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PERFORMANCE ANXIETY WITHIN THE SECONDARY CHORAL CLASSROOM: EFFECTS OF THE ALEXANDER TECHNIQUE ON TENSION IN PERFORMANCE

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PERFORMANCE ANXIETY WITHIN THE SECONDARY CHORAL CLASSROOM: EFFECTS OF THE ALEXANDER TECHNIQUE ON TENSION IN PERFORMANCE

By

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ABSTRACT

PERFORMANCE ANXIETY WITHIN THE SECONDARY CHORAL CLASSROOM: EFFECTS OF THE ALEXANDER TECHNIQUE ON TENSION IN PERFORMANCE

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The purpose of this research was to increase understanding about the relationship between musical performance anxiety and Alexander Technique-derived exercises within the secondary choral classroom. Subjects were enrolled in one of two high school beginning choral ensembles at a Detroit, Michigan high school. One ensemble (N=11 females) received sensory awareness and body alignment exercises based on the Alexander Technique over a thirteen week treatment period. The other ensemble (N=11 females) served as the control group and received no such instruction. Only the female's data was considered in this research. Criterion measures were administered pre- and post-treatment, prior to two similar school performances.

Results suggested that the subject population had had substantial experience with musical performance anxiety in the ensemble setting. Self-reported symptoms most widely reported included both cognitive (general nervousness, worry, and panicky feeling) and somatic manifestations (perspiration/sweating, dry mouth, and shortness of breath). The effect of treatment on musical performance anxiety was largely inconclusive. The treatment did appear, however, to positively impact some subjects' singing posture, state of relaxation, stage presence, breath control, and vocal technique.

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This document represents an outpouring of support from professors, colleagues, friends, and family. Without the diverse contributions from each of these individuals, this project could not have reached completion. First, many thanks to my collegiate voice teacher, Mr. Benjamin Allen, who fostered in me a love for vocal music and an interest in alleviating needless tension in vocal performance. Several other professors from Carleton College, specifically Dr. Lawrence Burnett and Dr. Phillip Rhodes, highlighted the importance of scholarly inquiry and provided much needed advice and counsel.

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Throughout the past year, the contributions of family and friends have been endless. Special appreciation goes to my wife, Rose, whose love, kindness, and support helped keep me in good spirits and the project moving forward even in moments of frustration and hopelessness.

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Introduction

> The house lights flicker on and off...students slowly enter the stage, each carrying their instrument with care, quickly moving to their assigned seat...the seating arrangement quickly fills up...house lights are dimmed while a few students adjust their instruments...others simply wiggle in their chairs in anticipation...only a few more students meandering onto stage...rustles of programs and squeaky chairs resonate from the audience and throughout the hall...the members of the band realize that there is one remaining empty chair...and no one to fill it...it is not a mistake, but rather a missing student...perhaps this student became ill...perhaps an emergency...perhaps frightened by the thought of performing in front of others...perhaps terrified by a lack of preparation...perhaps nervously standing outside the hall, trying to muster enough courage to enter the stage...

As an undergraduate music major at Carleton College in 1996, I entered the private voice studio for the first time. Though I was not aware, at the time I was experiencing significant muscle tension while singing, located primarily in the shoulders, neck, and face. My instructor, Benjamin Allen, an Alexander-trained vocalist, incorporated Alexander-derived principles into my voice study to alleviate my tension. Initial lessons involved no singing, consisting entirely of exercises in which I observed and explored the range of motion of my head, neck, and torso in isolation, as well as the engagement of these areas in daily activities such as sitting or walking. Initially, I was confused as to why Allen was devoting considerable lesson time to non-vocal exercises. Yet as I progressed, the exercises expanded in scope, my awareness of the interaction of musculature was heightened, and my tension and performance anxiety gradually decreased. Over the course of more than 130 private voice lessons and 100 group voice classes, I came to realize the powerful effect of this Alexander-derived approach on the study of voice. The focus of those initial lessons -- observation of engagement of the primary control -- had developed to the extent that I was now able to direct my energy and musculature towards more efficient and free use. Most of my anxiety provoked by vocal performance could be quelled on command, as I was able to observe and inhibit the tension, while consciously redirecting my energy.

Music educators can provide students with a variety of performance opportunities, both formal (such as auditions, competitions, and juries) and informal (such as solo recitals, in-class performances, and ensemble performances). Accompanying each opportunity is a different setting, audience, perception of importance, and subsequent level of stress and anxiety. While music educators can minimize performance formats that tend to elicit high levels of anxiety, students may still suffer the effects of musical performance anxiety. These include altered physiological, behavioral, and cognitive states, as well as negative effects on both their musical performance and attitudes towards future study of music. If music educators are to attempt to reduce their students' musical performance anxiety, they must first consider its prevalence, observable effects, and differences in those effects between age or experience levels. Once this knowledge has been gained, music educators can evaluate possible treatments, both in terms of effectiveness and practicality within the classroom setting.

Literature Review

What is Musical Performance Anxiety?

The terms "stage fright," "stress," and "performance anxiety" are often used interchangeably when discussing undesired, negative cognitions and physiological impairments related to public performance. While researchers, clinicians, and teachers have attributed these kinds of distress to factors such as level of performance experience, development of technique, and practice habits, such considerations do not account for the presence of performance anxiety in professional, skilled, or experienced performers, nor in private playing or practice sessions. Musical performance anxiety has been shown to meet the criteria for social phobia or social anxiety disorder, as described by the *Diagnostic and Statistical Manual*, but is characteristically different (Sataloff, Rosen, & Levy, 1999). While phobic anxieties are primarily the result of external, situational cues, musical performance anxiety is a result of one's own behavior. Further, when entering a performance situation, the fear felt by the performer is cognitively justified and plausible.

Salmon (1990) has proposed the following working definition for musical performance anxiety that will be used to guide future discussion:

> Musical performance anxiety is defined as the experience of persisting, distressful apprehension about and/or actual impairment of, performance skills in a public context, to a degree unwarranted given the individual's musical aptitude, training, and level of preparation. (p. 3)

Prevalence of Musical Performance Anxiety

Researchers have focused their efforts predominantly on the presence, effects, and treatments of musical performance anxiety in and on the careers of professional musicians, as their performance opportunities are both more frequent and more likely to be accompanied by occupational stress than those of student or amateur musicians. The largest study of professional orchestral musicians (Fishbein, Middlestadt, Orsatti, Struas, & Ellis, 1988) collected data from the International Conference of Symphony and Opera Musicians (N=2,212). Over 82 percent of respondents reported experiencing medical problems of some sort, including suffering from stage fright (24%), depression (17%), and acute anxiety (13%). In studying the presence of anxiety among members of the Organization of Canadian Symphony Musicians (N=204), Bartel and Thompson (1994) found that 96 percent reported experiencing some form of performance-related stress. Qualitatively researching the pressures facing popular musicians (N=70), Cooper and Wills (1989) found performance and related anxieties to be one of the more predominant issues. Audience, lifestyle, and financial concerns, as well self-imposed standards of musicianship were the most frequently attributed causes of anxiety.

Additional research has focused on the presence of musical performance anxiety in the lives of university students and professors. Wesner, Noyes, and Davis (1990) investigated the experiences with and attitudes towards performance anxiety among students and faculty at the University of Iowa School of Music (N=302). Over three-fifths of respondents indicated that they suffered from musical performance anxiety.

Anxiety that caused moderate distress was most prevalent (39.9%), followed by anxiety that caused marked distress (21.3%). In addition, 29.6 percent of respondents indicated the presence of anxiety that moderately impaired performance, and 16.5 percent reported anxiety that markedly impaired performance. Perhaps of greatest importance to music educators, however, are the respondents who indicated having previously avoided musical performance opportunities due to anxiety (9%). Such statistics indicate the extreme reaction to and the disabling effects of musical performance anxiety, highlighting the need for change in practice.

In a survey of graduate and undergraduate students at three universities (N=201), Southwest Texas State University, the University of Miami, and the Manhattan School of Music, Dews and Williams (1989) investigated the psychological and emotional issues facing music students. Respondents were asked to evaluate a list of twenty-two issues of concern using a five-point rating scale. Included in the upper half of most highly rated issues were pre-performance nerves (second highest rating), stage fright (ninth), and anxiety/concern (eleventh).

Few researchers have focused their efforts on measuring the effects of musical performance anxiety on musicians at the secondary level or younger. Shoup (1995) recognized this deficiency in musical performance anxiety research and investigated the presence of performance-related problems in high school and junior high school band and orchestra students (N=425). Specifically, he employed a survey to examine the frequency of performance-related problems in high school musicians. Shoup found that 55.5 percent of the students reported having an anxiety problem that affected their performance, while 18.0 percent reported severe nervousness.

