anesthetized patient is capable of retaining verbal and other high-level inputs in long-term memory. Auditory fibers are not affected by anesthetics, so they continue to transmit sound. It is not known what happens to patients when auditory perception continues to function during surgery. Several studies have cited the possible harmful effects of intraoperative awareness upon postoperative recovery (Osterman, Bessel & van der Kolk, 1998; Halliburton, 1998). Otto, Penava, Pllock, and Smoller (1995) suggested using active coping strategies as cognitive-behavioral therapy to help with the reintegration of fragmented memories.

Music Therapy

Alexander (2001), McCaffrey and Good (2000), Chlan and Tracy (1999), and Heiser, Chiles, Fudge, and Gray (1997) suggested music therapy as an approach aimed at reducing stress and anxiety. This approach is designed to elicit a psychophysiological relaxation response.

Radin (1971) reported that the therapeutic effects of music date back to primitive humans who thought that music had the power to free the body of evil

spirits. Scholars as Plato and Pythagoras (Meinecke, 1971), Aristotle (Alvin, 1966), and Nightengale (1992) have recognized the benefits of music as a tranquilizer.

There are certain criteria for making the best choice of music for patients to hear during surgery. Anxiolytic music (anxiety reducing) is a particular type of music that is designed to reduce anxiety (Kaempf & Amodie, 1989; Spintge, 1989; Watkins, 1997). Aldridge (1993a) reported that anxiolytic music is a way of putting musical sounds together to reduce anxiety. As a result of sedative music being played the listener relaxes and experiences a beneficial mood change from anxiety to calm.

The human body vibrates and responds to sound. Steve Halpern was one of the first American composers of anxiolytic music. Halpern and Savary (1985) stated

> It has been shown that the entire body as a total system vibrates at a fundamental rate of approximately 7.8 to 8 cycles per second (inaudible) when it is allowed to come into its most natural, relaxed state of being. The frequency of brain waves produced in this deeply relaxed (alpha) state, as in meditation, is also in the 8 cycles per second range. (Halpern & Savary, 1985, p. 38)

Halpern and Savary (1985) commented that our pattern of vibration and the earth's is the same and the nervous systems of all life forms are attuned to this fundamental frequency. A feeling of dis-ease occurs if there is any disruption in an individual's rate of 8 cycles per second (Halpern & Savary, 1985).

A significant correlation between anxiety and the use of therapeutic music has been established (Augustin & Hains, 1996). Augustin and Hains conducted research with 42 surgery patients to determine if music, plus instruction, before surgery would reduce patient anxiety levels. With $p \leq 0.05$ as the level of significance, patients in the experimental group experienced a significant decrease from pretest to posttest on systolic blood pressure (t= -2.48, p <0.025), diastolic blood pressure (t= -3.20), heart rate (t= -3.30), and respiratory rate (t= -6.40) as well as psychological variables obtained from the Spielberger State-Trait Anxiety Inventory (t= -2.90). The need for sedatives is reduced for those patients who listen to music during surgery with local and regional anesthesia (Alexander, 2001). According to Oz, Lemole, Oz, Whitworth and Lemole (1996), music diverts sound stimuli in the operating room and provides a feeling of comfort and relaxation during the surgical procedure.

Music has been used with surgical patients under many different circumstances. Guzzetta (1989) stated that music therapy has been used to help achieve a specific change in physiology, behavior and emotions. Music appeared to promote relaxation so that pain and discomfort are diminished (Chlan et al., 2000). Music can be used to distract a patient or elicit a pleasurable emotional state. Frandsen (1990) reported that she offered several types of music for patients, along with an explanation of the purpose for using the music. Frandsen noted that patients had different preferences, for example, some selected classical pieces, others music for guided imagery. Historically music therapy has

been used for cataract surgery patients undergoing local anesthesia (Gulledge & Kline, 1981). Cruise, Chung, Yogendran, and Little (1997) have continued this practice with their patients. Multiple advantages of this treatment included reduced patient anxiety, less sedative medication required, and disturbing operating noises were blocked out. Furthermore, patients undergoing flexible sigmoidoscopy screening were offered music therapy as a nonpharmacologic intervention (Chlan et al., 2000). Patients listened to music through headphones and they reported less anxiety and discomfort.

Korunka et al. (1993) conducted a study to determine the effects of music presented to patients during general anesthesia and how it affected postoperative results. Their findings showed that both the presentation of music and of positive suggestions during general anesthesia reduced how many analgesics had to be given during recovery and how patients perceived their pain level in the first postoperative days. This study, as opposed to previous studies, provided conclusive evidence of a beneficial effect of positive suggestions (Korunka et al., 1993). The study showed that the amount of stress associated with surgery could be reduced by this simple intervention, therefore benefiting the patient.

Guided Imagery

Guided imagery is a mind-body intervention intended to ease stress and promote a sense of peace and tranquility at a difficult time. It is a process of incorporating the power of the mind to assist the body to heal, maintain health, or

relax by an inner communication which involves all senses (touch, smell, sight, and sound). The process is thought to form an emotional connection among the mind, body, and spirit (Dossey & Guzzetta, 1994; Naparstek, 1994; Post-White, 1998).

According to Tusek, Cwynar, and Cosgrove (1999), one of the most well-studied complementary therapies is guided imagery. It is being increasingly used to improve patients' experiences in the hospital and health care outcomes. When a patient feels a sense of being in control, it may increase optimism, self-esteem and the ability to tolerate stress and pain (Manix, Tusek, & Solomon,1999). Patients may also feel empowered if allowed to have active participation in their own care. Personal empowerment may relieve patients' tension and fear related to the uncertainties that surround them in a hospital setting (Tusek, Church, & Fazio, 1997).

Guided imagery is a well-grounded therapy that has been implemented in patients to promote relaxation and positive psychological states. Used as an adjunct to conventional medical treatments, it can assist patients with managing or coping with the emotional effects often associated with illness such as anxiety, stress, tension, uncertainty, pain, depression, and insomnia (Tusek, Cwynar, & Cosgrove, 1999).

According to McCaffrey and Good (2000) and Dossey (1998), certain illnesses seem to be more receptive to imagery than others. Conditions caused or aggravated by stress such as angina, blood pressure, cardiac symptoms,

blood sugar, headaches, painful gastrointestinal disorders, and respiratory conditions often respond well to imagery. Imagery helps patients relax and slows the busy mind.

A common imagery technique begins with a general relaxation procedure by using a soothing, yet compelling, story at which time the patients are asked to close their eyes and focus on their breathing (Naparstek, 1994; Tusek, 1999). Then patients are encouraged to relax, clear their minds, and think of peaceful and calm images. They are told to focus on the present and if possible to tune out any thoughts that may be racing through their minds. They are taken to a place in their minds, such as a beach, tropical island, a cascading waterfall, or a meadow with refreshing country air, a place that is free of interruption. They are encouraged to focus on the details of the scene including vivid sights, sounds, and smells and the overall feeling of being in their safe place (Naparstek, 1994; Tusek, Cwynar, & Cosgrove, 1999). The imagery invites patients to confront any fears, uncertainties, or challenges that they may face and provides them with a technique to resolve any conflicts.

Complementary Medical Techniques

In addition to behavior modification programs, complementary medicine techniques have been used in many parts of the world as a standard means for treatment. This is especially true if the complaints were chronic or had a strong psychosomatic component (Ashton et al., 1997). Some of the modalities used

were music therapy, guided imagery, hypnosis, aromatherapy, meditation, yoga, massage, and therapeutic touch.

This study explored the specifics of complementary medicine in the areas of: music therapy and guided imagery. According to Eisenberg et al. (1993) and Johnson and Eckerly (1998), patients have become increasingly comfortable with the idea of incorporating complementary medicine into their health care and have spent more on these types of therapy than outpatient visits to physicians. Eisenberg et al. (1993) reported that in 1990, $13 billion was spent by 25% of Americans on unconventional therapies, whereas $10 billion was spent on outpatient visits to physicians during the same period.

Hypnosis Relaxation Techniques

Another modality which can be used as an adjunct to facilitate patient recovery is hypnosis. The ability of patients to cope with stress and depression can impact recovery in patients after open-heart surgery and myocardial infarctions (LeCron, 1971; Oz, 1998). The word *hypnosis* is derived from the name Hypnos, the Greek god of sleep (Oz, 1998). However, individuals in a trance-like state are alert and in control of their actions. The process is voluntary and the focus is internal (LeCron, 1971; Oz, 1998). LeCron suggested that hypnosis can be considered an advanced stage of relaxation since relaxation techniques are a usual part of the process. In this state the mind depends less on logic and more on sensations.

A study conducted by Ashton et al. (1997) demonstrated that self-hypnosis relaxation techniques can provide patients with a coping mechanism for the stress induced by open-heart surgery. Patients who chose self-hypnosis training experienced a significant reduction in tension after surgery compared to patients in the control group. This free-flowing state of mind is referred to as a trance state. Daley and Greenspun (1979) noted that the nurse teaching the patients self-hypnosis can assist them in pain management and other stress created by illness.

The hypnotherapist's approach entails cognitive counseling and supportive therapy, alternating between direct and indirect hypnotic techniques, which enhanced self-esteem and confidence for the patient. Although limited in scope, this research suggests that pretreatment, supportive environments, and nontraditional techniques, such as hypnotic strategies, must be explored further in the field of rehabilitation and psychological approaches.

Contrasting Theories

Block, Ghoneim, Sum Ping, and Ali (1991) found that surgery patients (*N*=209) listening to therapeutic suggestions during anesthesia showed no significant differences in their recovery. The suggestions predicted a favorable recovery without any side effects of surgery such as pain or nausea. These patients were undergoing more than one type of surgery, two of which were operations on their fallopian tubes and total abdominal hysterectomies. Using the

Spielberger State-Trait Anxiety Inventory, patients having operations on their fallopian tubes had trait anxiety scores of 32.1 (*SE*=1.4) in the control group versus 34.4 (*SE*=1.4) in the experimental group. The state scores were 29.0 (*SE*=1.2) for the control group versus 31.6 (*SE*=1.3) for the experimental group. The anxiety state scale for the group having total abdominal hysterectomies was 34.9 (*SE*=2.6) for the control group and 34.6 (*SE*=2.2) for the experimental group. These values were not significantly different ($p>0.05$). Therefore, no beneficial influence was found from therapeutic suggestions.

Blankfield, Zyzanski, Flocke, Alemagno, and Scheurman (1995) conducted a study with coronary-artery-bypass patients (*N*=95) using taped therapeutic suggestions, taped music, or blank tapes. Sixty-six patients received the treatment during surgery and postsurgery. Twenty-nine patients were administered blank tapes during surgery and no tapes after surgery. Patients who were administered the suggestion tape had a Depression Scale Score=3.3 (*SD*=3.3), those administered the music tape had a Depression Score= 3.0 (*SD*=2.6), and the control group had a Depression Score =2.8 (*SD*=3.0). Those patients administered the suggestion tape had a Daily Living Activities Scale score=3.0 (*SD*=2.7), those administered the music tape had a score=3.7 (*SD*=4.8), and the control group had a score=4.0 (*SD*=4.5). Two thirds of the patients were also assessed for anxiety and the progress they were making after surgery. There were no significant differences among the three groups. Blankfield et al. suggested screening patients for attributes that indicate an

increased likelihood that they would respond to tapes; then only those patients most likely to benefit from them would receive them.

Barnason, Zimmerman, and Nieveen (1995) examined the effects of music interventions on heart bypass surgery patients (*N*=96). Interventions were administered two times on days 2 and 3 after surgery in the patient's room. Barnason, Zimmerman, and Nieveen reported "No significant differences existed between postanxiety scores with the intervention groups over time, $F(2,89)=0.51$, $p>0.05$." Their findings were that 30 minutes of either music, music video, or rest periods did not significantly reduce patient's anxiety after surgery.

The Mozart Effect

An additional complementary medicine technique is music composed by Wolfgang Amadeus Mozart (Campbell, 2001). The music composed by Mozart (along with guided imagery) releases emotions in the body, reduces stress, and strengthens the immune system (1988). Mozart's music has been used to help people in a wide variety of ways from serving as an adjunct to help patients suffering from epilepsy reduce their epileptic activity to aiding children by enhancing their language development, physical movement in their body, and developing higher brain functioning (Campbell, 2001).

Summary

While researchers and practitioners have made a good beginning on reducing death and disability due to coronary artery disease, it still remains the leading

killer in the United States (American Heart Association, 2000). Coronary artery disease has a behavioral component. Psychological stress, depression and anxiety, and lack of social support are some of the psychosocial variables that have been linked to the development of coronary artery disease. Psychological factors are clearly involved in lifestyle choices. The psyche has an enormous effect on patients' well-being and functioning; therefore, a clinical psychologist can be an important adjunct to the cardiac health care team.

Farrell (1996) examined the relationship among anxiety, depression, paranoia, and psychosis that occur in both cardiac and cancer patients and yet are often ignored by the health care team.

> The physical correlates of cardiac dysfunction, however, can frequently hide what is termed a "masked depression," or depression that is missed (Alexopoulos, 1991, Alexopoulos et al., 1988) because efforts of healthcare professionals are aimed toward maintaining physical functioning. Primary care physicians may fail to attend to this dysphoria, believing that the circulatory insufficiency is leading to a sapping of energy and a resulting loss of interest and enjoyment in activities. (Farrell, 1996, p. 285)

This researcher has examined the scientific literature supporting the relationship between psychosocial factors and coronary artery disease. It appears that the studies link psychosocial and behavioral factors to coronary heart disease. The monitoring of patient anxiety and depression by the clinical psychologist as part of the hearth care team makes good sense. Assessment of anxiety and depression scores should be done so that a complete patient profile may be used to establish inpatient care plans and long term follow up protocol.

The review of the literature provides an efficient method of assessing documents that substantiate work completed by other professionals in this field. As this study developed into several topics of importance, the issues of cardiac surgery, psychology, physiology, emotions, anxiety, depression, anxiolytic music and guided imagery carried equal weight in the proposed research. Several experts have committed their professional life to investigating issues such as the physiological and psychological ramifications of cardiac surgery in hopes of answering critical questions. These authors provide substantial research that contributes to this dissertation proposal and offer propositions that led to chapter 3, the development of the methodology associated with the study of the emotional trauma associated with surviving coronary artery bypass graft surgery.

Chapter 3
METHODOLOGY

Introduction

Anxiety and depression are two psychological factors that commonly affect cardiac surgery patients before and after surgery. In a search of the literature few studies were found which specifically link emotions of cardiac artery bypass graft surgery patients to anxiety and depression scores. The present study investigated the effects of music and guided imagery on anxiety and depression with cardiac surgery patients. Two groups of surgery patients were randomly assigned one of two conditions. The experimental subjects listened to anxiolytic music/guided imagery tapes, while the control group listened to healing music tapes. It was hypothesized that there would be no difference in anxiety and depression among the two groups of cardiac surgery patients. It was further hypothesized patient demographic and psychological traits would not be associated.

Description of Methodology

The design was a quantitative, exploratory study comparing two groups of cardiac patients on measures of anxiety and depression prior to and after surgery. The purpose was to evaluate the effect of the independent variables, music and imagery. The dependent variables, anxiety and depression, were measures of change resulting from the treatment.

A quantitative approach was chosen because it was a pretest, posttest model in which subjects were administered instruments giving quantitative data. Numerical scores rated each patient's anxiety and depression on a numerical scale. Consequently, a quantitative model was most appropriate. Sampling procedures, including population size to be studied as well as the size of the control and experimental groups, were discussed. There was a description of the types and sources of data to be collected and specific analysis was made.

The null hypotheses were (a) that there would be no correlations among demographic factors and psychological traits as measured by the Medical History and Clinical Data Questionnaire and the Self-Evaluation Anxiety and Depression Questionnaire; (b) that there would be no differences in anxiety levels pre- and post-surgery between the experimental and control groups as measured by the Spielberger State-Trait Anxiety Inventory (S-scale); and (c) that there would be no differences in depression levels pre- and post-surgery between the experimental and control groups as measured by the Beck Depression Inventory-II.

The data used to assess the dependent variables were obtained from the Medical History and Clinical Data Questionnaire, the Self-Evaluation Anxiety and Depression Questionnaire, the State-Trait Anxiety Inventory (STAI), and the Beck Depression Inventory-II (BDI-II). These measures yielded interval data. The specific test instruments used in this study are explained below.

Sample and Population

The study focused on anxiety and depression of 30 male and female coronary artery bypass graft surgery patients. The Spielberger State-Trait Anxiety Inventory (S-scale), (Appendix A) and the Beck Depression Inventory-II (Appendix B) were administered before and after surgery. The focus of the study was on treatments administered during cardiac surgery protocol which would combine soothing (anxiolytic) music and guided imagery while measuring concurrently the patient's anxiety and depression scores. The expected outcome was that the patient would experience a faster recovery.

All 30 cardiac surgery patients were located in the cardiac care unit in a southern hospital accredited by the Joint Commission of Accreditation Healthcare Organization (JCAHO) of the North Carolina Department of Health and Human Services (DHHS). This accreditation is based on the following factors: number of cardiac procedures per year (609); number of cardiovascular beds in the cardiac unit (6); and admissions by race, such as American Indian, Asian, African-American/Non Hispanic, Hispanic, Multi-racial, Caucasian, and not available. The hospital is considered state-of-the-art in all respects, progressive in its treatment of cardiac disease and in general, and specifically a leader in cardiac by-pass surgery.

