CHAPTER ONE

Introduction

The concept of anxiety has enamored philosophers, psychologists, and researchers for hundreds of years. Kritzeck (1956) reports that one of the earliest recorded indications of this fascination with anxiety was in the eleventh century treatise *A Philosophy of Character and Conduct* by the Arab philosopher Ala ibn Hazm who defined anxiety as a universal human condition from which all humans seek escape. Debate over anxiety has continually developed in philosophical circles. An overall summation of works by May (as cited by Spielberger, 1972) reported that philosophers such as Spinoza, Schopenhauer, and Kierkegaard address anxiety in relationship to the role of fear, subjective expectations, the power of emotions, and the rational control of emotions through feeling, acting, and thinking. Modern psychologists and researchers have since jumped onto this bandwagon as demonstrated by the explosion of literature devoted to experimentally define, observe, measure, and develop coping strategies for anxiety reduction.

The following review of literature will 1) define anxiety and explore the effectiveness of measurement methods and anxiety reduction techniques, 2) define music performance anxiety and provide a rationale for the use of music as a cue for the reciprocal inhibition of anxiety, and 3) identify the need for aiming anxiety reduction techniques towards class guitar performance anxiety in music therapy and education students.

Review Of Literature

Defining Anxiety

Modern psychologists have posited many different theories in an attempt to define and alleviate anxiety. Freud defined anxiety from a psychoanalytic perspective as "something felt," an unpleasant emotional affective state basic to human experience (Freud, 1936). He focused on understanding the underlying reasons for anxiety, such as fear of criticism or self-imposed pressures. From a behaviorist perspective Wolpe (1958) focused on changing the anxiety and behavior, ignoring underlying causes. In cognitive-behavioral theory the attribution of anxiety as a result of negative thoughts and self-statements is unlearned in addition to the behaviors associated with the beliefs (Beck, 1976).

More specific definitions and classifications for anxiety have also been developed. Spielberger defined anxiety into two areas: 1) trait anxiety, long term traits creating anxiety, and 2) state anxiety, anxiety specific to a situation (Spielberger, 1972). Other researchers have investigated cognitive and somatic components of anxiety. The former is defined as recurrent anxiety provoking bothersome thoughts, mental images, poor concentration, dwelling on mistakes, and concern over appearance to others. The latter includes shortness of breath, shaking, pounding heart, dry throat, stomach upset, pacing, or sweating (Van Fleet, 1985).

One of the most frequently referenced models of anxiety in behavioral research is Lang's three systems model (Lawyer & Smitherton, 2004). In this model anxiety is comprised of three areas, behavioral, physiological, and verbal or subjective cognitive symptoms (Lang, 1968). Researchers have suggested that when measuring levels of anxiety in these three areas, while influencing one another, they are relatively independent and may demonstrate poor correlations with each other based on conditions under strong or weak emotional involvement, often referred to as dysynchrony (Hodgson & Rachman, 1971).

Yerkes and Dodson (1908) were among the first to hypothesize that a certain level of anxiety is necessary for peak performance, however, beyond a certain point of arousal performance will deteriorate. Researchers have shown that anxiety can have debilitating effects on test performance (Hembree, 1988), public speaking (Hofmann, Ehlers, & Roth, 1995), and music performance (Abel & Larkin, 1990).

Several anxiety reduction techniques have been researched to decrease levels of anxiety. Researchers have investigated biofeedback (Lehrer & Woolfolk, 1993; Schwartz, 1987), progressive relaxation (Jacobsen, 1929), imagery (Russell, 1992), autogenic training (Luthe, 1963), and music assisted relaxation techniques (Hanser, 1985; Pelletier, in press; Robb, 2000; Standley, 2000). One common behavioral method is through the reciprocal inhibition of anxiety. Wolpe (1958) developed a process called systematic desensitization in which anxiety is inhibited by a competing incompatible relaxation response. Williams & Chambless (1994) reported that providing a response incompatible with anxiety such as relaxation serves to decrease arousal and speed up the process of habituating to the stimulus. This technique is one of the most researched and effective interventions for reducing anxiety and phobias (Deffenbacher & Suinn, 1988). Paul and Shannon (1966) indicated that desensitization is also effective when conducted in groups rather than only with individuals, however it will take longer to conduct. Desensitization consists of three main stages. First, a hierarchy from the least to greatest fear is developed. In the second stage the participant is instructed on muscle relaxation techniques, the most commonly used is an abbreviated version of Jacobsen's (1929) progressive relaxation. During the third stage the hierarchy of fears associated with the stimulus is presented through verbal imagery and each fear is accompanied by a period of relaxation to inhibit the anxiety associated with the fear. During this stage participants indicate levels of complete relaxation or arousal by raising their right index finger. Occasionally some individuals are not able to experience anxiety only imagining the scene and real life exposure or in-vivo desensitization is needed (Wolpe, 1969). Variations of the original systematic desensitization have been investigated. Wolpe (1969) researched other methods for inducing relaxation and emphasized positive imagery. Lang's three system model has been incorporated in systematic desensitization to include the cognitive, physiological, and behavioral underpinnings in a Coping Model of Desensitization (Goldfried, 1971). Other variations include "real life" exposure to the fear as a fourth step (Levin & Gross, 1985), pairing the desensitization training with cognitive insight oriented training (Wardle, 1976), in-vivo desensitization during the training (Appel, 1974), and Reitman's (1997) incorporation of music during each stage of the coping model of systematic desensitization.

Measuring Anxiety

Several methods to determine levels of anxiety and the effectiveness of relaxation techniques such as desensitization have been investigated. Lawyer and Smitherton (2004) report that trends in measuring anxiety have continued to focus on Lang's three systems model which includes self-report and physiological measurements. In their meta-analysis on trends in anxiety assessment they found that self-report measures have become increasingly common over the past ten years and that the use of physiological measures has decreased. Commonly observed physiological indicators of anxiety were first reported by Cannon (1929) and may include heart rate, blood pressure, respiratory rate, and hormonal fluctuations. Since Cannon, a wealth of research has been done on physiological measurements including heart rate (Barger, 1979; Burns, Labbe, Arke, etc, 1995; Davis & Thaut, 1989; Standley, 1991), blood pressure (Fernell, 2002; Hamel, 2001; Hoffman, 1980; Zimmerman & Pierson, 1988), temperature (Kibler & Rider, 1983; Peach, 1984; Rider, Floyd, Kirkpatrick, 1985; Robb, et al, 1995; Standley, 1991; VanderArk & Ely, 1994; Walters, 1996), electromyography (EMG) (Budzynski, Stoyva, & Adler, 1970; Scartelli, 1984; Standley, 2000; Reynolds, 1984), respiratory rate (Ellis & Brighouse, 1952; Pujol, 1994; White, 1992), and galvanic skin response (GAS) (Peretti & Swenson, 1974). Reasons for a decreased use in physiological assessments may be due to problems with consistency. For example, researchers have shown that different relaxation techniques may result in different physiological changes (Lehrer & Woolfolk, 1993). An additional criticism of physiological measurement is that an individuals' autonomic activities do not respond similarly across similar situations, leaving a question as to what internal behavior states or thoughts are actually responsible for changes in physiologic measures (Orr & Roth, 2000). Despite the increased use of self-report measures, such as Spielberger's State Trait Anxiety Inventory (STAI), the Taylor Manifest Anxiety Inventory, or the Beck Anxiety Inventory, there is much criticism against these measures also. Most notably, Skinner (1953) discussed the difficulty of rating one's own current level of relaxation since only our inner personal experiences without much external modification are available to rely on for an answer. Other criticism indicates that self-report measures are influenced by social conditions (Poppen, 1988).

Since not much research has been done on measuring levels of participation in relaxation training, it is difficult to ascertain, in both the physiological and self-report literature, the extent

to which the validity of these measures may be diminished by the actual participation or lack of participation during training. Variables that may effect a participant's involvement in relaxation training include worrisome thoughts or inability to concentrate (Jacobsen, 1929) and adverse effects of relaxation described by Bernstein and Carlson (1993) as, 1) relaxation-induced anxiety (RIP), "the gradual increase in behavioral, physical, and psychological components of anxiety during relaxation training," and 2) relaxation- induced panic (RIP), "the rapid development of severe anxiety during relaxation training" (p. 66). Little research has been done on visual observation of participation level in relaxation despite Jacobsen's (1929) early identification of observable indicators of anxiety: "respiration is slightly irregular in time or force . . . voluntary or local reflex activities are revealed in such slight marks as wrinkling of the forehead, frowning, movements of the eyeball, frequent or rapid winking, restless shifting of the head, a limb, or even a finger" (p.30). Jacobsen also identified observable signs of increasing relaxation including palpitation of muscle groups, passive motion of body parts, changes in the force of respiration, flaccidity of muscle-groups, absence of movement or contraction, sudden involuntary jerks or reflexes, and increasingly slow responses to interruption. Schilling and Poppen (1983) suggested that a behavior scale for relaxation would provide an objective method of identifying relaxation results.

A Behavior Relaxation Scale (BRS) specifically designed to measure observed levels of relaxation and anxiety occurring in Behavior Relaxation Training (BRT) was developed by Poppen (1988) and was based on Jacobsen's (1929) and Wolpe's (1958) original observations of relaxed behaviors. BRT is the training of "overt relaxed behaviors through modeling, prompting, and performance feedback" (p.100). Since the development of the scale relatively little research has been conducted on its validity and reliability. To support the use of the BRS as an effective measurement tool, Norton, Holm, and Clinton (1997) established that the BRS has high correlations with other physiological and self-report measurements and that it identifies significant differences in level of relaxation between control and experimental groups, even when physiological and self-report methods do not differentiate between control and experimental groups. Schilling and Poppen (1983) established interobserver reliability for the scale at 95.7%. Relatively little research has been conducted using this tool possibly due to the complexity of its administration. The scale is based on time sampling of ten different behavior classes that incorporate Jacobsen's observations on the effect of posture and include breathing

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rate, the head, the feet, the hands, etc. Behavior is observed in five segments of one minute each. The minute is divided into 30 seconds to observe breathing rate, 15 seconds to observe other body items, and 15 seconds to record observations. Behaviors and postures in each of the ten classes are marked as relaxed or unrelaxed. A problem within the scale is the classification of 'relaxed' based on a relaxed versus unrelaxed posture. While an unrelaxed posture is definitely indicative of increased muscular tension and hence possible anxiety the BRS does not take into account the experience of a person falling asleep and yet remaining in an unrelaxed posture, such as with hands or feet crossed.

Future research on a scale to measure observed levels of relaxation during relaxation training would be important to 1) develop an easily administered observable scale to use during relaxation training, 2) provide objective measures indicating relaxation (Poppen, 1988), and 3) to determine the extent to which individuals engage in relaxation training, thereby providing vital information on the validity of self-report or physiological measures.

Music Performance Anxiety

One area with a wealth of literature on the effectiveness of anxiety reduction techniques is in music performance anxiety research. Music performance anxiety is a commonly reported problem among musicians (Goode & Knight, 1991). Wardle (1969) first demonstrated that music performance anxiety is measurable, quantifiable, and modifiable. Researchers have since demonstrated that performers, including musicians of all levels, experience physical, psychological, and occupational stress problems due to anxiety (Lederman, 1989). In a review of literature Reitman (1997) reported that the term musical performance anxiety is interchangeable with other terms such as stage fright and performance tension, both of which indicate the physiological, behavioral, and cognitive components inherent in anxiety (Lehrer, 1987).

Researchers have indicated that different musical performance conditions may have differing effects on the manifestation of anxiety as a result of many variables unique to the musical performance. Ely (1991) found that types of musicians, job differences, type of instrument played, age, years of experience, and level of preparation are all variables that have a relationship with performance anxiety. Brotons (1994) investigated another variable: the effect of juried versus nonjuried performers and blind versus open juried performances on levels of

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anxiety. Broton found significant differences between juried and not juried but no significant differences between open versus a blind jury performance.