The high level of self-reported performance anxiety at the secondary level discovered by Shoup (1995) emphasizes the importance of continuing research and investigation in this area. Such results suggest that initial experiences with performance anxiety occur prior to university or professional training. At some point during the early

stages of students' music education, musical performance becomes associated with high levels of apprehension, resulting in negative physiological, behavioral, and cognitive states.

Because the effects of musical performance anxiety are also likely to vary based on experience level, Steptoe and Fidler (1987) examined the role of experience upon tension levels. The researchers found that of professional, amateur, and student musicians, students reported the highest level of performance anxiety while professionals reported the lowest level. In addition, the researchers observed a positive correlation between both performance anxiety of professionals and a fear of crowds and performance anxiety of students and a fear of social situations, suggesting that the perception of audience and potential social repercussions as a result of performance may influence anxiety levels.

The effects of audience on the musical performance anxiety of high school band students (N=27) was investigated by LeBlanc, Jin, Obert, and Siivola (1997). Heart rate measurements were assessed under three solo performance conditions: alone in a practice room, playing in a practice room with one of the researchers present, and in a rehearsal space before a small peer-group audience. Prior to each performance, self-reported anxiety was measured by the Personal Performance Anxiety Report, an analog scale. An audio recording was made of the final performance condition and was judged by the researchers. Following the third condition, an exit interview was conducted by a university student unrelated to the research. LeBlanc et al. observed increases in self-reported anxiety in each succeeding condition and increased mean heart rate from the first and second to the third performance condition. Student responses during the exit interview solidified the previous measurements, as the majority of students (63%) identified the peer-group audience condition as the highest anxiety setting.

The Anxiety-Performance Relationship

Does anxiety related to performance automatically detract from or diminish performance quality and experience? While the aforementioned research indicates that the effects of anxiety during performance are exclusively negative, many researchers acknowledge that modest levels of tension contribute positively to the vitality of performance and creative expression (Gates & Montalbo, 1987; Fogle, 1982; Wilson, 1997). What defines an appropriate, modest level of tension? How are levels of arousal determined?

The relationship between arousal and performance quality has been explained through two diverse hypotheses: the Yerkes-Dodson Law, or inverted-U hypothesis, and the drive theory hypothesis. Studying habit strength formation in mice, Yerkes and Dodson (1908) developed what is now referred to as the inverted-U hypothesis or Yerkes-Dodson Law, in which for any given task, there is an optimal level of arousal at which peak performance occurs. Arousal levels greater or less than optimal both result in decreased quality of performance. The Yerkes-Dodson Law has been widely accepted as an explanation of arousal patterns and has guided much research in performance anxiety. In doing so, however, the Yerkes-Dodson Law has been extrapolated to apply to the relationships between stress and performance, arousal and performance, and anxiety and performance. The variation in definition and application has caused much debate as to the validity of such extrapolations.

The drive theory hypothesis (Martens, 1974) argues that maximum performance quality is not achieved through an optimal level of arousal, but through a combination of habit and drive. Researchers have defined drive differently, including the following: the energy that moves the body; the stimulus leading to activity; general activity itself; behavioral tendencies; goal-directed activity; and personal motivation. Arousal and drive are used synonymously in discussions of drive theory, as each focuses on the intensity of a given behavior without specific function or objective. Habit is defined as "the

hierarchical order or dominance of correct and incorrect responses" (p. 167). As drive increases, so does the likelihood of the correct response occurring, increasing arousal. Increases in correct responses, such that they become the dominant response or habit, lead to increased drive and a positive linear relationship between arousal and performance quality. Degree of arousal and performance quality are thus directly related, though there is no single, optimal level of arousal at which performance quality peaks. Instead, performance quality increases as a direct result of the mastery of correct responses and subsequent increases in drive or arousal.

The Yerkes-Dodson Law and drive theory hypotheses both assume that anxiety is one-dimensional. The multidimensional anxiety theory (Burton, 1988; Liebert & Morris, 1967; Morris, Davis, & Hutchings, 1981), however, argues that anxiety responses contain both cognitive and somatic components. The cognitive component, labeled "worry," refers to any cognitive concern related to performance caused by the fear of failure or poor self-evaluation, and is manifested through negative thoughts and comments and displeasing facial expressions (Liebert & Morris, 1967, p. 975). Cognitive anxiety is aroused by situational factors that influence self-evaluation and are expected to remain constant prior to and during performance, abating only when expectations dramatically change. The somatic component, or "emotionality," refers to autonomic arousal directly related to psychological stress, observed through rapid heart rate, shortness of breath, and tense muscles. Somatic anxiety is a conditioned response to specific nonevaluative cues prior to performance. When attention turns to the performance itself, these cues lose their salience. As such, typical somatic anxiety experiences are short in duration and decrease rapidly when performance begins.

In an attempt to clarify the relationship between the cognitive and physiological components of anxiety and performance, Hardy and Parfitt (1991) continued earlier research on catastrophe theory. The catastrophe model assumes that a state anxiety response, or a "transitory state or condition...that varies in intensity and fluctuates over

time," is a result of the relationship between cognitive and physiological components (Spielberger, 1966, p. 12). The level of cognitive anxiety in relation to physiological arousal determines whether the effects on performance are minimal or catastrophic. Low levels of physiological arousal allow for improved performance as cognitive anxiety increases, while high levels of physiological arousal result in a negative correlation between performance quality and cognitive anxiety. Low levels of cognitive anxiety result in an inverted-U shape relationship between performance and physiological arousal, while high levels of cognitive anxiety may have positive or negative effects on performance, depending on the specific level of cognitive anxiety and physiological arousal.

Determinants of Musical Performance Anxiety

While the Yerkes-Dodson Law, drive theory, multi-dimensional anxiety theory, and catastrophe theory have been widely discussed, none of them consider what variables might contribute to heightened or lowered states of arousal and thus to degrees of performance anxiety. Wilson (1997) acknowledges this and developed an extension of the Yerkes-Dodson Law in which three additional variables were considered: trait anxiety, task mastery, and situational stress. Wilson's multi-variable model of optimal arousal allows teachers and students to reflect on variables potentially involved in debilitating performance anxiety.

LeBlanc (1994) greatly expanded the variables determining anxiety in his theoretical model of musical performance anxiety (see Figure 1). His model considers variables both independently and in mutual interaction, within the context of preparing and presenting a major solo musical performance. LeBlanc's model is divided into eleven levels, arranged in a hierarchy according to the passage of time, and he includes the following areas (from beginning to completion): performer's characteristics and learning history; preparation for performance; performing environment; performer's self-perceptions; the act of performance; and evaluation of performance. LeBlanc provides

music educators with a comprehensive overview of the interactions between variables related to performance anxiety and their influence on anxiety levels. Though designed for solo performances, the performance variables involved are also applicable to the ensemble classroom.