These 30 cardiac patients were admitted to the cardiac unit with a diagnosis of chronic cardiac insult with impending cardiac artery bypass graft surgery. The

admitting nurse notified the researcher each time a patient in this category was admitted for surgery by the two cardiac surgeons participating in this study.

The researcher contacted patients individually to ascertain their willingness to participate in the study. All subjects were selected based on a mutual agreement between the researcher and patient and then confirmed by their signed informed consent forms (Appendix G). The concept of informed consent is explained in Appendix F.

A random selection method was used to select a total of 30 participants. The 30 subjects were randomly assigned to either one of two groups: control group or music/imagery tapes (experimental group). The letter C=control and a number from 1-15 was assigned. The letter M=anxiolytic music/imagery tapes and a number of 1-15 was assigned (e.g., C1 means the patient was in the control group and the first to be selected). The random selection of the control population was achieved by selecting every fifth person from a total of 30 to be a control patient. The process was repeated continuously until a total of 15 patients had been selected for the control group. The remaining patients were assigned a number from 1-15 and were identified by using M1-M15. As numbers were selected as a control they were circled by the researcher and not used again in counting every fifth person to be used for controls (Appendix O).

Each of the 30 subjects selected was requested to complete the Spielberger State-Trait Anxiety Inventory and Beck Depression Inventory-II (Appendixes A, B), and the Self-Evaluation Anxiety and Depression Questionnaire (Appendix C).

The one-page Self-Evaluation Anxiety and Depression Questionnaire allowed patients to record their impressions of present anxiety and depression levels. This form was pilot tested for clarity with six patients and one professor at Walden University (Appendix D). There were no conflicting questions. Construct validity is assumed; thus, no test of validity or reliability was necessary. The Medical History and Clinical Data Questionnaire (Appendix E) was filled out by the researcher. It was used to record specific medical history and surgical procedures.

Instrumentation

The researcher used two standardized instruments (STAI and BDI-II) and one self-designed assessment tool previously mentioned. One set of three music/imagery tapes created for general anesthesia by Linda Rodgers, a clinical social worker, was utilized. These individual tapes were named as follows: Tape #1 (Pre-Operative), Tape #2 (Intra-Operative), and Tape #3 (Post-Operative). These three music/imagery tapes for general anesthesia included recordings with "anxiolytic" music tones with voice-over. A transcript of the voice-over dialogue is provided in Appendix H. The three instruments included the Spielberger State-Trait Anxiety Inventory (STAI), the Beck Depression Inventory-II (BDI-II), and a one page Self-Evaluation Anxiety and Depression Questionnaire (Appendix C). The researcher obtained demographic data, clinical data, medical history,

diagnosis, and planned surgical procedure from the patient's medical record and recorded information on a self-designed form (Appendix E).

Beck Depression Inventory-II (BDI-II)

The Beck Depression Inventory-II (Appendix B) is a self-report instrument composed of 21 statements. It was designed to evaluate the severity of depression in adults and adolescents aged 13 years and older. It measures such items as moods, pessimism, sense of failure, self-dissatisfaction (anhedonia), guilt, punishment, self-dislike, self-accusations, suicidal ideas, crying, irritability, social withdrawal, fatigability, indecisiveness, agitation, insomnia, loss-of-appetite, worthlessness, concentration difficulty, and loss of energy (Beck, Steer, & Brown, 1996).

The BDI-II was developed from the psychometric data and clinical experience with the BDI and BDI-IA but with substantial revisions (Beck, Steer, & Brown, 1996). The BDI-II was developed to be more consistent with the criteria for depression defined in the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition (DSM-IV; 1994).

The BDI-II can be self-administered or administered orally. It requires between 5 and 10 minutes to complete. The BDI-II questionnaire asks patients to circle the number beside the statement in a group of four statements (0-3) which most accurately describes how they have felt in the last 2 weeks.

The BDI-II is easily scored by adding the ratings of the 21 items (Beck, Steer, & Brown, 1996). The rating of each item is from 0 to 3 on a 4-point scale. If multiple items are circled, the highest number is used.

Initial information about the psychometric characteristics of the BDI-II was collected from 500 psychiatric outpatients. The coefficient alpha was .92 (Beck, Steer, & Brown, 1996). The BDI-II was also administered to 120 college students and showed a comparable coefficient alpha of .92.

The BDI-II has content validity because it was specifically developed to assess depressive symptoms to meet the criteria set forth by the DSM-IV for depressive disorders. Scores of 10 or greater indicate symptoms of at least mild to moderate depression.

Spielberger State-Trait Anxiety Inventory (STAI)

The S-Anxiety Scale (Form Y-1) of the State-Trait Anxiety Inventory (STAI) is a 20-item self report instrument that was designed to evaluate the severity of anxiety in adults and adolescents age 13 years and older (Spielberger et al., 1983) (Appendix A). It was designed to provide an assessment tool to evaluate how persons feel "right now" (Spielberger, 1966). It was developed for the assessment of symptoms corresponding to criteria for diagnosing anxiety and disorders listed in the American Association's Diagnostic and Statistical Manual of Mental Health.

According to Spielberger (1983), a major revision of the original STAI (Form X) was done, resulting in a "purer" means of measuring anxiety, providing a

more definitive way to discriminate between feelings of anxiety and depression. Items for "younger, less-educated persons and individuals from lower socioeconomic status groups" were replaced, resulting in a "better balance between anxiety-present . . . and anxiety-absent . . . items" (Spielberger et al., 1983, p. 2). Working adults, college students, high school students, and military recruits were used to collect normative data for the revised scale and this data is available.

The S-Anxiety Scale has a 4-point Likert format and responses range from "almost never" to "almost always." The scale has been used comprehensively to assess the level of S-Anxiety derived from experimental procedures or impending surgery.

Norms were obtained from a pool of 1,838 working adults employed by the United States Government including clerical to supervisory personnel. An introductory psychology class was used to obtain norms from college students (*N*=855). More than 5,000 subjects were tested in order to provide construct standardization of Form Y (Spielberger et al., 1983).

Form X and Form Y were administered to a pool of high school and college students to determine the correlation between the two scales. Correlations ranged from .96 to .98. This showed that "research based on form X can be readily generalized to Form Y" (p. 23), because "for most clinical and research applications, the two forms may be considered . . . equivalent for the assessment of anxiety" (Spielberger et al., 1983, p. 23).

The STAI has had widespread use for more than 15 years in research and clinical practice (Spielberger & Gorsuch, 1966). Smith and Lay (1974) and Spielberger et al. (1983) have documented the divergent, concurrent, convergent, and construct validity of the STAI. The reliability of the STAI for assessing anxiety has been proven in over 2,000 studies in various areas as substance abuse, physical disease, psychopathology, psychosomatic illness, and as a measure in outcomes in various treatments. One of the major populations with which the STAI has been used is medical patients with coronary heart disease (Bloom, 1979; Roseman & Chesney, 1980; Whitehead, Blackwell, DeSilva, & Robinson, 1977). Moreover, the S-Anxiety scale has shown particular sensitivity to stress in the environment, validated by research concerning how patients react emotionally to surgery (Auerbach, 1973; Spielberger, Auerback, Wadsworth, Dunn, & Taulbee, 1973).

Self-Evaluation Anxiety and Depression Questionnaire

This researcher developed a 3-item self-report scale (Appendix C) that was designated to gather specific data about the patient. Patients rated on a scale of 1 to 10 the degree of anxiety, depression, and overall health they are feeling at the present moment. The information gathered in this form allowed patients to self-report their level of anxiety and depression. A pilot test and results are in Appendix D. There were no conflicting questions. Construct validity is assumed; thus, no test of validity or reliability was necessary.

Data Collection Procedures

Initially, the researcher sent request letters (Appendixes I, J) to both cardiac surgeons asking permission to work with their patients. Upon receiving permission to work with their patients, the researcher contacted the Institutional Review Board (IRB) of the hospital where the research was to be conducted, by telephone, and requested permission to meet with that board. The researcher completed the Statement of the Investigator to the IRB (Appendix K).

Upon receiving permission to meet with members of the IRB, the researcher described in detail the importance of the research study and asked permission from the IRB members to conduct the research study in that hospital.

After the IRB gave the researcher permission to conduct the research, the researcher sent an explanatory memo (Appendix L) to each cardiac surgeon, operating room nurse, floor nurse, and doctor's office to introduce the study and to explain its importance in the care of cardiac surgery patients and the role of a clinical psychologist.

The researcher enlisted support from the hospital staff and cardiac surgeons to conduct the study within the designated hospital. In addition, the surgeons were requested to identify a liaison (registered nurse) within the hospital who would assist the researcher in dissemination and retrieval of questionnaires and completed paperwork.

The researcher administered the data gathering instruments in accordance with the standard instructions. All instruments were given in the same sequence

to both experimental and control subjects. The protocol included the following steps:

Step 1
The two registered nurses (liaisons) participated in a training session. The training explained (a) the importance of the study (Appendix L); (b) the time lines to be followed (Appendix N); (c) terminology (Appendix M); and (d) the Beck, Spielberger, and Self-Evaluation Anxiety and Depression Form (Appendixes A, B, C) and their use with cardiac surgery patients. The training established rapport between the research team and researcher.

Step 2
The researcher interviewed the cardiac surgery nurses, operating room nurses, and recovery room nurses individually to elicit their participation in the study. Each nurse had a 10-minute inservice for (a) discussion/education about the importance of the study; (b) playing some of the music tapes; (c) discussion of anxiety and depression scores and how they were to be quantitatively measured; and (d) development of a schedule for the tapes to be played presurgery, during surgery, and postsurgery (Appendix N).

Step 3
The researcher obtained the patient's informed consent (Appendixes F, G).

Step 4
The researcher classified each patient as an experimental or a control group participant. (See Appendix O for specific selection protocol.)

Step 5
A random selection method was used to select a total of 30 participants. The letter C=control and a number from 1-15 were assigned. The letter M=anxiolytic

music/imagery tapes and a number from 1-15 were assigned (e.g., C1 means the patient was in the control group and was the first to be selected). The random selection of the control population was achieved by selecting every fifth person from a total of 30 to be a control patient. This process was repeated continuously until a total of 15 patients had been selected for the control group. The remaining patients were assigned a number from 1-15 and were identified by using M1-M15. As numbers were selected as a control, they were circled by the researcher and not used again in counting every fifth person to be used for controls (Appendix O).

Step 6

An index card (Appendix P) was made as part of a packet (Appendix Q) for each patient. The index card included the time, date, and length that Tape #1, Tape #2, and Tape #3 were played for the candidates listed as M1-M15.

Step 7

Once the patient consented to be part of the study, the researcher established a written time schedule (Appendix N) with the patient. This schedule outlined when the tapes should be played and the index cards filled out. The researcher verified all the dates and times. Survey instruments (Beck II, Spielberger, and Self-Evaluation Anxiety and Depression Form) were hand-carried by the researcher to each hospital room where patients were assigned. Each packet included the STAI, BDI-II, and the Self-Evaluation Anxiety and Depression Form, the schedule for playing tapes, and an index card. (See Appendix P.)

Step 8

On the day of admission, the researcher administered the Spielberger State-Trait Anxiety Form (Appendix A), the Beck Depression Inventory-II (Appendix B), and the Self-Evaluation Anxiety and Depression Form (Appendix C). The researcher scheduled the tests approximately 10 minutes apart and the tests were completed in each patient's room. The researcher was present while each of the three tests was being administered. The researcher instructed the patient how to take each instrument. Care was taken to use a neutral voice tone, words, and body inflections to avoid influencing the patient.

Step 9

Data from all three instruments were collected and placed in appropriate files and were locked in a secured file drawer for future retrieval.

Step 10

The researcher instructed the patient how to play and listen to the anxiolytic music/guided imagery tapes or the soothing music tapes. The researcher gave the patient written instructions about the operation of the Walkman-type player and a review of the timeline. The researcher provided a schedule stating when to play the anxiolytic music/guided imagery tapes and the soothing music tapes (Appendix N).

Step 11

The patient listened to Tape #1 at 3 p.m., 4 p.m. and 5 p.m. the day before surgery. The anxiolytic music/guided imagery tape was administered to the experimental group and the soothing music tape was administered to the control group.

Step 12
The anxiolytic music/guided imagery Tape #2 was played continuously during anesthesia using a Walkman-type player with ear phones. The researcher was responsible for administering the tape and recording information on the index card. Control group patients listened to a soothing music tape during surgery.

Step 13
Both types of music were played in the recovery room. Patients in the experimental group listened to the anxiolytic music/guided imagery Tape #3 and control group patients listened to soothing music until they were fully oriented to name, date, and place. A recovery room nurse administered the tape.

Step 14
The Self-Evaluation Anxiety and Depression Form was administered at 1 p.m. on the third day following surgery.

Step 15
The Beck Depression Inventory-II was readministered at 2 p.m. the third day following surgery.

Step 16
The Spielberger State-Trait Anxiety Inventory (S-Anxiety) was re-administered at 3 p.m. on the third day following surgery. Once 30 patients (15 participants and 15 controls) had gone through the above steps, data gathering ceased and data analysis began.

Null Hypotheses

1. No correlations will be found among demographic factors and psychological traits as measured by the Medical History and Clinical Data Questionnaire and

the Self-Evaluation Anxiety and Depression Questionnaire.

2. No differences will be found in anxiety levels pre- and post-surgery between the experimental and control groups as measured by the Spielberger State-Trait Anxiety Inventory (S-scale).

3. No differences will be found in depression levels pre- and post-surgery between the experimental and control groups as measured by the Beck Depression Inventory-II.

Data Analysis

Kendall's coefficient of rank correlation for nonparametric data (Sokal & Rohlf, 1995) was used to test for any correlation among anxiety, depression, and overall health as measured by the self-evaluation questionnaire and appropriate demographic characteristics as recorded on the medical history questionnaire.

Other pretest statistics were a two-factor analysis of variance (ANOVA) with repeated measures on one factor (Glantz & Slinker, 1990) for analysis of the STAI scores. Repeated measures were conducted on each individual's pre- and post-surgery scores. The second analysis was the same as the first, but for BDI-II scores. Charts and tables were developed which reflect the assessment scores pre- and post- for each group, experimental and control. If the ANOVA values indicated significant differences, appropriate post hoc statistics were computed.

In order to ensure that the experimental and control groups did not differ in their demographic composition, each of seven characteristics was examined

using a contingency table chi-square analysis for each characteristic. In addition, the self-rating scores for anxiety, depression, and overall health were examined using Wilcoxon two-sample tests (for nonparametric data with only two classes) to determine if any differences existed between experimental and control groups (Sokal & Rohlf, 1995).

Data were transformed to achieve normality as necessary. The sequential Bonferroni procedure was used to assure that the overall significance probability did not exceed p=0.05 (Rice, 1989).

Summary

This research study examined the effects of anxiolytic music/guided imagery tapes on anxiety and depression scores for cardiac surgery patients. In this chapter a detailed review was presented of both the Spielberger State-Trait Anxiety Inventory (STAI) and the Beck Depression Inventory II (BDI-II), and the method of use within this study was discussed. Another instrument used to gather relevant information was the Self-Evaluation Anxiety and Depression Questionnaire. Scientific methodology and design are demonstrated through a step-by-step process describing the procedures that were used with cardiac surgery patient(s).

CHAPTER 4
RESULTS

Introduction

This chapter presents the results of this study. The primary purpose of this study was to focus on the effects of music/imagery on anxiety and depression before, during, and after cardiac bypass graft surgery. The research, conducted from February 28, 2003, to June 2, 2003, sought to determine the effectiveness of using anxiolytic music/imagery and soothing music tapes to assist these patients in alleviating their anxiety and depression.

Demographic Data from Medical History and Clinical Data Questionnaire

Marital Status

Since 5 patients had a notation indicating they were widowed, a fifth category for them was included (Table 1). Analysis showed that 63.3% were married, 6.7% were single, 6.7% were divorced, 6.7% were separated, and 16.7% were widowed.

Table 1

Marital Status of Patients

	N	Married	Single	Divorced	Separated	Widowed
Experimental Group	15	8	2	2	1	2
Control Group	15	11	0	0	1	3

Note. N=Number of patients in each category.

Employment Status

Analysis revealed that 62.1% of patients were retired (Table 2). Those patients employed full-time were 27.6% and those employed part-time were 10.3%.

Table 2

Employment Status of Patients

	N	Full-time	Part-Time	Retired
Experimental Group	15	3	2	10
Control Group	14	5	1	8

Note. N=Number of patients in each category.

Educational Level

No patients had an education level of "elementary school" or "MA/MS" and these categories did not affect the analysis (Table 3). Analysis by educational level indicated that 0.0% had attended no higher than elementary school, 44.4% were high school graduates, 0.0% had a master's degree, 29.6% had attended a community college, 18.5% had a bachelor of arts or a bachelor of science degree, and 7.4% had a PhD or an MD. The mean was 14.0 years of schooling, *SD*=2.5, median=14.0 years.

Table 3

Educational Background of Patients

	N	Elementary School	High School	Community College	BS/ BA	MA/ MS	PhD/ MD
Experimental Group	14	0	8	4	1	0	1
Control Group	13	0	4	4	4	0	1

Note. N=Number of patients in each category.

Age of Patients

The analysis of the data revealed that the ages of patients ranged from 48 years old to 82 years old with a mean of 63.6 ± 1.8 standard error and a median of 65.0. Only the following categories were used: 40-49 yrs, 50-59 yrs, 60-69 yrs, and 70-99 yrs (Table 4).