Researchers have addressed the role of anxiety in general performance areas and their investigations can be transferred into the musical performance domain. Yerkes and Dodson (1908) were among the first to hypothesize that a certain level of anxiety is necessary for peak performance, however, beyond a certain point of anxiety and arousal performance will deteriorate. Their research has been supported in musical performance literature reporting that a certain level of anxiety is necessary for peak performance (Plaut, 1990). Further investigations have shown that too much anxiety and frequent poor performances may actually discourage performers from staying in musical study (Wolfe, 1989). As a result of the debilitating potential of performance anxiety on musicians, several researchers have investigated methods of decreasing anxiety until the optimal level for performance is achieved.

Understanding how anxiety is manifested into performance is a necessary step to determine how to achieve an optimal level of performance. Wardle (1969) first systematically identified behaviors indicating different levels of anxiety during musical performance specific to trumpet performance. These included excessive vocalizations, instrumental behaviors, facial expressions, and extraneous arm, hand, body, feet, and leg movements. Manifestations of performance anxiety, which resemble the general observations of anxiety discussed earlier, were assembled into four different areas by Ely (1991) and Salmon (1991). These areas are described as, 1) physiological changes such as increased heart rate, sweating, shortness of breath, shaking, clammy hands, headache, and numb fingers; 2) psychological or emotional conditions including feelings of apprehension, fear of failure, irritability, and generalized panic; 3) cognitive problems including loss of confidence, lack of concentration due to thoughts and worries, memory lapses, and inability to include musicality, and 4) behavioral changes such as moistening lips, trembling of knees and hands, shoulder lifting, and a dead pan face.

Decreasing Music Performance Anxiety

Many anxiety reduction techniques have been aimed at reducing problems arising in one or more of these four areas. Some anxiety reduction techniques include: 1) pharmacological interventions such as beta-blockers to decrease negative somatic symptoms and improve intonation, vibrato, dynamic control, and other dimensions of musical performance (Gates, Saegert, Wilson, et al, 1985; Nube, 1991; Nettle, Kaser, & Vorkauf, 1982), 2) imagery

(Trusheim, 1987); 3) a combination of training with hypnosis (Plott, 1986); 4) increased prior public performances (Pulver, 2001); and 5) individual and group music therapy combined with behavioral techniques (Montello, Coone, & Cantor, 1990).

As previously mentioned, one of the most effective and researched anxiety reduction techniques is systematic desensitization. The first researcher to apply this technique in musical performance was Wardle (1969). Wardle demonstrated that systematic desensitization and systematic desensitization coupled with imagery and insight effectively increased performance ratings, and decreased heart rate and behavioral manifestations of anxiety during trumpet jury performance. Appel (1974) later studied the effect of systematic desensitization and music analysis with rehearsal on solo piano performers' pulse rate, total number of performance errors, and anxiety as measured through a questionnaire. In Appel's study anxiety was significantly reduced only in the systematic desensitization group and performance errors were only slightly reduced in the music analysis and rehearsal group.

<center>**Music Assisted Systematic Desensitization**</center>

The effects of a music assisted coping systematic desensitization and a traditional verbal coping desensitization intervention was compared by Reitman (1997). Reitman incorporated preferred music listening during all progressive relaxation training and desensitization stages. Results indicated that 1) no significant differences occurred in heart rate before, during, or after performance, 2) the coping desensitization with music demonstrated a significant decrease in sEMG activity although no significant differences were found between groups, 3) no differences between groups were found on cognitive measures, and 4) behavioral observation was not reliable due to the increased complexity caused by observing several different instrumentalists. Other variables that may have effected the results of Reitman's study include how and what musical structure was provided. In a meta-analysis on the effect of music to decrease arousal, Pelletier (in press) reported that music based on research induces greater levels of relaxation than preferred selections, possibly because preferred music may create some level of arousal that may be incompatible with the goal of relaxation. Pelletier also reported that combining several relaxation techniques with music may not be as effective as using a single technique. Reitman's use of preferred musical selections and the incorporation of music throughout all procedures may have diminished the results that could be gained from using music in a different manner. Further research on the role of music during systematic desensitization, incorporating research supported

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musical selections and limiting the use of music to specific sections of the desensitization process, is definitely merited.

Decreasing Anxiety Related to Student Guitar Performance

While a wealth of research has been conducted on the effect of desensitization techniques in decreasing performance anxiety this technique has not been specifically researched with music therapy and education students experiencing performance anxiety during class guitar performance. Incorporating anxiety reduction techniques, specifically systematic desensitization, into the curriculum may not only help decrease music therapy and music education students level of performance anxiety but could also be one step to improving guitar skill performance competencies.

Guitar Skill Competency

In the educational field support for competency-based education has been forthcoming and prevalent (Madsen & Yarbrough, 1980). Researchers in music education have suggested the value of replacing rote teaching with other techniques that may not demonstrate as recognizable achievements but indicate genuine growth (Johnson, 1991). Alley (1978) directed this viewpoint into the field of music therapy by calling for a competency-based music therapy curriculum. Other researchers in music therapy have also identified the need for a competency-based curriculum, including the opportunity to learn in nontraditional ways (Crowe and Bruscia, 1999; Lee, 2000). For example, improvement of music therapy training in a competency-based curriculum has been researched through the investigation of different types of feedback (Adamek, 1994; Alley, 1980; Furman, Adamek, & Furman, 1992).

Much focus has been placed on methods of guitar skill acquisition and performance in music therapy and education students. Guitar instruction and competency is a requirement of the American Music Therapy Association (AMTA) (2000) and part of the certification exam for all music therapists (CBMT, 1998b). In addition music education majors also take guitar courses as a degree requirement. Researchers have shown that there is a need for improved training in guitar skill competency (Gouzouasis, 1992; Krout, 1986; Wilcox, 1996). Techniques to improve the performance of guitar in class have included the incorporation of supplementary materials transferring the use of guitar to music therapy clients (Krout, 1986), different tonal and rhythmic patterns on learning guitar (Gouzouasis, 1992), interactive practicing (Cope, 1997), feedback methods during guitar song leading (Furman, 1987), and effects of previous performance

(Pulver, 2001). One component effecting performance of guitar that has not been directly investigated is decreasing the level of anxiety in the student. Interventions aimed at decreasing this level of anxiety may serve to improve the performance and competency level of the student.

CHAPTER TWO
PURPOSE

Three areas of focus presented in the review of literature are addressed in this study. These include investigation of 1) observed engagement in relaxation training, 2) the use of music as a cue for relaxation during desensitization, and 3) the effect of anxiety reduction techniques to improve guitar competency of music therapy and education students. In the current study the presence and absence of music as a cue for the reciprocal inhibition of anxiety was investigated. Music therapy and music education students experiencing guitar performance anxiety were selected as participants. Music was incorporated into desensitization through the presence of music as a cue to induce relaxation followed by the absence of music and presentation of the guitar performance anxiety imagery.

The primary purpose of this study was to investigate the effect of music as a cue for reciprocal inhibition during music assisted systematic desensitization (MASD) on guitar competency, observed anxiety, and self-perception of anxiety during guitar performance. The following hypotheses were tested:

H_0: There will be no significant difference on guitar competency between the control and experimental groups.

H_1: There will be no significant difference of observed anxiety between the control and experimental groups.

H_2: There will be no significant difference on self-perception of anxiety between the control and experimental groups.

A secondary purpose was to examine the relationship between participation in MASD with guitar competency evaluations, observed anxiety, and self-perception of anxiety. This was completed by data and graphic analysis of experimental participants' observed responses during abbreviated progressive relaxation and MASD. The following hypothesis was tested:

H_3: There will be no significant difference on self-perception of anxiety before the first MASD session and after the second MASD session.

CHAPTER THREE
METHOD

Participants and Setting

Participants included 22 female music students from Florida State University class guitar or music therapy lab sections requiring guitar performance check ups. Participants were randomly assigned to control (n = 11) and experimental (n = 11) groups. Demographic data collected for participants included gender, age, major area, medication use, previous formal relaxation training, average number of hours practicing guitar outside of class, and total number of years experience playing guitar (See Appendix A). Participants ranged from 19 – 35 years old in the control group and 20 – 33 years old in the experimental group. Nine of the participants, 41%, reported medication use and six of the participants, 27%, reported previous relaxation training experience consisting of reading about relaxation training, participating in relaxation sessions during music therapy lab, and taking yoga classes. Average practice time ranged from one hour per week to six and a half hours per week and years playing guitar ranged from .58 to 6 years. Eighteen of the participants, 82%, were music therapy students, three were music education students, 14%, and 4% were seeking a general bachelor's degree in music. One student in the experimental group dropped out of the study following the first MASD session resulting in a total of 10 participants for the experimental group. All participants in the guitar classes volunteered to participate and were given extra credit incentives for participation by their instructors. Participants in the music therapy lab class were required by the instructor to participate.

Equipment

Equipment used for this study included a RCA RCD148 CD Player, a Hitachi 7500LA Rapid Reflex 16 bit DSP III video camera, and a CRDI version 2003.

Design and Procedure

Measures collected in this study for guitar performances and MASD treatments are outlined in Table 3. Further description and procedures are provided below.

Table 3

Researched Dependent Measures

Participants	Performance One	MASD Treatment Sessions	Performance Two
Control	Questionnaire	No Treatment	Likert Scale
	Likert Scale		Guitar Competency
	Guitar Competency		Checklist
	Checklist		Guitar Anxiety
	Guitar Anxiety		Rating Form
	Rating Form		
Experimental	Questionnaire	Pre-test Likert Scale	Likert Scale
	Likert Scale	Post-test Likert Scale	Guitar Competency
	Guitar Competency	Abbreviate Progressive	Checklist
	Checklist	Relaxation Score	Guitar Anxiety
	Guitar Anxiety	Graphical Analysis of	Rating Form
	Rating Form	Desensitization	

Guitar Performance

A two sample pre and post test design was used to measure the effect of music assisted systematic desensitization on the dependent variables of the guitar competency checklist, observed anxiety, and self-perception of anxiety during guitar performance. Students were videotaped in front of a group of 3 or more observers and requested to perform a song of their choice based on the following criteria, 1) perceived as minimally anxiety provoking, 2) recently

learned, and 3) a song with a minimum number of errors when performing. Performances took place in the classrooms used for each student's regular guitar class or lab section.

The researcher met with participants one to two weeks before the first guitar performance. During this first meeting the purpose of the study was explained and the researcher collected basic information regarding participants' schedules and class attendance times for guitar performances and music assisted desensitization sessions. At the first videotaped guitar performance, participants in both control and experimental groups completed consent forms (see Appendix B), questionnaires (see Appendix D), and a Likert scale. Self-perception of anxiety was measured using a 1 – 10 Likert scale with ten indicating a high amount of anxiety and 1 indicating a low amount of anxiety (see Appendix E). Participants in the experimental group then completed the anxiety hierarchy associated with guitar performance and were scheduled for two desensitization sessions. The anxiety hierarchy consisted of 24 anxiety provoking images related to class guitar (see Appendix F). The images were selected after review and discussion with two board certified music therapists who were graduate students attending Florida State University. Participants were asked to rate each image on a scale from 1 – 10, 10 indicating a high level of anxiety and 1 indicating a low level of anxiety.   Images were then arranged in a master hierarchy order from least anxiety provoking to most anxiety provoking based on group averages.

The day after the second treatment session participants in both experimental and control groups completed the post guitar performance during prearranged class times. After performance participants filled out the final Likert scale.

