Verbal and Imaginal Therapeutic Models in the Treatment of Music Performance Anxiety

by

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Abstract

An imagery-relaxation treatment and a rational-restructuring-relaxation treatment were compared for effectiveness in the treatment of music performance anxiety. Treatment consisted of five, one-hour, weekly sessions. The participants were nineteen musically trained volunteers who had a desire to reduce the anxiety they experienced before and during music performance. Anxiety was measured before and after treatment using a Music Performance Attitude Inventory and the State-Trait Anxiety Inventory. In addition, autonomic measures of heart rate, respiration, and right and left finger temperature were taken before and after treatment while the participant listened to a tape describing an anxiety-provoking music performance situation. Analyses of Variance were used to test for differences between the treatment groups.

It was hypothesized that the imagery-based treatment would prove more effective because imagery and music are both predominantly right cerebral hemisphere functions. The results failed to show a clear superiority of either treatment. The only significant between-group difference was a greater left hand temperature increase (a relaxation response) during the post-treatment assessment in the imagery group ($p = .02$). This finding was interpreted as showing that the imagery treatment produced greater right hemisphere relaxation than did the verbal treatment. Other results were also discussed.

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Anxiety is a common phenomenon which appears in everyday life in many forms, in many situations. If it is mild, it may facilitate the performance of the aroused individual through increased attention and motor responsiveness. But when anxiety is excessive, such that it inhibits optimal responses, it may result in a substantial impairment of important activities.

Anxiety may result from a number of factors; specific conceptualization of these factors depends on the theoretical framework within which one defines anxiety. In its most simplified form, anxiety can be seen as having two principle components: cognitive and physiological. In Schachter's (1966) conceptualization, an individual's autonomic arousal is understood by that individual in light of cognitive interpretations of the situation. This theory has been criticized as being an "incomplete and inaccurately simplistic explanation of emotional functioning" (Lazarus, 1976, p.55). Rather,

> Emotion is not merely a labelling of a reaction, but it is a reaction shaped by judgements about an event of significance to the person.... The first event in the sequence, under natural conditions, is the appraisal by the organism of some environmental situation which may in turn lead to a state of physiological arousal. Under certain circumstances - personal and situational - this initial arousal may be interpreted and redirected. (Spielberger, 1972, p. 269).

It is the point of reinterpretation and redirection that the potential for therapeutic intervention emerges.

Cognitive appraisal or attribution theories have recently become popular frameworks within which to conceptualize behavior therapy approaches, such as that employed by Meichenbaum and Cameron (1973) in the treatment of anxiety.

> In treating multiphobic clients, Meichenbaum and Cameron (1973), consistent with Schachter's (1966) theory, suggest that the client's fear reaction involved two major elements, namely, (1) heightened arousal (e.g., increased heart rate, rapid breathing, and bodily tension) and (2) a set of anxiety-engendering avoidant thoughts, images, and self-statements. (Foreyt and Rathjen, 1978, p. 207).

It is these two elements which are presently considered paramount. An avoidance of more complex and theoretical debates over the structure, functions and causality of anxiety is not a denial of their importance for a broad and complete understanding of the condition; rather, it is the present concern to define "anxiety" in understandable terms so that treatment can be appropriately conceptualized.

Anxiety has been categorized into two types, as described by Spielberger

and Gandry (1971), specifically, "state" and "trait" anxiety. Trait anxiety is created by an individual's appraisal of a given situation as dangerous or threatening. Such an appraisal is dependent upon attitudes, skills, personality dispositions, and experiences. Trait anxiety is a relatively stable, permanent characteristic. State anxiety is, "an emotional reaction or pattern of responses that occurs in an individual who perceives a particular situation as personally dangerous or threatening, irrespective of the presence or absence of objective danger" (Spielberger, 1972, p.489). State anxiety, then, is a transitory or temporary condition. The co-existence and interaction between state and trait anxiety can best be classified by an examination of the main assumptions of the theory, which are as follows:

" 1. for all situations that are appraised by an individual as threatening, an A - state (i.e. state anxiety) will be evoked;

2. individuals with high A-trait (i.e. trait anxiety) will perceive situations or circumstances that involve failure or threats to self-esteem as more threatening than will persons who are low in A - trait;

3. the intensity of the A - state reaction will be proportionate to the amount of threat that the situation poses for the individual;

4. the duration of the A - state reaction will depend upon the persistence of the individual's interpretation of the situation as threatening;

5. high levels of A - state will be experienced as unpleasant through sensory and cognitive feedback mechanisms;

6. elevation in A - state has drive properties which may be expressed directly in behavior, which may serve to initiate psychological defenses that have been effective in reducing A - states in the past;

7. stressful situations that are encountered frequently may cause an individual to develop coping responses or psychological defense mechanisms which reduce A - state by minimizing the threat." (Gandry and Spielberger, 1971, p. 69).

Spielberger, Gorsuch, & Lushene (1970) developed a psychometric instrument for measuring state and trait anxiety. The State-Trait Anxiety Inventory appears to measure anxiety - proneness in social situations. The measures correlate with each other, seemingly because both kinds of anxiety are generated upon cognitive threat to self-esteem or ego. Therapy, then, might most usefully emphasize learning to more adaptively evaluate the situation; this serves as a cue to use cognitive and physical coping skills.

Cognitive Behavior Therapies and Anxiety

Psychoanalysis, and later, Behaviorism, were long the two principle schools of therapy. This extreme and rather arbitrary differentiation of psychology into these opposing factions was to form the impetus for the growth of a group of therapies which would attempt to bridge the gap between the two parent schools. In 1956, Bruner, Goodman and Austin said that,

> The past few years have witnessed a notable increase in interest in and investigation of the cognitive processes that mediate between the classical 'stimuli' and 'response' out of which stimulus-response learning theories hoped to fashion a psychology that would by-pass anything smacking of 'mental'. The impeccable peripheralism of such theories could not last long.... The old image of the 'stimulus-response bond' began to dissolve, its place being taken by a mediation model (p. 106)

Behaviorists insist that they have never ignored the role of cognitions in human behavior (Wolpe, 1978). One of the first recognizably cognitive elements used within a behavioristic paradigm was the use of imagery in Wolpe's "systematic desensitization."

Imagery Techniques

This therapeutic approach, based on the idea of 'counter-conditioning', or 'reciprocal inhibition', involved the use of muscle relaxation in conjunction with the imaginal representation by the client, of some situation that

was anxiety-producing, in his or her life. The counter-conditioning concept follows from the idea that it is difficult to be anxious cognitively while physically being very relaxed. The cognitive rehearsal of dealing effectively with an uncomfortable situation innoculated the client against becoming anxious in the real situation. There are a number of advantages to imaginal procedures, as opposed to particularly in vivo techniques. In imagination, any scene can be experienced. This is important when exposure to the real feared situation is not presently possible, for whatever reason (e.g., fear of flying). There is also minimal discomfort, where exposure to the actual situation could be very uncomfortable.

The widely accepted legitimacy of this treatment model is evidenced by the large number of investigators and clinicians who have used it in the treatment of anxieties and phobias (see Gambrill, 1977). Imagery has also been found to be an important component in the self-instructional training of impulsive children (Meichenbaum,1977). Cognitive rehearsal in imagination has been found to be very useful for improving athletic performances (Suinn, 1972). Imagery has also been used to assist in the development of assertiveness (Kazdin, 1975).

There are many parallels to therapeutic techniques employing imagery. Daydreaming, which is often a rehearsal in fantasy of possible situations, what one could do, and what the outcome might be, is one example. In hypnotherapy as well, imagery is an important component, along with physical relaxation, in restructuring expectancies and interpretations of one's own behavior (e.g., Kroger and Fezler, 1976).

Verbal Strategies

In the 1950's, Albert Ellis developed Rational-Emotive Therapy. He suggested that it is not the external events or conditions which create

anxiety via a learned response, but rather of importance are the mediating events (i.e., irrational, self-defeating thoughts which occur between the activating event and the consequences). Ellis describes this as the A-B-C theory of the creation of anxiety and other negative 'emotional' disturbances; the Activating event does not create the Consequences, because only mediation by the Belief system of the individual is capable of shading the interpretation of the situation to generate psychological upset (Ellis, and Grieger, 1977).

In a recent article, Ellis (1977) discussed the primary hypotheses of Rational-Emotive Therapy. The role of the therapist in disputing these irrational beliefs and persuading clients towards more functional belief systems, is stated by Ellis:

> Because people frequently hold irrational, logically inconsistent, antiemprical, and absolutistic ideas, because these ideas tend to bring them needless self-defeating results, and because they do not accord with reality, a therapist or other helper or teacher can show them how their irrational beliefs do not hold up as true and demonstrate that their continuing to believe irrationalities will almost inevitably bring them gratuitous pain; and such a therapist or helper can often persuade them to change or surrender their irrational beliefs and the dysfunctional behaviors to which they contribute. Effective psychotherapy importantly includes the therapist's actively and directively disputing, challenging, and questioning client's irrational philosophies and persuading them to adopt less self-defeating beliefs. (p. 12-13).

Wolpe (1978) claims that cognitive intervention alone is not sufficient, that there are autonomic components which must be dealt with. In this vein, there have been several studies which have utilized a rational-restructuring paradigm (derived from Rational-Emotive concepts) in conjunction with muscle relaxation procedures (e.g., Germer, 1975; Grande, 1975). Systematic desensitization procedures have also been used (e.g., Russel, Wise, and Stratoudakis, 1976; Weissberg, 1974). These combined approaches not only provide some relief from tension in the immediate situation, but also build some practical, realistic techniques on two levels with which to battle anxiety

in actual situations. The important conceptualization on which these cognitive-behavior therapies are based is that the optimal therapy gives the client some means of dealing with anxiety or stress of any kind (e.g., via progressive muscle relaxation) while at the same time substituting coping skills for maladaptive thoughts. Both of these techniques are easily generalized to situations outside therapeutic contacts. Also, clients can use their own maladaptive behaviors and physiological arousal as cues to employ their coping skills. This gives the individual a feeling of self-control, and a feeling of control over the situation (Meichenbaum, 1973), both of which are important for the continuance of adaptive performance facilitated by an increasing self-confidence. Also important for each individual in treatment is that the coping skills can be tailored to his or her own peculiar needs. Generally speaking, the therapeutic paradigms popular in the early part of this century tailored the client's problems to fit the therapy.