Table 4

Ages of Patients

	N	Age	40-49 yrs	50-59 yrs	60-69 yrs	70-99 yrs
Experimental Group	15	63.1 ± 2.5	1	5	6	3
Control Group	15	64.1 ± 2.6	2	4	4	5

Note. N=number of patients in each age category. Mean values (±*SE*).

Family History of Heart Disease

All patients responding to this question had a family history of heart disease. Each combination of relatives was classified as a separate level or category. For example, patients with only "father" marked were in one category and patients with both "father" and "siblings" were in a different category. One patient who had an uncle with heart disease was classified under an "Other" category and one patient who answered "yes" but did not specify a relative was also classified under "Other".

Analysis revealed that 97.7% of all patients had heart disease in their family. Those with a mother with heart disease were 65.5%. Patients whose fathers experienced heart disease were 55.2%; 34.5% of patients had siblings with heart disease. Furthermore, 6.9% of patients had a grandfather with heart disease and 13.8% had a grandmother with heart disease.

Job Status

No patients indicated a status of "semi-retired" and this category was excluded from the analysis (Table 5). Those patients who had/had held a professional position was 25.0%. Those who had/had held a non-professional position was 37.5%.

Table 5

Job Status of Patients

	N	Professional	Non-Professional	Semi-Retired	Retired
Experimental Group	11	2	4	0	5
Control Group	13	4	5	0	4

Note. N=Number of patients in each category.

Notification of Cardiac Surgery

All patients were notified within 1-7 days prior to surgery with the exception of one patient who was notified 1-4 weeks prior.

Demographic Comparisons of Treatment Groups

In order to ensure that the treatment groups did not differ, contingency table chi-square analysis was used to compare treatment groups (experimental and control) for each of the demographic factors from the Medical History and Clinical Data Questionnaire. In addition, since the ages of the two groups were normally distributed, a one-way analysis of variance (ANOVA) for age was also conducted (ANOVA: F=0.08, p=0.7840). The experimental group and the control group seemed to be demographically similar. No significant differences were detected between the treatment groups (experimental or control) for any of the questions (Table 6).

Table 6

Chi-Square Values for Differences between Experimental and Control Groups

Demographc Factor	*N*	Chi-Square Value	*p*
Marital Status	30	4.6737	0.3224
Employment Status	29	1.0223	0.5998
Educational Level	27	3.1005	0.3764
Age	30	1.3444	0.7186
Family History	29	8.6425	0.6549
Job Status	24	0.7273	0.6951
Surgery Notification	28	1.0370	0.3085

Note. *N* = Sample Size. *p* = Probability.

Data from Self-Evaluation Anxiety and Depression Questionnaire

Anxiety scores ranged from 1 to 10, as did depression and overall health scores, with overall mean scores of 5 for anxiety, 4 for depression, and 6 for overall health (Table 7).

Table 7

Self-Evaluation Scale for Depression, Anxiety, and Overall Health in Cardiac Surgery Patients

	N	Anxiety	Depression	Overall Health
Experimental Group	15	5.00 ±0.87	4.80 ±0.85	5.80 ±0.63
Control Group	15	4.87 ±0.78	3.13 ±0.56	5.80 ±0.43
Overall Scores	30	4.93 ±0.57	3.97 ±0.52	5.80 ±0.37

Note. N=Number of patients in each category. Mean values (±*SE*).

Self-Rating Comparisons of Treatment Groups

In order to ensure that the treatment groups did not differ, Wilcoxon two-sample tests (Sokal & Rohlf, 1995) were used to compare scores in the experimental and control groups using the Self Evaluation Anxiety and Depression Questionnaire. The Wilcoxon two-sample test is a nonparametric method used in lieu of a one-way ANOVA with only two classes. A continuity correction of 0.5 was applied.

Results from the Wilcoxon showed that the mean anxiety scores for the treatment groups (Table 7) did not differ significantly (Z=-0.0209, p=0.9833; Fig. 1). The mean depression scores for the treatment groups (Table 7) did not differ (Z=-1.3667, p=0.1717; Fig. 1). The mean overall health scores treatment groups (Table 7) did not differ (Z=0.0000, p=1.000; Fig. 1).

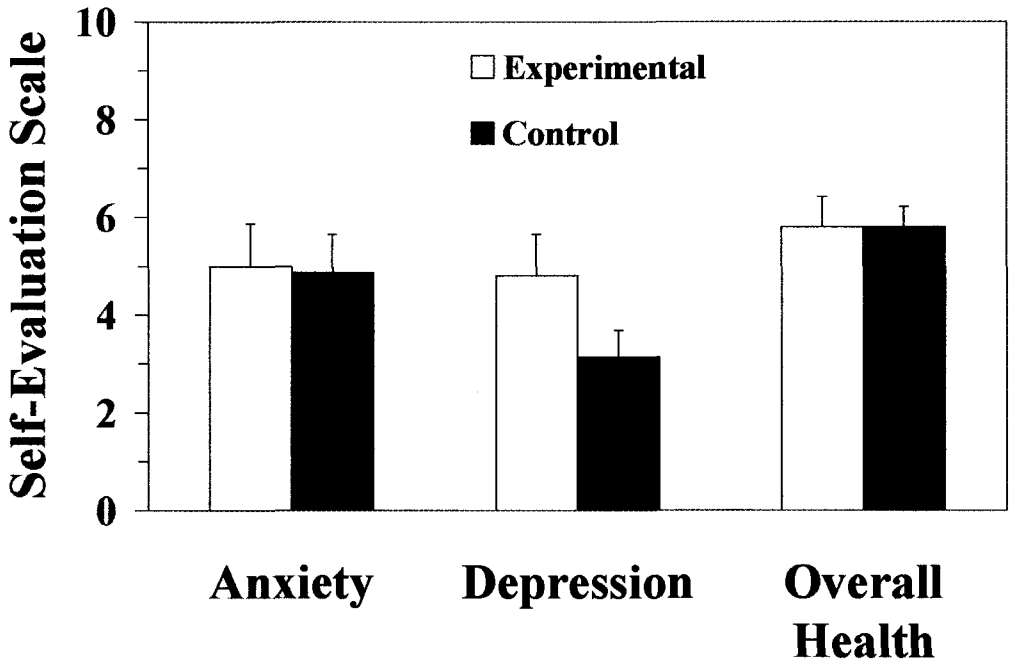

Figure 1. Mean self-evaluation scores (+*SE*) for anxiety, depression, and overall health in experimental (*n*=15) and control (*n*=15) groups.

Correlation of Data from Medical History and Clinical Data Questionnaire and Self-Evaluation Anxiety and Depression Questionnaire

In order to test the first null hypothesis, Kendall's coefficient of rank correlation for nonparametric data (Sokal & Rohlf, 1995) was used to evaluate the relationships between 8 factors: anxiety (as measured by the self-evaluation questionnaire), depression (as measured by the self-evaluation questionnaire), overall health, marital status, employment status, educational status, age group, and job status.

No analysis was possible for family history of heart disease since all patients had a family history of heart disease. Also, no analysis of surgery notification was possible since all patients were notified within approximately the same time

frame. The sequential Bonferroni procedure (see below) was used to evaluate correlation coefficients (Rice, 1989).

Anxiety showed a highly significant positive correlation with depression (tau=0.48701, $p<0.01$; Appendix R) and a significant negative correlation with age group (tau=-0.45761, $p<0.05$; Appendix R). So, a high anxiety score was associated with a high depression score and an increase in age was associated with a decrease in anxiety scores. Further analysis using the actual age rather than the age group also showed significant negative correlation with anxiety (tau=-0.43248, $p<0.05$).

Analysis of Experimental and Control Groups

Two analyses of the experimental and control groups were conducted in order to evaluate null hypotheses 2 and 3. Null hypothesis 2 was that there would be no difference in anxiety levels pre- and post-surgery between the experimental and control groups as measured by the Spielberger State-Trait Anxiety Inventory (S-scale). Null hypothesis 3 was that there would be no difference in depression levels pre- and post-surgery between the experimental and control groups as measured by the Beck Depression Inventory-II.

Spielberger State-Trait Anxiety Inventory (S-Scale) Scores

Individual Spielberger State-Trait Anxiety Inventory (STAI) scores ranged from 20 to 64 (Table 8). Mean presurgery STAI scores for patients were 44 for both experimental and control groups; postsurgery scores were 33 for the

experimental group and 36 for the control group (Table 9). Higher scores indicate a higher state of anxiety than lower scores, and the scores in this study are comparable to scores in previous studies that measured STAI (S-Scale) scores in patients.

Table 8

Individual STAI and BDI-II Scores

Patient ID #	Treatment Group	STAI Pre-Surgery	STAI Post-Surgery	BDI-II Pre-Surgery	BDI-II Post-Surgery
1	C	58	34	5	7
2	C	37	43	10	10
3	E	48	41	21	13
4	E	29	23	5	6
5	C	43	34	3	6
6	C	49	36	6	7
7	E	46	39	22	6
8	C	47	44	13	9
9	E	50	37	6	11
10	C	39	32	8	5
11	E	24	22	4	10
12	C	39	23	16	10
13	E	46	20	20	5
14	E	61	21	29	8
15	C	47	36	7	25
16	C	44	26	16	6
17	E	32	26	13	5
18	C	47	49	6	0
19	E	29	33	2	12
20	C	20	56	4	5
21	E	50	39	23	13
22	E	47	44	39	3
23	C	38	31	16	5
24	C	39	32	3	7
25	C	44	24	26	9
26	E	48	43	10	13
27	E	63	49	11	14
28	E	36	24	2	6
29	E	48	31	8	4
30	C	64	40	16	2

Note. C = Control Group. E = Experimental Group.

Table 9

Pre- and Post-Surgery Anxiety and Depression of Cardiac Surgery Patients

	N	STAI Pre-Surgery	STAI Post-Surgery	BDI-II Pre-Surgery	BDI-II Post-Surgery
Experimental Group	15	43.80 ±2.96	32.80 ±2.48	11.63 ±1.23	8.84 ±1.12
Control Group	15	43.67 ±2.57	36.00 ±2.37	9.65 ±1.17	7.04 ±1.20
Overall Scores	30	43.73 ±1.93**	34.40 ±1.71**	10.59 ±1.14	7.89 ±1.11

Note. N=Number of patients in each category. Mean values (±*SE*). BDI-II scores are retransformed from the log-transformed scores used in analysis. ** highly significant results ($p<0.01$).

The STAI data were normally distributed (Kolmogorov-Smirnov, $D<0.1430$, $p\geq0.1175$; see Appendix S). Comparisons were conducted using a two-factor analysis of variance (ANOVA) with repeated measures on one factor (Glantz & Slinker, 1990). Repeated measures (pre- and post-surgery) were conducted on individuals. The treatment group (experimental or control) was used as the between-subjects factor and pre- and post-surgery measures were used as the within-subject factor. All mean values are reported as ± 1 SE interval (Table 9).

The treatment group (experimental or control) did not influence individual pre- and post-surgery STAI scores (ANOVA: $F=0.30$, $p=0.5910$; Fig. 2). However, individuals showed a highly significant difference in pre- and post-surgical STAI scores overall, without regard to treatment group (ANOVA: $F=15.51$, $p=0.0005$). This trend was similar in both treatment groups (ANOVA: $F=0.49$, $p=0.4877$). Before surgery individuals had a mean STAI score of 43.73 ± 1.93 and after

surgery they had a mean score of 34.40 ± 1.71 (Table 9), a difference of 9.33 points. Although not significantly different, the mean postsurgery score of the experimental group was 32.80 ± 2.48 and the mean of the control group was 36.00 ± 2.37 (Table 9), a difference of 3.20 points; yet both groups only differed by 0.13 points before surgery.

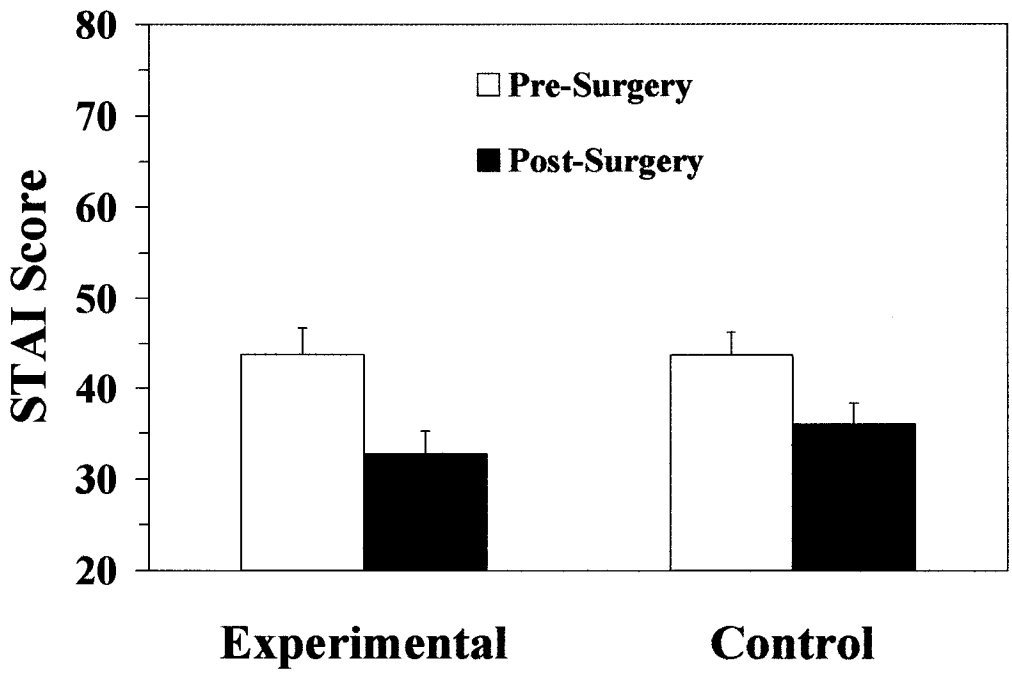

Figure 2. Mean State-Trait Anxiety (S-Scale) Inventory (STAI) scores (+*SE*) before and after surgery in experimental (*n*=15) and control (*n*=15) groups. See Appendix T for alternative Figure 2.

Beck Depression Inventory-II (BDI-II) Scores

Individual BDI-II scores ranged from 2-39 (Table 8). Mean BDI-II scores ranged from 10-12 for presurgery patients and from 7-9 for postsurgery patients (Table 9). Scores from 0-13 indicate minimal depression; those from 14-19

indicate mild depression; 20-28 indicate moderate depression; and severe depression is defined by a score of 29-63 (Beck, Steer, & Brown, 1996). Accordingly, the average patients in this study did not suffer from severe depression. Specifically, two patients suffered from severe depression prior to surgery, nine patients suffered from moderate depression prior to surgery, and two after surgery (Table 8). All other scores indicated minimal to mild depression.

Data from the BDI-II were logarithmically-transformed to achieve normality (Kolmogorov-Smirnov, $D<0.1249$, $p=0.1500$; see Appendix U). Comparisons were conducted using a two-factor analysis of variance (ANOVA) with repeated measures on one factor (Glantz & Slinker, 1990). Repeated measures (pre- and post-surgery) were conducted on individuals. Treatment group (experimental or control) was used as the between-subjects factor and pre- and post-surgery measures were used as the within-subject factor.

The treatment group (experimental or control) did not influence individual pre- and post-surgery BDI-II scores (ANOVA: $F=1.58$, $p=0.2194$; Fig. 3) and individuals did not show a significant difference in pre- and post-surgical BDI-II scores overall, without regard to treatment group (ANOVA: $F=2.93$, $p=0.0980$). This trend was similar in both treatment groups (ANOVA: $F=0.01$, $p=0.9041$). Although not significantly different, the mean presurgery score was 10.59 ± 1.14 and the mean postsurgery was 7.89 ± 1.11 (Table 9). If sample sizes ($N=30$) had been greater, the overall group results for pre- and post-surgical BDI-II scores may have differed significantly as indicated by the probability level that somewhat approached significance ($p=0.0980$) at the 0.05 level. Mean postsurgery scores

of the treatment groups were also not significantly different; the mean postsurgery score of the experimental group was 8.84 ± 1.12 and the control group was 7.04 ± 1.20 (Table 9), a difference of 1.80 points. However, the mean presurgery scores differed by 1.98 points.