Observed Guitar Performance Measures

Videotapes of performances were later analyzed using a guitar competency evaluation checklist and a guitar anxiety rating form. The evaluation checklist was adapted from Furman (1987) and Florida State University guitar class instructors to measure guitar competency (see Appendix G). The guitar competency checklist consisted of items such as singing in pitch, maintaining a steady rhythm, and playing correct sounding chords.   Pre and post observed anxiety was determined by scores on the guitar anxiety rating form during a five second observe five second record interval recording procedure as outlined in Madsen (1998). The guitar anxiety rating form was adapted from Wardle (1969) and Brotons (1994) to measure observed anxiety responses specific to guitar performance (see Appendix H). Observed anxiety was

divided into the following categories, 1) general body such as swaying, poor posture, shrugging shoulders, shifting feet, 2) arms and hands such as extraneous elbow movement, clutching the guitar strings, and adjusting clothes, 3) face such as blushing, dead pan, extraneous head movement, batting eyes, and looking at the floor, 4) instrumental behaviors such as adjusting tuning pegs, inspecting instrument, frequently looking at left hand, and poor tempo or chord timing, and 5) vocalizations such as unsteady singing voice, laughing inappropriately, apologizing, and showing off.

Systematic Desensitization Sessions

Self-perception of anxiety was recorded before and after both desensitization sessions using a 1 – 10 Likert scale with ten indicating a high amount of anxiety and 1 indicating a low amount of anxiety (see Appendix I).

Group desensitization sessions were implemented two days prior to the post guitar performance, one per day for each participant. Group sizes averaged from 2 to 7 participants, based on scheduling needs for each participant. Total time length averaged from 55 minutes to 75 minutes based on the number of participants. The musical selection used was Camille Saint Seans' Symphony No. 3 in C Minor, opus 78, second movement which was selected based on previous research demonstrating the production of alpha rhythms in the temporal lobes of musicians and non-musicians during music listening (Wagner, 1975). All desensitization sessions took place in a 16' x 18' sound proof room at the Center for Music Research at Florida State University.

Wolpe (1969) suggested that some individuals do not experience anxiety when thinking about feared situations and that only the real situation may provoke the anxiety. In order to provide as much reality associated with guitar performance as possible participants were seated upright in chairs to mimic the classroom chairs in which they would be sitting in while waiting to perform guitar and they were instructed to place their hands in the guitar playing position during several steps of the desensitization. An outline of the two desensitization periods is provided in Appendix J.

In desensitization session one participants first completed the pre-test Likert scale. The process of desensitization and in vivo guitar playing positions were then explained (see Appendix K). Next, participants engaged in breathing exercises and then an abbreviated progressive muscle relaxation procedure (see Appendix L). Following guided music listening

instructions, participants engaged in desensitization procedures that first consisted of music listening as a cue for increasing relaxation. Participants were instructed to communicate when completely relaxed by raising the right index finger. A maximum time length of three minutes was designated for music listening. Instructions were given before and after each music segment to avoid having competing stimuli during music listening. Instructions for the desensitization sessions are in Appendix M. After all participants indicated complete relaxation, or when the three minutes expired, the researcher slowly faded the volume of the music to silence and then instructed participants to engage in imagery associated with guitar performance anxiety. During the imagery segments participants reported successful visualization of the images by raising the right index finger. After progression through each hierarchy image and music listening segment participants then completed the session by filling out the post-test Likert scale.

In the second desensitization session participants also began by completing the pre-test Likert scale. Questions were answered by the researcher to further explain or clarify any misunderstandings in the procedures of the first session. Participants then engaged in breathing exercises, abbreviated progressive muscle relaxation, guided music listening, and desensitization procedures similar to session one, followed by the post-test Likert scale.

Videotape Analysis

For the secondary purpose of this study, to examine the relationship between participation in the desensitization sessions and the dependent variables, systematic desensitization sessions were videotaped. Observations on level of anxiety and self-report of complete relaxation were collected during the abbreviated progressive relaxation and desensitization stages. A 0 – 7 anxiety rating scale based on Jacobsen's original observations and incorporating the effect of posture on level of anxiety and relaxation was developed by the researcher after review and discussion with one graduate student (see Appendix N). This scale ranged from 0, indicating complete relaxation, to 7, indicating completely anxious. Scores at a 6 or 7 indicated non- participation in the session due to excessive movement and an unrelaxed posture. Excessive movement consisted of constant foot or finger tapping, scratching or itching, and adjusting clothes or body while in an unrelaxed position. Examples of unrelaxed posture included leaning forward on both knees with the elbows and head resting on the hands or leaning excessive weight forward on the body. Participants level of anxiety and relaxation during the abbreviated progressive relaxation was measured by the anxiety rating scale scores given during

a five second observe five second record interval recording procedure following procedures by Madsen (1998).

The Continuous Response Digital Interface (CRDI) was used to measure continuously observed levels of relaxation and anxiety in addition to the section in desensitization in which these responses were occurring on videotapes of the experimental sessions. Byrnes (1996) used the CRDI to measure the level of perceived stress while listening to audio, video, and paired audio video stimuli. The CRDI is a measuring device in which an observer adjusts a dial to what is being observed and movement of the dial is recorded into a computer software program (Gregory, 1989; Madsen, 1990). Successful reliable adaptation of scales to the CRDI has been reported in research (Madsen, 1993). Gregory (1995) reported several different successful measures of reliability with the CRDI using summative means of data and Pearson correlations of data. The CRDI has been successfully and reliably used with the manipulation of one dial to measure continuous responses of perceived tension during music listening (Madsen, 1993; Southall, 2003) and with two dials (Brittin, 1996; Goins, 1998; Gregory, 1994). In the current study two CRDI dials were used simultaneously to measure responses. Dial one measured level of anxiety based on the scale used during abbreviated progressive relaxation (see Appendix O). Dial two was used in this study to identify the section of the desensitization process being observed and consisted of four zones. These zones consisted of music listening, finger lift, imagery, and instructions (see Appendix O). Both dials were manipulated by observers simultaneously to measure continuous anxiety responses, where they occurred during the desensitization stage, and at what point in time each participant perceived compete relaxation during music, as observed by a finger lift.

CHAPTER FOUR
RESULTS

Results for participant demographic data, guitar performance measures (guitar competency checklist, guitar anxiety rating form, and Likert scale), MASD session measures (Likert scale, abbreviated progressive relaxation scores, and graphical analysis of MASD) and six case studies are presented below.

Participant Demographics

Demographic variables were examined using a Mann-Whitney Test to determine differences between the control and experimental group. No significant differences were found between groups for age, medication use, average hours practicing per week, previous relaxation training, level of anxiety during the first guitar performance, and self-perception of anxiety during the first performance. Significant differences did occur on number of years playing guitar, with the experimental group having a significantly lower number of years experience than the control group. However participants each selected a song based on their own perception of level of anxiety associated with performing the song to control for the effect of guitar experience.

Guitar Performance Measures

Dependent measures taken during pre and post guitar performances were statistically reviewed. Gain scores from pre to post test between the control and experimental groups were compared for the guitar competency checklist, guitar anxiety rating form, and the Likert scale. Interobserver reliability on guitar checklists of 20% of the participants averaged 83% with a range from 76% to 92%. Interobserver reliability on the guitar anxiety rating form for 20% of the participants averaged 85% with a range from 76% to 91%. After reliability was established the researcher scored the remaining checklists and guitar anxiety scores. Means for the experimental group scores taken during the guitar performance are listed in Table 4 and complete data for guitar performance measures are available in Appendix P. The higher the score on the

guitar competency checklist the better the performance with the highest possible score 13 out of 13. Higher scores on the guitar anxiety rating scale indicated more anxiety and lower scores indicated lower levels of anxiety.

Table 4

Means for Dependent Measures of Experimental and Control Groups

Dependent Variables		Pre	Post	Gain Score
Guitar Competency Checklist				
	Experimental	7.9	9.7	1.8
	Control	9.09	9.55	.45
Guitar Anxiety Rating Form				
	Experimental	75.27	67.26	-6.86
	Control	69.85	66.51	-2.89
Likert Scale				
	Experimental	6.7	5.8	-.9
	Control	6.63	5.09	-1.54

A Mann Whitney Test was used to analyze the gain scores between control and experimental groups with alpha levels based on a one tailed test. The obtained U value on the guitar competency checklist, $U = 27$, was less than the critical value of $U = 31$, therefore reject H_0 at the .05 alpha level ($p = .051$). On the guitar anxiety rating form the obtained value, $U = 43$, was greater than the critical value of $U = 31$, therefore fail to reject H_1. The obtained U value on the self-perception Likert scale, $U = 48$, was greater than the critical value of $U = 31$, therefore fail to reject H_2.

Pre to post test scores were then analyzed to determine significant differences within groups on the anxiety rating scale and the Likert scale using a Wilcoxon Signed Ranks Test. The

obtained T value for the guitar anxiety rating scale in the experimental group, T = 7, was less than the critical T value, T = 8, therefore there was a significant change in a negative direction, indicating less anxiety, on the guitar anxiety rating scale from pre to post test at a .05 alpha level (p = .037). The obtained T value for the control group, T = 25, was greater than the critical T value, T = 11, therefore changes from pre to post test were not significant (p = .477). The obtained T value on the Likert scale for the experimental group, T = 8, was equal to the critical value, T = 8, and approached significance at the .05 alpha level (p = .15). The control group Likert scale obtained T value, T = 0, was less than the critical T value, T = 5, therefore there was a significant decrease on self-perceived anxiety from pre to post test at a .01 alpha level (p = .017).

Music Assisted Systematic Desensitization (MASD) Sessions

The pre and post-test Likert scale data during the desensitization sessions were analyzed using the Wilcoxon Signed Ranks Test. Scores on the Likert scale from the pre test of session one to the post test of session four were compared using a Wilcoxon Signed Ranks Test. The obtained T value, T = 0, was less than the critical value, T = 3, therefore reject H_3 at the .01 alpha level (p = .017).

Several participant results representative of the sample in this study were selected for further examination. Case studies on six participants explore the relationship between participants' levels of observed anxiety, self-reported level of complete relaxation during music segments, and the role of these measures and demographic variables on the dependent measures of the guitar competency checklist, guitar anxiety rating form, and the Likert scale. To facilitate greater understanding on the effect of the demographic variables on level of relaxation during sessions and the dependent measures taken during guitar performance for the current sample of students, a Pearson product moment correlation was conducted. No significant correlations were found for any demographic variables in the small sample of students in this study, which indicated that significant results reached on dependent measures were not due to other variables tested. Correlations in Table 6 indicated trends within the group. For example, age had the strongest effect on the guitar competency checklist, with a lower score for the older individual in both control and experimental. However in the experimental group the preference for music during desensitization had a greater effect on improving guitar competency. Average hours practicing per week had the strongest effect on decreasing scores on the guitar anxiety rating

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form and were closely followed by age. Gain scores for self-perception of anxiety when playing guitar during guitar performance was most affected by the number of years experience playing the guitar and gain scores for the systematic desensitization sessions Likert scale were most affected by age of the participant.