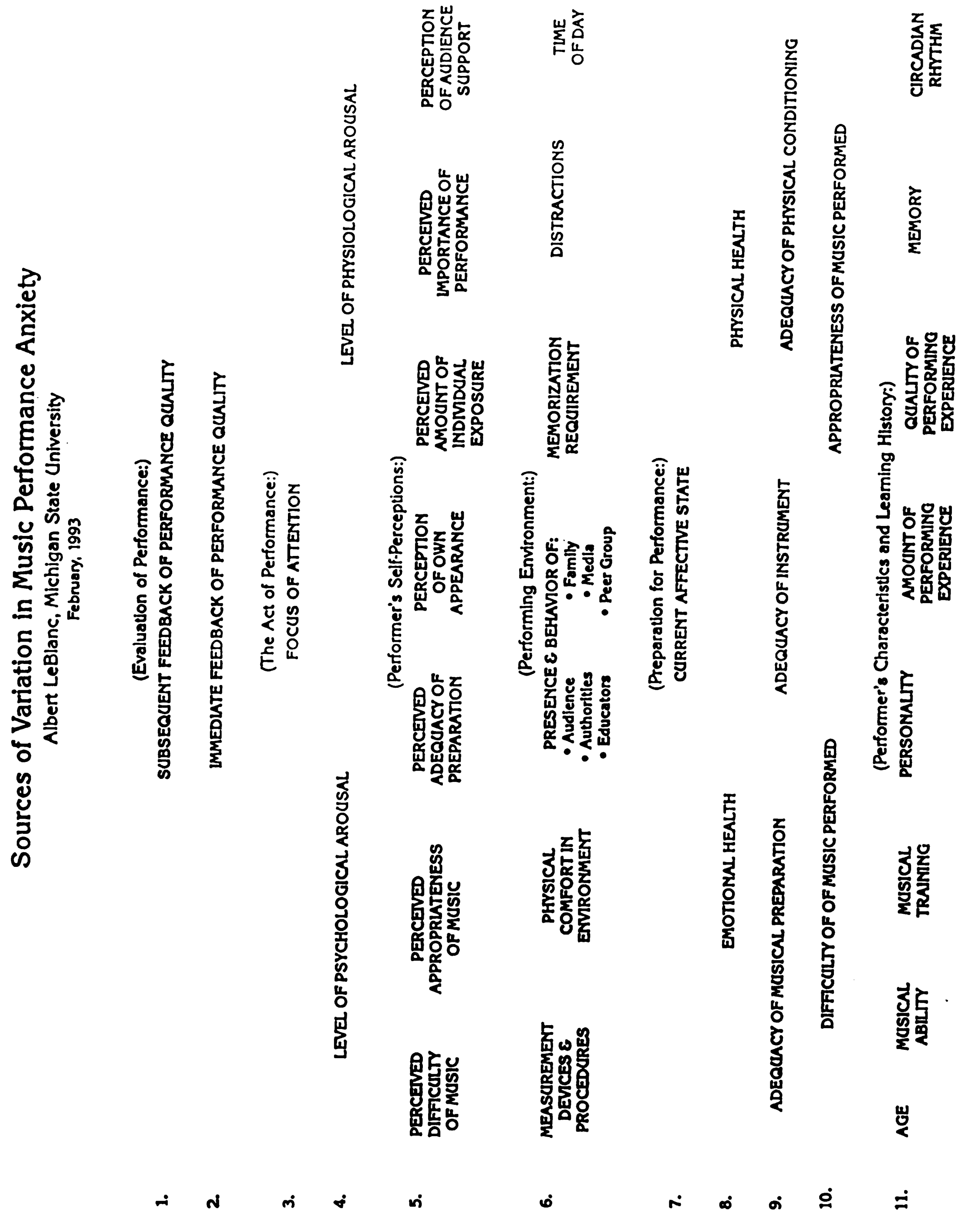

Figure 1. LeBlanc's (1993) Sources of Variation in Musical Performance Anxiety.[1]

[1]From "A theory of music performance anxiety," by A. LeBlanc, 1994, *Quarterly Journal of Music Teaching and Learning*, 5(4), p. 71. Copyright 1993 by A. LeBlanc. Reprinted with permission.

What aspects of performance are affected by various levels of arousal? When performance anxiety reaches high levels, what physiological, behavioral, and cognitive changes occur? Even if catastrophe does not occur, what changes are brought on by increased tension and heightened performance anxiety?

Physiological, Behavioral, and Cognitive Effects in Various Performance Settings

Abel and Larkin (1990) also asked these questions in their study of undergraduate students at the Virginia University School of Music (N=22). Comparing measurements from a baseline laboratory session and a session immediately prior to a required jury performance, the researchers sought to identify the physiological and cognitive components of performance anxiety, as well as the relationship between physiologically indicated and self-reported levels of performance anxiety. Heart rate and blood pressure were measured and compared with results from the Personal Report of Confidence as a Performer, while the State-Trait Anxiety Inventory and a self-report of confidence were administered to assess subjective levels of anxiety.

Results suggested that high-stress performance situations, such as juried performances, resulted in increased heart rate, blood pressure, and self-reported anxiety. Significant increases in heart rate (79.8 to 91.0 bpm), systolic blood pressure (112.2 to 128.6 mm Hg), diastolic blood pressure (71.3 to 78.0 mm Hg), and self-reported anxiety (5.5 to 9.2) were observed between the laboratory and jury sessions. Increases in physiological arousal were not found to be accompanied by increases in self-reported anxiety, as heart rate and self-reported anxiety co-varied directly, while no relationship was suggested between blood pressure and self-reported anxiety. In addition to these physiological effects, cognitive effects were observed; lower levels of self-reported confidence during the laboratory session were accompanied by an increase in heart rate at the jury session.

In a study of undergraduate brass musicians (N=39), Tartalone (1992) observed marked increases in both vital signs and self-reported anxiety levels that differed between

low- and high-stress performance situations. Physiological effects were measured in terms of blood pressure, pulse rates, and respiration rates, while cognitive effects were measured by the state-anxiety portion of the State-Trait Anxiety Inventory (STAI). All criterion measures were administered weekly for three weeks prior to a juried performance to develop baseline data, one week prior to performance before a dress rehearsal, and three times on the day of the juried performance. Blood pressure was observed to increase significantly by a total of 7.74 mm Hg between baseline and juried measurements. Pulse rate also increased significantly throughout the measurement period, rising a total of 16.82 bpm. Respiration rate increased, though not achieving statistical significance, by a total of 2.30 breaths per minute. Mean scores from the STAI increased 6.53 from baseline data to the juried performance. The amount of increase in vital signs and self-reports suggested that the dress rehearsal and jury performances were considered higher stress events than those occuring at the time of the baseline measurements. Additionally, Tartalone found that anxiety and arousal measurements of inexperienced performers were consistently higher than those of experienced performers, suggesting that while arousal and anxiety levels are inter-related, performance experience is a determining factor in both areas.

Wesner et al. (1990) identified the prevalence of several symptoms of performance anxiety in university faculty and students (N=302). Based on self-reports, subjects reporting marked impairment (N=49) were compared with those reporting little or no impairment (N=160) due to performance anxiety. Poor concentration (63.3%), rapid heart rate (57.1%), trembling (45.8%), dry mouth (42.6%), sweating (42.6%), and shortness of breath (39.6%) were the most highly reported symptoms of those considered significantly impaired. Of those who reported little or no impairment, dry mouth (14.4%) and rapid heart rate (11.5%) were the most widely reported symptoms. In regards to performance setting, the researchers found that 63.6 percent of respondents found auditions to be significantly anxiety provoking, while only 52.6 percent felt similarly

towards solo performances. Small ensembles (10.6%), large ensembles (3.3%), and private lessons (9.3%) were reported as significantly less stressful performance opportunities.

While the previous discussion acknowledged that moderate levels of arousal facilitate an optimal performance, excessively high levels of arousal can result in another physiological symptom of performance anxiety: hyperventilation. Widmer, Conway, Choen, and Davies (1997) investigated the role of hyperventilation in musical performance, studying full-time undergraduate music students of two British colleges of music (N=70) and professional musicians of three London-based orchestras (N=71). The researchers used several criterion measures, including self-reports of symptoms experienced in both general life and public performances, the Nijmegen Questionnaire, which identifies hyperventilators, the State-Trait Anxiety Inventory, the Personal Report of Confidence as a Performer, and demographic data.

Using upper and lower quartiles of anxiety scores as a guide, subjects were divided into groups of low, medium, and high-anxiety musicians. Results indicated that public performances were associated with significantly higher levels of musical performance anxiety than measurements taken from daily life. This linear association suggests that increased hyperventilation results in increased musical performance anxiety, and vice versa, which is a potentially vicious and destructive cycle for performers. Comparison of general anxiety and anxiety in public performances of the entire sample yielded significant mean increases in hyperventilation from non-performance to performance situations.

In addition to the physiological symptoms discussed, there are several behavioral and cognitive changes associated with musical performance anxiety. To determine the relationship between physiological and psychological levels of performance anxiety and jury and non-jury conditions, Brotons (1994) used a pre- and post-test control group design (N=64). To measure subjects' behavior during performance, judges completed a

researcher-designed observation form, identifying twenty-three behavioral indicators of nervousness. Nervous behaviors most frequently observed were: 1) shifting or tapping of feet and legs; 2) body swaying or excessive movement while breathing; 3) arm and hand movements; 4) facial or head movements; and 5) adjusting, manipulating or inspecting the instrument.

Tobacyk and Downs (1986) hypothesized that increased levels of musical performance anxiety in college music majors (N=33 in original trial and N=29 in replication of research) between jury and non-jury conditions would result in specific cognitive changes. Specifically, the researchers anticipated a positive correlation between anxiety levels and levels of threat and irrational beliefs, based on Kelly's personal construct theory and Ellis' rational emotive theory (Tobacyk & Downs, 1986). Using a pre- and post-test design, the researchers administered the State-Trait Anxiety Inventory (STAI), the Threat Index, and an Irrational Belief Questionnaire (IBQ). Tobacyk and Downs observed a direct correlation between heightened levels of self-reported anxiety and increases in levels of threat. In addition, the IBQ was found to be a significant predictor of increases in the STAI. Such results indicate that self-construal and patterns of belief are negatively affected by increased tension, in turn suggesting that musicians' notions of self are directly related to success and/or failure in performance.

Cognitive changes, including heightened self-reports of anger and anxiety were observed to significantly increase prior to high-stress performances, as measured by Hamann (1982). The researcher compared undergraduates' (N=90) self-reported state and trait anxiety, through the State-Trait Anxiety Inventory (STAI), and curiosity and anger, via the State-Trait Personality Inventory (STPI). Measurements were taken prior to an enhanced anxiety performing condition, in front of an instructor and peers, and a reduced anxiety condition, privately, with tape recording equipment. Significant differences were observed in subjects' mean STAI state anxiety scores between enhanced

and reduced anxiety conditions. Similar significant increases were observed in mean STPI state anger scores.