The scope of cognitive behavior therapies is broad. Three of the most widely studied anxieties have been interpersonal or social anxiety, test anxiety, and speech anxiety. Interpersonal anxiety has been studied using cognitive-behavior therapy approaches, most studies using a Rational-Emotive therapy-based approach, systematic desensitization, sometimes RET with desensitization, and usually a no-treatment or waiting-list control group (e.g., Weissberg and Lamb, 1977; Newmark, 1974; Reister, 1976; Boutilier, 1977; Kanter, 1976; Grande, 1975). Most conclusions point to a greater effectiveness of the RET approaches, but all procedures were found to be better than no treatment.

Meichenbaum and Cameron (1974) cite several studies of the treatment

of speech and test anxiety. For example, in Meichenbaum's studies of speech anxiety, group treatments were conducted which "included progressive relaxation training, group hierarchy construction, imagery training, and group desensitization," in a comparison of "insight" therapy based on Ellis' Rational-Emotive approach, and systematic desensitization. "The major results indicated that the 'insight' approach was equally as effective as desensitization in reducing the behavioral and affective indicants of speech anxiety." In similar studies (e.g., Weissberg, 1975; Germer, 1975; Weissberr, 1974; Casas, 1976), Rational-Emotive approaches generally seem to be the preferred treatment of speech anxiety, over systematic desensitization, relaxation alone, and no-treatment or placebo control groups.

In the treatment of test anxiety, the effectiveness of different therapeutic approaches is less clear. Most studies have used Rational-Emotive approaches, relaxation procedures, and systematic desensitization, similar to those techniques used in studies of speech anxiety (e.g., Russel, Wise, and Stratoudakis, 1976). Generally, no treatment or placebo controls have been found to produce less reduction of test anxiety than the cognitive and behavioral approaches; further conclusions would be premature.

With regard to the overall effectiveness of cognitive behavior therapies, it is apparent that they are at least somewhat effective. But it would be unwarranted to conclude that they are better than purely behavioral or cognitive therapeutic approaches. Part of the inconclusiveness of the outcome research may be due to the inappropriate expectation by some experimenters that one treatment will be found to be most effective overall in the reduction of 'anxiety'. Perhaps a more realistic question to investigate would be, "Which therapeutic approach would be better for which particular anxiety?" A clearer understanding of this issue is beginning with the isolation by investigators of specific anxieties (e.g., test and speech anxiety).

During the everyday activities of human beings, there are many and varied demands made on the physical and 'mental' capabilities of every individual. Some tasks require skills quite different from those required by another task. For example, different behaviors and attitudes are needed in an academic situation than in a social situation, which are again different from the demands of many other situations. Writing a test and giving a speech are both verbally-dependent activities; this makes them different from situations involving non-verbal behaviors, such as athletic competitions or artistic performances. Of specific interest to the present study is the relationship of verbal and imaginal coping strategies to music performance and accompanying anxiety. An understanding of this issue is enhanced by an exposition of the human brain's two cerebral hemispheres.

Hemisphere Specialization

Two related avenues of thought, philosophy and psychology, have often utilized the apparently-natural dichotomies of rational-irrational, verbal-spatial, logical-illogical, scientific-artistic, concrete-abstract, and secondary-primary. It appears that the human cerebrum is so differentiated with the two cerebral hemispheres specializing in certain modes of thought and perception. The left hemisphere is specialized for verbal, analytical functions, while the right hemisphere is specialized in spatial, synthetic thinking; the left hemisphere operates along logical lines, and the right hemisphere operates appositionally (Bogen, 1969; Bogen and Bogen, 1969; Bogen, 1972; Kimura, 1973; Risberg, Halsey, Wills, and Wilson, 1975; Blakemore, Iverson, and Zangwill, 1972).

A number of investigations have dealt with the concrete measurable aspects of hemispheric function. Risberg, Halsey, Wills, and Wilson (1975) found a

significant difference in the amount of blood flow to each hemisphere depending on the type of task assigned: when the tasks involved verbal, logical processing, the blood flow was greater in the left hemisphere; when the mode of thought was spatial and holistic, there was more blood in the right hemisphere. This difference is also suggested by EEG studies, which indicate that when the tasks are verbal (including reading and talking) the right hemisphere had more alpha activity, with the left hemisphere being more active. Spatial tasks produced the opposite condition: the right hemisphere was active while the left hemisphere produced alpha waves, indicating a lack of processing involvement (Schwartz, Davidson, Maer, and Bromfield, 1973).

Further evidence for differential modes of processing and different specialization of function is found in studies of visual perception. Words are processed faster and more correctly in the right visual field (i.e., are left hemisphere processed) while spatial stimuli (such as faces) are processed faster and more correctly in the left visual field (i.e., are processed in the right hemisphere) (Hines, 1978; Geffen, Bradshaw, and Nettleson, 1972). For geometric figures, the left hemisphere is more efficient when the figures are simple, and the right hemisphere is better for processing more complex figures (Umilta, Bagnara, and Simion, 1978).

Related to spatial processing is imagery, which also seems to be a function of the right hemisphere (Gowan, 1978; Robbins and McAdams, 1974). Individuals who use imagery will also do well on spatial tasks (Hughes, 1976). EEG measurements show a suppression of alpha activity in the left hemisphere during imagery (Robbins and McAdams, 1974). It seems possible that imagery is very important as a means of cognitive processing, and is likely the cognitive equivalent of visual perception. The right hemisphere appears to be responsible for visuo-spatial, or imaginal, representation of the world's events and objects.

Further, "it is not just the type of perceptual stimulus or the mode of readout used which determines which hemisphere, but rather the type of information processing required to solve the given problem" (Nebes, 1974). The right hemisphere is adept at forming a complete stimulus from its component parts, for example, forming an image from the component parts - - people, objects, and spatial relationships. Imagery, then, is understood to be focused in the right hemisphere.

It seems relatively clear that music is the domain of the right hemisphere. The perception and generation of music have been studied from a number of viewpoints. Bogen (1969) cites several cases where the left hemisphere of an individual was functionally absent, without impairment to the quality of musical talent of that individual. One of the most striking of these cases is of the musician and composer Ravel,

> who was struck down at the peak of his career, ... his "analytic recognition" of musical notation, and piano playing to sight ... grossly disabled; on the other hand, melodic, rhythmic and stylistic sense were unimpaired, and playing or singing from memory was largely retained. ... His artistic sensibility did not seem to be in the least altered. (p. 145).

Similar cases of writers, painters, and singers are also cited by Bogen (1969), all having had some substantial injury to the left hemisphere resulting in aphasia and its concomitant disabilities, yet leaving artistic and creative talents unimpaired.

Using auditory tests, several investigators have concluded that, generally, the left hemisphere processes verbal and mathematical information, while the right hemisphere processes musical stimuli (Kimura, 1973; Sidtis and Bryden, 1978). Lateral eye movements have been found to be more to the left (i.e., dominance of the right hemisphere) for musical problems; verbal problems elicited more movements to the right (indicating left hemisphere activity) (Weiten and Etaugh, 1974). However, only melody, tone, and timbre

seem to be clearly localized in the right hemisphere (Kimura, 1973; Bogen, 1969; Bever and Chiarello, 1974). Musical chords seem to be perceived better by the left hemisphere (Taub, Tanguay, Doubleday, and Clarkson, 1974), and rhythm may be as well (Cook, 1974).

It has recently been found that the musical training of the subjects also affects the dominance of one hemisphere or the other for music. Non-musically trained subjects show greater left hemisphere activation while talking or doing some other verbal task, and greater right hemisphere activation with musical tasks, such as whistling or humming. The musically trained subjects, on the other hand, failed to show these differences with regard to musical activity; rather, when these individuals perceived musical stimuli or generated music themselves, both hemispheres were equally involved (Davidson and Schwartz, 1977; Bever and Chiarello, 1974; Hirshkowitz, Earle, and Paley, 1978). It has been suggested that with training, musicians come to analyze melody and tone not only in the holistic, synthetic terms of the right hemisphere, but also in the mathematical, sequential terms of the left hemisphere (Werner, 1974; Davidson and Schwartz, 1977). However, it has alternatively been demonstrated that experience has nothing to do with ear differences as such (and with hemisphere differences) in the perception of musical stimuli; rather, the more musical aptitude a person has, the more accurately musical stimuli are perceived (Gaede, Parsons, and Bertera, 1978).

The functions of the two hemispheres cannot be entirely distinguished, since there is communication between the two via a body of fibres called the corpus callosum. When this pathway is severed surgically, there are consistent deficits in performance on specific tasks; the two hemispheres can exist almost as two minds (Galin, 1974). Each hemisphere does seem to utilize its own perceptual and processing system (Dimond and Beaumont, 1972), although there is also

much overlap of function as well (Ferris and Dorsen, 1975; Levy, Nebes, and Sperry, 1971). The actual type and extent of interhemispheric communication remains unknown (Teng and Sperry, 1974).

The Present Study

This study is designed to assess the relative effectiveness of two cognitive therapies for the treatment of music performance anxiety. The techniques are intended to utilize primarily the right or the left hemisphere. A verbal coping procedure, patterned after Ellis' Rational-Emotive Therapy, will be compared to an imagery coping procedure. Both procedures will be used in conjuction with progressive relaxation and hierarchy desensitization.

Since it seems likely that both imagery and music are predominantly right hemisphere functions, it is hypothesized that the imagery-based procedure may prove the more effective in treatment of music performance anxiety. The rationale for this hypothesis is that the best therapy may be one which utilizes the same cerebral hemisphere as the one predominantly involved in the task. Since the rational-restructuring is a verbal therapy, it is aimed at the left hemisphere and should prove less effective than the therapy aimed at the right hemisphere. The treatments are the same in that they are both designed to teach the participants the use of coping strategies: relaxation, and either coping imagery or rational self-statements. Both groups will systematically desensitize themselves, learning to cope with feared situations in a hierarchy using relaxation and a cognitive strategy.