Table 6

Correlations for Demographic Variables with Dependent Measures Gain Scores (GS1) and Desensitization Likert Scale Gain Scores (GS2) for all Participants

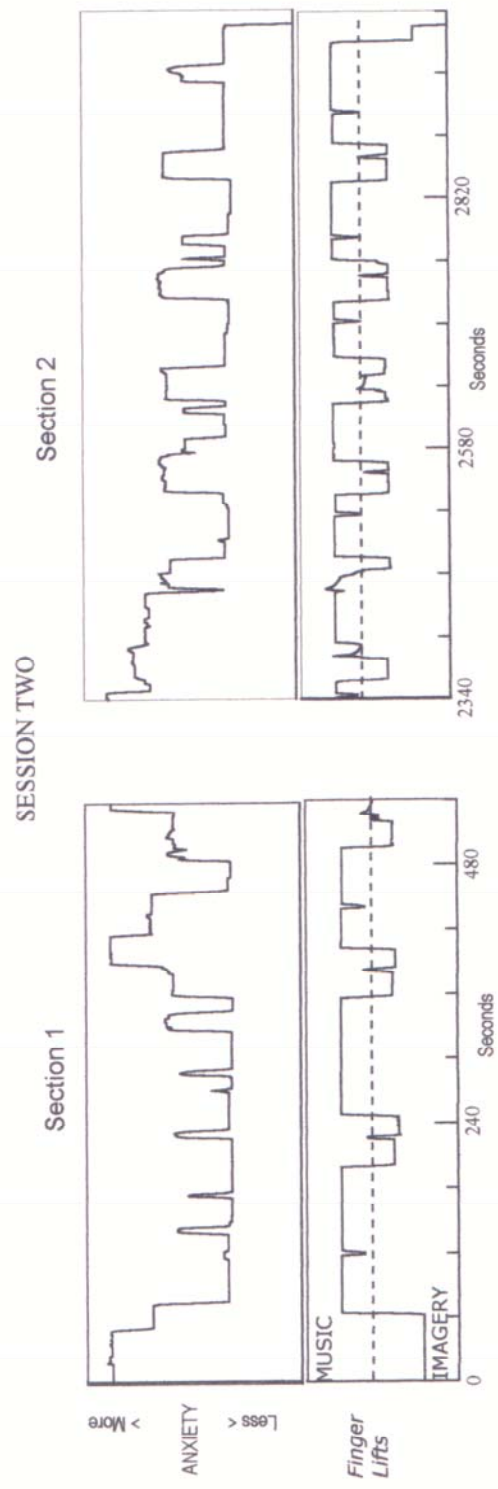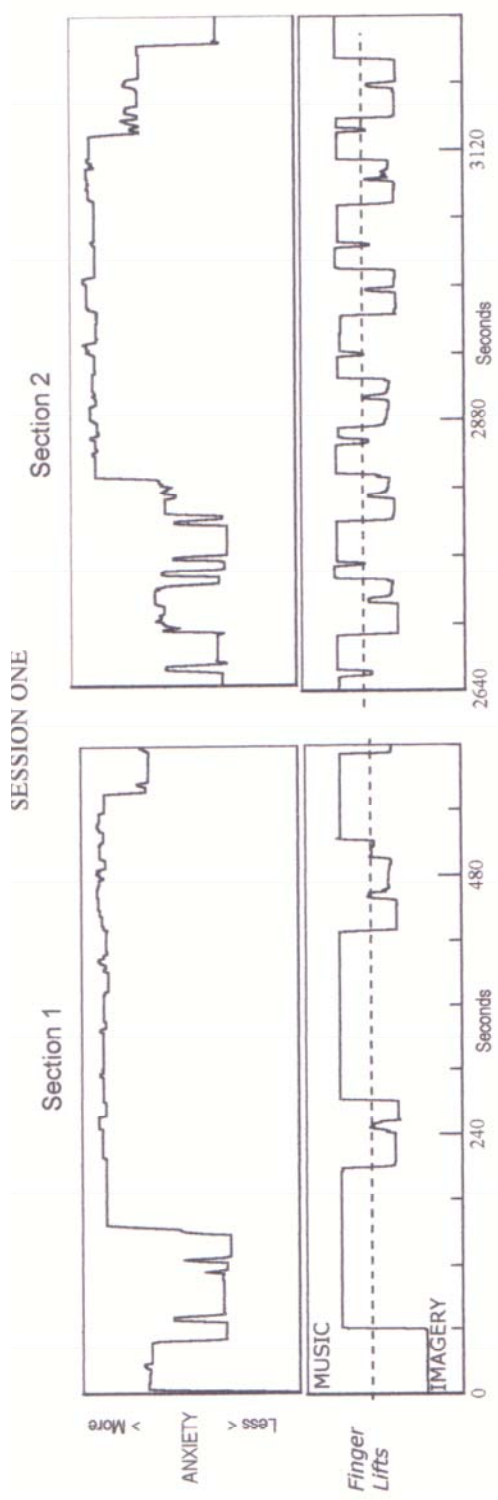|	Dependent Measures			
Demographics	Guitar Competency	Guitar Anxiety Rating Form	Likert (GS1)	Likert (GS2)
Age	-0.36	0.36	0.04	0.53
Medication Usage	-0.23	-0.12	-0.18	-0.20
Previous Training	0.07	-0.01	-0.01	-0.02
Average Practice Time (per week)	-0.24	0.37	-0.17	0.20
Years Experience Playing Guitar	0.04	0.10	0.29	-0.10
Preference for Song Performed on Guitar	-0.20	0.15	0.10	-.07
Preference for Music During Desensitization	-0.41	0.05	-0.15	0.31

The results above were incorporated with graphical analysis of the participants' varying levels of anxiety and relaxation during the desensitization sessions. After establishing reliability, videotapes of the abbreviated progressive relaxation and systematic desensitization sessions were

analyzed by the researcher and one additional board certified music therapist graduate student. Problems encountered when establishing reliability were discussed and worked out between raters before continuing the observations. Interobserver reliability during the abbreviated progressive muscle relaxation for 20% of the participants averaged at 84.93% with a range from 81% to 88%. A Mann Whitney Test was then used to determine any significant differences between the researcher's and the graduate student's ratings on abbreviated progressive muscle relaxation. The U value, U = 57, was greater than the critical value, U = 41, and therefore no significant differences were found between raters (p = .447). On the CRDI dial one relaxation scale interobserver reliability ranged from .89 to .98 with a mean correlation of .93. On dial two reliability ranged from .97 to .99 with a mean correlation of .98.

Results from graphic analysis of participants are included in the following six case studies. In Figure 1, results for the first case study are presented. The top portion of the graph is CRDI dial one results showing the level of anxiety from none to maximum observed anxiety responses. The bottom portion of the graph represents the CRDI dial two identifying the section of the desensitization stage occurring in time with the anxiety responses. In the top portion of the bottom graph horizontal lines indicate a music segment and descending lines that immediately ascend back into the musical segment indicated a finger lift by the participant that communicated complete relaxation. In the bottom portion of the bottom graph horizontal lines indicate imagery segments on guitar performance anxiety. Ascending lines that quickly descend back into the imagery segment indicated a finger lift by the participant, which communicated successful visualization of the imagery.

The following six case studies were selected based on the valuable insight they provided on using music as a cue for the reciprocal inhibition of anxiety. Permission for use of presentation of individual data and written statements was attained (see Appendix Q). For the purpose of increased confidentiality ages of participants will be discussed as 24 years and under or 25 years and older.

Figure 1. Graphic analysis of anxiety in session one and two during MASD desensitization for case study one.

SESSION ONE

Section 1   Section 2

SESSION TWO

Section 1   Section 2

ANXIETY
More > < Less

MUSIC

Finger Lifts

IMAGERY

Seconds

0   240   480   2640   2880   3120

2340   2580   2820

24

Sections of graphs for each session were selected for inclusion in this study based on the unique behaviors demonstrated. As seen in Figure 1, session one section one corresponds to session two section one. The actual time shown in each graph section from session to session may vary based on the differing lengths of each session but the anxiety images do not.

Case Study One

Case study one was a music therapy student under 24 years old, with 6 months experience playing the guitar, and an average practice time of 0 – 2 hours per week. She had no previous relaxation training and was not on any medications at the time of the study.

Self-report data from guitar performances and MASD sessions indicate no change in perception of anxiety however scores on the guitar checklist, guitar anxiety rating form, and during MASD sessions indicate improvement in guitar competency and a dramatic decrease in anxiety during guitar performances and MASD sessions (see Table 7).

Table 7

Case Study One

Sessions	Dependent Variables		
Guitar Performance	Guitar Checklist	Guitar Anxiety Rating Form	Likert Scale
Pre	8	78.75	8
Post	11	61.42	8
MASD	Abbreviated Progressive Relaxation Score	Total Number Finger lifts During Music Segments	Average Anxiety Score in Desensitization**
Session 1	43.34	16	171.52
Session 2	32.37	20	126.61

**Scores on CRDI are considered equivalent when within ten degrees of each other.

Despite participation in all stages of MASD the self-report data do not reflect observed changes in level of anxiety and therefore would not be a reliable indicator of decreased anxiety in this case (see Figure 1).

In Figure 1 sections of her desensitization sessions were selected as an example of the strong effect of music as a cue for relaxation. During the first ten minutes of session one anxiety rose during the first musical segment at second 180 (see Figure 1). One reason for this increase is found in the written remarks following the session in which initial confusion over what music she would be listening to was reported. She would be listening to guitar music since this was the instrument that she experienced anxiety towards. During the following minutes high levels of anxiety occurred with imagery associated to playing guitar at home and it wasn't until the third music segment at second 540 that the level of anxiety began to decrease. At the beginning of the second session any misunderstandings regarding the use of music were cleared. Changes in level of anxiety during the first musical segment from the first to second session are evident (see Figure 1).

In section two of Figure 1 a high level of anxiety was maintained in session one throughout the last five guitar anxiety images associated with the guitar performance. However in section two of session two the anxiety for these last five segments was drastically decreased. As can be seen, the only anxiety occurred during each guitar imagery scene, which was successfully decreased with the onset of musical segments.

Finger lifts occurring during musical segments indicated complete relaxation. In session two section one she lifted her finger during the third musical segment despite evidence on the other dial that she was not as completely relaxed. This inconsistency is also observable in session one section two during the third to sixth musical segment and in session two section two during the first musical segment. Providing a greater description and education on the definition of relaxed may circumvent this type of inconsistent self-report.

The natural amount of transfer of learned relaxation from MASD to performance was definitely successful. In reference to the lack of change in self-report two possibilities occur: 1) including cognitive and coping model approaches with MASD may bring the self-report data in line with the observed behaviors or 2) since two sessions successfully effected performance and levels of observed anxiety it may be that a third session would elicit change in self-report and foster the natural transfer of the learned relaxation to a cognitive level of awareness. Another factor to consider is that both MASD sessions and the post guitar performance occurred in a three day time period. It is possible that the increased focus on guitar anxiety may have countered the effect of MASD on decreasing self-perceived levels of anxiety.

Recommendations for eliciting change in all dependent measures include three sessions instead of two, allowing more time between sessions, or pairing cognitive coping skills with MASD. However it is apparent that the short two MASD session treatments are adequate in creating an optimal level of arousal for improved performance.

Written remarks following the MASD sessions provide insight on perceptions of this participant and other reasons why self-perception may not have changed. She expressed that her anxiety been lowered if the music played was guitar music, since that is the instrument she experiences performance anxiety towards. An additional problem expressed by this participant was the belief that the hierarchy steps were too small and therefore took too long complete. This perception may have impeded progress on decreasing perception of anxiety. Further educating students on these two issues is recommended in the future. For example, playing guitar music as a cue for relaxation when the participant perceives anxiety towards the guitar may create anxiety, counteracting the effect of music as a cue for relaxation. In addition, small steps in the hierarchy are a necessity to decondition any possible future scenarios in which anxiety may occur during actual performance.

Case Study Two

Case study two was a music therapy student under 24 years old with seven months experience playing guitar and an average practice time of 2.5 hours per week. She had no previous relaxation training and was not on any medications at the time of the study.

Self-report data taken after each guitar performance indicate a decrease in level of anxiety and are consistent with an observed decrease in anxiety on the guitar anxiety rating form (see Table 8). However her performance actually decreased indicating two possibilities, 1) a decrease in anxiety might have hindered her performance and the level of arousal may need to be higher for adequate performance, 2) one additional session may have served to positively impact the performance. Since her initial guitar checklist score was 9 out of 13, indicating room for improvement, it seems likely that the latter possibility is most applicable.

Table 8

Case Study Two

Independent Variables	Dependent Variables		
Guitar Performance	Guitar Checklist	Guitar Anxiety Rating Form	Likert Scale
Pre	9	77.5	6
Post	8	62.85	4
MASD	Abbreviated Progressive Relaxation Score	Total Number Finger lifts During Music Segments	Average Anxiety Score in Desensitization**
Session 1	28.32	18	195.87
Session 2	48.18	21	132.33

**Scores on CRDI are considered equivalent when within ten degrees of each other.

One marked effect is that the level of anxiety during abbreviated progressive relaxation in session two increased by twenty points from the first session. While written remarks following the session did not indicate a reason for this, it may be that 1) she experienced a high level of stress due to events during the day that decreased her level of concentration, or 2) anxiety from the desensitization carried over from the previous day despite counter conditioning due to the closeness in occurrence of sessions. It seems unlikely that the latter occurred since during the first session she reported a decrease from 9 to 6 in the self-report and her written remarks indicated that using the deep breathing and muscle relaxation skills decreased the level of anxiety when visualizing guitar imagery. Despite the increase in anxiety during progressive relaxation in the second session a dramatic decrease in anxiety during the desensitization is easily seen in Figure 2.