How do the two genders respond differently to various performance conditions? LeBlanc et al. (1997) observed that high school female band members (N=11) experienced greater anxiety than male participants during solo performance in high anxiety performance settings. Self-reports of anxiety and mean heart rate were both markedly higher for females during the third condition, solo performance before a peer-group audience with audio recording. Performance quality ratings of the audio recordings were considerably higher for females as well.

Abel and Larkin (1990) also investigated the question of gender in their study of undergraduate students (N=22, Male=8, Female=14). The researchers observed that females' state-anxiety, as measured by the State-Trait Anxiety Inventory, experienced higher increases than males' between baseline and juried performance conditions. Additionally, females reported increased confidence prior to juried performances, as measured by the Personal Report of Confidence as a Performer and a self-report of confidence. Males experienced higher levels of systolic blood pressure than females, while no differences in heart rate were observed.

Treatment and Coping Strategies

How do musicians cope with debilitating levels of musical performance anxiety? Unfortunately for secondary music educators, the majority of published research has focused on the treatment approaches used by professional and university student musicians. From this body of research, cognitive-behavioral therapy, cue-controlled relaxation, systematic desensitization, and pharmacological treatment have been investigated most thoroughly. Music educators should be familiar with the predominant treatments, so as to evaluate each in terms of its applicability and feasibility within the classroom setting.

Cognitive-behavioral therapy. Performance anxiety has been shown to cause development of negative thought (Steptoe & Fidler 1987; Tobacyk & Downs, 1986), which exacerbates the predominant physical symptoms. To avoid the development of negative thought, researchers have suggested coping strategies commonly referred to as cognitive-behavioral treatment, which involve exposure to and reconditioning of behaviors and cognitive approaches to performance. The combination of cognitive psychology and behavior modification came largely as a result of philosophical developments in the 1960s. While behavior therapy and modification were on the decline in the mid-1960s, behaviorist researchers, including Skinner and Bandura, began investigating the influence of self-control on development. Behaviorism was previously based on the assumption that the external environment serves as the greatest influence on an individuals' life. As such, the interest in self-control's impact on development signified a philosophical change in behaviorist theory. Human beings were now viewed as active participants in their own development, in constant interaction with their environment, rather than solely being a product of their environment. Behavior therapy thus adopted cognitive processing models to explain behavioral change, from which developed cognitive-behavioral therapy (Mahoney & Arnkoff, 1978).

Procedurally, traditional cognitive-behavioral therapy requires that subjects first identify negativity upon impact, replacing negative thoughts with positive thoughts. Subjects then train themselves to counter such negativity with positive, task-oriented thought processes. In the performance arena, positive performance opportunities are created and experienced, so as to increase levels of confidence and develop positive associations with performance.

Clark and Agras (1991) compared the effects of cognitive-behavioral treatment and the use of the drug busiprone, both in isolation and combination. Using a mass media campaign to recruit subjects, the authors used several self-reporting measures to confirm that subjects did suffer from performance anxiety and met criteria for social

phobia. A total of thirty-four subjects were eligible and elected to participate in the study.

The applied cognitive-behavioral treatment included listing positive and negative self-statements, exploring techniques for statement modification, extensive training in applied relaxation, and exposure to feared performance situations. Using a double-blind, placebo-controlled format, the researchers administered numerous criterion measures every week over a five-week period, including the Personal Report of Confidence as a Performer (PRCP), State-Trait Anxiety Inventory, Self-Statement Questionnaire, Fear Survey Schedule, Social Avoidance and Distress Scale, and the Fear of Negative Evaluation Scale. Subjects who had undergone cognitive-behavioral treatment were shown to have a greater reduction in performance anxiety than all other conditions and statistically significant mean improvements in several measures, including the PRCP. Results of the busiprone treatment group will be examined later in this discussion.

In a comparison of cognitive-behavioral therapy, behavioral rehearsal programs, and wait-list control groups, Kendrick, Craig, Lawson, and Davidson (1982) investigated the effects of each treatment approach on the performance anxiety of amateur pianists (N=53). The cognitive-behavioral therapy, referred to as attentional training, included recognizing and challenging negative and task-irrelevant cognitions, substituting positive self-statements in their place, observing slide-tape, cognitive modeling sequences, verbalizing self-statements while performing, and guided imagery. Kendrick et al. measured anxiety multidimensionally, addressing the subjective, physiological, and behavioral components of performance anxiety. Both the cognitive-behavioral therapy and behavioral rehearsal programs reduced musical performance anxiety relative to the control condition. In addition, the cognitive-behavioral therapy treatment group provided enhanced reports of self-efficacy, as measured by the Expectations of Personal Efficacy Scale for Musicians.

While the cognitive-behavioral therapy approach relies on the development of self-control techniques to modify behavior, cognitive learning therapies recognize the combination of cognitive processes and behavioristic procedures. There are three distinct types of cognitive learning therapy: cognitive restructuring, coping skills therapy, and problem-solving therapy (Mahoney & Arnkoff, 1978). Of these differing approaches, cognitive restructuring has been applied most frequently to musical performance anxiety research and will be investigated further in this document (Sweeney & Horan, 1982; Nagel, Himle, & Papsdorf, 1989).

Cognitive restructuring enables the subject to discover and detect maladaptive cognitions, observe the resulting negative effects, and substitute more adaptive thought patterns in their place. As a therapeutic method, there are three documented approaches to cognitive restructuring: rational-emotive therapy, self-instruction, and cognitive therapy. Rational-emotive therapy, developed primarily by Ellis (Mahoney & Arnkoff, 1978), is the most prevalent of these approaches and has been observed to have positive effects on musical performance anxiety. Ellis argued that emotional distress was the direct result of irrational thoughts or perceptions, rather than realistic environmental or situational changes. In practice, rational-emotive therapy includes the following procedures: discussion about the influence of irrational thoughts; monitoring thought patterns; modeling rational self-evaluations, including the modification of thought patterns; providing feedback on those modifications; and performance experience so as to recognize performance-relevant cognitions. Focusing on the rationality of thought, rational-emotive therapy emphasizes the elimination of irrational, maladaptive thoughts and beliefs.

Sweeney and Horan (1982) investigated the effects of cognitive restructuring on musical performance anxiety at the university level, using undergraduate music majors at Penn State University (N=49) as subjects. Using a pre- and post-test design, the researchers administered several state anxiety indices, including the Musical Performance

Competence, Behavioral Index of Anxiety, Piano Performance Anxiety Scale, and pulse rate prior to two public recitals. The cognitive restructuring treatment consisted of identifying self-defeating thought patterns, analyzing them in terms of their consequences, and replacing them with coping statements that maintained task attention and diminished anxiety. Sweeney and Horan observed a significant decline in physical manifestations of anxiety by the cognitive restructuring treatment group, as measured by the Behavioral Index of Anxiety.

Nagel et al. (1989) developed a treatment program that combined several of the aforementioned approaches, including cognitive-behavioral treatment, rational-emotive therapy, progressive muscle relaxation, and temperature biofeedback training. Subjects consisted of volunteer undergraduate music performance majors (N=20), all self-identified sufferers of debilitating anxiety. Randomly divided into treatment and wait-list control groups, the subjects received treatment weekly in both group and individual sessions, each over a six-week period. Subjects in the treatment group were instructed in cognitive-coping strategies and rational-emotive therapy, including presentation of a rationale for relating negative thought and performance anxiety, substitution of positive statements for negative thoughts, and challenging of irrational self-destructive statements related to performance anxiety. Group sessions provided additional focus on progressive muscle relaxation, while individual sessions included biofeedback temperature regulation training as related to relaxation techniques. Anxiety during performance, as measured by the Performance Anxiety Inventory, and general test anxiety, as measured by the Test Anxiety Inventory, were significantly reduced for the treatment group, while their were no significant changes observed for the control group.

Cue-controlled relaxation. Also referred to as conditioned relaxation (Russell & Sipich, 1974), cue-controlled relaxation enables the subject to achieve a relaxed state through the use of a self-produced cue-word. Training consists of two phases, the first of which is instruction in deep, progressive muscle relaxation. When fully relaxed, the

subject attends to their breathing while the therapist speaks a cue word simultaneous to the subjects' exhalation. The subject then speaks the cue word while maintaining the relaxed state. As a result, when initial signs of anxiety emerge, the subject is able to use the cue word while exhaling, and subsequently achieve the relaxed state (Grimm, 1980). The minimal procedures involved in achieving a relaxed state allow for great flexibility, as cue-controlled relaxation can be adapted to many anxiety-producing situations or settings.