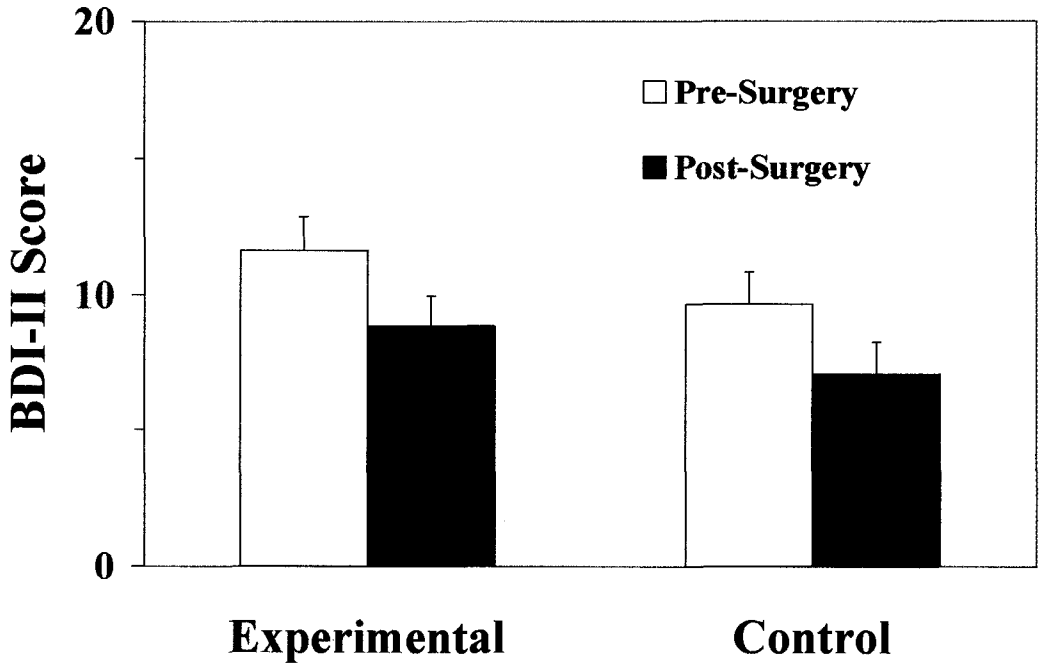

Figure 3. Mean Beck Depression Inventory-II (BDI-II) scores (+*SE*) before and after surgery in experimental (*n*=15) and control (*n*=15) groups. See Appendix V for alternative Figure 3.

Overall Significance Levels

The sequential Bonferroni adjustment (Rice, 1989) was used to determine significance levels for the multiple comparisons performed in this study. This procedure may be used when more than one statistical test is used within a

single study. It ensures that the overall experiment error rate does not exceed p=0.05.

Summary

Null hypothesis 1 was that demographic factors and psychological traits among cardiac surgery patients would not show any correlations. Two significant relationships were found among the factors examined: (a) that anxiety levels were positively correlated with depression levels, and (b) that anxiety levels were negatively correlated with age. This means that increased anxiety was associated with increased depression and increased age was associated with decreased anxiety. Accordingly, the first null hypothesis was supported for the correlations among: overall health, marital status, employment status, educational level, and job status. The first null hypothesis was also supported for the correlation between age and depression. However, the null hypothesis was rejected for the correlation between anxiety and depression and between age and anxiety.

Hypothesis 2 was that cardiac surgery patients who are exposed to anxiolytic music/guided imagery visualization therapy via audio taped recordings would not differ in levels of anxiety after surgery compared to those who experience healing music. Similarly, hypothesis 3 was that cardiac surgery patients who are exposed to anxiolytic music/guided imagery visualization therapy would not differ in levels of depression after surgery compared to those who experience hearing music. Results of the scores for the Spielberger State-Trait Anxiety Inventory (STAI) (S-

Scale) and the Beck Depression Inventory-II (BDI-II) showed no difference in the experimental and control groups as measured by this study, indicating that music/imagery tapes did not differ in their effects from that of a control music tape. Thus, the second and third null hypotheses were supported for these questions.

The STAI (S-scale) is an assessment tool designed to evaluate how an individual feels "right now", and one of the major populations in which it has been used is medical patients with coronary heart disease (Bloom, 1979; Roseman & Chesney, 1980). The Beck Depression Inventory-II (BDI-II) was designed to evaluate the severity of depression in adolescents and adults (Beck, Steer, & Brown, 1996).

Overall (when all patients are looked at as a whole without regard to treatment group), presurgery STAI scores were significantly higher than postsurgery scores. Presurgery BDI-II scores were also higher than postsurgery scores, although this difference only approached significance. Thus, differences in pre- and post-surgery scores were detected overall, which may indicate that the methods used in this study were sensitive enough to detect a difference between the experimental and control groups if such a difference had existed.

In summary, the results of this study indicate that anxiety and depression may be correlated in cardiac patients and that an increase in age may indicate a lower anxiety level overall. Other demographic and psychological factors, such as marital status, employment status, educational level, job status, and overall

health, were not related. Moreover, the effects of the music/imagery tapes were not greater than that of the music-only tapes for either anxiety or depression.

In chapter 5 conclusions are drawn from the data analysis presented in chapter 4. Also included are alternative explanations for the results, social implications, limitations of the study, and recommendations for how the study might be useful.

CHAPTER 5
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This study was conducted to assess the anxiety and depression scores of coronary artery bypass graft surgery patients (CABG). It sought to determine the effectiveness of music/imagery tapes in helping these patients alleviate anxiety and depression, in other words, lower their BDI-II and STAI (S-scale) scores. No study of anxiety and depression behaviors for this group of coronary surgery patients has been previously undertaken; yet, they comprise a group of hospitalized patients amounting to one fourth to one half of all surgeries done.

These findings are of importance to other medical professionals, other psychologists and mental health professionals, health educators, students of clinical training programs (e.g. RN, RT, medical lab technicians, etc.), and the general public in North Carolina. Identifying those anxiety and depression behaviors that were seen as high or low, either by the standardized test or by the patient's personal assessment, was a first step toward designing inservices and other educational programs to improve patient care for CABG patients. This chapter includes a summary of the findings, conclusions, implications, and recommendations.

Findings

The following discussion addresses the findings from the analyses conducted to answer the null hypotheses.

Null Hypothesis 1

The first null hypothesis was that no demographic or psychological traits of cardiac patients would show a correlation among factors from the Medical History and Clinical Data Questionnaire and the Self-Evaluation Anxiety and Depression Questionnaire. Two significant correlations were detected. Anxiety was positively correlated with depression, and age was negatively correlated with anxiety. In other words, those patients with relatively high anxiety tended to have relatively high depression, and older patients tended to have lower anxiety than younger patients. Rozanski, Blumenthal, and Kaplan (1999) found that the combination of anxiety and depression substantially elevates the risk for cardiac patients to experience future coronary events.

Null Hypothesis 2

The second null hypothesis stated that cardiac patients who are exposed to anxiolytic music/guided imagery visualization therapy via audio taped recordings would not differ in levels of anxiety after surgery compared to those who experience healing music. Anxiety levels were measured using the Speilberger State-Trait Inventory Scale (STAI). There was no significant difference in the experimental and control groups as measured by the STAI. In other words, the anxiolytic music/imagery tapes (Linda Rodgers) were not better than music tapes (Mozart) in reducing anxiety.

The results of this study and the patient scores were comparable to those of patients in other studies. Bolwerk (1990) specifically selected myocardial

infarction patients with a preliminary STAI score of at least 40 and found scores of about 31 in patients who listened to music while in the hospital and scores of about 40 in patients who did not listen to music. Augustin and Hains (1996) found baseline scores of about 35-40 in patients. Immediately prior to surgery, patient STAI scores were about 33-35 whether preoperative instructions included music or did not. In a third study, patients undergoing a sigmoidoscopy showed pre-procedure scores of about 37-40, while post-procedure scores were 35 in patients who listened to music during the procedure and about 42 in those who did not (Chlan et al., 2000).

In other studies, White (1999) used the Spielberger State-Trait Inventory S-scale (STAI) to evaluate anxiety in patients who suffered from an acute heart attack, and Barnason, Zimmerman, and Nieveen (1995) used the STAI (S-scale) to measure the effects of music interventions on anxiety in heart surgery patients.

Null Hypothesis 3

The third null hypothesis was that cardiac patients who are exposed to anxiolytic music/guided imagery visualization therapy via audio taped recordings would not differ in levels of depression after surgery compared to those who experience healing music. Depression was measured using the Beck Depression Inventory-II (BDI-II). There was no significant difference in the experimental and control groups as measured by the BDI-II. In other words, the anxiolytic music/imagery tapes (Linda Rodgers) were not better than healing music tapes (Mozart) in reducing depression.

The Beck Depression Inventory has also been used in similar studies. Frasure-Smith et al. (2000) used the Beck Inventory with their patients who had suffered a heart attack and found that depressed mood was a predictor of cardiac death within 1 year. Garcia, Valdes, Jodar, Riesco, and Flores (1994) also used the Beck to evaluate depression in heart attack patients and found depression to be twice as prevalent as anxiety in these patients.

Additional Findings

Although no significant differences were found between the treatment groups, there were differences in test scores overall before and after surgery. When all patients are looked at as a whole without regard to treatment group, the presurgery STAI (S-scale) scores were significantly higher than postsurgery scores. Also, presurgery BDI-II scores approached a significant difference with postsurgery scores. These results may indicate that listening to either music or music/imagery tapes may lower anxiety and depression.

These results may also suggest that the BDI-II and STAI (S-scale) are useful methods for evaluating anxiety and depression in studies similar to this one. Since a difference was detected pre- and post-surgery for all patients, the test appears to be sensitive enough to detect any differences in treatment groups if such differences exist. Thus, future studies may use a similar protocol to evaluate depression and anxiety.

Also, even though it was not an initial objective of this study to evaluate the responses on the Self-Evaluation Anxiety and Depression Questionnaire or the

Medical History and Clinical Data Questionnaire for the two treatment groups, the results demonstrate that the experimental and control groups did not differ in their composition, at least in regards to the responses to these questions. Future studies that use relatively small sample sizes might choose to use similar instruments to assure that treatment groups are similar in their composition.

As noted, a difference was not found between using the music/imagery tapes as opposed to music alone. This was surprising because the music/imagery tapes were specifically designed to elevate the mood in cardiac patients. On the other hand, the Mozart music tapes have been previously shown to enhance health (Campbell, 2001). The overall decreases in anxiety and depression seen in this study suggest that music may be effective in this regard. It is not known whether different types of music might be more or less effective in reducing anxiety and depression or whether patient choice of music might be more or less effective than the tapes used in this study. Future studies might investigate these questions.

Also, this study indicates that age is associated with a decrease in overall anxiety levels and that anxiety and depression may be interrelated. However, marital status, employment and job status, and educational levels did not appear to affect anxiety, depression, and perception of overall health. Future studies might further investigate these factors.

Alternative Explanations for the Results

One reason why the anxiety and depression scores did not show a larger decrease postsurgery may have been that the participants were not given a choice as to what music they would prefer (Augustin & Hains, 1996). They could have brought a tape from home or a library of tapes could be made available with a wide range of music and music/imagery tapes or compact discs. Also these open heart surgery patients were extremely ill, and due to the nature of their illness the levels of anxiety and depression were difficult to assess. Most of the patients were medicated before surgery, and more heavily medicated during and after surgery. This factor may have influenced their perceptions of their anxiety and depression. Also, music or music/imagery tapes might be considered as an adjunct with pharmacological interventions to help patients manage their pain (Orwin, 1998).

Social Implications

Treatment for patients who suffer from coronary artery disease has traditionally focused on physiological factors (Buselli & Stuart, 1999). Cardiologists such as Oz (1998), McDougall (1996), and Simon (1994) recognized that standard coronary risk factors are not always predictors of heart disease or its reoccurrence. Fernandez (1993) reported that depression is typically not properly diagnosed and was second only to anxiety as a predictor of recurring cardiac events. A number of studies demonstrated that emotional support can significantly impact the cardiac patient's health (Fernandez, 1993;

Ornish, 1978; Oz, 1998). Psychologists can contribute to the health care of cardiac patients by being a member of the health care team. Clinical psychologists are encouraged to enter the medical arena in the scientific investigation of heart disease (Eads, Sears, Sotile, & Conti, 2000).

In this research study, music played to emphatically lower anxiety and depression had an overwhelming acceptance from the patients having open-heart surgery, with many requesting tapes to take home with them and use as part of their recovery process. While this study was not intended to review these aspects, there was a conscious social impact and patient satisfaction level was higher. Allowing the patient to be an active participant in surgery empowers him/her to be an active contributor to the procedure.

Health care management of patients undergoing cardiac bypass surgery has traditionally focused largely on physiological factors. However, in the past few years reduction in heart disease in the United States resulted less from "high tech" medical interventions than from lifestyle changes. Related research has confirmed that such psychosocial factors as anxiety and depression can negatively affect the health outcomes of coronary patients (Allen & Scheidt, 1996; Buselli & Stuart, 1999; Frasure-Smith et al., 2000). Psychologists now contribute to the health care of cardiac surgery patients at a few larger hospitals and many hospitals associated with medical schools.

The theoretical foundations of this research study were to include a psychological component as an adjunct to the physiological component. Emotional changes occurring with patients undergoing open heart surgery are

important factors to consider in patients' overall health (Oz, 1998). Learning more about how psychological factors affect cardiac surgery patients provides a greater understanding of heart disease. This researcher believes that the best argument for studying anxiety and depression and their effects on cardiac surgery patients would be to help them learn how to recognize and then express their emotions. Such a reciprocal fit would assist these patients in not having recurrent cardiovascular complications (Fernandez, 1993; Oz,1998).

Some of the interventions used by psychologists in clinical cardiac surgery settings to relieve anxiety and depression include soothing music and guided imagery visualization, prayer, acupuncture, hypnosis, massage, meditation, therapeutic touch, yoga, and homeopathy (Busselli & Stuart, 1999; Olson, Oz, Whitworth, & Lemole, 1996).

Two common psychological factors, anxiety and depression, have often been cited in research on coronary artery bypass graft surgery patients (Ai, Peterson, & Bolling, 1997; Edell-Gustafsson & Hetta, 1999). The research questions were formulated to investigate whether music/imagery tapes could help lessen adult patients' anxiety and depression.

This study did not show that the music/imagery tapes used were any more effective than simply listening to soothing music. Future studies should explore pre- and post-surgery depression and anxiety with and without the use of music. Currently the notion and standard of practice indicates that giving individuals a personal choice in music may also affect results (Allen & Blascovich, 1994).

Conclusions

Although problems in cardiac surgery patient management have been publicized, until now no study had been conducted to identify specific levels of anxiety and depression in CABG patients. Such a study was necessary to facilitate training workers in clinical psychology as to their role in counseling these patients.

This study provides a necessary first step in the development of skills which any psychologist interested in working as a professional in the field of cardiac counseling can acquire. It helps to define those skills needing special emphasis for psychologists wanting to specialize in cardiac counseling. In addition, it provides basic educational information on which clinical psychologists can increase their therapeutic effectiveness. Both patients' self-assessment and standardized tests saw high levels of anxiety and depression in the study group. This consistency provides a good rationale for including certain skills in health psychology programs for psychologists working with CABG patients pre- and post-surgery. For example, those patients who are identified as being highly stressed could be offered individual counseling sessions using cognitive-behavioral therapy sessions in which patients learn that they are valued and unique, as well as attending weekly group meetings. These group meetings would allow patients to connect with others experiencing some of the same stressors that they are feeling. Music libraries containing tapes or CDs could be offered as an alternative method of calming the patient's anxiety and raising their mood. Other methods the clinical psychologist could use to empower the patient

include life skills training, meditation, self-hypnosis, progressive muscle relaxation training, and biofeedback.

This baseline research now joins other like studies in an effort to produce promising new information about the neuroscientific effects of music. For example, Shaw (1999) has been a pioneer in providing a greater understanding of how the brain works and how music may enhance how we think, reason, and create.

It is now possible to study emotional responses to music with psychological tests and physiologic measures (e.g. respiration rate, blood pressure, hormone level, skin response and electromyograms. Other clinical researchers of music and brain function have used cognitive/behavior scales and included case studies and qualitative and quantitative methodology.

As new research explores the effects of music on neurological and physical healing, wellness models of music therapy should be developed. This researcher recommends that clinical psychologists do medical research for all complementary medical methods using a format of pre- and post-testing. Having music tapes and CDs available for patients before, during, and after surgery, and providing a library of tapes for patients in the ICUs, children's centers, for the staff, and throughout the hospital would enhance wellness. This researcher further recommends more research using different types of music to gain specific responses to anxiety and depression.

Inservice training should target any area of cardiac counseling in which patients and standardized tests tend to rate the highest. In this study, patients'

ratings were consistently higher presurgery than postsurgery. The administered tests were consistently higher presurgery and postsurgery. The ratings on all subscales for each of the two tests could be used to establish specific needs for education. But such inservice education would be equally valuable for other professional medical staff in the cardiac unit. Cardiac counselors need to learn to fully involve the medical support staff in such training. Support staff such as nurses should assist in planning the future research agenda if they are expected to be part of the cardiac counseling team. The cardiac psychologist must expect the medical care team to assume such roles. To begin the development and implementation of cardiac counseling for CABG patients into the hospital setting, clinical psychologists must be willing to take deliberate steps to modify any current methods that are deficient or ineffective. Inservice education can bring about continuous professional development in the psychologist's role.

This study may act as a catalyst to indicate the process of identifying and developing effective types of music specific to cardiac care. No easy formula, set of scientific rules, or foolproof recipe exists as to how role responsibilities are to be fulfilled. By adopting a stance based on principles that emerge from theory and research in clinical psychology and related social sciences, psychologists increase the chance of better health care. Knowledge from many sources must be used by psychologists so that cardiac patients' care plans are sound and effective for the unique situations and problems they face.

Medical research studies have documented the various harmful effects of anxiety and depression on both psychological and physiological responses to surgery. Anxiety can contribute to heightened emotional stress leading to high blood pressure, increased pain, nausea, and vomiting (Guzzetta, 1989). This study suggests that music may be an effective but simple tool in which patients partner with the medical staff to reduce their anxiety and depression, leading to a healthier recovery from surgery. This inexpensive and readily available practice empowers the patient to become an active participant in his/her recovery. Expanding existing health care treatment strategies in this way with the use of complementary practices might reduce the patient's hospital stay. Indirectly this patient education and empowerment leads to less expense for the patient. Psychologists can provide a valuable adjunct to the health care team by evaluating the patient's emotional state.