Figure 2. Graphic analysis of anxiety in session one and two during MASD desensitization for case study two.

SESSION ONE
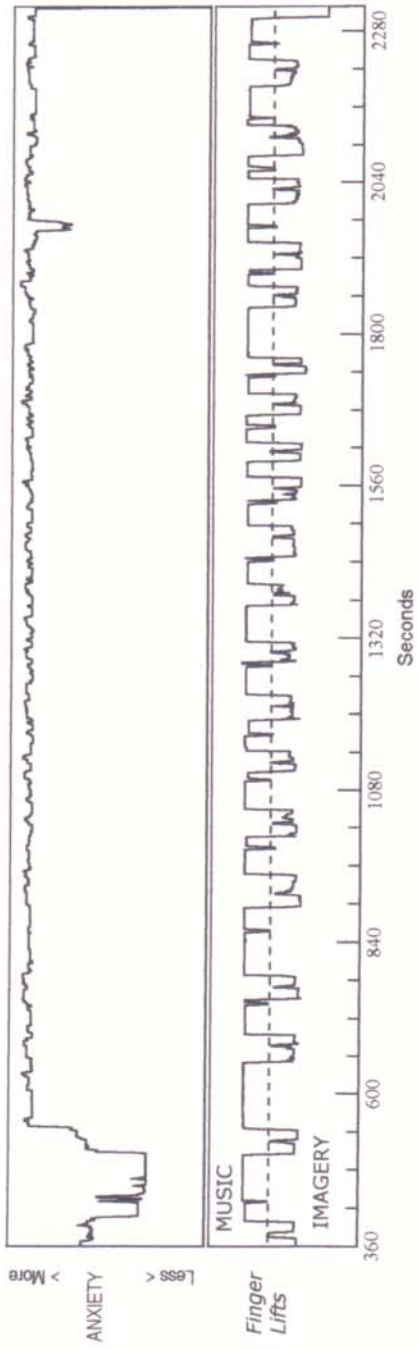
SESSION TWO
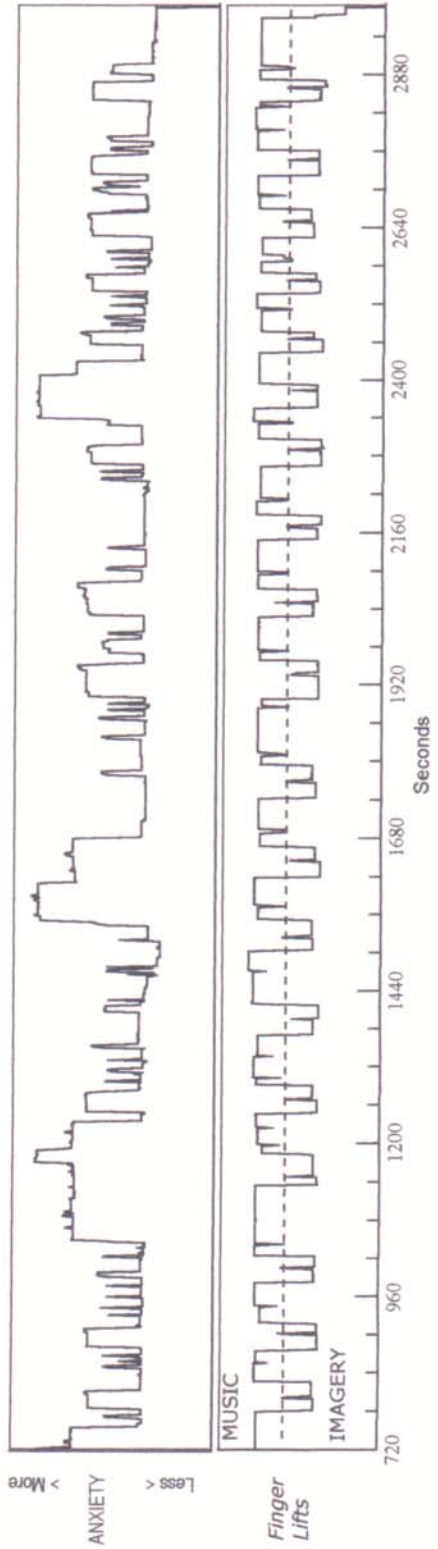
The majority of guitar anxiety imagery in session two in which she still associated high levels of arousal included those related to the beginning of performance, approaching difficult notes during performance, and playing or singing a wrong note during performance.

Sections during desensitization were selected in Figure 2 because of the extreme changes noted in levels of anxiety. Self-report of relaxation as indicated by a finger lift was again inconsistent with the actual level of relaxation during the first and second sessions. During the first session the high level of anxiety indicated the inability to remain still for longer than twenty seconds from second 600 through the last musical segment. While she participated in the finger lifts and guitar imagery she did not fully engage in the relaxation. Written remarks following the first session indicate that she was trying to relax, "Remembering to breathe deeply and to consciously relax muscles during the music made the visualization of scenes in guitar class not as anxiety filled." There is a large discrepancy between her perceived state of relaxation and the actual level demonstrated in Figure 2. During session two her finger lifts were more consistent with observed levels of relaxation and she was able to reach that state much more quickly as demonstrated by the shorter time segments in musical segments before each finger lift. For example, the finger lifts in first four musical segments of session two occurred much more quickly than the first four finger lifts in session one, indicating a quicker onset of the relaxation response.

In this case natural transfer to the cognitive perception of anxiety occurred after two MASD sessions, but this did not transfer to improving scores on the guitar competency checklist. It is possible that one additional session or the incorporation of cognitive and coping skills with MASD may again be merited to help facilitate full transfer across self-report, level of observed anxiety, and guitar competency. However, music was definitely successful as a cue for relaxation as demonstrated by the large decrease in levels of anxiety from session one to session two.

Case Study Three

Case study three was a music therapy student under 24 years old with 2.5 years guitar experience and an average practice time of 1.5 hours per week.

She had no previous relaxation training but was using medication at the time of this study. Self-report measures taken at each performance and during MASD sessions indicated a decrease in level of perceived anxiety, which is consistent with other data collected (see Table 9).

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Table 9

Case Study Three

Guitar Performance	Dependent Variables		
	Guitar Checklist	Guitar Anxiety Rating Form	Likert Scale
Pre	10	64	8
Post	11	60	6
MASD	Abbreviated Progressive Relaxation Score	Total Number Finger lifts During Music Segments	Average Anxiety Score in Desensitization**
Session 1	70.96	12	215.13
Session 2	68.47	18	164.57

**Scores on CRDI are considered equivalent when within ten degrees of each other.

Despite high levels of anxiety throughout both sessions and the consistency of these levels with her written remarks, indicating too many wandering thoughts and an inability to concentrate, graphic analysis of the central portion of the MASD sessions demonstrate a dramatic difference in level of anxiety (see Figure 3). Many large decreases in anxiety occurred during music listening segments. During the first session large decreases tended to occur towards the end of musical segments as can be seen in Figure 3 at second 950 and 1620. As the session progressed increases in relaxation began occurring more quickly as seen at second 1700 and 1980. However finger lifts indicating relaxation were not consistent with observed levels of anxiety. Every finger lift in session one is accompanied by a high level of anxiety and the only segment without a finger lift is the one in which she actually began to relax at second 1700.

Figure 3. Graphic analysis of anxiety in session one and two of MASD desensitization for case study three.

SESSION ONE
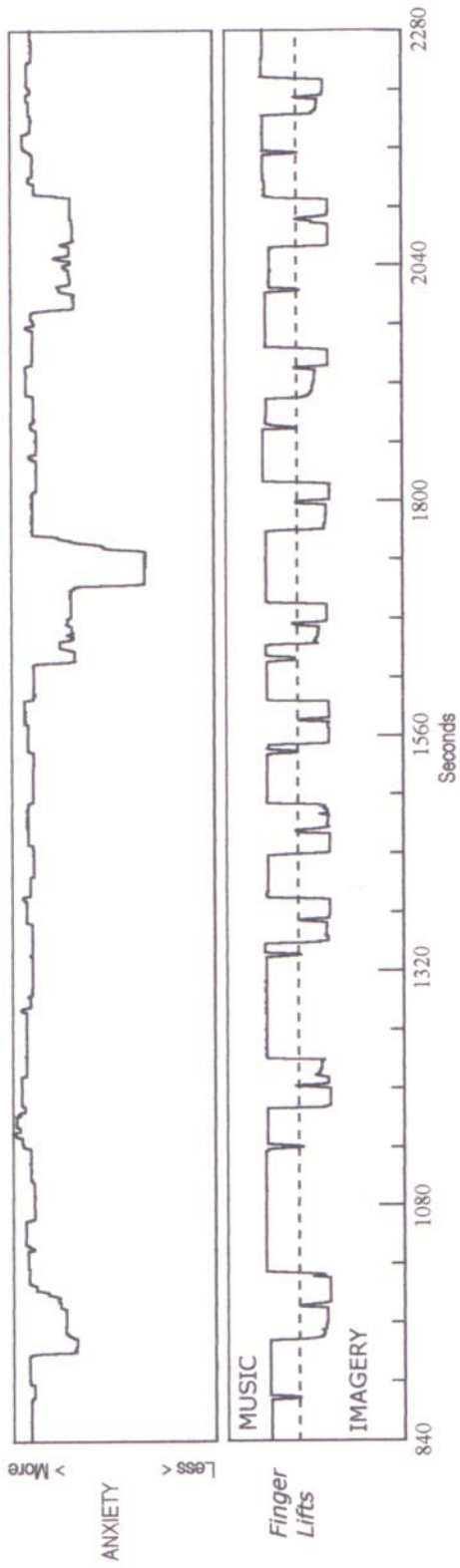
SESSION ONE
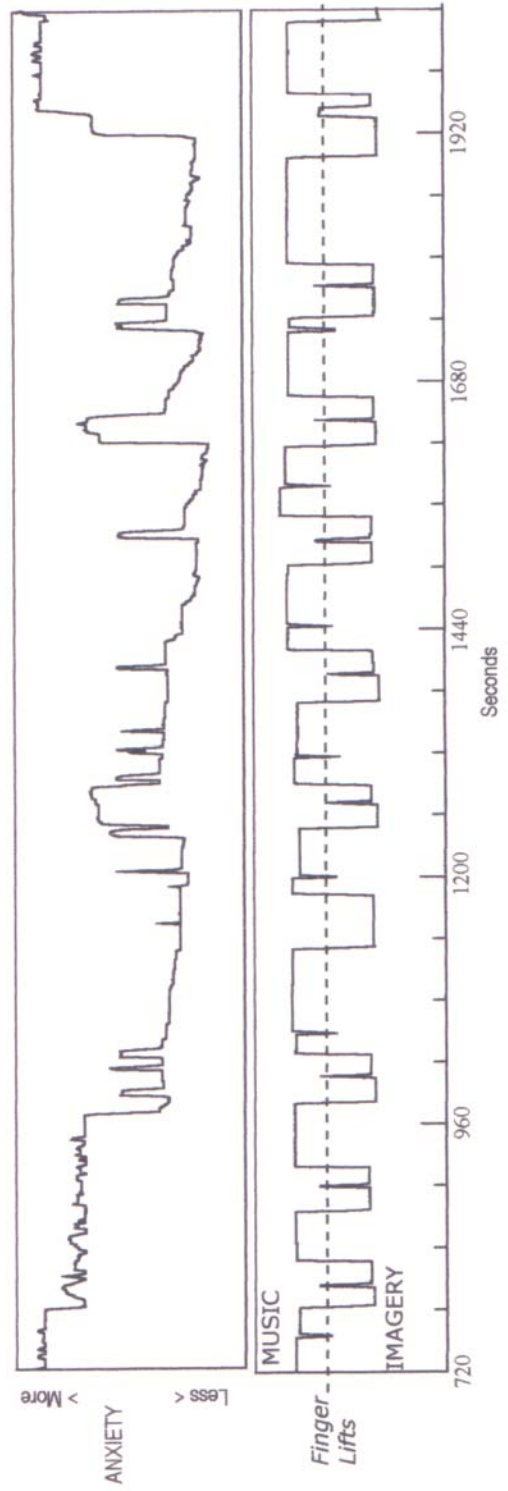
During the second session the level of anxiety remained lower during imagery on practicing guitar in front of friends and continued to lower until she fell asleep. Despite drifting in and out of sleep she retained a level of awareness to stay on task with lifting her right index finger and participating in in-vivo guitar playing and imagery. This is demonstrated by spikes in anxiety seen from second 960 through 1920. Levels of anxiety increased during the arousal imagery at second 1260 and 1620 in the second session and were immediately followed by the musical segments cueing relaxation as demonstrated by the decreases in level of anxiety following the high anxiety arousing imagery, for example at second 1260 and 1620. The dramatic increase in anxiety at second 1920 during MASD session two occurred during imagery on singing the first note of the song during performance which indicates a stronger level of anxiety associated with this image.