It has been a typical, sound experimental procedure to include a no-treatment control group, to ensure that any change from before to after therapy was actually caused by the treatment and not just due to expectation or other extraneous factors. However, several recent studies have concluded that the efficacy of psychotherapy is generally accepted, and that the need for controls in research

is now not as great as in the early investigations. For example, Parloff (1979) concludes that,

> A review of controlled studies permits the conclusion that psychodynamic therapies, client-centered psychotherapy, cognitive therapies, and behavioral therapies have achieved results that are superior to no-treatment procedures. (p. 298).

It has further been suggested that adequate control conditions are difficult to create, and that the most realistic type of research is that which compares the "best available" treatments (O'Leary and Borkovec, 1978). The present study can be conceptualized within this framework. It was thereby decided that comparing the imagery-relaxation treatment with the rational-restructuring - relaxation treatment would be appropriate, given that the hypothesis was in regard to which therapy would be more effective, not whether the therapies would be effective at all.

This choice of design was also dictated by the small number of available potential clients, precluding the addition of a third (no treatment) group.

Method

Participants

Twenty-three participants volunteered for involvement in the study, with four later withdrawing. (Three of them found they could not afford the time demanded; the other felt she could not be helped by the methods chosen). Participants were attracted from the Thunder Bay Symphony Orchestra and the Music Department of Lakehead University. All expressed the desire to become less anxious when performing musically, and all had some musical skill. Of the nineteen, seven were females and twelve were males. The average age was 25.8 years. Years playing the individuals' instruments ranged from one to thirty-one years, and instruments were of several kinds (e.g., piano, guitar, trumpet, timpani, flute, viola, violin, bass). Participants were randomly assigned to the two treatment groups: imagery-relaxation (n=9) and rational-restructuring-relaxation (N=10).

Apparatus

In the initial interview, demographic information was gathered, such as name, age, sex, etc. (see Appendix A). Also, handedness was evaluated by a Handedness Inventory (Oldfield, 1972) (see Appendix B). (Much of this information was used in post-hoc analyses, but was not of central interest).

The three types of measures of importance for this study were assessments of music performance anxiety, of state-trait anxiety, and of physiological arousal to a simulated music performance situation. A Music Performance Attitude Inventory was developed to assess the levels of music performance anxiety. This inventory consisted of 20 questions, most adapted from Speilberger's Test Anxiety Inventory. Each question was answered on a scale ranging from "1" (Almost Never) to"4" (Almost Always) (see Appendix C) .

Participants were also asked to fill out the State-Trait Anxiety Inventory (Spielberger, Gorsuch, and Lushene, 1969) (see Appendix D).

A Beckman Polygraph was used for obtaining the physiological measures. For measuring heart rate, a photo-sensitive plethysmograph was attached to the index finger. Half of the participants used their left finger, the other half their right (as randomly assigned, regardless of treatment group). The signal was fed into a voltage pulse pressure coupler (#9553).

For respiration, a strain gauge transducer was attached around the participant's abdomen. The signal was fed into the strain gauge coupler (#9872).

Skin temperature was measured using a thermistor coupler (#9558) with Yellow Springs thermistors. The middle finger of both hands was used for the skin temperature measure, for all participants.

Procedure

Before any therapy was begun, one other therapist was chosen so that experimenter bias and differential aptitude could be minimized. (Attempts were made to enlist additional therapists but only one could be recruited). The actual strategy of the sessions was discussed, and each therapist practiced several times with the other therapist acting as a "patient", using both treatment methods. A script (Ferguson, Marquis, and Taylor, 1977) was used for the relaxation training, to be consistent across therapists (see Appendix E). Participants were randomly assigned to the treatment groups. Each therapist had participants from each group. The author had 15 participants while the other therapist had four.

The therapy sessions were one hour per week for five weeks. Participants were asked as well to do fifteen minutes of "homework" per day (see Appendix F), of relaxation. After the second session, participants were asked to use their

cognitive coping strategy (either imagery or rational self-statements) in at least one other anxiety-provoking situation (not including music performance) before the next session.

Intake Session: The nature of the project was explained by saying:

> There have been a number of treatments developed recently for dealing with anxiety. Although all the methods have been shown to work, some methods may work better for some people than others. We would like to find if one works better for performing musicians than another. Your involvement in this project is entirely voluntary, and free of charge.

Participants filled out all the required forms as well as gave all other pertinent information. The general strategy, number of sessions, etc., was described.

Autonomic measures were taken, for pre-treatment measures, while the participant listened to a tape of a music performance situation (see Appendix H). Participants were introduced to this autonomic equipment with:

> This equipment is designed to show how your body reacts to stress. There is no electricity flowing into your body, and it will not be painful in any way. This equipment will only measure the tension in your body.

The function of each device (plethysmograph, etc.) was explained in simple terms. Initial baseline measures were then taken while participants relaxed with their eyes closed for 5 minutes before listening to the tape.

Session 1: In the first session, the relaxation training began, using the aforementioned script, which was read aloud by the therapist. The participant was asked to practice the relaxation at home for about fifteen minutes per day, using the general procedure outline he or she was given (see Appendix F). The use of a hierarchy was explained, and the individual was asked to consider (and possibly to write down) what should go into his or her hierarchy, before the next session. A typical hierarchy was used as a guideline for suggestions to the therapist (see Appendix I).

An explanation of the therapeutic approach to be used was given in this session. For the rational-restructuring group, the explanation was similar to the following:

> People often say things to themselves which make them anxious. Learning to say positive, rational things can help people become more comfortable and thereby perform better at whatever they are doing. For example, people often think that they must behave perfectly, or they will be disapproved of by others. It is better to understand that everyone makes mistakes, and worrying what other people think will only distract one from the task at hand. The goal of these sessions will be to teach you some of those rational thoughts you can say to yourself, to help you cope with anxiety.

For the imagery group, the explanation was:

> People often imagine themselves doing poorly in some situation; this makes them anxious. When they actually get into that situation, they have practiced mentally making mistakes and this makes them so anxious they actually do make errors. Learning to imagine oneself performing very well can help one to feel calm and confident when in the actual situation. Mental practice has been found to be almost as effective as actual practice, for example, in athletic events. With positive mental practice one can perform much better, since there is no anxiety about it. The goal of these sessions is to teach you how to imaginally prepare yourself to give your best performance.

Session 2: The hierarchy was established, consisting of approximately ten items, and relaxation was again practiced (in a form slightly abbreviated from the script). The first few items of the hierarchy were attempted while the participant was relaxed. Both imagery and rational-restructuring groups used coping strategies (as opposed to mastery strategies). For example, coping verbalizations for the rational-restructuring group were similar to the following:

> Imagine that it is one hour before you are to begin your performance. You can see yourself standing off stage, waiting; you look very nervous and jittery. You can see the people around you, the other musicians, and the other people. You notice your instrument, and you are holding your music.

> ... As you stand there, now you can see yourself becoming calmer, and more relaxed. You look confident, even though it is not long before you go on stage. Your face looks calm, and you seem sure of yourself. You look ready to give a good performance.

The groups were asked to think either in words or in images, depending on the group to which they were assigned.

When the participants were relaxed, those in the imagery-relaxation group were asked to signal with their finger if they could "see" the situation in the hierarchy clearly; the verbal-relaxation group was asked to verbalize what was going through their minds, as they thought about that situation. During the session, the verbal group was asked to say aloud the things they were thinking to themselves about the anxiety-producing situation, and then to say aloud the more adaptive things once these were learned. The imagery group was told to "see" themselves first being anxious and then coping, and becoming more confident and relaxed. The coping aspect of the imagery was believed to be equivalent to the replacement of rational verbalizations for irrational ones. Both allow the beginning of anxiety, through either dysfunctional verbalizations or imagery, then the dampening of that anxiety with the imposition of coping strategies.

Session 3: After the relaxation was accomplished, the hierarchy items were attempted, beginning with the last one which was successfully passed during the previous session. As many items as possible were attempted within this hour. (As a general rule, no more than four items were attempted during each hour). They were then reminded to do their homework.

Session 4: Almost all items in the hierarchy were covered by the end of this hour, such that there were only a few situations remaining which had not been dealt with. Participants were again asked to continue their homework (both physical and cognitive). No problems other than those of music performance (such as personal problems) were discussed in these sessions.

Session 5: In the last session, the final few items of the hierarchy were covered, and any problems of the therapy which had not already been covered were discussed.

Final Assessment: Subsequent to the final treatment session, the participants again filled out the Music Performance Attitude Inventory and the State-Trait Anxiety Inventory; the autonomic measures were taken again during a 5 minute baseline and while the participant was listening to the tape of the music performance. As well, participants responded to a few self-report questions regarding their involvement in the project (see Appendix J).

Treatment of Data

Scores for the Music Performance Attitude Inventory and for the State-Trait Anxiety Inventory obtained before and after treatment for both groups were analysed by 2x2 Analyses of Variance (Pre - Post X Group). Change scores (Pre - Post) were computed to examine correlations.

For the autonomic measures, raw scores were obtained from the polygraph records for each measure on the last minute of the 5 minute relaxation period (Baseline) and on the last minute of the music performance tape (Criterion). Separate 2x2 Analyses of Variance (Baseline - Criterion X Group) were calculated on the pre-treatment and post-treatment scores. In addition, change scores were derived from the difference between the baseline and criterion measures during both the pre- and post-treatment assessments for computing correlations. The differences between these change scores were also examined.

Results

The major changes in dependent variables pre- to post-treatment measures are presented in Tables 1 and 2.