A further implication of this study is to indicate worthwhile instruments for assessing depression and anxiety behaviors in the field of cardiac surgery. An overall significant difference was found between pre- and post-surgical anxiety and a nearly significant difference in depression. These results suggest that the Speilberger State-Trait Anxiety Inventory and the Beck Depression Inventory-II are effective measurement tools for similar future study protocols. Finally, this study indicated that age may be a factor in overall anxiety levels and that anxiety and depression may be correlated. On the other hand, marital, employment, and educational status, and patients' anxiety, depression, and overall health do not appear to be related. Future studies will be necessary to evaluate these factors.

Limitations

This study was time-limited to the 5-day period that the patient was actually hospitalized for coronary artery bypass-graft surgery. Due to the time constraints it was impossible to conduct research with a larger group of patients. Therefore, it is the belief of the researcher that if the size of the group could have been doubled, then statistically the hypotheses may have been proven.

Also this cardiac group of patients had different primary care physicians, doctors who were specialists as lung doctors, treatment plans, and medications. To what degree these factors could have affected the results of the study is unclear.

Professional psychologists often conduct studies with a small number of subjects through extensive--and often prolonged--investigations to develop patterns and relationships of meaning (Dossey, Keegan, & Guzzetta, 2000; Williams et al., 1997). However the model for this study was that of one cardiovascular surgery team in one southern United States hospital.

Recommendations

Several aspects of the research must be considered before proceeding to take action on the basis of the results. As the recommendations are specific, it would be well for the reader to keep in mind the specifics of the study and to generalize the results cautiously. It should also be remembered that the population (30 total) included 10 female and 20 male CABG patients. This population is thought to be typical of North Carolina and other states as well. This

is only one approach to the study of the effects of music/imagery tapes on coronary artery bypass graft surgery patients (CABG). Others are needed to supplement the point of view as expressed in the recommendations.

The researcher recommends:

1. Professional psychologists should provide a valuable adjunct to the health care team by evaluating the patient's emotional state with standardized tests such as the Beck Depression Inventory-II or the Spielberger State-Trait Inventory (S-scale). This study was closer to significance than .05 and was therefore strong enough to be used for counseling sessions using cognitive-behavioral therapy sessions in which patients learn that they are valuable and unique. Weekly support group meetings should stress the importance of connecting with others experiencing some of the same stressors that they are feeling.

2. Clinical psychologists such as those doing cardiac counseling must be aware of the anxiety and depression levels of their patients, so they do not erroneously assume that their methods of counseling will result in improved health care, for example lower anxiety and lower depression.

3. Professional psychologists are familiar with administering and scoring standardized tests as the STAI and the BDI-II. They can then interpret the meaning of the test scores, specifically identify problems for each individual patient, and develop a treatment plan targeted at the psychological risk factors for each cardiac patient. This treatment plan would be addressed and implemented in follow-up care for each cardiac patient.

4. Medical doctors as well as allied health professionals (such as nurses, counselors, and social workers) should also become aware that, in isolation, patient characteristics, educational characteristics, and occupational characteristics yield little understanding of anxiety and depression levels.

5. Hospital advisory boards could acquaint all medical staff with psychosocial treatment methods which are inexpensive and readily available. This would empower the patient to become an active participant in surgery and recovery. Efforts could be made to expand existing health care treatment strategies in this way with the use of complementary practices to reduce the patient's hospital stay.

6. Professional psychologists could assist physicians in the total care of the cardiac patient by using their expertise in helping the patient modify potentially harmful psychosocial factors as anger, aggression, hurry sickness (feeling of having to live life at a rapid pace), or these cardiac counselors could help heart patients modify lifestyle risk factors as obesity, smoking, and drinking. Professional counselors could also facilitate groups concerning a psychosocial issue as anger management. Many physicians lack training in behavioral intervention techniques.

7. An intervention that professional psychologists could provide is a music library of different types of tapes or compact discs as an intervention to help calm the cardiac patients' anxiety and raise their mood, that is, overcome their depression. Training the professional psychologist could provide cardiac patients

would be life skills training, learning meditation techniques or self-hypnosis, and biofeedback training.

8. Seminars and orientation courses for cardiac counseling should be conducted by professional organizations and accreditation commissions for doctors and medical staff, as well as hospital advisory boards to acquaint professionals in the health delivery system with new trends in the delivery and in-patient treatment plans for CABG patients and to arrange symposia in such topics as anxiety's contribution to heightened emotional stress leading to high blood pressure, increased pain, nausea, and vomiting (Guzzetta, 1989).

As new research explores the effects of music on neurological and physical healing, wellness models of music therapy should be developed. This researcher recommends that clinical psychologists do medical research for all complementary medical methods using a format of pre- and post-testing. Having music tapes and CDs available for patients before, during, and after surgery, and providing a library of tapes for patients in the ICUs, children's centers, for the staff and throughout the hospital would enhance wellness. The researcher further recommends more research using different types of music to gain specific responses to anxiety and depression.

Opportunities lie ahead for psychology to blend with medical practices. As medical doctors and nurses come to realize the benefits of partnering with mental health professions, cardiac patients will receive optimum care. When individuals perceive more empowerment as they participate in their healing process, their recovery rates will be faster. As the medical paradigm slowly shifts towards

recognizing the importance of mental health professionals in treating psychosocial factors, then more psychologists will be utilized by physicians in the care of cardiac patients.

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APPENDIX A

State-Trait Anxiety Inventory (STAI), S-scale

mind garden

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. 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 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

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STAIP-AD Test Form Y
www.mindgarden.com

APPENDIX B

Beck Depression Inventory-II (BDI-II)

BDI-II Date:

Name: _____ Marital Status: _____ Age: _____ Sex: _____

Occupation: _____ Education: _____

Instructions: This questionnaire consists of 21 groups of statements. Please read each group of statements carefully, and then pick out the one statement in each group that best describes the way you have been feeling during the past two weeks, including today. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including Item 16 (Changes in Sleeping Pattern) or Item 18 (Changes in Appetite).

1. Sadness
- 0 I do not feel sad.
- 1 I feel sad much of the time.
- 2 I am sad all the time.
- 3 I am so sad or unhappy that I can't stand it.

2. Pessimism
- 0 I am not discouraged about my future.
- 1 I feel more discouraged about my future than I used to be.
- 2 I do not expect things to work out for me.
- 3 I feel my future is hopeless and will only get worse.

3. Past Failure
- 0 I do not feel like a failure.
- 1 I have failed more than I should have.
- 2 As I look back, I see a lot of failures.
- 3 I feel I am a total failure as a person.

4. Loss of Pleasure
- 0 I get as much pleasure as I ever did from the things I enjoy.
- 1 I don't enjoy things as much as I used to.
- 2 I get very little pleasure from the things I used to enjoy.
- 3 I can't get any pleasure from the things I used to enjoy.

5. Guilty Feelings
- 0 I don't feel particularly guilty.
- 1 I feel guilty over many things I have done or should have done.
- 2 I feel quite guilty most of the time.
- 3 I feel guilty all of the time.

6. Punishment Feelings
- 0 I don't feel I am being punished.
- 1 I feel I may be punished.
- 2 I expect to be punished.
- 3 I feel I am being punished.

7. Self-Dislike
- 0 I feel the same about myself as ever.
- 1 I have lost confidence in myself.
- 2 I am disappointed in myself.
- 3 I dislike myself.

8. Self-Criticalness
- 0 I don't criticize or blame myself more than usual.
- 1 I am more critical of myself than I used to be.
- 2 I criticize myself for all of my faults.
- 3 I blame myself for everything bad that happens.

9. Suicidal Thoughts or Wishes
- 0 I don't have any thoughts of killing myself.
- 1 I have thoughts of killing myself, but I would not carry them out.
- 2 I would like to kill myself.
- 3 I would kill myself if I had the chance.

10. Crying
- 0 I don't cry anymore than I used to.
- 1 I cry more than I used to.
- 2 I cry over every little thing.
- 3 I feel like crying, but I can't.

_____ Subtotal Page 1

Continued on Back

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11. Agitation

0 I am no more restless or wound up than usual.
1 I feel more restless or wound up than usual.
2 I am so restless or agitated that it's hard to stay still.
3 I am so restless or agitated that I have to keep moving or doing something.

12. Loss of Interest

0 I have not lost interest in other people or activities.
1 I am less interested in other people or things than before.
2 I have lost most of my interest in other people or things.
3 It's hard to get interested in anything.

13. Indecisiveness

0 I make decisions about as well as ever.
1 I find it more difficult to make decisions than usual.
2 I have much greater difficulty in making decisions than I used to.
3 I have trouble making any decisions.

14. Worthlessness

0 I do not feel I am worthless.
1 I don't consider myself as worthwhile and useful as I used to.
2 I feel more worthless as compared to other people.
3 I feel utterly worthless.

15. Loss of Energy

0 I have as much energy as ever.
1 I have less energy than I used to have.
2 I don't have enough energy to do very much.
3 I don't have enough energy to do anything.

16. Changes in Sleeping Pattern

0 I have not experienced any change in my sleeping pattern.
1a I sleep somewhat more than usual.
1b I sleep somewhat less than usual.
2a I sleep a lot more than usual.
2b I sleep a lot less than usual.
3a I sleep most of the day.
3b I wake up 1–2 hours early and can't get back to sleep.

17. Irritability

0 I am no more irritable than usual.
1 I am more irritable than usual.
2 I am much more irritable than usual.
3 I am irritable all the time.

18. Changes in Appetite

0 I have not experienced any change in my appetite.
1a My appetite is somewhat less than usual.
1b My appetite is somewhat greater than usual.
2a My appetite is much less than before.
2b My appetite is much greater than usual.
3a I have no appetite at all.
3b I crave food all the time.

19. Concentration Difficulty

0 I can concentrate as well as ever.
1 I can't concentrate as well as usual.
2 It's hard to keep my mind on anything for very long.
3 I find I can't concentrate on anything.

20. Tiredness or Fatigue

0 I am no more tired or fatigued than usual.
1 I get more tired or fatigued more easily than usual.
2 I am too tired or fatigued to do a lot of the things I used to do.
3 I am too tired or fatigued to do most of the things I used to do.

21. Loss of Interest in Sex

0 I have not noticed any recent change in my interest in sex.
1 I am less interested in sex than I used to be.
2 I am much less interested in sex now.
3 I have lost interest in sex completely.

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____ Subtotal Page 2
____ Subtotal Page 1
____ Total Score

APPENDIX C

Self-Evaluation Anxiety and Depression Questionnaire

SELF-RATING SCALE FOR ANXIETY AND DEPRESSION

Directions: On a scale of 1-10 (1= lowest, 10=highest) circle your level of depression and anxiety and your overall health at the present time.

Anxiety

1 2 3 4 5 6 7 8 9 10
Low Medium High

Depression

1 2 3 4 5 6 7 8 9 10
Low Medium High

Overall Health

1 2 3 4 5 6 7 8 9 10
Low Medium High

APPENDIX D

Pilot Study for
Self-Evaluation Anxiety and Depression Questionnaire

Scores from Pilot Study for Self-Rating Scale for Anxiety and Depression

ID #	Anxiety	Depression	Overall Health
1	5	6	2
2	1	2	3
3	3	4	5
4	5	2	7
5	4	2	5
6	3	5	10
7	2	2	9
8	3	4	8
9	5	7	6
10	3	2	9

APPENDIX E

Medical History and Clinical Data Questionnaire

MEDICAL HISTORY AND CLINICAL DATA QUESTIONNAIRE

1. Are you:
   _____a. married c. _____divorced e._____other
   _____b. single d. _____separated

2. Describe your employment status:
   _____a. full-time _____b. part-time c. _____retired

3. Describe your educational background:
   _____a. elementary school c._____community college
   _____b. high school d._____BS/BA
   _____e. MA/MS f._____PhD/MD

4. Age:
   _____a. 20-30 years old c._____40-50 years old e. _____70 years or older
   _____b. 30-40 years old d._____50-60 years old

5. Family have a history of heart disease: (check all that apply)
   _____a. yes a._____father c._____siblings e._____grandmother
   _____b. no b._____mother d._____grandfather

6. Job status: (check more than one if appropriate)
   _____a. professional position c._____semi-retired
   _____b. non-professional position d._____retired

7. When was the candidate first informed about cardiac surgery;
   _____a. 1-7 days c._____ 1 month to 6 months e._____ over a year
   _____b. 1-4 weeks d._____ 6 months to 1 year _____(date)

8. Was consent obtained to enter the hospital?
   a._____yes b._____no

9. Educational level:
   _____a. 0-8 years c._____13-14 years e._____17-24 years
   _____b. 8-12 years d._____15-16 years

10. Admitting diagnosis: _____

11. Type of surgery planned: _____

12. Work status:
   _____a. semi-retired c._____work full-time e._____parental caregiver
   _____b. retired d._____never worked

APPENDIX F

Informed Consent

Informed Consent and Patient Education

Patient consent is based on the principle of autonomy, which holds, in the medical setting, that adults are allowed to decide for themselves the type of care they feel is appropriate. A person must have the mental capacity to be able to make an intelligent choice as to whether a procedure is to be performed. Treatment without consent is a battery (Bianco, 1993). Consent gives the health-care professional the right to touch and treat the patient. There are three important aspects of consent:

First, health care professionals (primarily the physician, although agents may also be appropriate) must communicate clearly with each patient telling them what he or she needs to know to decide what is the best course of treatment. In most cases, the health care professional is serving as an educator to the patients with the intent to help make effective decisions. Next, the law states that patients have legal rights in the consent process established through guidelines and court cases.

Third, being ethical with patients includes concepts such as beneficence (providing what the health-care professional sees as the "best " level of care) may conflict with patient autonomy (patients should be allowed to make even "bad" decisions, so long as they have all the information).

> Consent exists, as do many concepts, on a continuum. Many procedures require only that the patient verbally, or by action, agree to have a procedure performed. Informed consent is a procedure whereby patients may agree to medical intervention or refuse it based on information provided by a health-care professional regarding the nature and possible consequences of the intervention. Providing this information is usually considered a duty of the physician, and he or she will probably remain ultimately responsible under the doctrine of Respondeat Superior (Bianco, 1993).

Health-care workers have a variety of legal and ethical responsibilities in securing consent. For example, physical therapists have developed an expanded role in consent over many other health professionals because of their ability to engage in independent practice (Coy, 1989). Nurses have also continued to examine their role in consent, especially in the absence of a physician (Davis,1989). Inlander and Weiner (1993) found that 83% of nurses were informing patients about alternatives to procedures when they felt that the physician had not done so.

Consent provided by clinical psychologists also is assumed to exist on a continuum ranging from simple consent for a routine examination to informed consent for an invasive procedure. It requires appropriate communication with and education of the patient, a recognition of legal rights and obligations, and attention to the various ethical dilemmas that may arise. Counseling and patient education have well-defined roles in simple consent. Along with other health professionals, clinical psychologists are also developing new roles in securing informed consent

An additional factor besides open-heart surgery that can favorably affect the long-term survival for cardiac patients is patient education. Lifestyle modification through patient education is very important. Oz et al., (1996) found that once

patients were informed about their primary purpose for entering the hospital (the operation), they were more willing to consider taking an active role in their recovery. A member of the cardiac team educates and informs the patient about induction of anesthesia; the course of the operation; awakening in the intensive care unit with an endotracheal tube and chest tubes in place; the late intensive care course with extubation; removal of chest tubes; pain-management techniques; the normal course of recovery on the routine-care floor; and the usual time-frame for recovery at home. This process usually includes patient education and informed consent. Current trends in cardiac surgery recovery provide an open door to expand the role of the clinical psychologist in the role of educator and counselor.

APPENDIX G

Informed Consent Form

Presbyterian Healthcare
Informed Consent to Participate in a Research Study

☐ **Presbyterian Hospital** ☐ _____

Study Title:

This is a research study. You are being asked to read the following document as a part of the informed consent process. The informed consent process is to inform you of the risks and benefits involved in the study so you can make a free decision whether or not to participate. Informed consent includes having the study fully explained to you, an opportunity to ask questions, your questions answered to your satisfaction and a written informed consent to read and sign.

Description of Study
You are being asked to participate in this research study using music and imagery in heart surgery patients. It will be performed by Sara R. Rose, LPC, a Clinical Psychology doctoral intern at Walden University. The purpose of this study is to look at the effects of music with and without imagery on anxiety and depression. You will be one of 30 patients in this research project at Presbyterian Hospital. Your participation will last for approximately 4 days.

Most people who have heart surgery find it a stressful experience. Often patients worry about whether the surgery will go well and how they will do. The hospital environment, where there is less control, may make the stress level even higher. The equipment, medications, tests, doctors, and nurses are all strange new experiences. Many people become anxious and depressed when this happens to them.

When people become anxious and depressed the body may work harder. This research is aimed at lowering your anxiety and depression using music and guided imagery.

Music and guided-imagery have been studied with the use of anesthesia and for some medical procedures. Results of these studies suggest that music and guided-imagery therapy can reduce stress and anxiety and cause relaxation responses that calm the body and decrease blood pressure and heart rate. It can help patients feel more comfortable in a strange environment and distract them.