Full participation in the training did not occur until the music desensitization in session two. The high scores, averaging a 7 throughout both sessions, demonstrate lack of participation in the progressive relaxation. A six or seven on the observed anxiety rating scale indicated unrelaxed posture and excessive movements without a twenty second segment of time completely still. In this case excessive movements included crossing and uncrossing legs, scratching the head, leaning forward on both legs and moving head up down or side to side, and adjusting the body back and forth from a relaxed position leaning against the back of the chair to an unrelaxed position sitting up straight on the edge of the chair. Results for this participant in guitar performance indicate minimal improvements. If the participant had been fully engaged in the abbreviated relaxation training then greater relaxation may have been reached during the music desensitization stage and the results of the guitar competency, observed level of anxiety, and self-report may have demonstrated a greater improvement, thus effecting the statistical results on the effectiveness of MASD.

Despite rating her preference at 7 for the musical selection used during MSAD, in written remarks she reported not liking the music. This may have hindered her ability to relax. In future studies using researched musical selections, researchers may want to screen participants to determine individuals who may have a negative association or overt disliking of the music, as is done in music therapy practice.

Music as a cue for relaxation definitely transferred to performance and experienced anxiety during performance. However, this only slightly occurred. Reports of wandering

thoughts and inability to concentrate may be due to levels of stress at the time of the sessions or side effects from medication use. Given the high level of anxiety and lack of concentration for this participant the changes, such as experiencing much anxiety and then falling asleep, definitely indicate the powerful effect of music as a cue for relaxation and reciprocal inhibition of anxiety.

Case Study Four

Case study four was a music therapy student over 25 years old with 8 months guitar experience and an average practice time of 2 hours per week. At the time of the study she was on medication.   Previous relaxation training included reading articles on progressive relaxation and guided imagery and performing these techniques on students for a school project.

Self-report data indicated an increase in perceived levels of anxiety during performance and a decrease during MASD (see Table 10). Her guitar anxiety score slightly decreased and performance slightly improved. Her score for observed anxiety during desensitization remained the same even though she had a large improvement in relaxation during abbreviated progressive relaxation in the second session.

Table 10

Case Study Four

	Dependent Variables		
Guitar Performance	Guitar Checklist	Guitar Anxiety Rating Form	Likert Scale
Pre	5	93.84	7
Post	7	90.9	9
MASD	Abbreviated Progressive Relaxation Score	Total Number Finger lifts During Music Segments	Average Anxiety Score in Desensitization**
Session 1	41.16	22	100.8
Session 2	28.57	22	103.46

**Scores on the CRDI are considered equivalent when within ten degrees of each other.

During session one her highest levels of anxiety occurred during the guitar anxiety imagery in section one and section two as demonstrated by spikes in anxiety that occur at the same time as the imagery. In session two, graphic analysis of relaxation indicated levels of anxiety not reflective in the average anxiety score. As seen in Figure 4 she experienced dramatic increases in anxiety in two notable sections of session two that did not occur during session one. In the first section the time for complete visualization of the imagery took longer than usual as seen in the bottom portion of the graph on session two at second 720 and at second 1080. The first image was related to playing the last note of the song during guitar performance and the second was practicing alone in a practice room two days before the performance. In written comments following the session she reported not usually using a practice room and as a result the image was difficult to visualize. In the future, including a reference to this possibility while completing the hierarchy with students may prevent this problem from occurring.

Several reasons may occur for her developing more anxiety during the second sessions. One may be effects from her medication. Another reason may be minimal guitar experience coupled with her age. She had played guitar for seven months and age has a large effect on performance that is confounded by experience playing guitar (see Table 2). A person with several years of experience when playing guitar may have experienced dramatic increases whereas an older individual over twenty-five years with minimal experience, as in this case, would not. An additional reason may be the observation of relaxation induced anxiety since this occurred during session two.

Despite increases in anxiety the music cued relaxation and inhibited large amounts of anxiety associated with these images as can be seen during the musical segments in Figure 4 session one at second 1240, 1390, 1600, 2415, 2520, and 2640 and in session two at second 840, 1200, 2200, and 2580. In final written comments following session two she stated, "It was very relaxing visualizing practice and performance situations with music interspersed. In fact I was so relaxed I forgot to lift my finger during the music."
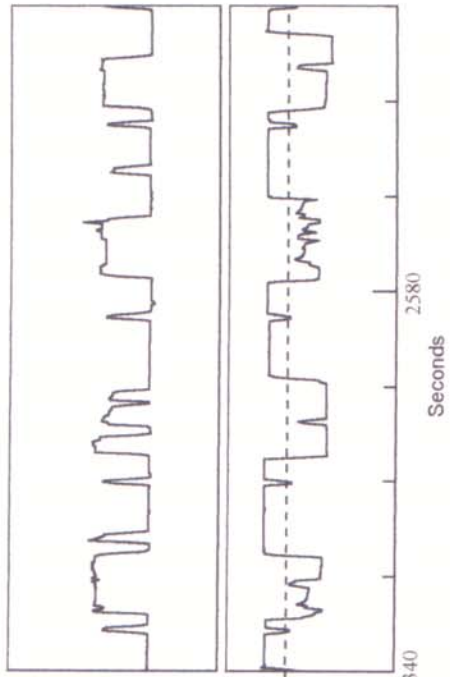
Figure 4. Graphic analysis of anxiety in session one and two during MASD desensitization for case study four.
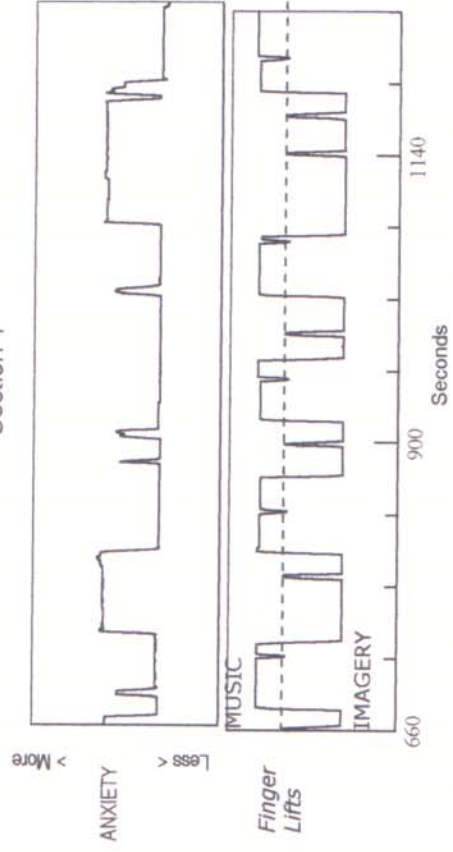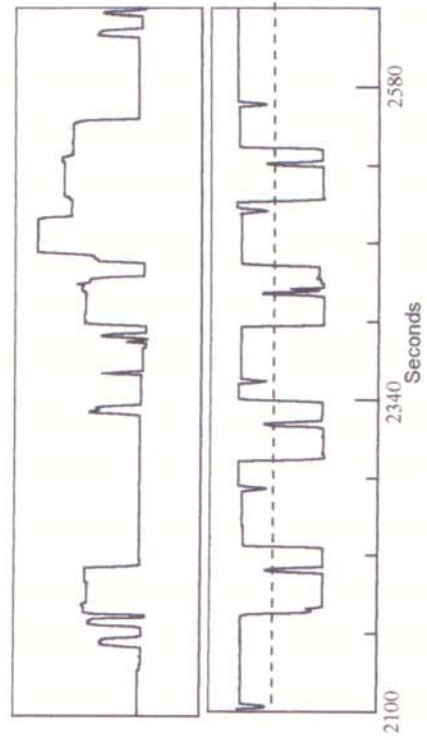
Case Study Five

Case study five was a music therapy student under 24 years old who had 3 years experience playing guitar and an average practice time of 2.5 hours per week. She was not on any medication at the time of the study and had no previous relaxation training.

Self-report data during guitar performances indicate a slight decrease in perceived anxiety. This decrease is consistent with, 1) a decrease scores on the guitar anxiety rating form, 2) a large improvement on the guitar checklist from 7 to 11 out of 13, 3) decreases in anxiety from the first to second session during progressive relaxation, and 4) an increase in the number of finger lifts indicating her perception of complete relaxation (see Table 11).

Table 11

Case Study Five

	Dependent Variables		
Guitar Performance	Guitar Checklist	Guitar Anxiety Rating Form	Likert Scale
Pre	7	66.7	7
Post	11	56	6
MASD	Abbreviated Progressive Relaxation Score	Total Number Finger lifts During Music Segments	Average Anxiety Score in Desensitization**
Session 1	35.12	11	86.52
Session 2	26.19	17	89.11

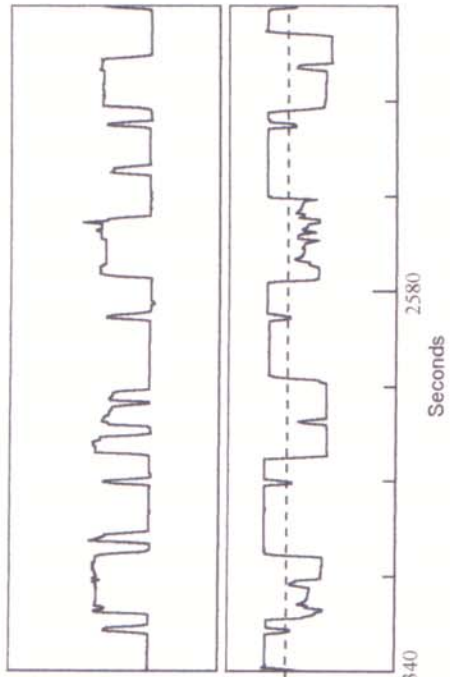**Scores on CRDI are considered equivalent when within ten degrees of each other.