Table I: Means and Standard Deviations of Autonomic Measures for Treatment Groups Before and During The Music Performance Tape

		Verbal		Imagery	
		Pre	Post	Pre	Post
Baseline HR	$\bar{X}$=	77.70	70.20	78.33	76.11
	sd=	16.79	13.29	10.76	9.77
HR Change	$\bar{X}$=	-0.20	0.50	2.22	0.78
	sd=	3.88	3.78	3.03	4.89
Respiration Baseline	$\bar{X}$=	15.80	12.40	13.22	13.00
	sd=	4.19	3.81	3.80	3.74
Respiration Change	$\bar{X}$=	2.90	2.20	2.00	1.89
	sd=	2.77	3.68	2.06	2.71
FTL Baseline	$\bar{X}$=	27.96	26.46	27.53	26.81
	sd=	1.96	2.40	2.55	1.77
FTL Change	$\bar{X}$=	0.08	-0.19	-0.33	-1.21
	sd=	0.58	0.78	1.09	0.98
FTR Baseline	$\bar{X}$=	27.62	26.72	29.50	27.86
	sd=	1.88	2.79	3.81	2.40
FTR Change	$\bar{X}$=	0.15	0.60	0.92	-0.91
	sd=	0.60	1.14	2.88	1.02

Table 2: Means and Standard Deviations of Self-Report Measures Taken Before and After Therapy

		Verbal		Imagery	
		Pre	Post	Pre	Post
MPAI	$\bar{X}$=	42.00	37.90	46.89	42.11
	sd=	12.23	12.22	13.96	12.22
State Anxiety	X=	38.90	32.30	39.89	32.56
	sd=	11.81	6.04	14.06	5.62
Trait Anxiety	X=	42.60	38.60	40.22	36.44
	sd=	12.27	9.17	11.05	9.95
General Benefit Reported	X=	-	2.80	-	2.44
	sd=	-	0.63	-	0.53
MPA Benefit Reported	X=	-	2.40	-	2.33
	sd=	-	0.70	-	0.50
Reduction of Other Anxieties	X=	-	2.60	-	2.11
	sd=	-	0.97	-	0.60
Rated Stress-fulness of tape	X=	-	1.80	-	2.00
	sd=	-	0.79	-	0.71
Rated Realism of tape	X=	-	2.30	-	2.89
	sd=	-	0.95	-	0.78
Desire of S to Be In Other Research	X=	-	3.30	-	2.78
	sd=	-	0.68	-	0.97

Note: None of the above differences are significant at $p. \leq .05$.

Significant differences between the treatment groups were found on none of the measures, with the exception of left finger temperature. During the post-treatment assessment session, the imagery-based treatment group's left finger temperature increased more than that of the verbal group, $F(1,17) = 6.35$, $p = .02$, while listening to the tape of a music performance situation. (See Figure 1). There were no significant differences between the groups' left finger temperatures in the pre-treatment session.

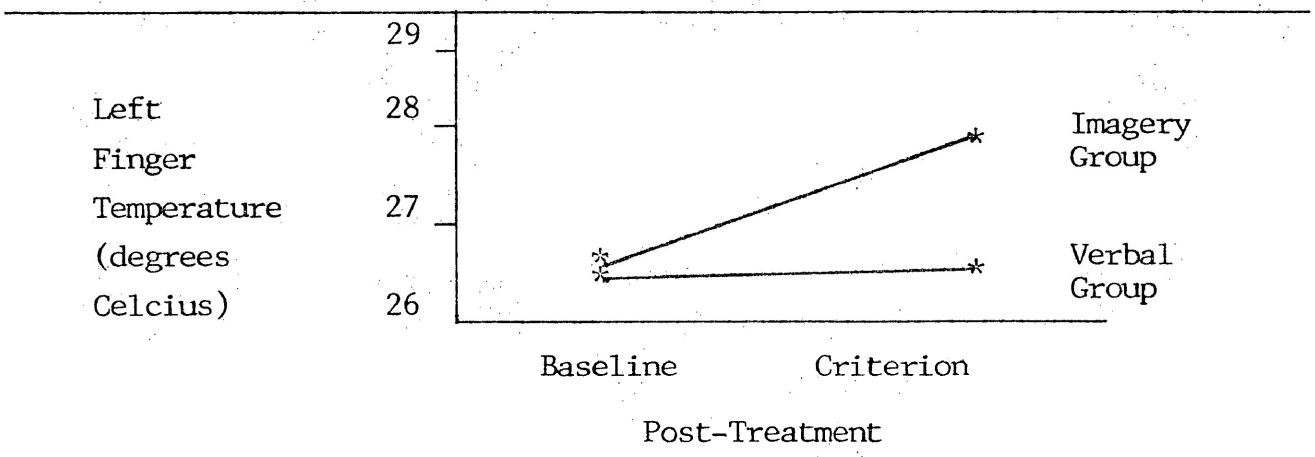

Figure 1. Treatment group changes in left finger temperature during the post-treatment assessment.

There were no differences between the treatment groups in pulse rates, respiration, or changes in right finger temperature. Changes in music performance anxiety as measured by the Music Performance Attitude Inventory (MPAI), and in state and trait anxiety, as measured by the

State-Trait Anxiety Inventory, as well as other self-report measures, were virtually the same for both groups (see Appendices K and L).

There was a significant decrease in Music Performance Attitude Inventory scores over all participants, from pre-to post-treatment ($\bar{X}_{pre}$ = 44.32, $\bar{X}_{post}$ = 39.9), $F(1,17) = 6.76$, $p = .05$. State Anxiety also decreased overall ($\bar{X}_{pre}$ = 39.37. $\bar{X}_{post}$ = 32.42), $F(1,17) = 7.97$, $p = .05$, as did trait anxiety ($\bar{X}_{pre}$ = 41.47, $\bar{X}_{post}$ = 37.58), $F(1,17) = 4.88$, $p = .05$.

The Music Performance Attitude Inventory was found to correlate highly with the scores on both state and trait anxiety before treatment, $r(17) = .395$, $p = .047$, and $r(17) = .456$, $p = .025$, respectively. Pre- and post-treatment scores on the MPAI correlated with each other, $r(17) = .401$, $p = .044$.

The tape used to create the simulated music performance situation did not produce substantial physiological arousal. Only respiration showed a significant change (increase) from baseline to criterion. In the pre-treatment assessment session there was a significant increase in respiration (across both groups), $F(1,17) = 19.59$, $p = .01$; a similar, though smaller increase was also seen in the post-treatment assessment, $F(1,17) = 7.98$, $p = .05$. The more a participant reported he or she found the tape stressful, the more likely that person was to have had an increased respiration rate in the pre-treatment assessment, $r(17) = .524$, $p = .011$.

While heart rate did not show an overall increase from baseline to criterion, either before or after treatment, there was a significant correlation between self-report of amount of music performance anxiety benefit from involvement in the project and heart rate change in the post-treatment assessment, $r(17) = -.538$, $p = .009$. Participants reporting large benefits from treatment tended to show a relaxation response (heart rate decrease) to the

tape, while those reporting less benefit tended to show a stress response (heart rate increase). A reported lessening of music performance anxiety was also related to an increase in heart rate during the post-treatment assessment smaller than that in the pre-treatment assessment, $r(17) = .403$, $p = .043$. Reported benefit from treatment did not significantly correlate with any other autonomic or anxiety questionnaire measures.

Generally, autonomic indices did not change significantly from pre- to post-treatment, with the exception of left finger temperature, which increased over all participants, $F(1,17) = 5.23$, $p = .05$. Although there were decreased heart and respiration rates, and changes in right finger temperatures, these were nonsignificant.

The questionnaire anxiety measures were not related to the autonomic measures, with one exception. The pre-treatment measure of trait anxiety correlated significantly with the change in temperature of the left hand from pre- to post-treatment, $r(17) = .444$, $p = .028$. The lower the pre-treatment measure of trait anxiety, the more likely a person was to show a greater increase in left finger temperature during the post-treatment assessment (from baseline to criterion) than was shown in the pre-treatment session. In other words, low trait anxious people showed a greater decrease in arousal to the music performance tape after treatment.

There were some sex differences in evidence. Although there were no significant differences between the males and females on the MPAI before treatment, post-treatment measures showed females scoring significantly higher than males, $F(1,17) = 10.63$, $p = .005$. The differences between the pre-and post-treatment scores within the male and female groups were not significant. Women also found the music performance tape more realistic than did the men, $F(1,17) = 10.37$, $p = .005$. Males were more likely than

females to have a drop in left finger temperature in the initial assessment, $r(17) = .391$, $p = .05$. Females had a higher right than left finger temperature in the baseline measures before treatment; for males, the reverse was true, $F(1,17) = 6.81$, $p = .018$.

There was one significant difference between the two therapists' groups. The respiration of the second therapist's group decreased more than that of the other therapist's group during the post-treatment assessment, $F(1,17) = 4.37$, $p = .052$.

Age correlated positively with left finger temperature in the pre-treatment assessment, $r(17) = .548.$, $p = .008$. There was also a positive relationship between age and a decrease in respiration during the pre-treatment assessment session, $r(17) = .391$, $p = .049$.

78.5% of the sample were right-hand dominant; 21.5% were left-hand dominant. There were no significant differences detected on any variables, between left and right handers.

Discussion

The hypothesis that the imagery-based treatment would prove more effective than a verbally-based treatment in the reduction of music performance anxiety was not clearly supported. There were no differences between the treatment groups on the Music Performance Attitude Inventory, the State-Trait Anxiety Inventory, or post-treatment rating of treatment benefit. Nor were there any group differences in respiration, heart rate, or right finger temperature responses to the music performance tape. However, one measure did differentiate between the groups, suggesting some important treatment differences.

It was found that the imagery-based treatment group had a larger increase in left finger temperature than did the verbally-based treatment group during the post-treatment assessment, while listening to the music performance tape. Since finger temperature increases with relaxation, i.e., with lowered arousal, and assuming that the left finger's responses are controlled by the right hemisphere, it can be inferred that the right hemisphere of the imagery group became more "relaxed" than did the right hemisphere of the verbal group. In other words, the imagery treatment may have directly modified processes in the right hemisphere which underlie music performance anxiety. The imagery-based treatment was designed to assist the right hemisphere in making a non-anxious response to stress. This was done by training the participants to involve the right hemisphere in an activity (imagery) which could serve either to distract the right hemisphere from making an emotional response, or to itself serve as a means of re-interpreting the situation so that an emotional response was not likely.