In addition to considering the effects of cognitive restructuring at the undergraduate level, Sweeney and Horan (1982) also measured the impact of cue-controlled relaxation upon musical performance (N=49). Using a pre- and post-test design, the researchers observed statistically significant improvements in self-reported trait anxiety through the Debilitating subscale of the Achievement Anxiety Test Scale and state anxiety measured by the Anxiety Differential, and improvements in performance as measured by the Musical Performance Competence.

Cue-controlled relaxation has also been found to positively affect test anxiety, as measured by Russell and Sipich (1974) in a university case study. Using a pre- and post-test format, the researchers measured anxiety in terms of self-reports, through the Test Anxiety Scale and the State-Trait Anxiety Inventory, and cognitive experiences, through the Anxiety Differential. Treatment instructing the subjects to utilize the cue-controlled relaxation techniques occurred weekly over a five-week period prior to test administration. In all measurements, Russell and Sipich observed large reductions in anxiety levels.

Systematic desensitization. Evolved from the methodology of reciprocal inhibition, in which the "elicitation of one response appears to bring about a decrement in the strength of evocation of a simultaneous response" (Wolpe, 1958, 29), systematic desensitization combines elements of cognitive-behavioral therapy and cue-controlled relaxation in efforts to reduce anxiety. Treatment consists of three procedural steps: 1)

Training in deep muscle relaxation; 2) construction of anxiety hierarchies; and 3) counterposing the relaxed and anxious states through the use of imagery.

Subjects are initially trained in deep muscle relaxation, developing a familiarity with the relaxed state. Second, subjects construct anxiety hierarchies, listing all anxiety-evoking stimuli from low to high. Once completed, subjects are hypnotized, and, while in the trance, are encouraged to relax deeply. The therapist then depicts vivid images from the subjects' anxiety hierarchy, beginning with the lowest ranked situation. If the subject is disturbed by any image, they provide physical indication and the therapist moves to the next situation. Those images that elicit no reaction or disturbance are eliminated. Each successive presentation tends to elicit weaker reactions, until even the highest ranked stimuli fails to evoke an anxious response. The average number of sessions required for successful treatment is estimated to be approximately 10 to 25 (Wolpe, 1958).

Wardle (1969) investigated the effects of systematic desensitization treatment and variations thereof on the performance anxiety of university male brass performers (N=30). Using a pre- and post-test design, subjects were randomly assigned to one of three treatment groups: behavioral techniques of systematic desensitization (Group A), psychotherapeutic technique of insight coupled with desensitization-relaxation procedures (Group B), or control group (Group C). Groups A and B each received seven forty-five minute sessions of their specific treatment.

Performing without accompaniment and before a small audience, subjects were evaluated pre- and post-test using sight reading examples from the Watkins-Farnum Performance Scale. Heart rate was monitored prior to, during, and immediately following performance. In addition, trained observers monitored subjects' behavioral indications of nervousness prior to and after performance. Finally, three independent judges evaluated audio recordings in terms of performance quality.

Groups A and B, each of which received a form of systematic desensitization, showed significant reductions in heart rate means, though Group B was greater. Behaviorally, both treatment groups indicated a reduction in outward physical expressions of anxiety. Results from the Watkins-Farnum Performance Scale indicated no significant differences between groups, though the desensitization group (Group A) showed the greatest positive change from pre-test to post-test. Analyses of variance indicated no significant differences between treatment groups in terms of judged performance quality.

In an effort to combat the shortage of available therapists, Paul (1966) investigated the effects of modified systematic desensitization on anxiety when administered in therapy groups. Subjects were undergraduates at the University of Illinois (N=50) enrolled in a required public speaking course. All students enrolled in the course (N=710) completed several personality and anxiety scales at the beginning of the semester, including the IPAT Anxiety Scale Questionnaire, the Pittsburg Social Extroversion-Introversion and Emotionality Scales, the Interpersonal Anxiety Scales, and the Personal Report of Confidence as a Speaker. Those students with the highest scores and interest in treatment were selected as subjects for the research. Subjects were then divided into five groups of ten subjects, using the initial performance anxiety scales to create equivalent groups. Three groups received individual treatment in systematic desensitization, sight-oriented psychotherapy, or attention-placebo during the first semester. The fourth group served as a waitlist control, and was assigned to combined group desensitization and discussion during the second semester. The fifth group served as the untreated control.

Subjects receiving group desensitization (N=10) met weekly for nine sessions. Treatment was administered to five subjects at a time. Sessions one through three included training in progressive muscle relaxation and construction of anxiety

hierarchies. Sessions four through eight focused predominantly on imagining situations from the hierarchies after having achieved the relaxed state.

The personality and anxiety scales administered pre-test were also given following each groups' treatment. Because the fourth group waited until second semester to receive treatment, they completed all criterion measures a total of three times: initial pre-test, following first semester but prior to treatment, and post-treatment. In addition, grade point averages of all subjects were reported pre- and post-treatment.

Comparison of the effects of individual desensitization and group desensitization indicated no significant differences. Both approaches to desensitization were superior to individual insight-oriented psychotherapy and attention-placebo treatment groups in self-report measures and grade point averages. As a result, it appears that both approaches are equally beneficial towards the reduction of subjects' anxiety. Differences between individual and group desensitization groups were observed, however, by the therapists. Both therapists noted that subjects from the group setting perceived the treatment as a method capable of mastering, encouraging confidence that they could develop the ability to combat anxiety. The researchers hypothesized that the group interaction may also improve subjects confidence and expedite treatment as they encounter other anxiety sufferers and discuss individuals' anxiety hierarchies.

Pharmacological treatment. Alcohol and drugs, specifically beta blockers, are widely used by professional performing musicians to combat musical performance anxiety (Bartel & Thompson, 1994; Neftel, Adler, Käppeli, Rossi, Dolder, Käser, et al., 1982; Cooper & Wills, 1989; Gates & Montalbo, 1987). Bartel and Thompson (1994) discovered that nearly one half of reporting Canadian professional symphonic musicians (N=204) indicated previous or current use of pharmacological treatment, specifically beta blockers (37.7%) and alcohol (9.8%). Pharmacological approaches to reducing performance anxiety have also been observed amongst popular musicians; Cooper and

Wills (1989) qualitatively found several male popular musicians who indicated using drugs and/or alcohol as a treatment method for musical performance anxiety.

At the university level, such approaches to reducing musical performance anxiety are far more infrequent, as observed by Wesner et al. (1990). Measuring faculty and student (N=302) drug and alcohol use, the researchers discovered that few subjects reported occasional or frequent use of either prescription drugs (3.3%) or alcohol (1.0%). These results suggest a sharp increase in the reliance on pharmacological coping methods for performance anxiety as musicians move from academic to professional performance environments.

Despite such high self-reports of pharmacological use by professional musicians, their effectiveness in reducing musical performance anxiety and appropriateness of use remains in question. Because beta blockers are the most widely prescribed and used pharmacological treatment for general performance anxiety, researchers have focused their efforts on measuring the effect of beta blocking drugs on musicians (Fishbein et al., 1988; Clark & Agras, 1991; Neftel et al., 1982).

Clinically, this family of drugs is referred to as beta-adrenergic blockers because of their role in blocking activity in the beta-adrenergic areas of the sympathetic nervous system (Wilson, 1986; Norris, 1993). While the sympathetic nervous system promotes optimal cardiac, respiratory, and muscular functioning, when its activity is increased, many physiological symptoms of performance anxiety, including increased heart rate and blood pressure, sweating, dry mouth, loss of breath control, hypertension, and tremors, are simultaneously heightened. Adrenaline, a hormone that stimulates the sympathetic nervous system, is secreted by the adrenal glands during the "flight or flight" response typical in high anxiety settings. When beta blocking drugs are in the system, they are absorbed by the same receptor sites as adrenaline, minimizing the response to heightened levels of adrenaline.

There are two-subtypes of receptors, called beta-adrenoceptors, that are affected differently by the specific type of beta blocking drug. Type one beta-adrenoceptors are located primarily in the heart and kidneys, overseeing responses to catcholamines and the release of resin. Type two beta-adrenoceptors are present in the lung, skeletal muscle, vascular smooth muscle, and liver, addressing tremor, bronchodilation, and metabolic effects (Nies, 1986). Certain beta blocking drugs possess selectivity of either type one or type two adrenoceptors, directly affecting specific areas of the body and resulting in physical manifestations of performance anxiety. In clinical practice, where they are administered to treat high blood pressure, chest pains, heart arrhythmias, tremor, and hyperventilation, beta blocking drugs have been found to have minimal addictive potential and high levels of tolerance (Noyes, 1982; Nies, 1986).