Figure 5. Graphic analysis of anxiety in session one and two during MASD desensitization for case study five.
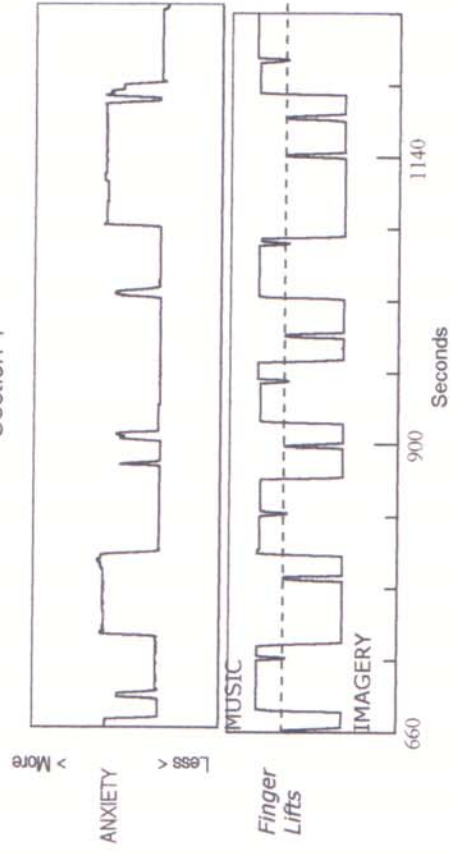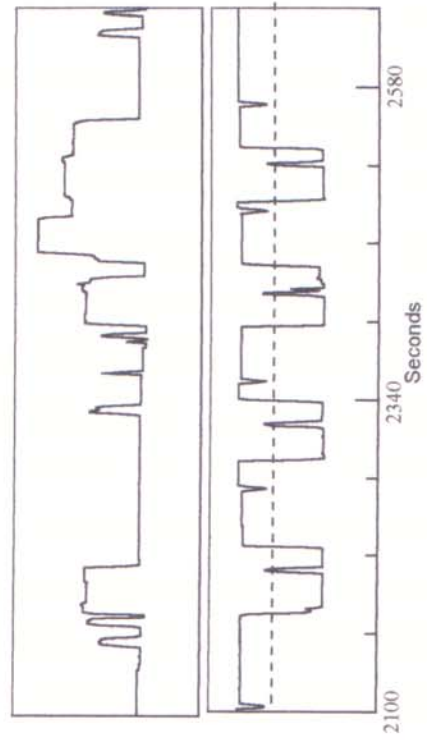
SESSION ONE

Section 1　　Section 2

SESSION TWO

Section 1　　Section 2

ANXIETY

More
Less

Finger
Lifts

MUSIC

IMAGERY

Seconds

1140　1380　1620　2340　2580

660　900　1140　2100　2340　2580

While her average score during desensitization remained the same, graphic analysis showed a marked decrease in anxiety jumps and a large increase in number of finger lifts during session two, indicating levels of complete relaxation that she did not perceive during the first session (Figure 5). During both sessions increased anxiety occurred during the imagery segments. Immediately following the imagery the music functioned to cue relaxation as seen in session one and session two (see Figure 5). Following session one she stated, "I feel more tense than I did because after I started getting anxious I couldn't relax and so each on built on the one before it. I was very relaxed at the beginning though. But it also made me frustrated when I couldn't relax."

This exemplifies a limitation of group sessions. Building anxiety throughout session one occurred since the anxiety imagery continued to be presented to continue with group progress even though she wasn't completely relaxing following the imagery. Despite her frustration during session one she stated she was less anxious during session two and her scores on the guitar checklist demonstrated a dramatic improvement and her guitar anxiety rating successfully decreased.

Case Study Six

Case study six was a music therapy student under 24 years of age with 7 months playing experience and an average practice time of 2 hours per week. She was not on any medication at the time of the study and reported no previous relaxation training. In written comments following desensitization she stated that she does not usually feel anxious when only imagining guitar performance. This was substantiated by her self-report on the Likert scale throughout all of the desensitization sessions, which she rated at a level of one for anxiety experienced when thinking about guitar performance. The inability to feel anxiety when thinking about the feared object was identified by Wolpe (1969) and he suggested in vivo desensitization was one solution to the problem. In this study in-vivo desensitization consisted of guitar hand playing positions during the guitar anxiety imagery segments. It is difficult to determine if observed levels of arousal seen in Figure 6 are due to the anxiety imagery or frustration with the inability to experience the anxiety when imagery is presented.

Figure 6. Graphic analysis of anxiety in session one and two during MASD desensitization for case study six.
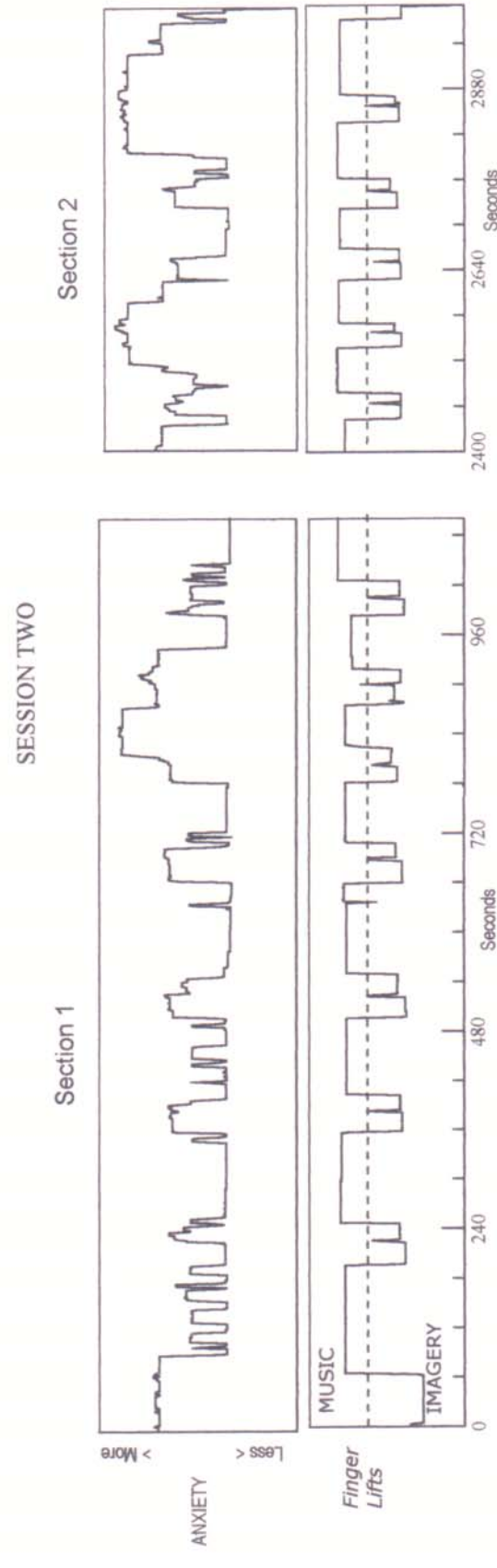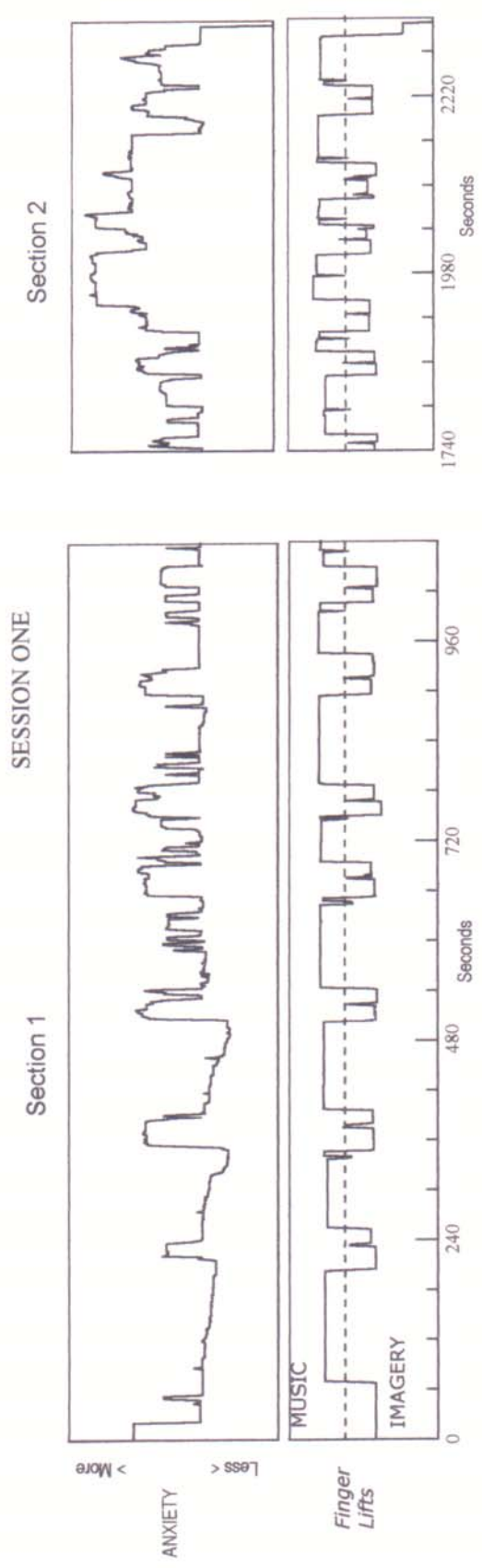
Self-report data during the guitar performance indicated a decrease in perceived level of anxiety following the second performance. This result is consistent with a decrease on the guitar anxiety rating form and a slight improvement on the guitar checklist. However this is inconsistent with performance during MASD in which every score rose in the second session (see Table 12). The increase in anxiety began during progressive relaxation, which indicates that that it was not due to the music and desensitization. She participated in training in the first MASD session, however during the second session her progressive relaxation score indicated minimal involvement. The decreased number of finger lifts and increased level of arousal during desensitization indicated her inability to attain a relaxed state, which is not indicative of whether or not she participated in the music desensitization stage. Her progressive relaxation score, six, indicated no segments of time longer than twenty seconds without movement unrelated to relaxation. Scores of six and seven indicate movement in the individual, in this particular case crossing and uncrossing legs, shrugging shoulders, itching or adjusting body, and rolling the head from side to side. These behaviors indicated that the participant was not engaged in relaxing and this may have affected her ability to relax during the MASD ultimately affecting the results of the dependent measures taken during her guitar performance.

Table 12

Case Study Six

	Dependent Variables		
Guitar Performance	Guitar Checklist	Guitar Anxiety Rating Form	Likert Scale
Pre	11	74.5	5
Post	12	68	2
MASD	Abbreviated Progressive Relaxation Score	Total Number Finger lifts During Music Segments	Average Anxiety Score in Desensitization**
Session 1	34.63	16	94.27
Session 2	61.5	2	141.52

**Scores on CRDI are considered equivalent when within ten degrees of each other.

In the first section of session one dramatic decreases in anxiety occurred with the onset of every musical segment suggesting that the music segments were cueing relaxation (see Figure 6). However, she reported in her written comments following session one that it was difficult to focus on relaxing since she was picking apart the music. The only indication of her reported difficulties in relaxing during the first session are the lack of finger lifts during several musical segments, as seen in section one. Finger lifts occurring during section two of session one communicated her self-perception of relaxation however her observed behavior and movements indicated otherwise.

Problems with relaxing in the second session may have been due to the inability to completely relax during the progressive relaxation. Her report after session two that her chair was extremely uncomfortable may have been a major interruption on her focus and hence her ability to find a relaxed position from which she could continue to relax. In both sessions anxiety increased at the end of the sessions during the most anxiety provoking imagery. Music listening decreased the level of anxiety as seen during the musical segments of both section twos, however enough time was not given to reach a complete state of relaxation.

Based on guitar performance dependent measures, MASD was successful in decreasing anxiety and improving performance. However it is interesting to note that this occurred despite her lack of full relaxation in session two. Had she not attended session two she may have still scored similarly during guitar performance, suggesting that her optimal level of arousal and relaxation for performance may have been reached following one session of MASD.

Summary

In summary, results indicated that there was a significant difference on guitar competency scores between the control and experimental group, with greater increases in the experimental group. While there was no significant difference between groups on the guitar anxiety rating form and the self-perception Likert scale, further analysis indicated that a significant decrease in anxiety occurred from pre to post test on the guitar anxiety rating form. While no significant difference was found on the Likert scale for the experimental group there was a significant decrease on self-perception of anxiety in the control group. Measures taken during the MASD sessions indicated there were significant decreases on perceived guitar performance anxiety from the first to second session. In addition, case studies and analysis of experimental group participants indicated many trends seen in Table 13.