Left finger temperature was also related to trait anxiety. The less trait anxious a person, the more likely he or she was to increase in left finger temperature (i.e., respond with a non-stress response) after treatment. A median split analysis revealed that during the post-treatment assessment, the low trait anxious group increased their left hand temperature more than the high trait anxious group. In other words, the low trait anxious participants showed more evidence of relaxation while listening to the music performance tape.

Similar results have been found in other studies. Test anxious subjects, while listening to a tape of a test situation, had a greater drop in left finger temperature than in right finger temperature. Trait anxiety was found to correlate with a larger decrease in left finger temperature. (Jamieson, Ghannam, and Papsdorf, Note 1). In another study of anagram-solving behavior, it was again found that there was a greater drop in left hand temperature than right-hand temperature. It was suggested that, "the greater drop in temperature for the left hand may be indicative of greater involvement of the right hemisphere which is generally regarded as more 'emotional' than the left" (McCann and Papsdorf, Note 2). This suggestion is supported by other research into the differential responsiveness of the hemispheres to stimuli. Schwartz, Davidson, Maer, and Bromfield (1973) found that both spatial and emotional questions elicited more eye movements to the left (indicating right hemisphere activation) than to the right. There are more eye movements to the left when individuals are under stress than to the right (regardless of question content), indicating greater right than left hemisphere activation during emotional arousal (Tucker, Roth, Arenson, and Buckingham, 1977). Also, the emotional content of human voices is perceived better by the left ear than

the right (Carmon and Naschon, 1973). It can therefore be suggested that for the imagery group of the present study, the emotionality of the right hemisphere was decreased, as indicated by an increased left finger temperature.

The other autonomic measures, while failing to discriminate between groups, did show some significant relationships with other measures. The finding that respiration correlated with the perceived stressfulness of the baseline tape of the music performance situation indicated that increased respiration and the subjective perception of the environment as stressful were directly related. It is also interesting that a decrease in heart rate and the participants' self-reports that they benefitted from participation in the study were significantly related. This may be due to a perception by the participant of his or her heart rate as being lower than before treatment, and thereby feeling relaxed; they may then have attributed this to treatment benefit.

The self-report measures failed to discriminate between the treatment groups. The Music Performance Attitude Inventory, which was developed for this study, was used to assess before- and after-treatment levels of music performance anxiety. It failed to differentiate between groups, although scores did decrease significantly after treatment. The participants generally reported at least "a little" benefit from involvement in the study, suggesting that there is some value in the therapeutic contact given. This is also suggested by the significant decrease in state and trait anxiety scores after treatment. However, it would be inappropriate to conclude from this that treatment was indeed effective, since there was no control group.

Sex differences were found on some variables in the present study. Females showed a lessening of music performance anxiety as measured on the MPAI, and they also perceived the baseline tape as being more realistic than did the males. These two factors may be similar in that they both may be

susceptible to the Hawthorne effect, i.e., females may be more likely than males to be influenced by experimenter expectation. Women also seemed to be less right-hemisphere activated under stress, as indicated by the finding that males were more likely to have a drop in left finger temperature in the initial assessment (indicating right hemisphere arousal); it appears that females began the study with a lower right than left hemisphere arousal. Females seemed to maintain roughly the same comparative levels of hemisphere arousal from pre- to post-treatment, while males seemed to react more strongly to the stresses of the experimental situation. There is much literature to suggest that females and males are not lateralized in the same way. Adult males in one experiment performed worse on a motor task with the right hand than with the left, with concurrent verbalizations; however, the females' performance while verbalizing was unaffected (Johnson and Kozma, 1977). It was believed that the poorer right hand performance of the males when verbalizing was due to interference with right-sided motor control by the left hemisphere, indicating that verbal and right-sided motor control are both in the same (i.e., left) hemisphere. For women, it was suggested that their language functions were less clearly lateralized, since their right hands' performance was not influenced by verbalizing. Males seem to be better than females on certain visuo-spatial tasks (Kimura, 1973). This may be due to the finding that males are lateralized for non-linguistic-spatial processing by the age of six years; females are bilaterally represented until approximately thirteen years of age, when the right hemisphere becomes the central locale for spatial perception and processing, and this may have developmental implications (Witelson, 1976). Therefore, it seems that females are less clearly lateralized, either for verbal or spatial functions. The findings of this study

would concur with those conclusions, since the only experimental variable which showed any discriminative ability (left finger temperature) showed that females seemed to be less clearly laterally responsive autonomically than were males. These suggestions must be considered in light of the heterogeneity of the groups involved. For example, on the whole, the age of the women was slightly greater than the age of the male group ($\bar{X}$ women = 28.43; $\bar{X}$ men = 24.33). This difference, together with the small sample sizes (7 women, 12 men), would suggest that the sex differences found should be viewed as tentative.

The finding that the group of one therapist had a larger decrease in respiration during the post-treatment assessment than did the group of the other therapist, may be the result of a greater emphasis on breathing by one therapist than the other. The groups did not differ on any other measures of treatment effectiveness.

It appears that the older subjects were able to control their breathing better than were younger musicians in the group. This may be a learned response, since many people believe that one can calm down a bit by taking a deep breath. Also, musical experience was closely related to age, such that the older participants typically had more experience. Control of respiration may improve with experience and thereby with age.

The population of the present study had a larger proportion of left-hand dominant people (21.5%) than is found in the general population (5-10%) (Beaumont, 1974). Contrary findings were presented by Oldfield (1969), who found no greater proportion of left-handers amongst musicians than in the general population. However, it can nevertheless be suggested that handedness and its related hemisphere lateralization could be related to involvement in the arts, including music. Since handedness is controlled by the contralateral

hemisphere, one could suggest that being left-handed would predispose one to being better at tasks involving the right hemisphere. Although in the present study there were no differences on any variables, it has been found that for right-handers, degree of handedness was related to expressiveness, rhythmic accuracy, technique, and overall musicality; right ear dominance for rhythmic stimuli was related to dextrals' academic performance (Cook, 1974). For left-handers, few conclusions could be drawn. This may be due, at least in part, to the possibility that left-handers are not all lateralized in the same way. In other words, some sinistrals may be left-hemisphere lateralized for speech, as are right-handers, but some may be equally lateralized while others may have reversed lateral-specialization. Sinistrals have been found to score higher on the performance subtests of the WAIS than dextrals, and both groups scored the same on the Verbal subtests (Miller, 1971). However, it has also been found to the contrary, that while both groups scored the same on the verbal subtests, left-handers were found to score more poorly on the Performance subtests (Levy, 1971). It has further been suggested that the verbal centers of the sinistral are located not only in the left hemisphere but also in the right (Levy, Nebes, and Sperry, 1971; Dimond and Beaumont, 1972; Dimond and Beaumont, 1974). It seems then, that sinistrals are less clearly lateralized than dextrals (Hecean and Sanguet, 1971; Zangwill, 1969). The roles of the specific hemispheres in hand function may depend on the nature of the task; in other words, it may be that one hand is directed by one hemisphere for one skill or aspect of a given skill, and is directed by the other hemisphere for another skill (Dimond and Beaumont, 1972), which could relate to hemispheric involvement in the actual playing of a musical instrument. Specific handedness may not be significant in music performance.

There were a number of observations made throughout the study that are of clinical and theoretical interest. In construction of the music performance hierarchies, there were a number of commonalities among individuals. What made a music performance situation worse was any combination or number of the following: (1) if friends were watching; (2) if other musicians, especially who played the same instrument, were watching; (3) if the music was not very familiar; (4) if it was a solo performance rather than a group performance; (5) if it was an audition rather than just a performance; (6) if family was watching; (7) if the audience was large or very knowledgeable; (8) if the music was classical rather than folk, rock, or blues; (9) if the instrument was borrowed rather than one's own.

During the project it became evident that the processes of the two therapies chosen were actually quite different from one another. The most obvious difference, and perhaps the most critical in terms of therapeutic effectiveness, was that the verbally-based therapy (based on Rational-Emotive therapy) required much more active involvement by the participant, whereas the imagery-based therapy was much more dependent on the therapist to structure the therapy situation by developing the images of the participant for a given music performance situation. The imagery technique was much more experiential, compared to the verbal procedure which was more confrontive, active, directive, and non-experiential. Also, the imagery technique proceeded at a more regular pace, since it took approximately the same amount of time to master each music performance situation in imagination. For the verbal group, the first few items of the hierarchy took longer than the last few items, because of the amount of initial learning and understanding required of the 'philosophy-of-life' approach of Rational-Emotive therapy, before any items could actually be conquered. The components of the situations of the verbal group's

hierarchies which were responsible for anxiety were the same in all situations, by R.E.T. definition, whereas for the imagery group each situation was different, (although there were some similarities over situations for individuals). Follow-up research would be useful, since it is suspected that the verbal group will maintain benefits longer than the imagery group because of the broad applicability of R.E.T. and its 'philosophy-of-life' approach.

One significant observation was that often subjects in the verbal group would speak of how they could "see" themselves in the situation described in their hierarchy; less often, it seemed that the imagery group would also cross modalities of thinking and appear to talk to themselves about the situation, rather than restricting their thinking to imagery. In this sense, it was sometimes difficult to arbitrarily enforce either the imagery or the verbal cognitive mode since it was not always natural for the individual. A further complication was that the imagery group still had to depend on some verbal mediation, since the therapist's instructions were spoken.

It must be noted that no attempt was made in this study to assess the reliability or validity of the Music Performance Attitude Inventory. That would require administration to larger samples. The moderate correlations with state and trait anxiety scales, as well as the fact that MPAI scores changed significantly from before to after treatment, suggest that further research into the development of a music performance anxiety scale would be worthwhile.