Anxiolytic music is as type of music that is designed to reduce anxiety. It is a way of putting musical sounds together with no recognizable melodies.

Guided-imagery is a mind-body therapy to ease stress and promote a sense of peace and tranquility. It is the use of the spoken word with positive messages. It begins with a general relaxation procedure asking you to relax, close your eyes, think of peaceful and calm images and then relax your fingers, hands, and muscles. You are taken to a place in your mind such as a beach, a tropical island, cascading waterfall, or a meadow with refreshing country air. You are encouraged to focus on the details of the place.

A certified social worker, Linda Rodgers, daughter of the composer Richard Rodgers, has developed three tapes of anxiolytic music and guided-imagery. These tapes are designed to encourage relaxation. Studies by Ms. Rodgers and others have shown that anesthesia does not significantly impair hearing: thus, her three tapes are used before, during, and after surgery.

It is not clear at the present time whether anxiolytic music with guided-imagery or just soothing music is better. For this reason, the treatment given to you will be assigned based on chance, using a method of selection called randomization. Randomization is like the flipping of a coin. Your chance of receiving either treatment is equal.

You will be in one of two groups:

Group One: You will listen to the anxiolytic music and guided-imagery tapes the day before surgery at 3pm, 4pm, and 5pm. You will also listen to t the music and imagery tapes during surgery and in the recovery room after surgery is over until you wake up.

Group Two: You will listen to soothing music the day before surgery at 3pm, 4pm, and 5pm. You will also listen to music during surgery and in the recovery room after surgery is over until you wake up.

A Walkman-like tape player with ear phones will be used. The researcher will show you how to use this. You will be able to control both the placement of the ear phones and the volume of the tape player for your greatest comfort.

Both groups will complete questionnaires before listening to the music with or without guided imagery and on the third day after surgery. These questionnaires take approximately 10 minutes to fill out and ask questions about how you are feeling.

Information regarding demographics will be collected on each patient. Demographics include marital status, age, educational background, employment status, admitting diagnosis, surgery, and time frame when you were informed of the need for cardiac surgery.

Risks
Any treatment has possible side effects. Treatments used in this therapy may or may not cause side effects. There are no previous studies that identify risks with music and guided-imagery therapy. The volume of the tapes could be a risk and will be adjusted by you and the researcher to suit your hearing levels. You are reminded that this study will explore anxiety and depression on a personal level. In addition, there is always the risk of uncommon or previously unknown side effects occurring.

You should discuss this with your doctor. If you have unusual symptoms, you should report them immediately to your doctor.

Benefits
There may not be direct benefit to you for participating in this study. The use of music with or without guided-imagery may decrease any anxiety or depression you may be feeling but there is no guarantee. Another possible benefit of the study is to learn about the use of music and guided-imagery before, during, and after cardiac surgery so others in the future may benefit.

Alternative Treatments
Instead of being in this study, you have the option not to participate. Your decision will not affect the care you receive for your condition.

Confidentiality
Efforts will be made to keep personal information in your research record private and confidential. Absolute confidentiality cannot be guaranteed. Personal information will be given out as required by law.

The following organizations may look at and/or copy your research records:
- Presbyterian Healthcare Ins and Drug Administration
- Possible government of regulatory agencies
- Sara R. Rose, LPC, the investigator

The information may be used for publication in scientific literature but, will not include your name or contain any other personally identifying information, except as otherwise required by law.

Cost/Compensation
There are no additional costs if you participate in this study. However, you will be responsible for all medical costs not study related. You and/or your insurance company will be responsible for all costs associated with hour condition and hospitalization. If you suffer an illness or injury from being in this study emergency medical care is available, however, you will be responsible for the costs. You may have to bear the full cost of this treatment and your insurance

company may not reimburse you. Long-term medical care and/or hospitalization will not be given free of charge.

You will receive no payment for taking part in this study. You will not participate in any economic benefit derived from the research.

Investigator Payment
The investigator is not being compensated for her work in this study.

Participant Rights
Your participation in this research study is voluntary. You may choose not to join or may leave the study at any time and this will not affect your medical care, nor will you be penalized or lose benefits to which you are otherwise entitled. If you decide to stop taking part in this study, at any time, you should talk to your doctor so that it can be done safely.

For questions about this study, a research-related injury, or your rights as a research participant, contact:

- Sara R. Rose at 704-365-6653
- Dr. Clifton Hastings or Dr. Charles Edwards at 704-375-8413
- Presbyterian Healthcare Institutional Review Board, Dr. Robert Farnham, (704) 384-5369
- Alertline at 1-800-350-0094

You will get a copy of this form. You can also request a copy of the study plan.

Patient Consent
I agree to participate in this study. I have read all of the above, or have heard it read to me. I have had the opportunity to ask questions about this study, and my questions have been answered to my satisfaction. I consent to release my medical records to the research staff.

_____	_____
Patient's Name	Medical Record #
_____	_____
Patient's Signature	Date
_____	
Witness' Name	
_____	_____
Witness' Signature	Date

Investigator Statement

I have participated in the informed consent process with this patient and have offered an opportunity for further explanation of the procedure, study, and/or drugs to the individual whose signature appears above.

Investigator's Name _____

_____ _____

Investigator's Signature Date

APPENDIX H

Transcript of Voice-Over Dialogue of Tapes #1, #2, and #3

TAPE #1
Title :GENERAL ANESTHESIA
PRE-OPERATIVE TAPE Played just before surgery

The recording that you are listening to was especially made for patients who are going to have surgery. We know that surgery can be a really difficult time for everyone, especially the waiting time before surgery even starts. But we also know that the more relaxed you feel, the more easily you will be able to manage your surgery. So this part of the recording was made to help you feel as comfortable as you can while you wait.

Begin now, by noticing the music that has been playing in the background while I have been talking to you... It's music that was written especially for surgical patients to hear. It is music that is meant to help you relax, peaceful music, quiet, unassuming, designed to help calm and comfort you. All you need to do is listen and know the music is there to help you feel more comfortable and relaxed... From time to time, as the music play, I will offer different suggestions to help you relax even more. Even during your surgery, you will still be able to listen to the music and suggestions. Although you are having a general anesthesia, we know that patients often continue to hear sounds and voices in the operating room. That's perfectly okay, but because we know that it can happen, I will continue to give you information and suggestions, and you will be able to hear the same music that you are hearing now.

Later, when your surgery is finished and you begin to wake up from the anesthesia, you will be able to hear the last part of this recording, as you begin your recovery. You will continue to hear the same music, and I'll add some new information and suggestions - the kind of things other patients have found comforting to know about during their recovery from surgery. For now, the best thing you can do is listen. Close your eves, and close out the hospital. Tune in to the music and the messages, and tune out anything that bothers you...

Begin by closing your eyes. Let your eyelids close slowly over your eyes. Your eyelids are beginning to feel heavy over your eyes, and as you do this, you are beginning to take charge of relaxing your body. Now, with your eyes still closed, think about your right hand, and make it into a fist. Now make it tight. Squeeze your fist even tighter. And now let it go. Let your fingers relax and your hand rest gently. Let your whole hand rest and relax. Now, if you like, try the same thing again with your left hand. Make it into a fist, tight. Tighter. Now let go. Let your

fingers relax and your hand rest gently. If you want, you can move on and do the same thing with the rest of your body. Think about a part of your body that feels really tense right now. Feel all the tension. Think about how it feels, and when you're ready, let the tension go. Tell that part of your body to relax and rest comfortable. As the music continues to play, remember that the music is there to help you feel relaxed. Now, as the music plays, think about other parts of your body that may feel tense. Feel the tension, and now as the music plays, tell the muscles that feel tight and tense to relax, and imagine feeling those muscles growing soft and heavy, and very relaxed. Now let the softness spread to other parts of your body. Let it flow gently from the top of your head, and then all the way down to your feel and on to the tips of your toes. Feel your whole body beginning to relax. Let go all of the tension everywhere. Rest, listening to the music feeling calm and comfortable. You don't have to think about anything else. Just listen to the music and let the music bathe you in a warm bath of sound... Let the music wash over your whole body, relaxing and soothing, helping your body relax, allowing your muscles to grow soft and heavy, letting your mind drift peacefully letting your mind and your body relax to the sound of the music... And now, with your eyes closed, listening to the music, relaxed and comfortable, take yourself off to a different place...

Imagine that you are somewhere else, somewhere far away. A place that is warm and safe where you can take yourself now. Let it be an island far, far away, with a beach, and miles and miles of clean, white, velvety, soft sand. Imagine feeling warm sand beneath your feet, and lie down on the sand, feeling its warmth. Feel the soft sand holding your body, and the sun warming your body as you rest on the beach. Feel the breeze touching your skin. Hear the leaves of the palm tress brushing gently against each other. Hear the waves rolling up over the sand, each wave followed by another, rolling over and over, again and again. Smell the salt air, hear a seabird calling somewhere in the distance. As you lie on the beach, relaxed and comfortable, let this be your special place, your special beach where you can stay as long as you like, resting, relaxing, knowing that when you choose to leave, you will be able to return anytime that you wish, knowing that this special place will always be waiting you, peaceful, safe - a place where you can come and go whenever you like: where you will always feel comfortable and calm, peaceful and quiet, very safe and relaxed...

In your imagination you can go wherever you like. Wherever that may be, let it be a place that you love, where you feel safe and comfortable. Perhaps this place will be one that you already know, or perhaps it will be a new imaginary place. Wherever it is, let it be as peaceful as your special island. Let it be a quiet, restful spot where you will be just as comfortable and safe. Take yourself there now, and imagine how it will look when you arrive... What will you see? Imagine yourself there and find a spot that looks comfortable. See yourself sitting down or stretching out... Imagine walking around, noticing all the things that you see... Imagine things that you know and love. Take a moment to look closely at each

object. Look at its shape. Notice whether it is big or small. Perhaps there is something that you want to hold. Is it soft? Is it your favorite color? Is there someone who is very special who is there with you? If you like, imagine being there with someone you love... And now, as you look around, take pleasure and comfort in being here. Feel safe, peaceful and relaxed. Stay as long as you like, and return whenever you wish...

You don't have to think about anything else. Just listen to the music, and let the music bathe you in a warm bath or sound... Let the music wash over your whole body, relaxing and soothing, helping your body relax, allowing your muscles to grow soft and heavy, letting your mind drift peacefully, letting your mind and your body rest and relax to the sound of the music...

Now, with your eves closed, listening to the music, relaxed and comfortable, take yourself off to a different place...

Imagine that you are somewhere else, somewhere far, far away. A place that is warm and safe where you can take yourself now. Let it be an island far, far away, with a beach, and miles and miles of clean, white, velvety soft sand. Imagine feeling warm sand beneath your feet, and lie down on the sand, feeling its warmth. Feel the soft sand holding your body, and the sun warming your body as you rest on the beach. Feel the breeze touching your skin. Hear the leaves of the palm trees brushing gently against each other. Hear the waves rolling up over the sand, each wave followed by another, rolling over and over, again and again. Smell the salt air, hear a seabird calling somewhere in the distance. As you lie on the beach, relaxed and comfortable, let this be your special place, your special beach where you can stay as long as you like, resting, relaxing, knowing that when you choose to leave, you will be able to return anytime that you wish, knowing that this special place will always be waiting for you, peaceful, safe - a place where you can come and go whenever you like; where you will always feel comfortable and calm, peaceful and quiet, very safe and relaxed...

In your imagination, you can go wherever you like. Wherever that may be, let it be a place that you love, where you feel safe and comfortable. Perhaps this place will be one that you already know, or perhaps it will be a new, imaginary place. Wherever it is, let it be as peaceful as your special island. Let it be a quiet, restful spot where you will be just as comfortable and safe. Take yourself there now, and imagine how it will look when you arrive. What will you see? Imagine yourself there and find a spot that looks comfortable. See yourself sitting down or stretching out... Imagine walking around, noticing all the things that you see... Imagine things that you know and love. Take a moment to look closely at each object Look at its shape. Notice whether it is big or small. Perhaps there is something that you want to hold. Is it soft? Is it your favorite color? Is there someone who is very special who is there with you? If you like, imagine being there with someone you love... And now, as you look around, take pleasure and

comfort in being here. Feel safe, peaceful and relaxed. Stay as long as you like, and return whenever you wish...

TAPE #2
GENERAL ANESTHESIA
INTRAOPERATIVE TAPE Played During Surgery

The music that you are hearing now is the same music you have been listening to. The same music you heard before your surgery. The main difference is that now, you are in the operating room. Your doctors have put you to sleep, and your surgery has started. You are safe. You are in safe hands, and you can leave the work of surgery to your doctors. Your surgeon has performed this operation many, many times, and knows exactly what to do. Your anesthesiologist is an experienced doctor, and knows exactly how to care for you. The operating room nurses are specially trained, and part of the operating room team working to make everything safe for you. Everyone in the operating room knows what to do and when to do it. Everyone is working together to make sure everything works as perfectly as it can. And the operating room team is watching you to make sure that you are safe. So you can relax. You can relax now, and let them do what they do best, while you listen to the music that will continue to play throughout your surgery. All you need to do is listen, and remember that the music is there to help you feel more comfortable and relaxed. Just as you did before your surgery started, listen to the music again, and let the music bathe you in a warm bath or sound. Let the music calm and comfort you. Let the music play for you, relaxing, soothing you...

Tell your body to rest and relax. Tell your body to let go the tension everywhere. Remember that you are safe, and so you can tell your whole body to rest and relax... Listen to the music, feeling calm and comforted. Now, beginning to feel relaxed and letting yourself drift with the music - drifting smoothly back to your island; to your island far, far away. Back to the beach where and sand is clean and white and velvety soft. Float gently down to the warm sand on the beach and rest. Feel the sun warming your body, and rest. Smelling the salt air, hearing waves as they roll up and over, and over, and over, and over again, washing and smoothing the sand...

Listen to the music and rest, drifting and floating with the music...now drifting back to the place that is all your own - your safe place; your peaceful, quiet place. The place that is all your own where you love to be, seeing all the things that you know and love to see. Hearing all the sounds that you love to hear. Drifting and listening... Drifting and noticing all the things around you that you

love... Drifting and resting, feeling very, very comfortable, and very, very relaxed. Listen to the music. All you need do is listen to the music...

And when your surgery is finished, and you wake up, I will be talking to you again, and you will hear the music playing again, and feel comforted, and relaxed and safe...

Listen to the music, let the music bathe you in a warm bath of sound. Let the music wash over you, warming and comforting... drift with the music, feeling calm and comfortable, and very, very relaxed...

TAPE #3
GENERAL ANESTHESIA
POSTOPERATIVE TAPE played following surgery

The music that you are hearing is the same music that you have heard before. Now the only difference is that your surgery is finished. Your surgery is over, and you are beginning your recovery... In the recovery room are many special people who know what you need and how to care for you. They are specialists in helping people as they wake up from the anesthesia. Let them help you. Let them take care of you, and as they care for you, let yourself drift awake, continuing to listen to the music, letting the music sooth and comfort you, just as it has before... drifting in and out of sleep, floating gently with the music...

As you start your recovery, there will be many interruptions. The nurses may need to stop the recording to ask you a question or to tell you something. They may check your blood pressure. You will feel them caring for you, and know that all the things they do are part of helping you begin your recovery from surgery. The recovery room is a busy, noisy, place, and when you first wake up from the anesthesia, everything may sound very loud. Don't let it bother you. Tune out all the noise that you hear, and tune in to the music. Listen to the music, listen and rest. Relax and drift, floating gently back to sleep with the music...

As you begin to wake up, you may be aware of many different things - feeling sleepy and drowsy. It's okay to feel this way. It's natural for most people to feel very sleepy when they first wake up. So the best thing you can do is relax and sleep...

When you open your eyes, the lights can seem very, very bright, and yet it will be hard for you to see clearly. Everything may seem blurry at first. That's okay, too. It's another part of waking up from the anesthesia. For now, it's okay to keep your

eyes closed, because in a little while, it will be easier for you to see. For now, relax, and let yourself drift with the music...

You may be aware of other feelings now. Your throat may feel sore. That's because there was a tube that breathed for you during surgery. It's natural for your throat to feel sore, but you don't have to let it bother you, because you know the soreness will go away, and you can even try to imagine taking a drink of something cool and soothing. Imagine feeling the cool liquid soothing your throat. Feel the soreness beginning to go, and let your throat relax. Let yourself drift listening to the music, relaxing and drifting...listening to the music. The more you can relax the more comfortable you will feel...

You may be aware of the bandage covering your surgery, and the soreness underneath and all around that part of your body. It's natural to feel sore after surgery. Don't let it bother you. Remind yourself that it won't last. Remember that then you start to relax, you'll start to feel more comfortable. So tell the muscles all around your surgery to loosen up and let go...and feel the muscles begin to grow soft...Feel the muscles underneath your incision become loose and relaxed...

Imagine the softness spreading throughout your body, relaxing and soothing, allowing all the muscles in your body to release and relax...and know that whenever you like, whenever you wish to tune into the music you can let the sound of the music wash over you...You can feel the music relaxing your body, even feeling the presence of your body growing more and more soft, more and more relaxed...for now, just rest...and float...and listen to the music...

You may be aware of other tubes that are helping your body recover from surgery. Some are there to take away fluids. Others are there to make it easier to give you medicine that will help you to recover. All of the tubes are there to help your body begin the healing process. The tubes are there to do the work for you. Tell yourself not to let them bother you, because they are there to make you well...and so while they work for you, let yourself drift and drowse again, listening to the music...knowing that each time you hear the music, it will be safe to relax even more...to float with the music...beginning to know that the more you relax, the more comfortable you will feel...