Many researchers have observed reduced self-reports of performance anxiety, outward symptoms, and improved quality of performance as a result of beta blocker treatment (Lidén & Gottfries, 1974; Neftel et al., 1982; Brantigan, C., Brantigan, T. & Joseph, 1982; Lehrer, Rosen, Kostis, & Greenfield, 1987; Noyes, 1982; James, Griffith, Pearson, & Newbury, 1977). One of the first investigations of the effect of beta blocking drugs on performance anxiety was conducted by Lidén and Gottfries (1974). Using a double-blind, crossover format, the researchers measured the effect of alprenolol on symptoms directly related to subjects' (N=19) heightened catecholamine output, specifically palpitation, increased muscular tonus, and tremor. Results indicated a significant decrease in self-reported severity of symptoms during alprenolol treatment.

A double-blind, crossover design was used by James et al. (1977) to measure the effect of oxprenolol on university music students' (N=24) self-reported anxiety and performance quality. Subjects completed self-reports of nervousness prior to performance and of performance quality immediately following, though neither changed significantly as a result of treatment. However, blind adjudication of musical

performance quality was found to improve significantly for subjects during oxprenolol treatment.

Neftel et al. (1982) studied the effect of atenolol on acute anxiety and technical-motor performance of string musicians. Using a double-blind procedure, the researchers created a stage-fright provoking stress model of performances with and without an audience. Immediately prior to and following performance, subjects (N=22) completed a Stage-Fright Rating Scale, while continuous heart rate and urine catecholamine levels were measured. Reported stage fright decreased significantly immediately following the performance under beta blockade, while it increased significantly under placebo. In addition, reduced heart rate and increased adrenaline and noradrenaline were observed in all settings under beta blockade.

Administration of propranolol, another beta blocker, has also been shown to reduce self-reports of musical performance anxiety and related physical manifestations (Brantigan et al., 1982). A double-blind, crossover design was used, with undergraduate musical performance majors (N=13) as subjects. Criterion measures were self-reports, including the State Trait Anxiety Inventory (STAI), monitored physical changes, including heart rate, blood pressure, saliva production, and outward signs of stage fright during performance, and blind evaluations of performance quality. Brantigan et al. observed significant decreases in average heart rate and situational anxiety as measured by the STAI. In addition, saliva production significantly increased for the treatment group, suggesting a reduction in the occurrence of dry mouth in performance.

The influence of beta blockers on attaining optimal arousal has resulted in much philosophical discussion and reluctance about their application to treatment of musical performance anxiety. Because beta blockers limit muscle response and cardiac output, use in a musical performance setting may fail to provide the physical energy required for optimal performance. In clinical practice, patients have reported lethargy, muscle fatigue, and exhaustion as a result of beta blocker administration (Lehrer et al., 1987).

Additionally, skill, coordination, vitality, emotional intensity, and judgment during performance may be limited as a result of depleted adrenaline levels (Gates & Montalbo, 1987; James et al., 1977; Lehrer et al., 1987).

There is a significant body of research suggesting that the use of beta blockers results in minimal reductions in performance anxiety and may in fact have deleterious effects upon performance. Using a double-blind, placebo-controlled format, Clark and Agras (1991) investigated the affect of the beta blocker busiprone on the quality of musical performance and anxiety levels in laboratory performances. Busiprone and placebo treatment groups initially received 5-mg tablets at a dosage of three per day, which increased to a maximum of twelve tablets per day based on individual tolerance. After a six-week treatment period, subjects (N=34) were assessed in terms of self-reports of anxiety, including the Personal Report of Confidence as a Performer and the State-Trait Anxiety Inventory, and physiologically in terms of heart rate. In all criterion measures, the busiprone treatment group displayed non-statistically significant improvements. Because of the sample size and the variation in dosage, the results of the busiprone treatment group were generally disregarded by the researchers.

The effect of beta blocking drugs on the performance anxiety of university voice students was measured by Gates and Montalbo (1987). The researchers implemented a double-blind, randomized, cross-over format. Subjects (N=13) received a placebo or 20 mg of nadolol prior to end-of-semester jury performances, which were repeated forty-eight hours later with the cross-over drug format. A panel of judges rated overall performance, while self-report measures were used to measure nervousness. Performance ratings, displaying high interjudge reliability, and self-reported anxiety scores were both found to have statistically insignificant differences between performance with nadolol and performance with placebo.

Investigation of the effect of nadolol on collegiate string musicians from London and Kingston (N=33), however, has demonstrated that the beta blocking drug may be of

some benefit (James & Savage, 1984). While self-assessments of performance quality and mood showed statistically insignificant changes under treatment, measurements of pulse rate significantly decreased, and objective assessment of bow control, including bow wobble, direction, change, and string crossing, showed significant improvement. For those instruments in which tremor is deleterious to musical performance, such a treatment approach may be of great assistance.

Conclusions about coping strategies. While the aforementioned treatment strategies have largely been proven effective in lowering musical performance anxiety when used by professional and university-level musicians, within the context of the secondary choral classroom, cognitive-behavioral treatment, cue-controlled relaxation, systematic desensitization, and pharmacological treatment are impractical. First, cognitive-behavioral treatment is intended to be administered on an individual basis. Further, it is probable that in the secondary classroom, students may lack the maturity necessary to engage in the substitution of negative thoughts with positive thoughts, minimizing the effects of treatment. While elements of cue-controlled relaxation and systematic desensitization may be applicable, they each require significant time for progressive and deep muscle relaxation training, time unavailable within the context of a secondary music curriculum. Finally, educators are unable to prescribe pharmacological treatments and, for obvious reasons, should avoid suggesting student use of drugs or alcohol to combat musical performance anxiety. If such treatments are impractical within the secondary classroom, how can educators decrease the performance anxiety of their students? What strategies are suitable to the secondary choral classroom context?

One viable option may be the inclusion of sensory awareness and body alignment exercises derived from the Alexander Technique. The Alexander Technique focuses primarily on reeducating one's kinesthetic sense, such that incorrect habitual reactions will be observed, inhibited, and replaced with consciously directed procedures. Such reeducation provides the opportunity for the natural performance of a given activity,

uninhibited by misuse of musculature that can significantly contribute to unnecessary, heightened levels of performance anxiety and stress. Perhaps if Alexander-derived exercises are incorporated into daily warm up exercises, music educators can reduce the debilitating musical performance anxiety of their students. To understand the potential impact of such exercises within the secondary choral classroom, music educators must first gain an understanding of the guiding principles of the Alexander Technique, applications to singing, and research and scholarly writing that has evaluated its effectiveness in similar contexts.

Guiding principles of the Alexander Technique. Working as an orator on the Australian stages, F. Matthais Alexander (1869-1955) was nineteen years old when he began to have difficulty using his speaking voice for sustained periods of time. Consultation with doctors and teachers of singing failed to provide adequate or permanent solutions for his ailment. Frustrated by inadequate diagnoses and treatment strategies, Alexander elected to investigate his condition himself. Through lengthy periods of observations, using a series of mirrors, Alexander (1985) noticed that whenever he began to recite, three things happened:

"1. He pulled back his head and lifted his chin.

2. As the axis of his head changed, his larynx depressed.

3. He sucked in air through his mouth, producing a gasping sound." (p. 26)

Because these three actions resulted in a loss of his speaking voice, Alexander assumed that they signaled unnatural functioning, or incorrect use of his body[2]. Attempting to combat such misuse, he focused his efforts upon the one component he could consciously control: movement of the head. Alexander discovered that when he prevented the pulling back of his head, he indirectly prevented both depression of the larynx and gasping. In addition, Alexander (1985) observed that when his head pulled back, his chest tended to

[2]Alexander did not refer to *use* as the use of specific parts, but the use of all parts of the organism acting in concert. Therefore, the term *misuse* refers to use of all parts of the organism not acting in concert. Such misuse is determined to be a result of modern living conditions, contributing to the development of incorrect learned responses.

lift, which in turn narrowed his back and shortened his stature. He concluded that the "primary control of the working of all the mechanisms of the human organism" (p. 28) was the dynamic relationship between the head and neck, which in turn affects the position and behavior of the torso. The organs of speech were not only influenced by use of the head and neck, but also of the torso; misuse of any mechanism of the primary control is inextricably linked to the misuse of all other mechanisms in the body.

Though it is generally assumed that physical sensations provide accurate information about posture, Alexander discovered that this assumption was incorrect. Instead, positions that he determined functional and comfortable were observed to be habitual patterns of misuse. Alexander described the inability to determine one's own physical state, leading to inefficient functioning of postural, respiratory, and vocal mechanisms as *unreliable sensory appreciation* (MacDonald, 1997). Because his sensory awareness was fallible and unreliable, Alexander was unconsciously interfering with the natural, free functioning of his body, and overexerting his voice in an unhealthy manner.

To combat these ingrained habits and reeducate the primary control, Alexander created a series of directions that combined preventative measures and actions. Despite teaching himself these directions cognitively, while speaking and reciting he was physically unable to maintain proper use of the primary control. When he attempted to recite the directions while acting, Alexander's body subconsciously resorted to familiar sensory experiences of misuse. Even when kinesthetic observations suggested correct use of the primary control, visual observations indicated reliance on habitual patterns of misuse. The influential power of instinctive direction on misuse of the physical mechanisms proved so great that they overcame any of Alexander's initial attempts to reeducate his primary control.