Autonomic measures typically do not correlate highly with each other (Hodges, 1976), as was found in this study (see Appendix K). Although raw scores and change scores of each type of measure correlate with each other, between measures there is a lack of relatedness. This may be due, at least

in part, to the low stressfulness of the tape used to acquire the participants' autonomic responses to music performance situations; the mean rating of the tape's stressfulness was "a little."

Some of the participants of this study had previous experience in techniques of relaxation, including yoga and meditation; this is a potential confound, since those people may have been able to learn new relaxation techniques easier than those with no other experience. Also, the participants differed in their musical expertise and experience. Those who have had many years as a musician have less motivation for treatment because generally they seem to have learned to cope with any anxiety over the years. Younger, less experienced musicians have more anxiety (and more motivation for treatment) because of their lower level of skill and confidence. Treatment research conducted with low-anxiety musicians as in the present study might be less sensitive to demonstrations of differential effectiveness than if most of the participants had been much more anxious.

The present study did not provide strong support for the hypothesis that the mode of treatment of specific anxieties should match the hemispheric involvement in the task. It may be that specific treatments may be differentially effective for different individuals, or tasks, but hemispheric involvement does not appear to be a critical factor. Directions for future research might consider individual differences in either cognitive style or style of hemispheric utilization.

Appendix A: Intake Data Sheet

Name of Participant: _____

Age: _____ Sex: _____

Years with Present Instruments: _____

Years with Symphony: _____

Siblings (ages): _____

_____

Previous Treatment for Anxiety: Yes No

If yes, describe: _____

_____

_____

Amount of Practice weekly or daily: _____

Number of Performances per month: _____

Treatment Goals: _____

_____

_____

Appendix B: Handedness Inventory

Experimenter_____

Name_____

Date_____

Sex_____

A. Have you ever had a tendency to left-handedness?_____

B. Instructions: Please indicate your preference in the use of hands in the following activities by putting a * in the appropriate column. Where the preference is so strong that you would never try to use the other hand unless forced to, put a ++ in the appropriate column. If in any case you are really indifferent, put a + in both columns. Some of the activities require the use of both hands. In these cases, the part of the task or object for which hand preference is wanted in indicated in brackets. Please try to answer all the questions, and only leave a blank if you have had no experience at all with the object or task.

C. Inventory:	Left	Right
1. Writing		
2. Drawing		
3. Throwing		
4. Scissors		
5. Comb		
6. Tooth Brush		
7. Knife (without fork)		
8. Spoon		
9. Hammer		
10. Screwdriver		
11. Tennis Racket		

	Left	Right
12. Knife (with fork)		
13. Baseball Bat (upper hand)		
14. Golf Club (upper hand)		
15. Broom (lower hand)		
16. Rake (lower hand)		
17. Striking Match (match)		
18. Opening Box (lid)		
19. Dealing Cards (card being dealt)		
20. Threading Needle (needle or thread, whichever is moved)		
21. Which foot do you prefer to kick with?		
22. Which eye do you use when using only one?		

Appendix C: Music Performance Attitude Inventory

Directions: Read each of the following statements carefully and then circle the appropriate number on the right side of this page, to indicate how you generally feel regarding music performance. There are no right or wrong answers. Do not spend too much time on any one statement, but give the answer which seems to describe how you generally feel with regard to musical performances.

		Almost Never	Some-times	Often	Almost Always
1.	I feel confident and relaxed while performing musically.	1	2	3	4
2.	The harder I work at rehearsing the more nervous I get.	1	2	3	4
3.	Thinking about the evaluation I will get interferes with my performance.	1	2	3	4
4.	I freeze up in important performances.	1	2	3	4
5.	During rehearsals I find myself thinking about whether I'll get through the performance all right.	1	2	3	4
6.	The harder I work at performing the more flustered I get.	1	2	3	4
7.	Thoughts of doing poorly interfere with my concentration while playing.	1	2	3	4
8.	I feel very jittery just before a performance.	1	2	3	4
9.	Even when I'm well prepared for a performance, I feel very anxious about it.	1	2	3	4
10.	During rehearsal, I get a very uneasy feeling about the up-coming performance.	1	2	3	4
11.	Before performances I feel very tense.	1	2	3	4
12.	I wish performances did not bother me so much.	1	2	3	4

13.	Before important performances I am so tense that my stomach gets upset.	1	2	3	4
14.	The night before a performance I have trouble sleeping.	1	2	3	4
15.	I feel very panicky before a performance.	1	2	3	4
16.	If I were to do an important performance, I would worry a great deal before doing it.	1	2	3	4
17.	While playing I find myself thinking about the consequences of performing very poorly.	1	2	3	4
18.	I feel my heart beating very fast during important performances.	1	2	3	4
19.	As soon as the performance is over I try to stop worrying about it but I just can't.	1	2	3	4
20	During a performance I forget music I already know.	1	2	3	4

SELF-EVALUATION QUESTIONNAIRE

Developed by C. D. Spielberger, R. L. Gorsuch and R. Lushene

STAI FORM X-1

NAME _____ DATE _____

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

	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1. I feel calm	①	②	③	④
2. I feel secure	①	②	③	④
3. I am tense	①	②	③	④
4. I am regretful	①	②	③	④
5. I feel at ease	①	②	③	④
6. I feel upset	①	②	③	④
7. I am presently worrying over possible misfortunes	①	②	③	④
8. I feel rested	①	②	③	④
9. I feel anxious	①	②	③	④
10. I feel comfortable	①	②	③	④
11. I feel self-confident	①	②	③	④
12. I feel nervous	①	②	③	④
13. I am jittery	①	②	③	④
14. I feel "high strung"	①	②	③	④
15. I am relaxed	①	②	③	④
16. I feel content	①	②	③	④
17. I am worried	①	②	③	④
18. I feel over-excited and "rattled"	①	②	③	④
19. I feel joyful	①	②	③	④
20. I feel pleasant	①	②	③	④

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SELF-EVALUATION QUESTIONNAIRE

STAI FORM X-2

NAME _____ DATE _____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you *generally* feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

	ALMOST NEVER	SOMETIMES	OFTEN	ALMOST ALWAYS
21. I feel pleasant	①	②	③	④
22. I tire quickly	①	②	③	④
23. I feel like crying	①	②	③	④
24. I wish I could be as happy as others seem to be	①	②	③	④
25. I am losing out on things because I can't make up my mind soon enough	①	②	③	④
26. I feel rested	①	②	③	④
27. I am "calm, cool, and collected"	①	②	③	④
28. I feel that difficulties are piling up so that I cannot overcome them	①	②	③	④
29. I worry too much over something that really doesn't matter	①	②	③	④
30. I am happy	①	②	③	④
31. I am inclined to take things hard	①	②	③	④
32. I lack self-confidence	①	②	③	④
33. I feel secure	①	②	③	④
34. I try to avoid facing a crisis or difficulty	①	②	③	④
35. I feel blue	①	②	③	④
36. I am content	①	②	③	④
37. Some unimportant thought runs through my mind and bothers me	①	②	③	④
38. I take disappointments so keenly that I can't put them out of my mind	①	②	③	④
39. I am a steady person	①	②	③	④
40. I get in a state of tension or turmoil as I think over my recent concerns and interests	①	②	③	④

Appendix E: Script for Deep Muscle Relaxation

Get comfortable in your chair and loosen any tight clothing. Uncross your arms and legs. During your relaxation sessions, try to do nothing but pay attention to my voice. Chewing gum or smoking will interfere with your concentration. During the first few sessions it will be easier to learn the skill of relaxation sitting in a chair with your head supported. Later, you can use a hard surface such as lying on the floor or on a bed to relax. Don't worry if all of your muscles are not perfectly relaxed the first few times. Relaxation requires patience, practice, and time. Your ability to relax will improve with practice.

Arrange yourself in a comfortable position. Try to relax as best as you can, and let all of the tension go out of all of your muscles as you listen to me counting backwards. [1*] 10 (pause), 9 (pause), 8 (pause), 7 (pause), 6 (pause), 5 (pause), 4 (pause), 3 (pause), 2 (pause), 1 (pause), 0 (pause).

Now take a couple of deep breaths, breathing slowly in and out, becoming more and more relaxed with each breath out (pause).

To teach you to relax, I am going to ask you to tense certain muscles and study the sensations you feel in them. Pay attention to them when they are tense and when you let the tension flow out of them. This feeling of lack of tension, or relaxation, will continue for a few seconds after you let the tightness flow out of each muscle group.

To start with, clench your right fist (pause).[2] Try to keep all of your other muscles relaxed while you do this exercise. Keep clenching your fist as hard as you can (pause). After several seconds, your fist and arm will begin to shake with the tension generated by these rock-hard muscles (pause). Pay attention to these muscles and how they feel when they are

* These numbers denote the number of minutes.

tense (pause). All at once, open your hand and let go. Relax. Let the tension flow out of your fist and arm. Study the sensations in the muscles of your arm and hand as they relax further and further. The warmth that you feel in your fist and forearm is a feeling of relaxation, the feeling of lack of tension (pause).

Clench both fists as hard as you can (pause).[3] Keep them tense until they are quivering (pause). Study the sensations in these muscles as they get more and more tense (pause). Again, let go all at once without easing off. Pay attention to the warm feeling of tension flowing out of your hands and forearm muscles as they relax. Study the sensations from these muscles as they relax. Study the sensations from these muscles as they relax further and further (pause).

Put the palms of your hands together in front of you and push them together as hard as you can. This will stretch the bicep muscles in both arms (pause). Keep pushing until your arms begin to fatigue, until they are quivering with tenseness, (pause) and quickly let go. Let your arms flop back on the chair and study the wave of relaxation, the lack of tension in them, as they relax. Notice the contrast between how the muscles feel when they are tensed and relaxed.[4] It is this difference between tension, being uptight, and relaxation, that you want to learn to control. The feeling of letting go is the feeling of relaxing. You will soon be able to tell your whole body to let go, to relax in this same way you told your arms to relax a few moments ago.