As you wake up even more, you may find that it is difficult to speak. It's often hard to talk when you first wake up from the anesthesia. The nurses caring for you know that it's hard to speak. They are very good at guessing what you may want, because they've taken care of so many other patients. So if it is difficult to speak at first, don't let it bother you...try again later, and know that you will be able to speak clearly again, soon. In the meantime, drift, and listen to the music...

Let yourself be cared for, and rest, and listen to the music...letting the music wash over you in a warm bath of sound, relaxing and soothing...Tune out the interruptions, tune out the bright lights. Tune out anything that bothers you, and tune into the music, letting the music play and comfort you, letting the tubes and medicine heal you, while you take charge of relaxing your body...knowing the more you relax, the more comfortable you will feel...

And while you listen, let the music help you drift, drift and return to your favorite place; the safe place that you found before, where you can feel comfortable and calm...where you know that you can go to feel relaxed and peaceful. Take yourself there now.... Let yourself drift back to your place, and begin to imagine how it looks...What will you see? Imagine yourself there and find a spot that looks comfortable. See yourself sitting down and stretching out... Imagine walking around, noticing all the things that you see...Imagine things that you know and love. Take a moment to look closely at each object. Look at its shape. Notice whether it is big or small. Perhaps there is something that you want to hold. Maybe there is someone who is very special who is there with you...If you like, imagine being there with someone you love...and as you look around, take pleasure and comfort in being there. Feel safe, peaceful and relaxed...listening to the music...resting and listening...

You don't have to think about anything else. Listen to the music, and let the music bathe you in a warm bath of sound. Let the music wash over your whole body, relaxing and soothing...helping your body to relax and heal...allowing your muscles to grow soft and heavy...letting your mind drift peacefully... letting your mind and your body rest, and relax, and heal to the sound of the music...

And if you like, let yourself drift back to that place far, far away...to the island, with the beach and miles and miles of clean, white, velvety soft sand... Imagine feeling warm sand beneath your feet, and lie down on the sand, feeling its warmth... feel the soft sand holding your body and the sun warming your body as you rest on the beach. Feel the breeze touching your skin. Hear the leaves of the palm trees brushing gently against each other. Hear the waves rolling up and over, each wave followed by another, rolling over and over, again and again... as you lie on the beach, relaxed and comfortable, let this be your special place, your special beach, where you can stay as long as you like...resting, relaxing, knowing that when you choose to leave, you will be able to return anytime that you wish, knowing that this special place will always be waiting for you - peaceful and safe, quiet, calm and comfortable, healing, relaxing... knowing that you may stay as long as you like, and return whenever you wish

APPENDIX I

Request letter sent to Dr. Hastings, cardiac surgeon, to request permission to work with his patients

Sara Rose, LPC, NCC
4501 Barwick Road
Charlotte, North Carolina 28210
704-651-2891

February 11, 2003

Clifton Hastings, M.D
Hawthorne Cardiovascular Surgeons
301 Hawthorne Lane
Charlotte, North Carolina 28204

Dear Dr. Hastings:

I am asking your cooperation in a study I am conducting for my doctoral degree from Walden University in clinical psychology. As part of my dissertation I plan to study the effects of music and imagery with open-heart surgery patients.

In order for me to gain approval from my doctoral committee, I need for you to agree to participate in the study by signing this agreement form and return it to me. Thank you in advance for your kindness.

Sara Rose, LPC, NCC
Clinical Psychology student

I,_____ M.D. cardiac surgeon, Presbyterian Hospital, Charlotte, North Carolina, agree to have patients introduced to this study and after informed consent will allow them to be part of this study.

APPENDIX J

Request letter sent to Dr. Edwards, cardiac surgeon, to request permission to work with his patients

Sara Rose, LPC, NCC
4501 Barwick Road
Charlotte, North Carolina 28210
704-651-2891

February 11, 2003

Charles Edwards, M.D
Hawthorne Cardiovascular Surgeons
301 Hawthorne Lane
Charlotte, North Carolina 28204

Dear Dr. Edwards:

I am asking for your cooperation in a study I am conducting for my doctoral degree from Walden University in clinical psychology. As part of my dissertation I plan to study the effects of music and imagery with open-heart surgery patients.

In order for me to gain approval from my doctoral committee, I need for you to agree to participate in the study by signing this agreement form and return it to me. Thank you in advance for your kindness.

Sara Rose, LPC, NCC
Clinical Psychology student

I,_____ M.D. cardiac surgeon, Presbyterian Hospital, Charlotte, North Carolina, agree to have patients introduced to this study and after informed consent will allow them to be part of this study.

APPENDIX K

Statement of Investigator to the IRB

STATEMENT OF INVESTIGATOR

1. Name and address of investigator

2. Education, training and experience that qualifies the investigator as an expert in the clinical investigation one of the following is attached.

   ¨ Curriculum Vitae ¨ Other Statement of Qualifications

3. Name and address of any medical school, hospital or other research facility where the clinical investigation(s) will be conducted.

4. Name and address of any clinical laboratory facilities to be used in the study.

5. Name and address of the Institutional Review Board that is responsible for review and approval of the study(s).

   Institutional Review Board
   Presbyterian Health Services Corp.
   200 Hawthorne Lane (P. O. Box 33549)
   Charlotte, NC 28233-3549

6. Names of the Subinvestigators (e.g., research fellows, residents, associates) who will be assisting the investigator in the conduct of the investigation(s).

7. Name and code number, if any, of the protocol(s) in the IND for the study(ies) to be conducted by the investigator.

I, the principal investigator, whose signature appears below, agree to a continuing exchange of information and advice with the Institutional Review Board of Presbyterian Hospital. I agree to communicate with the Board to obtain its approval before institution of any significant changes to or additions in the project or before continuing the project beyond the approval date. I agree to inform the IRB Chairman (384-5369) promptly upon the occurrence of any unexpected or serious adverse effects or complications. I agree to provide written progress reports at intervals specified by the Board. I hereby certify that I have received and read Part 812, Subpart E - Responsibilities of Investigators, and Subpart G - Records and Reports, Code of Federal Regulations, and will adhere to the investigational plan and procedures as outlined.

_____

Signature Date

CURRICULUM VITAE

NAME:

IF ADDITIONAL SPACE IS NEEDED, PLEASE USE REVERSE SIDE.

1) Undergraduate school attended
   Date of graduation and degree awarded
   Medical school attended
   Date of graduation and degree awarded

2) Institution of training
   Nature of training
   Date completed
   Institution of residency

Nature of training

Date completed

3) Any teaching or research experience (please include dates, names of institutions and brief description of experience).

4) Courses attended

Date _____ Location

Courses attended

Date _____ Location

5) Any experience in medical practice (please include dates, institutional affiliations and nature of practice).

6) List any pertinent medical or other scientific publications (please include titles of articles and names of publications).

Or you may attach a Curriculum vitae

APPENDIX L

Explanatory Memorandum to Introduce Research to Surgeons, Operating Room Nurses, Floor Nurses and Doctor's Office

Memorandum

Date: _____

Subject: **Cardiac Surgery Research Study**

Memo: Dr. Edwards, Dr. Hastings, Recovery Room Nurses, and 5D Floor Nurses, Director of Anesthesiology, Hawthorne Cardiovascular Surgery staff

From: Sara Rose, LPC, NBCC

This memo is to ask for your cooperation in a research study that I will be conducting beginning_____ and ending approximately _____. This study is part of the research requirement for a PhD in Clinical Psychology. This study will include patients of Dr. Edwards and Dr. Hastings who are candidates for coronary artery bypass graft surgery (CABG).

In this study there will be a control group of 15 patients and an experimental group of 15 patients. The primary purpose of this research will be to focus on the effects of music-imagery tapes on anxiety and depression scores

The theoretical foundations of this study will focus on the effects of music-imagery tapes used with cardiac surgery patients and originates in clinical psychology, education, sociology, and complementary medical treatments. I look forward to working with you.

Sara Rose, LPC, NBCC
Licensed Professional Counselor
(NC License #755)

APPENDIX M

Terminology Inservice

Definition of Terms

Acute myocardial infarction (MI). Death of a portion of the heart muscle, usually caused by sudden occlusion (blockage) of a previously narrowed coronary artery (Miller & Keane, 1987).

Anxiety. A continuum of discomfort ranging from mild to panic level which may include breathlessness, a choking sensation, palpitations, restlessness, muscular tension, tightness in the chest, trembling, or flushing (Miller & Keane, 1987).

Anxiolytic music. Music that lowers stress hormones called beta-endorphins, causing a lowered pulse rate, lowered heart rate and relaxation of the muscles thereby reducing anxiety and tension. (Fleming, 1999; Karin, 1999).

Cardiac event. A negative episode or happening pertaining to the heart (Miller & Keane, 1987)

Cardiac psychology. That branch of health psychology that identifies psychosocial risk factors for the development and perpetuation of cardiac heart disease and the psychological consequence (*sequelae*) of cardiac illness (Clay, 2001).

Cardiovascular disease. Disease (process having characteristic signs and symptoms) of the heart and blood vessels (Miller & Keane, 1987).

Coronary artery bypass graft surgery (CABG). Surgical treatment of coronary artery blockages that cannot be treated using drugs or angioplasty (Miller & Keane, 1987).

Coronary artery disease (CAD). See coronary heart disease.

Coronary heart disease (CHD), also known as Coronary artery disease (CAD). Disease of the arteries that supply blood to the heart itself (Miller & Keane, 1987).

Depression. Feelings of intense sadness, dejection, or melancholy causing a lowering of functional activity (Miller & Keane, 1987)

Guided imagery visualization therapy. A guided practice of relaxation to help patients relax and decrease symptoms of anxiety, stress, anger and impatience, and hostility. (Buselli & Stuart, 1999).

Music therapy. A varied and complex systematic process of intervention involving the use of soothing types of music to facilitate healing using musical experiences as dynamic forces of change. (Biley, 1999).

Psychophysiological relaxation responses. A comprehensive approach in medicine focusing on the interconnectedness of mind and body to explain disease and health using relaxation techniques as meditation, music therapy, and breathing exercises (Luskin, Newell, Griffith, Holmes, Telles, Marvasti, Pelletier, & Haskell, 1998).

Psychosocial. Pertaining to both psychic and social aspects of disease as depression, anxiety, hostility, social isolation, anger, and stress. (Buselli & Stuart, 1999).

State Anxiety. Refers to the process by which people respond to daily life at any given time (moment to moment) and level of intensity. (Spielberger, 1983).

Trait Anxiety. Refers to differences between individuals in the way they usually respond to stressful situations. (Spielberger, 1983).

APPENDIX N

Schedule for Playing Tapes

Schedule for Playing Tapes and Administering the BDI-II and the STAI

Tapes:

Tape #1

(Patient) Play the day before surgery at 3 p.m., 4 p.m., and 5 p.m.

Tape #2

(Nurse) Play continuously during surgery

Tape #3

(Nurse) Play continuously in recovery room until patient awakens from surgery.

Beck Depression Inventory-II (BDI-II)

Administer on the first day after patient enters hospital

Administer at 2 p. m. on the third day following surgery

Spielberger State-Trait Anxiety Inventory (STAI) (State-Anxiety Form)

Administer on the first day after patient enters hospital

Administer at 3 p. m. on the third day following surgery

Tape # 1 Played_____ Time_____ Date_____ Length_____

Tape #2 Played_____ Time_____ Date_____ Length_____

Tape #3 Played_____ Time_____ Date_____ Length_____

Spielberger Pre-Surgery Inventory Time_____ Date_____

Beck-II Pre-Surgery Inventory Time_____ Date_____

Spielberger Post-Surgery Inventory Time_____ Date_____

Beck-II Post Surgery Inventory Time_____ Date_____

Self-Evaluation Clinical Questionnaire Time_____ Date_____

APPENDIX O

Random Selection Method

Population Selection Method

ONLY the cardiac patients who are admitted to the two cardiac surgeon's (Dr. Clifton Hastings and Dr. Charles Edwards) service will be considered as a likely candidate for the research study.

Each patient admitted as above will be assigned a number from 1 to 30. Further, by looking at that assigned number on this selection table below, the researcher can determine if the patient will receive the music-imagery tapes or participate as a control subject.

Example: The #15 will be the third person to be assigned as a control and will be designated an identity number of "C-3." This is done to assure the patients confidentiality. The third patient to be in study will be assigned the identity of M-15 or a candidate to be played the music imagery tapes for this study.

Intervals of five were used in order to randomly select subjects (n-30) until all candidates were selected for study.
M=Music Music-imagery tapes will be administered.
C=Control Soothing music tapes will be administered.

5=C1		Music Imagery tapes	Control patients
1. C-11	16. C-13	#3	#1
2. C-15	17. M-11	#4	#2
3. M-15	18. C-9	#7	#5
4. M-13	19. M-10	#9	#6
5. C-1	20. C-4	#11	#8
6. C-7	21. M-2	#13	#10
7. M-6	22. M-7	#14	#12
8. C-12	23. C-14	#17	#15
9. M-8	24. C-10	#19	#16
10. C-2	25. C-5	#21	#18
11. M-1	26. M-5	#22	#20
12. C-8	27. M-12	#26	#23
13. M-4	28. M-9	#27	#24
14. M-14	29. M-3	#28	#25
15. C-3	30. C-6	#29	#30

APPENDIX P

Index Card

Time, date, length of tapes #1, #2, and #3

(INDEX CARD)
PATIENT INSTRUCTIONS CARD

Patient Name: _____

C_____ M_____

Date	Time	Length of Tape
Tape #1		
Tape #2		
Tape #3		

APPENDIX Q

Contents of the Patient's Packet

CONTENTS OF THE PATIENT'S PACKET

1. A consent form (Appendix D) explaining the study, why the respondent was selected, why it is important to complete the survey, a guarantee of confidentiality and anonymity, and instructions on how to complete the instrument.
2. The survey instruments with identifying code for each patient, off-set printed will be filled out and collected by the researcher at the time of administration.
3. An index card on which the patient will record when they listened to the tapes.
4. An identification card with the patient's I.D. number on the back and the message that the survey was completed.

Correlation Study for Demographic and Psychological Factors

	Anxiety	Depression	Overall Health	Marital Status	Employment Status	Educational Level	Age Group	Job Status
Anxiety	1.00000	0.48701**	-0.05483	-0.36530	-0.25080	-0.08677	-0.45761*	-0.00466
Depression	-	1.00000	0.00792	-0.21371	-0.12520	-0.30185	-0.23120	0.17519
Overall Health	-	-	1.00000	-0.05844	0.08537	-0.04700	0.12592	0.00947
Marital Status	-	-	-	1.00000	0.17329	-0.06265	0.39335	0.11614
Employment Status	-	-	-	-	1.00000	-0.09504	0.43691	0.47508
Educational Level	-	-	-	-	-	1.00000	0.01992	-0.27849
Age Group	-	-	-	-	-	-	1.00000	0.19813
Job Status	-	-	-	-	-	-	-	1.00000

Note. Kendall Tau Correlation Coefficients. * Significant results ($p<0.05$ after Sequential Bonferroni Procedure). ** Highly significant results ($p<0.01$ after Sequential Bonferroni Procedure).