As a result, Alexander (1985) concluded that old, instinctive directions of the self had to be replaced by new, conscious directions, guided by the following cognitive reasoning process:

"1. To analyze the conditions of present use.

2. To select the means whereby[3] a more satisfactory use could be brought about.

3. To project consciously the directions required for putting these means into effect." (p. 39)

To be effective in reducing misuse of the primary control, Alexander argued that cognitive and physical familiarity with the inhibitive actions must be developed through patterned repetition prior to application of the cognitive reasoning process as outlined above. Thus when the above process is applied, mental and muscular memories developed as a result of patterned repetition will obstruct previous patterns of misuse. Without adequate cognitive and physical familiarity with the inhibitive process, the body will instinctively resort to previous behaviors, regardless of their observable misuse or simultaneous verbal directives otherwise.

The redirection of behavioral patterns of misuse towards free, natural functioning can thus only be achieved through the combination of awareness, inhibition, and application and conscious projection of new directives. Applying such redirection towards misuse of the primary control, Alexander developed the following cognitive directions specific to his loss of the speaking voice, but which researchers have extrapolated to a variety of physical maladies. Duarte (1981) presents them as follows:

1. Let the neck be free. Allow the tension in the muscles of the neck not to increase.

2. Let the head go forward and up. Allow the head to not be pulled back or down.

3. Let the torso widen out and lengthen up. Allow the torso to not be shortened and narrowed by arching the spine. (p. 4)[4]

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[3]Alexander used the term *means whereby* to indicate the reasoned means applied to the gaining of a specific end. Specifically, means included the inhibition of the habitual patterns of behavior and the conscious projection of new directives.

[4]Alexander's choice of vocabulary, presented here with Duarte's (1981) editorial adjustments, are indicative

While Alexander's ideas were not developed specifically with musicians in mind, his attention to fine motor control and bodily coordination is applicable and may be beneficial to musicians of any level (Rosenthal, 1987). The manner in which use affects function is of heightened importance to choral music educators in attempts to promote students' free and efficient vocal production.

Purpose Statement

The purpose of this research is to gain information about the relationship between musical performance anxiety and exposure to sensory awareness and body alignment exercises drawn from the Alexander Technique, so that it can be used to improve instruction, treatment of musical performance anxiety, and performance levels.

Research Problems

This study includes both primary and secondary problems. The primary problems of this study are:

1. To determine the overall musical performance anxiety of high school female singers.
2. To determine the self-reported symptoms of musical performance anxiety of high school female singers.
3. To determine the effect of sensory awareness and body alignment exercises derived from the Alexander Technique's primary control model on the musical performance anxiety of high school female singers. Specifically, do self-identified levels of musical performance anxiety differ between high school students with extensive and no exposure to said exercises through vocal warm-up exercises.

The secondary problems of this study are:

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of the guiding principles of the Technique. Using terms such as "direct," "let," and "allow" infer an emphasis on the process rather than the product of achieving proper functioning of the primary control. Objectives do not focus on achieving a specific postural position, but rather on directing the components of the primary control towards a freer and more efficient position of movement.

1. To determine to what extent brief exposure to exercises based on the Alexander Technique in the high school choral ensemble setting is able to foster a conceptual understanding of the Technique.
2. To determine the perceived effects of Alexander Technique on performance by high school female singers.

Chapter Two

Related Research

> In order to play a musical instrument to a high level, (i) the instrument must be in good order, (ii) the player's mind, emotions, and body must be harmoniously balanced, and (iii) s/he must have the necessary knowledge, motor skills, and specific techniques for playing that instrument. Only when all these factors and many others combine efficiently can artistic results occur. In the case of singing, the links are even more subtle, for the musician's body is the musical instrument. (Bosanquet, 1987, p. 229)

Application of the Alexander Technique to Singing

Prior to inspiration and the onset of tone, the vocalist subconsciously makes several physical and mental adjustments to account for anticipated register, vocal tone, and timbre. Patterned repetition causes these physical and mental adjustments to become habitual, within which excessive tension in the vocal mechanism can occur, adversely affecting vocal production. Frank Pierce Jones (1976) referred to these changes as "reflex patterns of response," which serve as a preliminary set of actions prior to engagement in any type of movement. An American professor, Jones was the first to conduct experimental research on the work of Alexander. He discovered, similarly to Alexander, that the physical changes during the preliminary set included shortening of the head and neck musculature, lifting of the shoulders, and depression of the extrinsic musculature of the larynx.

Efficient and natural vocal production requires that posture, both sitting and standing, allow the rib cage to expand such that inspiration and expiration can be free. Using a single case study design (N=1), Jones (1972) observed changes in posture when Alexander's methods were applied to singing. Jones photographed the subjects' profile and then measured neck length under two conditions. First, the subject was photographed while singing in her habitual posture. Second, the experimental posture was applied, in

which pressure was exerted upon the occipult joint so as to not allow muscles of the head and neck to shorten. Results indicated lengthening of the neck in the experimental posture.

Based on the primary control model, if the neck becomes lengthened and free, the head and shoulders will experience similar expansion and freedom. Through this type of Alexander-derived exploration, students may in turn experience lengthening of the spine, expansion of the rib cage, and improved respiratory functioning, all principles central to the *appoggio* technique of vocal pedagogy (Miller, 1996). The heightened freedom may allow for more efficient functioning of the respiratory and vocal reflex, generally improving vocal performance.

The ability to effectively adjust one's posture requires the development of accurate and reliable sensory appreciation. Merely directing voice students towards vague notions of freedom and expansion is meaningless and confusing if they have not individually developed the means to change. Without reliable muscle sense, such ideas will remain theoretical constructs, limiting students' ability to interpret and translate them into reality. Further, the relationship between posture and tension in performance cannot be completely grasped unless students have improved their sensory awareness.

The relationship between Jones' findings (1972, 1978) and the effects of the Alexander Technique on singing were investigated by Duarte (1981). Duarte asserts that, through reeducation of the head balance, one's kinesthetic awareness is heightened, improving the necessary adjustments within the extrinsic musculature of the larynx. In addition, improvement in head balance has allowed for better coordination of the muscles of inspiration and expiration, improving both the intake of air and the onset of tone.

Duarte (1981) also examined the effect of the Alexander Technique from the vocalists' psychological perspective. Duarte identified three major areas in which the Alexander Technique can improve the psychological state of the vocalist: kinesthetic awareness, self-monitoring and self-assessment, and general attitude towards the

developing voice. First, because the preparatory set requires the vocalist to anticipate any necessary physical adjustments, the vocalist must be acutely aware of his/her kinesthetic sense, which involuntarily controls such modifications. Second, the self-monitoring and assessment of said modifications relies upon mental and sensory feedback developed through somatic experiences and imagery. The kinesthetic and mental awareness developed through the Alexander Technique allows the vocalist to more accurately ascertain his/her sensations and mental images, improving self-monitoring and assessment of misuse.

Vocal resonance has also been observed to change when Alexander's principles of head balance are applied to the practice of singing (Jones, 1972). In a single case study format, Jones used three approaches to measure changes in vocal resonance: sound spectrograms that display vocal resonance versus time; self-reports of vocal production; and informal ratings of performance quality by other musicians. Results indicated improvement of resonance in all criterion measures. In addition, the subject reported greater ease in singing and improved breath control under the experimental condition, although Jones did not account for the possibility of the placebo effect.

The effect of Alexander's principles on the singers' preliminary set was investigated through a case study format by Duarte (1981). Treatment was administered within the context of four weekly singing lessons given to voice students of the New England Conservatory (N=6). The treatment consisted of three major components:

1. Physical exercises: combination of relaxation exercises, exposure to Alexander's "basic directions," and identification of individual postural problems.
2. Vocal exercises: combination of breath exercises, including the "whispered ah" exercise (Alcantara, 1996, 144-151), development of sensory awareness, and the inhibition of maladaptive behaviors.

3. Repertoire rehearsal: emphasized the release of tension, mental imagery during the preliminary set, and musical interpretation.

Subjects completed three questionnaires, filled out at the first, second, and final lessons. The first questionnaire consisted of nominal data and self-reports of technical difficulties. The second questionnaire asked subjects to identify any general sensations or effects on singing observed since the first lesson. The final questionnaire required subjects to consider their own experience with the following concepts related to the Alexander Technique: Alexander's basic "directions," "awareness," a new "means whereby", and "inhibition" of bad habits and reflexes.