Clasp your fingers together in front of you and then almost pull your hands apart. This will tense the muscles in the back of your arms, and some

of the muscles in your shoulders (pause). Pull until you begin to feel fatigue in these muscles. This is the feeling of tension, the feeling of muscles pulling in opposition to each other, and getting nowhere. Study the feeling of tension in these muscles (pause). When the tension feels maximum, let go. Let your arms flop back to the arms of the chair and let your muscles relax.[5] Notice the heaviness in your arms, the warm, heavy feeling that comes when the arm muscles are relaxed. File away in your mind whatever it was you did to cause that sensation of relaxation and enjoy the good feeling as the tension leaves your arms. As they become more relaxed, they will begin to feel warmer and heavier.

To feel tension in the muscles in the back of your neck and shoulders, stretch your arms out to the side and hold them there (pause). Stretch them far out to the side, and reach as far as you can. Keep reaching, pulling your arms outwards. With time they will become very heavy and the muscles across the top of your shoulders will become tired and fatigued much as your arm muscles became tired (pause 10 seconds). When you are aware of this sensation, let go and feel the other feeling, the warm feeling in your muscles as tension is replaced by relaxation (pause).[6]

Move the points of your shoulders forward and together; feel the muscles tighten from the points of your shoulders down to your breast bone (pause). Now relax them, and pull your shoulders back as though you were trying to tough your shoulders blades behind your back. Feel the muscles tighten between your shoulder blades and feel your neck become quite tight (pause). Let go and relax (pause). Lift your shoulders up as if to touch your ears. Lift them as high as you can (pause): feel the muscles around your neck and shoulders as they tense (pause). Now, let go and let them fall; relax.

Feel a wave of relaxation spread around your shoulders as the tension leaves all of these muscles (pause).

Push your head backwards against the back of the chair (pause). Feel the muscles tense down the back of your neck (pause). Now, keeping those muscles tight, try to move your head forward pitting one set of muscles against another. If you have difficulty with this, try placing one hand on your forehead and pushing against it,[7] and at the same time remember to tense the muscles that would push your head backwards into the chair (pause). Now, in a similar fashion try to move your head to the right and to the left, at the same time tensing muscles on both sides of your neck (pause). Holding your neck very stiffly, study the tension created by this exercise. You will feel tension in all four directions as all of your neck muscles are taut (pause). Let them all go at once. Let your whole neck relax. Let the muscles in your neck relax so deeply that if a breeze came along it would blow your head from one side to the other life a leaf on a tree. Make it feel almost as though you had no bones in your neck. Just let the chair support your head. Let the chair take full responsibility for holding it up (pause).[8]

Leaving your neck relaxed and working from your shoulders down to your pelvis, try raising your back. Arch your back, raise it up and arch out (pause). Feel the muscles along your spine work as you tense them. Two columns on either side of your spine will get tense with this exercise. If you rock your pelvis from one side to the other, you'll feel more or less tension on each side as you change position (pause). Now, relax and sink back into the chair, and allow yourself to simply be supported by it. Let your muscles sink deeper and deeper into the chair as your muscles become more and more relaxed (pause).

Each time you do one of these exercises, notice what you do to relax your muscles.[9] Jot away in your memory the feeling of tension leaving. It is this feeling that you will soon be able to control. You will eventually be able to recreate or turn on this feeling of relaxation without first creating tension in your muscles for contrast (pause).

Next tighten your buttocks. This is an easy set of muscles to feel because it includes the largest muscle group in your body. Try lifting yourself out of your chair by tightening the muscles of your buttocks and upper thighs (pause). When there are tense and quivering, let go (pause). Relax and sink back into your chair (pause). Next, tighten all the muscles in your thighs.[10] Tighten the muscles that would move your knees together and at the same time the muscles that would move your knees apart, and the muscles that would push down and the muscles that would pull up (pause). Tighten them all at once until all the muscles in your upper legs are rock hard (pause). Keep them tense until they are quivering with fatigue (pause). Study the pattern of tension as these muscles become more and more tense and more tired. When they are maximally tense, let go and pay attention to the warmth in them as tension is replaced by a good feeling as they become more and more relaxed (pause). Feel these muscles gradually stretch and lengthen, smooth out, expand, and relax (pause).

Move your toes downward in a direct line with your shin bone and feel the tension in your calves (pause). Note the pattern of tension as the muscles become more and more fatigued (pause). Let go and relax (pause). Point your toes up toward your head and feel the muscles work in the front of your legs, (pause), and relax (pause).

Make a fist with your toes by curling your toes under your feet.

Feel the muscles work under your arch (pause) and relax. Feel those muscles smoothing out and relaxing.

By now, you are probably beginning to be very relaxed from your neck and head to the tip of your toes. Continue to let all of your muscles relax more and more while we work on a few additional muscle groups.[12] After being tensed in these exercises, your muscles will continue to relax as you sit in the chair for several more minutes.

Harden your abdomen muscles as though someone were going to hit you in the stomach (pause). Study the pattern of tension in your abdominal wall. Attempt to almost sit up, and you will engage the big muscle in the centre of your belly. Feel the tension in all those muscles as they work (pause), and then relax (pause).

Tighten your abdominal muscles again, and pull your abdomen in and tense it (pause) now push it out and tense it (pause), and relax. Repeat this exercise a few more times (pause 20 seconds).[13]

For the remainder of this relaxation session continue to rest your head on the back of this chair and try to remain as comfortable as possible.

Raise your eyebrows and wrinkle your forehead. This will help you feel the tension from your forehead, up to the top of your scalp. Don't worry if you can't feel this strongly immediately. For some people it is a very difficult muscle to sense. Now let your forehead relax. Just feel it smoothing out and enjoy that good kind of creeping sensation as the muscles in your forehead and scalp relax. If you cannot feel these muscles tense, next time try putting a piece of cellophane tape on your forehead to accentuate the feeling of a furrowed brow. Once more, raise your eyebrows and try to touch the top of your head with them.[14] Feel the muscles at work (pause).

Keep them tense until they feel tired (pause). Now, instead of relaxing all the way, try relaxing halfway. Let half of the tension flow out. Try to keep it at that level, damping out the fluctuations so that the level of tension remains constant. Now let half of that tension go (pause). Now let half again, and finally let it all go and just enjoy the good feeling as your forehead relaxes. Let it smooth out, and relax deeper and deeper (pause).

Once again, raise your eyebrows and try to touch the top of your head with them. Feel the muscles work up there. Keep them tense until they feel tired (pause).[15] Now instead of relaxing all the way, try relaxing halfway. Let half of the tension flow out of the muscles. Try to keep the level of tension constant at each step. Now let half of that tension go. Now let half go again. Finally let it all go and just enjoy the good feeling as your forehead relaxes. Let it smooth out and deeply relax (pause).

Try to pull your eyebrows together across the top of your nose and make a frown (pause). Feel the muscles work as your eyebrows are pulled together. It is almost an angry feeling to mimic the frown of an angry person (pause). Now let it go all the way, and feel that angry feeling dissipate and be replaced by a warm feeling of relaxation in those facial muscles (pause).[16] Try touching your eyebrows together again as tightly as you can (pause). This time let the tension go halfway (pause), and halfway again (pause). Let it all go. Try to become as aware as possible of the different sensations that go along with the different levels of tension in these and other facial muscles.

Next, close your eyes tightly. This may use some of your frowning muscles. You can feel the circular muscle that goes all round your eye contracting from all directions. You may begin to see stars or spots after a while as the tension builds. Relax, let it all go. Let all of the tension flow out of that part of your face and let your upper eyelids rest gently on the lower ones.[17]

Repeat this exercise twice, each time trying to sense the different levels of tension (pause 10 seconds).

For the remaining relaxation exercises, remember to leave your eyes closed. This will help you attend to the sensations in the muscles of your face, and become more relaxed without the interference of visual patterns or distractions. If you find sitting with your eyes closed uncomfortable, open them for a second now, to get your bearings, and close them again. Try to keep them closed as much as possible.

The muscles that control the movement of your eyes are among the most precise in your body. They have many nerve endings that sense exact levels of tension.[18] This enables you to coordinate your eye movements. To become aware of your eye muscles, try to look at the top of your head with your eyes shut. Look upwards as hard as you can. Hold this tension for a few seconds (pause) and then relax by returning your gaze to center. Repeat this. Look up and feel the tension (pause), then return your eyes to rest and feel the tension leave your eyes.

Next, look all the way to the left, and feel the tension in the little muscles that move your eyeballs to the left, then return your gaze to center and feel the muscles relax. Try it again. Look all the way to the left, hold it (pause),[19] and return to center (pause). Now look all the way to the right and feel another set of eye muscles become tense. (pause). When you can feel the tension, return your gaze to the center and let those muscles relax (pause). Do it again. Look all the way to the right (pause), feel the tension, (pause), and relax.

With your eyes still shut, roll your eyes in a large circle. There are six sets of muscles that move your eyes. With some practice, you can feel the control of your moving eyes pass from one set of muscles to

the next as you roll your eyes around in a complete circle. You can feel those muscles that move your eyes to the top, to the right,[20] down to the bottom, to the left, to the top, to the right, down to the bottom, to the left to the top again, and so on around in a circle. Make several more rotations (pause), at some point changing directions (pause). Then relax them and study the sensation as the tension goes out of these muscles when your eyes are pointed straight ahead.

You can even learn to relax the tiny muscles that focus your eyes. With your eyes shut, try to visualize a ping pong table about ten feet away from you. Notice the green surface and white lines. Next to the net, picture a ping pong ball. Strain to read the label on the ball - try to visualize the brand name, and be aware at the same time of the tension and strain in your eyes.[21] Suddenly, shift your gaze to a point about two feet in front of you - a neutral or rest position. Notice the difference in tension level. Repeat this exercise. Visualize the ping pong ball (pause) and then return your gaze to neutral (pause).