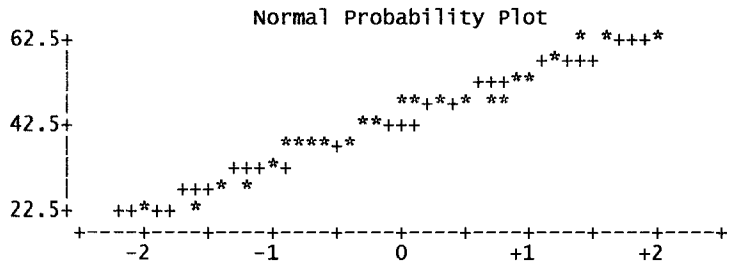
APPENDIX S

Data Distribution for STAI Scores

The SAS System
The UNIVARIATE Procedure
Variable: STAI - PRE-SURGERY

Stem	Leaf	#	Boxplot
6	134	3	0
5	8	1	|
5	00	2	|
4	6677778889	10	+-----+
4	344	3	| + |
3	678999	6	+-----+
3	2	1	|
2	99	2	|
2	04	2	0

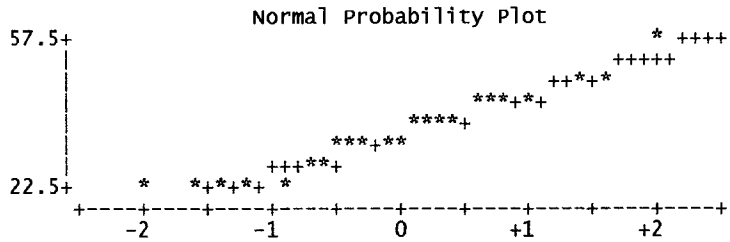
Multiply Stem.Leaf by 10**+1



The SAS System
The UNIVARIATE Procedure
Variable: STAI - POST-SURGERY

Stem	Leaf	#	Boxplot
5	6	1	
5			
4	99	2	
4	013344	6	
3	66799	5	
3	1122344	7	
2	66	2	
2	0123344	7	

Multiply Stem.Leaf by 10**+1



APPENDIX T

Alternative Figure for STAI Scores

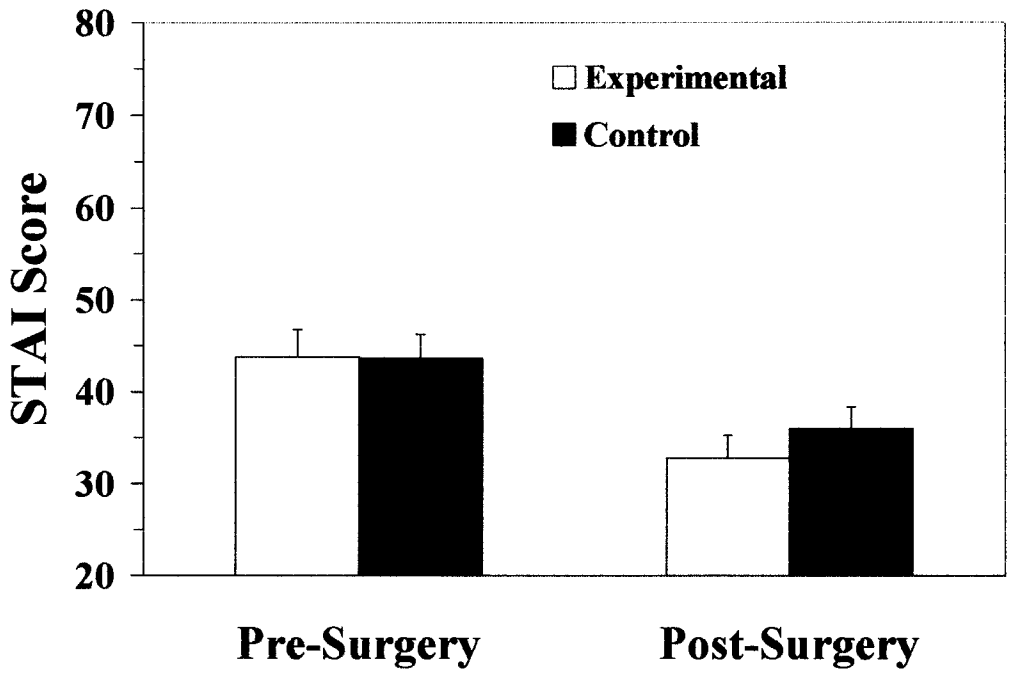


Figure T1. Alternative Figure 2. Mean State-Trait Anxiety (S-Scale) Inventory (STAI) scores (+*SE*) in experimental (*n*=15) and control (*n*=15) groups before and after surgery.

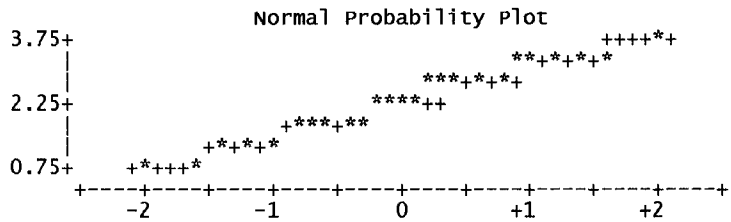
APPENDIX U

Data Distribution for BDI-II Scores

The SAS System
The UNIVARIATE Procedure
Variable: BDI-II - PRE-SURGERY
After Logarithmic Transformation

Stem	Leaf	#	Boxplot
3	7	1	
3	001134	6	
2	668888	6	+-----+
2	11334	5	*--+--*
1	668889	6	+-----+
1	1144	4	
0	77	2	

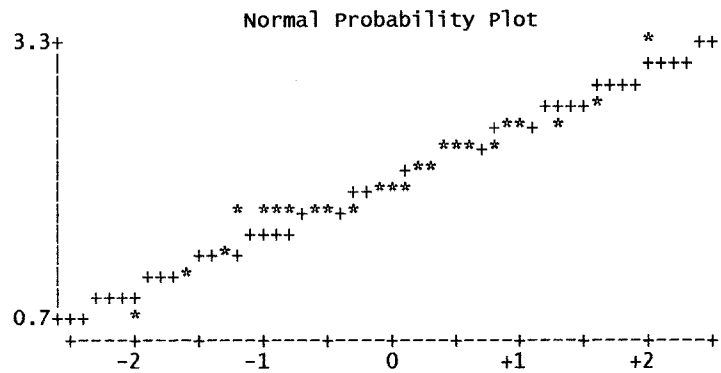
----+----+----+----+



The SAS System
The UNIVARIATE Procedure
Variable: BDI-II - POST-SURGERY
After Logarithmic Transformation

Stem	Leaf	#	Boxplot
32	2	1	
30			
28			
26	4	1	
24	08666	5	
22	00000	5	
20	8	1	
18	555	3	
16	1111199999	10	
14			
12	9	1	
10	0	1	
8			
6	9	1	

Multiply Stem.Leaf by 10**-1



APPENDIX V

Alternative Figure for BDI-II Scores

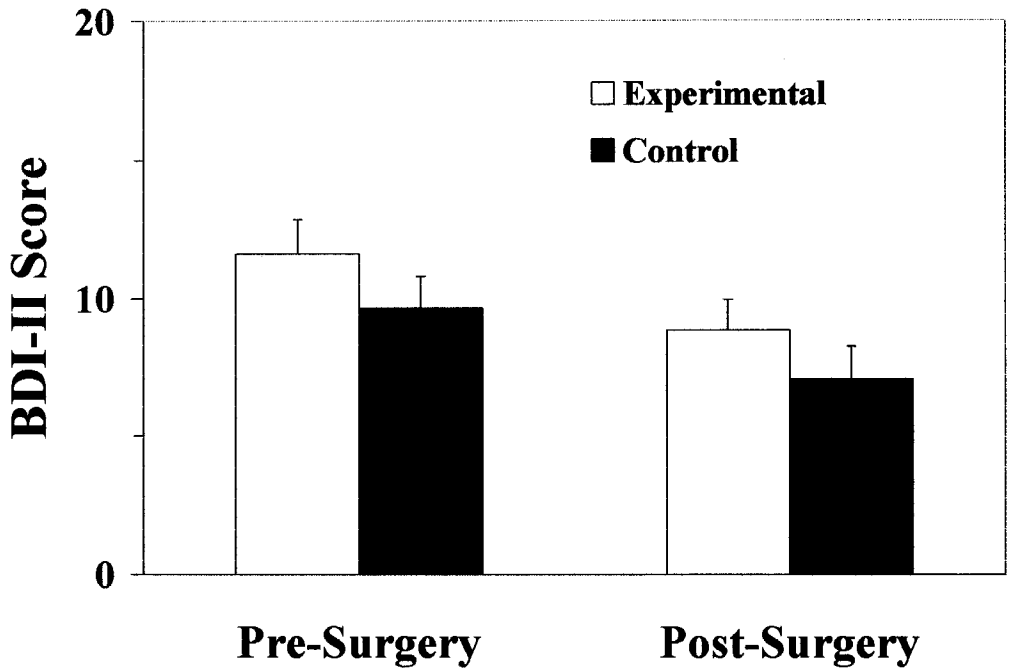


Figure V1. Alternative Figure 3. Mean Beck Depression Inventory-II (BDI-II) scores (+*SE*) in experimental (*n*=15) and control (*n*=15) groups before and after surgery.

CURRICULUM VITAE

SARA R. ROSE, MHDL, LPC, NCC
4501 Barwick Road
Charlotte, NC 28211
(704) 651-2891
Practicing Counselor #755

EDUCATION:

Walden University: 3/1/1996 – Present: - PhD Clinical Psychology

University of North Carolina at Charlotte: 6/1/1989 – MHDL Counseling

Salem College: 5/30/1961 – BS

PROFESSIONAL EXPERIENCE:

10/2003 – Present: Sara Rose, Licensed Professional Counselor, private practice

11/2000 – 11/2003: The Family Tree, Licensed Professional Counselor, private practice

9/1998 – 10/2000: Carolina Psychological Services, PA, Licensed Professional Counselor, private practice

1/1991 – 7/1999: Presbyterian Hospital, Belk Heart Center, Licensed Professional Counselor

6/1989 – 1/1991: Charlotte Council on Alcoholism and Chemical Dependency, Licensed Professional Counselor

PROFESSIONAL DUTIES:
My duties with the Belk Heart Center at Presbyterian Hospital, Charlotte, N.C., included psychodiagnostic assessment and treatment planning, as well as individual psychotherapy. Most of the psychological intervention was short term and problem focused, dealing primarily with anxiety, depression and lifestyle adjustments associated with coronary difficulties. Referrals often occurred in connection with open-heart surgery, implantation of defibrillators and myocardial infarctions.

In addition to working with individuals, family therapy was often an adjunctive treatment. Depression and anxiety in spouses and family members were

significant issues. Similarly, grief and loss were likely to be prominent issues in the family treatment. As with the individual psychotherapy, family intervention was short term and problem centered. When additional treatment was needed, a referral to community resources was facilitated.

My work also included group therapy for patients and their families dealing with various coronary problems. These groups became a regular part of the treatment resources available for patients in the Belk Heart Center. Dealing with common emotional issues, developing coping skills, improving patients' understanding of their experiences were prominent aspects of the group treatment.

In addition to my direct work with patients, I also provided psychosocial consultation for staff members. Such assistance included helping them address patient issues, as well as helping staff deal with the stresses associated with working in such emotionally intense settings as the Belk Heart Center.

PROFESSIONAL DEVELOPMENT:

September 2000: "Helping Adult and Child Survivors of Adult Sexual Abuse" by Adena Bank Lees, CISW, ICADC, 5.5 hours.

August 2000: "Ethics in Counseling" sponsored by the American Counseling Association, 15 hours.

August 2000: "Building Positive Client Self-Esteem" by the American Counseling Association, 15 hours.

November 1999: "Up from Down: Brief Therapy for Treating Depression" by Shelley Mobley, Med, EdS, LPC, LMFG, 2 hours.

November 1999: "Counseling Parents of Adolescents" by Elizabeth Scott, LCSW, 3 hours.

October 1999: "Dual and Multiple Addictions" by Karen Edmonson, MA, LP, LICSW, CCDC-R, 7.2 hours.

October 1999: "Dual Diagnosis of ADHD and Substance Related Disorders" by Diane Johnson, PhD, 3 hours.

September 1999: "Treating the Out-Of-Control Adolescent" by Scott Sells, PhD, 6 hours.

June 1999: "Final Rights: How to Care for People in the Last Phases of Life" by Douglas Smith, MA, MS, MDiv, 5.75 hours.

October 1998: "The Spiritual Basics of Theory: Spirituality as a Therapeutic Force in Therapy" by Harry J. Aponte, ACSW, 8 hours.

June 1998: "Working with the Grief Process" by Dr. Wayne Leaver, Walden University, 2 weeks.

March 1998: "Private Practice Sanity" by Janet Pipal, PhD, 8 hours.

January 1998: "Diagnosis and Treatment Planning" sponsored by the American Counseling Association, 8 hours.

May 1997: "Violence and Conflict" sponsored by the American Counseling Association, 8 hours.

July 1997: "Techniques of Psychological Testing" (Parts 1 & 2) by Dr. Steve Lifrak, Walden University, 2 weeks.

October 1996 – June 1997: "Neuro Linguistic Programming" (Levels I, II, and III) by Dr. Robert Bodenhamar, Master Practitioner, 7 months.

September 1996: "Rapid Cost-Effective Treatment for Anxiety Disorders" by David Burns, PhD, 1 day.

July 1995: "The DSM IV Disorders" by Allen Frances, MD, 2 days.

March 1995: "Feeling Good: Fast and Effective Treatments for Depression, Anxiety and Therapeutic Resistance" by Dr. David Burns, 8 hours.

December 1994: "The Psychology of Health, Immunity, and Disease", Hilton Head, SC, 1 week.

December 1994: "Clinical Supervision" by Area Health Education, Charlotte, NC, 2 days.

October 1994: "Interactive Guided Imagery" by Academy for Guided Imagery, Washington, DC, 2 days.

December 1993: "The Psychology of Health, Immunity, and Disease", Hilton Head, SC, 1 week.

November 1993: "Understanding Grief and Helping Yourself Heal", Hilton Head, SC, 1 week.

October 1993: "How to Manage Conflict and Maintain Emotional Control", Charlotte, NC, 2 hours.

December 1993: "Laughter and Heart Disease", Charlotte, NC, 1 hour.

April 1993: "Stress Management for Health Professionals", Charlotte, NC, 8 hours.

July 1993: "Grief Counseling and Grief Therapy" by Dr. William Worden, 1 week.

November 993: "Grief and the Dysfunctional Family and Developing Grief Groups", Wrightsville Beach, NC, 2 days.

COMMUNITY SERVICE:

Consultant, RAIN (Regional Aids Interfaith Network) teams, 1993 – present.

Member, Junior Service League, 1985 – present.

Chairman, Alcohol and Substance Abuse Committee, Myers Park Presbyterian Church, 1986 – 1988.

Leader, Covenant Group, Myers Park Presbyterian Church, 1993 - 1995.

CERTIFICATION:

Registered Practicing Counselor (#755), North Carolina Board of Licensed Professional Counselors

National Board of Certified Counselors (#24602)

Certified Substance Abuse Counselor (#928)

PROFESSIONAL AFFILIATIONS:

American Association for Counseling and Development (Member)

Licensed Professional Counselor's Association of North Carolina (Member)

American Psychological Association (Member)

North Carolina Psychological Association (Member)

Association for Advancement of Behavior Therapy (Member)

Association for Death Education and Counseling (Member)

WORKSHOPS CONDUCTED:

Does Stress Affect Infertility? (2001). Infertility Group, Center for Women's Health, Presbyterian Hospital, Charlotte, NC.

How to Manage Stress and Enjoy Life (2001). Matthews Methodist Church, Senior Adults, Matthews, NC.

How to Work with People Experiencing Chronic Pain (2001). Myers Park Methodist Church, Stephen Ministers, Charlotte, NC.

Stress and Chronic Pain Relief (2000). Mind-Body Program, Sisky YMCA, Charlotte, NC.

Stress Management (1998). Group of Bankers, Holiday Inn, Charlotte, NC.

Spirituality and Nursing Care (1998). School of Nursing, Presbyterian Hospital, Charlotte, NC.

How to Cope with Grief and Loss (1998). Same Day Surgery Nurses, Presbyterian Hospital, Charlotte, NC.

What is the Personal Style Inventory and What Can I Learn from It? (1998). Leadership Group, Presbyterian Hospital, Charlotte, NC.

How Singles Can Handle Stress (1997). St. Gabriel's Catholic Church, Charlotte, NC.

Spirituality and Care of Patients (1997). School of Nursing, Presbyterian Hospital, Charlotte, NC.

An Experiential Hour of Stress Release and Relaxation Techniques (1997). Women's Health Weekend, Central YMCA, Charlotte, NC.

Identifying Learning Styles Using the Personal Style Inventory (1997). School of Nursing, Presbyterian Hospital, Charlotte, NC.

Anger and Your Health (1997). Myers Park Methodist Church, Stephen Ministers, Charlotte, NC.

Cardiac Stress Management Wellness Program (1996 – 6 sessions). Cardiac Patients and Those Individuals at High Risk, Presbyterian Hospital, Charlotte, NC.

Handling Anger (1996). Sharon United Methodist Church, Stephen Ministers, Charlotte, NC.

Support Group for Heart Patients and Significant Others (1995 – present). Presbyterian Hospital, Charlotte, NC.

Ways to Reduce Stress (1995). Women in Electronics, Charlotte, NC.

Ways to Reduce Stress (1995). Charlotte-Mecklenburg Planning Commission, Government Center, Charlotte, NC.

Unplug the Christmas Machine (1994). Parish Nurses, Charlotte, NC.

Invocation (1994). School of Medical Technology, Presbyterian Hospital, Charlotte, NC.

Helping Families Cope with Loss (1994). Families who lost a loved one to cancer, Hospice of Charlotte, Charlotte, NC.

How to Personally Cope with Loss (1994). RAIN (Regional Aids Interfaith Network) team, St. John's Baptist Church, Charlotte, NC.

Spirituality and Faith (1994). Panel Discussion. St. John's Baptist Church, Charlotte, NC.

Spirituality and Women (1994). Southern Women's Show, Merchandise Mart, Charlotte, NC.

Personality Types and Team Building (1994). American Heart Association, Charlotte, NC.

Mind/Body Health (1994). Matthews Presbyterian Church, Matthews, NC.

Stress Management (1994). Association of Women in Metal Industry, Wyndam Gardens Hotel, Charlotte, NC.

How to Cope with Stress (1994). N.C. Harvest Group, Myers Park Baptist Church, Charlotte, NC.

How Practicing Mind/Body Techniques Helps You Maintain Wellness (1993). Philafun Festival Philadelphia Presbyterian Church, Charlotte, NC.

Stress and Your Health (1993). Mecklenburg Cardiovascular Consultants. Charlotte, NC.

How to Overcome Stress in Your Life (1993). Members of Mint Hill Women's Club, Mint Hill, NC.

How to Deal with Stress (1993). Farmwood Women's Club, Mint Hill, NC.

Health and Religion (1993). Matthews Vacation Bible School Adult Class, Presbyterian Church, Matthews, NC.

Stress and the Working Woman (1993). Metrolina Nephrology Staff, Metrolina Nephrology Office, Charlotte, NC.

Secrets for Serene Holidays (1992). Unitarian Church Women, Unitarian Church, Charlotte, NC.