Table 13

Summary of Experimental Participant Results in MASD

Summary of Results of MASD Sessions
▪ Average preference for music during MASD was an 8 on a 1 – 10 Likert scale with a range from 6 – 10.
▪ Number of participants inconsistently raising the right index finger was 7 out of 10, 70%.
▪ Number of participants not completely participating in desensitization was 4 out of 10, 40%, and the number not completely participating in the abbreviated progressive muscle relaxation was 2 out of 10, 20%.
▪ Number of participants having trouble clearing thoughts was 6 out of 10, 60%. Problems clearing thoughts were reported in written comments as the following: 1) picking apart the music (1 student)   2) thinking of things needing to be done (3 out of 10 participants)   3) frustrated with not being able to relax (1 student)   4) getting lost in the music and forgetting the finger lift (1 student)   5) something always itchy or scratchy and increasing throughout the session (1 student)
▪ Number of participants with an increase on the guitar competency checklist was 8 out of 10, 80%.
▪ Number of students with a decrease on the guitar anxiety rating form was 8 out of 10, 80%.

CHAPTER FIVE
DISCUSSION

Guitar Performance

The primary purpose of this study was to investigate the effect of music as a cue for relaxation during systematic desensitization on guitar performance for music therapy and music education students. The effect of MASD was measured by results on guitar competency, level of anxiety during performance, and self-perception of anxiety during performance between a control group receiving no treatment and an experimental group receiving MASD. Results indicated that improvement on the guitar competency checklist was significant between experimental and control groups, with greater improvement in the experimental group. In the experimental group 80% of the participants demonstrated an improvement on the guitar competency checklist. While there was no significant difference between groups on level of anxiety on the guitar anxiety rating form, *ex post facto* analysis indicated that, 1) a significant decrease occurred between the pre and post anxiety levels in the experimental group and not the control group, with 80% of the experimental participants demonstrating a decrease in anxiety, and 2) scores from pre to post test on the self-perception of anxiety Likert scale indicated a significant decrease in the control group but not the experimental. These results suggest that MASD was an effective treatment for improving performance and decreasing anxiety.

The successful use of a relaxation training technique such as MASD on improving guitar competency in music therapy and music education students indicates that this may be a valuable approach to improve performance and competency of the students. Previous research has demonstrated that repetitive guitar performances will also improve performance. As a result, the

repetitive performance of each student in this study may also have had an affect on improving performance levels and MASD may have served to speed up or heighten that process. For music therapy students improved performance is important but decreasing observable signs of anxiety during the performance is essential to effective music therapy interventions. MASD significantly decreased levels of anxiety in this study. Using MASD may not only help therapy students decrease guitar performance anxiety but also improve the effectiveness of music therapy interventions. Future possibilities include instructing music therapy and education students on the implementation of MASD or the traditional systematic desensitization, with an emphasis on learning how to implement the technique for themselves at home during the class semester, such as making tapes or compact discs with progressive relaxation instructions and using a remote control radio to foster music and no music during desensitization. Wolpe (1969) demonstrated that self-administration of systematic desensitization could successfully cure fear or phobias. This could be incorporated as a project for students in guitar skill classes to 1) decrease performance anxiety related to guitar and thus improving competency, 2) develop self-awareness and vital self-management skills for their own anxiety, and 3) increase their knowledge on the application of relaxation techniques to use with future music therapy clients.

Previous research incorporating music in a coping model systematic desensitization procedure demonstrated no significant differences between groups, however music assisted coping desensitization was compared to a group receiving coping systematic desensitization. In the present study the MASD group was compared to a control group receiving no treatment. Future research comparing the method of MASD to a control group receiving traditional systematic desensitization is warranted. In essence research investigating the difference would really be determining if music as a cue for relaxation is more effective than positive imagery as a cue for relaxation. As Wolpe (1969) originally demonstrated, researchers should investigate the most effective cues for relaxation. Wolpe's studies resulted in the use of positive imagery, however researchers should continue his search for the best possible relaxation cues and not remain static with one method merely because it is the traditional route.

While results were positive for observed dependent variables in the experimental group and not in the control group this did not occur on self-report data. Results for the experimental group indicated no significant differences between groups from pre to post test. However the control group did have a significant change from pre to post test, indicating a confounding

variable affecting the self-perception of the control group. Variables ruled out as not statistically significant that may have affected this measure included differences on level of anxiety during the first performance between the control and experimental group. The only significant difference on variables between the control and experimental group found was years experience playing guitar, with the control group having more experience than the experimental. The researcher attempted to control for this variable by allowing students to select their own song for performance based on their perception of anxiety towards the song. However while perception of anxiety towards performance of a new song may be similar despite experience on the guitar, researchers have shown that perception of anxiety and self-efficacy towards the guitar in general is confounded by the number of years experience (Steptoe & Fidler, 1987). Craske and Craig (1984) have also shown that students with more experience playing guitar are most likely to have a higher self-efficacy towards performance and thus anxiety is more likely to be significantly altered since they have a greater previous experience and a priori comfort level with the guitar. Students in the experimental group with little experience and thus less of a chance to establish a priori comfort levels with practicing and performing on guitar would less likely be able to alter their self-perception associated with performance and thus less likely to demonstrate significant changes on self-perceived anxiety. Future researchers may measure level of comfort or level of self-efficacy related to guitar performance to determine differences in this area between control and experimental groups. In addition, having students rate their level of anxiety associated with performing the song they selected on a 1 – 10 Likert scale may help to determine if there was a significant difference in level of perceived anxiety each individual's song performed.

In this study observed responses were not statistically consistent with the self-report and cognitive responses. The occurrence of significant changes on some of the measures but not all of the measures falls in line with the dsynchrony of results in the three areas of Lang's model of anxiety. This indicates that the dysynchrony is not an indicator of poor results since previous researchers have shown and expect this occurrence to happen.

MASD Sessions

Despite the lack of significance on the self-report administered in the experimental group during guitar performance, significant results did occur on self-report measures taken during the MASD sessions. It appears likely that while the MASD sessions were able to alter self-report during the session, when participants are being conditioned to relax, that there was not enough

time to transfer to the guitar performance itself. One variable that may have been a limitation to greater transfer between the MASD sessions and performance could be the minimal number that were conducted, only two MASD sessions were implemented. Researchers investigating systematic desensitization and its variations typically conduct as much as eight sessions (Wolpe, 1969; Wardle, 1969; Reitman, 1997). Meanwhile, little research has been done on what number of sessions will produce desired results. Implementing research on only two sessions serves to determine 1) if there are individuals that could attain desired results after only a minimal time length of two sessions, 2) what variables may indicate the need for minimal sessions or the need for more sessions, and 3) the powerful effect of music as a cue for relaxation as a result of significant results after only two sessions of MASD. Examination of the six case studies indicate that two sessions can produce desired changes in behavioral anxiety responses and competency of guitar performance.

Information gained through case studies and participation in MASD provided many insights for the future application of MASD. Many issues arose that students could be educated on and researchers could further investigate in order to improve the effectiveness of MASD. At the beginning of the first session taking data on each individual's daily stress level may help determine reasons for variations in level of participation from session to session. In addition if conducting research on MASD as compared to another group it will help to determine group differences in level of anxiety prior to the intervention. Conducting MASD in a group format may require different instructions or changes in intervention than when conducting MASD with an individual. For example longer segments of music in the beginning of MASD may function to establish a full level of relaxation in more of the students. In the future students should be educated before the sessions that they may not reach complete relaxation and that if this happens to not feel frustrated or get upset because it is expected to happen when MASD is conducted in a group. This may prevent decreased concentration and frustration due to not being able to fully relax. In addition students could be presented an excerpt of the music listening to determine any negative experiences or overt disliking before beginning MASD sessions. When the guitar anxiety hierarchy is first presented to the students to rank levels of anxiety for each image extra emphasis should be placed on students communicating if images on the guitar anxiety hierarchy do not apply to them or if they are unable to visualize the image. If some students have problems visualizing images that others do not have a problem imagining then a new image could be

constructed to satisfy both students. If this is impossible the students should be educated that some of them may not be able to imagine all of the scenes and that this is okay just continue following the instructions. Confusion in one student on the music being used in MASD could be prevented from occurring again by educating students that the music used during MASD has no relationship to the song they are performing on the guitar. Finally, 70% of the students reported complete relaxation inconsistently with the observed levels of anxiety. While abbreviated progressive muscle relaxation may teach students how to relax, developing a definition of what fully relaxed should feel like may help students to correctly perceive and identify their own completely relaxed feelings.

The population in this study consisted of female musicians. Prior research has demonstrated that musicians and females are both affected more by music than nonmusicians and males. Future research on the effects of MASD in a different population group consisting of males and musicians will further determine its effectiveness.

The secondary purpose of this study was to examine the relationship between participation in MASD with guitar competency evaluations, observed anxiety, and self-perception of anxiety through observed levels of anxiety and relaxation during MASD sessions

Results of the observed levels of relaxation indicate that only 60% of the participants fully engaged in relaxation training. Discussion of these occurrences in the case studies illuminates the fact that the lack of participation throughout the entire MASD session may have effected the statistical outcome of the effect of MASD on guitar competency, observed level of anxiety, and self-perception during guitar performances. The fact that these participants did not engage fully in MASD decreased the likelihood for even greater significance. This fact lends support to the powerful effect of music as a cue for relaxation.

This brings up an issue mentioned in the review of literature discussing the difficulty in ascertaining the level of participation occurring in studies investigating the effect of relaxation techniques through pre and post self-report or physiological data. Lack of full participation would affect these study's results as it did in the present study. Future researchers should be careful in their use of pre and post self-report and physiological measures as indications of effective or ineffective relaxation techniques. One suggestion to circumvent this problem from continuing to occur would be to measure observed participation during relaxation training. While the scale used in this study may be too extensive and timely to implement, development of

a checklist indicating on or off task behavior for each participant using a time sampling procedure and indicating a criterion level that must be reached to indicate full participation may be vital to the validity and reliability of results which indicate effective or ineffective relaxation techniques.

In order to investigate the hypotheses of this study the researcher had to develop a scale to measure levels of anxiety and relaxation that would be specific in measuring relaxation training in MASD. Results of interobserver and interrater reliability of the $0 - 7$ scale for measuring level of anxiety during the abbreviated progressive muscle relaxation and desensitization indicate that it was easily administrable and reliable for measuring the level of anxiety and relaxation during MASD sessions. Problems encountered in establishing reliability centered on identifying relaxed versus unrelaxed postures and resulted in reliability at 84% during the progressive relaxation. Reference to Jacobsen's, Wolpe's, and Poppen's research served to resolve these issues. However, reliability on the CRDI dial one was 93% and dial two was 98%. Since reliability on the CRDI was strong, the lower reliability during the time sampling of the abbreviated progressive muscle relaxation may be due to the greater difficulty involved with each observer's ability to adequately recall the behavior observed in the previous time sample. Measuring continuous responses on the CRDI circumvents problems occurring as a result of inaccurate recall. Further reliability of this scale is supported by the consistency of the scale in measuring levels of increased arousal as they occurred during arousal segments of the desensitization sessions, shown in the CRDI graphs of the six case studies. Currently Poppen's BRS scale is the only scale developed to measure observed relaxation responses during relaxation training. Development of a scale in this study serves to provide a different approach to measuring levels of relaxation during training. The successfulness of the use of this scale in the present study indicates the potential the scale has for being a valid and reliable measure and merits further research.

The results of this study indicate that music as a cue for relaxation during systematic desensitization decreased anxiety related to guitar and improved guitar performance competencies in music therapy and music education students. Suggestions for future research on the effects of self-administered desensitization in music therapy and music education students during training may impact the development of other competencies and improve the quality of future music therapy practices. Valuable information of the effect of several variables on the

success of MASD is provided in this study. Future researchers may use the results as a guide on how to measure levels of relaxation during relaxation training and how to use music effectively as a cue for relaxation during desensitization of guitar performance anxiety.