With your eyes still shut, pull your lips back to show your teeth, as though you were going to brush them. Try to touch your ears with the corners of your mouth. You will feel two muscles when you do this exercise: one lifts up the middle of your lip and the muscles that pull back the corners of your mouth. Feel the muscles tense as they work (pause). Now relax and notice the sensation of tension leaving those muscles, the good feeling as the muscles relax (pause).

Pucker your lips tightly until you can feel them quivering (pause).[22] Let the pressure go suddenly and feel the relaxation as the circular muscles around your mouth let go (pause). Try it again: pucker, (pause), and relax (pause).

Your jaw muscles are among the most powerful muscles in your body. When they are tense you can actually hear the tension. Clench your teeth, feel the muscles, and listen to the sound of tensions as teeth are clenched. Feel the tension spread up into your temples, and attend to the feeling of tension in your bones and teeth (pause). Now, let go and feel the relaxation spreading through these muscles. Feel the relaxation as tension is taken off your teeth and off your jaw. Enjoy it (pause).

Push your tongue forward against your teeth and feel the tension in this muscle (pause), then push your tongue to the right (pause), and to the left (pause), then pull your tongue back and feel the muscles that retract the tongue (pause), and relax (pause). Let your tongue lie passively on the floor of your mouth and let all the tension leave it (pause).

Pretend you are going to clear your throat and feel the upper part of your throat close and hold it there (pause). Relax now, and let that tension go away. Do it again - start to cough, feel your throat close, (pause), and then relax and feel the tension leave your throat. With sufficient practice, all of these muscles in the throat can come under voluntary control. Swallow and observe what happens. A wave of tension forms in the back of your throat and flows down your esophagus.[24] This wave of tension if followed by a wave of relaxation. With practice the wave of tension can be followed all the way to your stomach. Try it again. Swallow and try to follow the wave of tension that goes down your esophagus and the wave of relaxation that follows the tension (pause). Do this a few more times and try to follow the wave of contraction until it empties into your stomach. If you cannot feel this, think of it as if you were drinking a glass of cold water, to help you identify the feelings and their location (pause).

High pitched sounds are produced by air movements past tense vocal chords. The higher the note, the higher the tension and vice versa. Think of humming a high note. Feel the tension in the muscles that tighten your vocal chords (pause).[25] Now relax by pretending to hum the notes of the musical scale downward. As the notes you make get lower and lower, your vocal chords will become more and more relaxed until they are like two strings blowing in a breeze. End up by pretending to hum a very, very low note with your vocal chords almost totally relaxed (pause). Repeat this exercise - start with a very high note and progress to a low one while paying attention to the change in tension in your vocal chords (pause).

I want you to practice a different kind of breathing for the remainder of the exercise. Use your muscles only to breathe in,[26] hold your breath briefly to sense the tension in your chest, and then let the air flow out passively by simply letting go and relaxing. Breathe a little more deeply and a little bit more slowly than usual. Each time you breathe out, with each exhalation, say the word, "relax" to yourself. Let this exhalation be a signal to relax every muscle in your body. You will feel a sense of relaxation in your chest, between your ribs each time you let go. With each exhalation let this feeling of relaxation spread throughout your chest, around to your backbone, up your spine, into your neck and head, and down from your chest to your abdomen, legs, and feet. With each exhalation you should become more relaxed and drift more and more into a state of total quiet.[27]

It may help you to use a square pattern of breathing. Breathe in while you count slowly to 4 (pause), hold your breath to a count of 4 (pause), breathe out on a count of 4 while saying "relax," hold your breath out for the same count. Breathe in (4 second pause), hold your breath (4 second pause), breathe

out while saying "relax," etc. If you continue this regular pattern of breathing, you can become more relaxed than you may ever have been in your life.

While you are doing your breathing exercises, attend to the sensations that are coming from your muscles. If you find some residual tension, search around to try and find a switch to turn it off.[28] Try to achieve release from the residual tension by simply letting go. With time this will be your way of relaxing. Without tensing first, you will be able to let go progressively and become more and more relaxed. When you feel anxiety coming, breathe slowly and with each exhalation, say "relax" and let the tension go.

To increase your overall feeling of relaxation I am going to once again count backwards from 10 to 0. With each count I would like you to become a little bit more relaxed and perhaps a bit more drowsy; a little bit more sleepy, but not quite asleep.[29] 10 (pause), 9 (pause), 8 (pause), 7 (pause), 6 (pause), 5 (pause), 4 (pause), 3 (pause), 2 (pause), 1 (pause), 0 (pause).

Now just continue relaxing like this, deeper and deeper, and let the feeling of relaxation permeate your entire existence. Stay relaxed in this dreamlike state for another few minutes.

(Adapted from a script by Ferguson, Marquis, and Taylor, 1977).

Appendix F: Homework Relaxation Outline

As instructed in the treatment sessions, relax your muscles, in the following order:

hands

shoulders

neck

chest

back

stomach

buttocks

thighs

toes

eyebrows

eyes

mouth

teeth

tongue

Remember to breathe deeply and slowly; sit in a comfortable chair or lie on a bed. It will be best if there are no distractions, such as noise, bright lighting, or restrictive clothing.

Please practice once a day between sessions with the therapist.

Appendix G: Participation Agreement

I, _____, the Researcher, do hereby agree to provide the treatment assigned for a total of five one-hour sessions, at one per week, plus two assessment sessions. In case of unavoidable absence for a scheduled session, the Participant will be notified 24 hours in advance (except in case of emergency), and another session will be scheduled at a mutually satisfactory time and date. I agree to answer any of the Participant's questions pertaining to the nature of the project, except where it is contraindicated by the considerations of research design. I agree to arrive on time for scheduled sessions, and to keep all information regarding individual participants confidential. Should data from this study be published, anonymity of the participants is assured.

I, _____, the Participant, do hereby agree to participate in the treatment assigned for a total of five, one-hour sessions, at one per week, plus two assessment sessions. In case of unavoidable absence for a scheduled session, the Researcher will be notified 24 hours in advance (except in case of emergency), and another session will be scheduled for a mutually satisfactory time and date. I agree to cooperate and participate to my fullest capacity, and to clarify any misgivings I may have at any time during the project. I agree to do the homework assigned, and to arrive on time for scheduled sessions. I understand that I may discontinue my participation at any time, and that all information about my individual participation will be kept confidential.

Signed _____ _____

(researcher) (participant)

Appendix H: Baseline Tape Script

Imagine that you will be doing a solo performance in two weeks.... The audience will be large and there will probably be other musicians there ....Now imagine that a week has passed and you have only one more week to prepare....As you rehearse, you have a bit of difficulty in a few places.... Now imagine that there are only a few days befor the performance and you are practicing very hard.....Imagine that now it is the night before....You are trying to sleep but your thoughts keep coming back to tomorrow's performance....It is now the day of the performance....At home, you try to go over, for the last time, the most difficult passages of the music....As you make your way to the auditorium you try to practice in your mind.... It is now fifteen minutes before you go on stage.... You are warming up, preparing your instrument.... You glance out at the audience, and it is a full house.... You recognize a few other musicians near the front.... You walk out on stage; there is applause, then silence as the audience waits for you to begin.... You begin your first piece, the most difficult.... You know a difficult passage is coming up. You come to it and make a mistake....Your mind goes blank.* You forget your music and you have to stop.... You find your place and continue.... The rest of your performance goes without error .... At the end of your performance, the audience applauds favorably.

* At this point the criterion measures were taken.

Appendix I: Standard Music Performance Anxiety Hierarchy

1. Think of yourself practicing. You know there is an important performance in two weeks.
2. Now a week has passed and you are practicing hard for the performance.
3. Think of yourself practicing the night before the important performance. You discuss it with some of your fellow performers. You are having difficulty concentrating on your music.
4. You are in bed the night before the performance and your mind flashes to the performance. You think you might not be properly prepared.
5. It is the day of the performance. You leave to go to the theatre.
6. Think of yourself now entering the stage. As you take your place you overhear other people around you reviewing the music to be played.
7. Think of yourself sitting in your place in the orchestra. You prepare your instrument.
8. Now the conductor comes onto the stage. He begins the first piece.
9. You are now playing the music and you come to a passage you do not know well.
10. You make a mistake. The person nearest you notices, and looks at you, frowning. You feel that everyone, including the conductor, has noticed it.

Appendix J: Self-Report Questions

1. How much do you feel you have benefited from your involvement in this project?:

   a) not at all
   b) a little
   c) quite a bit
   d) very much

2. How much do you feel your involvement in this project has helped you in dealing with your music performance anxiety?:

   a) not at all
   b) a little
   c) quite a bit
   d) very much

3. How much has your involvement helped you in dealing with other anxiety-producing situations (i.e., not including music performances, such as social, interpersonal, business situations)?:

   a) not at all
   b) a little
   c) quite a bit
   d) very much

4. Did you find the tape recording of the music performance situation (as in the assessment sessions) at all stressful?:

   a) not at all
   b) a little
   c) quite a bit
   d) very much

5. Did you find the taped music performance situation realistic?:

   a) not at all
   b) a little
   c) quite a bit
   d) very much

6. Would you consider becoming involved at another time, with other research in psychology?:

   a) not at all
   b) a little
   c) quite a bit
   d) very much

Please make any other pertinent comments about your involvement in this project, that will help the researcher evaluate the success of the project and ways in which it could be improved for future research.

Appendix K: Intercorrelations of Autonomic Measures

	HR2	HR3	HR4	Resp1	Resp2	Resp3	Resp4	FTL1	FTL2	FTL3	FTL4	FTR1	FTR2	FTR3	FTR4
HRL	.97	.72	.76												
HR2	–	.74	.77												
HR3		–	.94												
HR4			–												
Resp1				–	.91	.50	.53								
Resp2					–		.47								
Resp3						–	.70		.43				.44		
Resp4							–	.47	.56	.43			.54		
FTL1								–	.93			.61	.68		
FTL2									–	.48	.42	.66	.83	.50	
FTL3										–	.88		.52	.62	.59
FTL4											–		.53	.62	.73
FTR1												–	.77	.58	.49
FTR2													–	.61	.56
FTR3														–	.91

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Notes

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