While Duarte (1981) synthesized subjects' responses and included substantial salient data, he failed to discuss the results or draw any conclusions. Nonetheless, much important information can be observed from the included data. Regarding general sensations as a result of treatment, subjects indicated ease and efficiency of breath and movement, and awareness of and ability to release tension. Impact of treatment upon singing was observed to have varied results, as several subjects reported a decrease in anxiety over passages of high tessitura or general tension levels, while others noted increased breath control and consistency of vocal tone. Results of the final questionnaire indicated that subjects had gained an understanding of Alexander's basic "directions" and fluency with the working vocabulary. Though equal emphasis of vocabulary may not have existed in each treatment setting, a conceptual understanding and application to practice was attained by nearly all participants.

The Alexander Technique and its Effects on Musical Performance Anxiety

As shown, a significant body of research has been conducted to measure the effects of cognitive-behavioral therapy, cue-controlled relaxation, systematic desensitization, and pharmacological treatment on musical performance anxiety. In contrast, however, there is minimal research that examines the effects of the Alexander Technique on tension related to musical performance. The lack of experimental research

exists despite frequent discussion of the Alexander Technique as a treatement strategy in non-refereed publications (Babits & Mayers, 1987; Babits & Mayers, 1988; Calder, 1991; Ely, 1991). Watson and Valentine (1987) discovered that of those who indicated experimenting with a complementary medical technique to confront musical performance anxiety (N=16), 43 percent had relied on instruction in the Alexander Technique.

Valentine, Fitzgerald, Gorton, Hudson, and Symonds (1995) are the only researchers to have conducted experimental research measuring the physiological, behavioral, and cognitive effects of the Alexander Technique on the musical performance anxiety of vocalists. Using undergraduate students from a university in the United Kingdom (N=25, 21 female, 4 male), subjects were divided into treatment and wait-list groups, in which the treatment group received fifteen free private lessons in the Alexander Technique from one of two teachers of the technique. The teachers represented two different Alexander Technique training schools, and no attempt was made by the researchers to analyze differences between them. All subjects were measured on four occasions: at the initial audition, pre-class, post-class, and at the final recital. Peak breath flow and heart rate were objectively measured, while musical quality, height, and proper implementation of the Alexander Technique were subjectively measured during each performance.[5] To objectively measure musical performance anxiety, the Full Nowlis mood adjective checklist was administered pre- and post-performance, while the Music Performance Anxiety Self-Statement was administered only post-performance. The researchers also interviewed subjects in the treatment group to obtain subjective reactions to the treatment and collected reports from the Alexander teachers to ascertain individual subjects' receptivity and progress.

Physiologically, Valentine et al. (1995) observed no significant developments for the treatment group. Mean heart rate variance between the audition and recital was

[5]Peak breath flow was measured with a peak flow meter. Subjects were instructed to blow as hard and fast as possible with a short, sharp blow. The best of three attempts was recorded.

observed to differ significantly for the entire sample, although there were no significant interactions between groups. Changes in height and peak breath flow were minimal.

Behaviorally, the researchers observed significant improvement in musical and technical quality (inter-judge reliability of r = .59 and r = .57, respectively) for the treatment group. Between the pre- and post-class measurements, the treatment group showed significant improvement in both categories, while the control group declined.

Measuring the degree of misuse of the Alexander Technique proved difficult, reflected by an extremely low inter-judge reliability (r = .05). The criterion measure, a seven-point rating scale, was developed and agreed upon by the two teachers of the Alexander Technique. Because the teachers were from different training schools, perhaps their differences in pedagogy were great enough to alter their interpretation of misuse. Additionally, pedagogical differences may have adversely affected their ability to develop a reliable criterion measure. While Valentine et al. (1995) speculated that an adequate understanding and implementation of the Alexander Technique may require more than the designated fifteen lessons, this conclusion remains hypothetical, because of the dubious nature of the criterion measure.

Cognitively, several improvements were observed in the treatment group, though none were statistically significant. The anxiety factor of the Full Nowlis mood adjective checklist revealed decreased scores from pre- to post-class measurements, decreases that were more marked for the treatment group. Scores on the Music Performance Anxiety Self-Statement, which indicates a positive outlook and task-focused attention, increased markedly for the treatment group from pre- to post-class sessions, while the control group showed a decline. Though the scores generally indicated an increase in desired behavior for the treatment group and a decrease for the control group, the differences between groups at pre-class measurements were statistically significant while the post-class measurements were not statistically significant. As such, the differences between groups

when the pre-class score was used as a covariate resulted in no statistically significant differences between groups.

Summary

Incorporation of the Alexander Technique into the vocal music environment has been shown to yield numerous benefits, physiologically, behaviorally, and cognitively. Yet instruction in the Alexander Technique is not designed for use in a group setting, such as a secondary choral classroom. Is it possible, then, for secondary choral music educators to adapt Alexander's approach to this specific setting and observe positive outcomes? If so, where in the rehearsal setting would such exercises be appropriate?

Instructional time in the choral classroom focuses on three primary components: physical and vocal warm-up exercises, sight-reading, and rehearsal of choral repertoire. Because it already includes exercises intended to engage the body physically, the time dedicated to physical and vocal warm-up exercises appears to be the most conducive to incorporating a modified form of the Alexander Technique.

Chapter Three

Methodology

Participants

The subjects were members of one of two beginning secondary choral ensembles from a Detroit, Michigan academic magnet high school. During the second semester, both ensembles were taught by the same primary instructor, the author, who completed the internship semester as a student teacher in that setting during the course of study. Thus, both ensembles were taught by a different primary instructor, the cooperating teacher, during the previous semester. Prior to the administration of treatment, all subjects had received considerable instruction from the author.

One ensemble was a women's choir (N=12), the other a mixed gender choir (females N=15, males N=6). For the purpose of this research, only the female subjects' data was evaluated, though data was collected from all subjects. From the initial pool of female subjects (total N=27), one subject from the women's choir and four subjects from the mixed gender choir could not complete all aspects of the research. As such, their data has been excluded from future discussion, reducing the sample size (women's choir, N=11, mixed choir, N=11).

Nominal data collected prior to treatment revealed that the subjects represented various levels of prior musical experience, though all subjects indicated this was the first year in a high school choral ensemble. As students at an academic magnet high school, subjects were required to pass entrance exams and meet minimum grade point average requirements throughout their tenure. Subjects resided throughout the city of Detroit and represented a wide variety of socio-economic backgrounds. All subjects were African-American, ranging in age from 13 to 16 years. Both ensembles met daily for one 51-minute period, on a rotating schedule. Thus, the time of day in which treatment was administered was evenly distributed throughout the 8:00 a.m. to 3:30 p.m. school day.

Design and Procedures

Application forms for the University Committee on Research Involving Human Subjects (UCRIHS) were submitted and approval was received (see Appendix G). Consent forms (see Appendix F) were distributed to and collected from all subjects. To address primary problems one and two, a one-dimensional between treatments design with experimental and control groups was employed. Primary problem three was addressed through the use of a pre- and post-test design with two groups. The women's choir was randomly selected as the treatment group, receiving sensory awareness and body alignment exercises derived from the Alexander Technique. These exercises, approximately one to four minutes in length, occurred three to four times weekly as a part of vocal, warm-up exercises. Treatment was administered over a 13-week period. The mixed gender choir served as the control group and received no sensory awareness or body alignment exercises over the treatment period.

Treatment was administered by the researcher, who has had considerable exposure to the Alexander Technique in over 130 private voice lessons and 100 group voice classes and has read extensively on the subject. Nonetheless, he acknowledges a lack of professional certification in the Alexander Technique, which may have affected the results of this research. Additionally, though the author served as primary instructor for both treatment groups, the simultaneous completion of the internship semester may also have impacted the results of this research.

Three to four times per week, as a component of daily warm-up exercises, the treatment group was led through sensory awareness and body alignment exercises based on the Alexander Techniques' premise of the primary control. All exercises were guided, and many include verbal directives based on Alexander's basic directions, described by Duarte (1981) as:

1. Let the neck be free. Allow the tension in the muscles of the neck not to increase.

2. Let the head go forward and up. Allow the head to not be pulled back or down.
3. Let the torso widen out and lengthen up. Allow the torso to not be shortened and narrowed by arching the spine. (p. 4)

Examples of exercises used includes the following:

1. Exploring the range of motion of the head, through silent observation.
2. Exploring the range of motion of the neck, through silent observation.
3. Observing the interaction of the primary control when sitting and standing.
4. Observing the lengthening of the spine through the "stacking" of vertebrae.
5. Shoulder-freeing movements, such as windmills.
6. Stretching of arms out to the sides and up, freeing the rib cage and breath mechanism.
7. Imagining that the top of the skull is suspended from a puppet string.
8. "Whispered ah" exercise (Alcantara, 1996, 144-151).

Occasionally, individuals were used as visual models for the rest of the treatment group, for the purpose of improving observational skills and awareness.

Criterion Measures

Prior to the first and second school performances of the spring 2002 semester, between which treatment occurred, subjects completed several researcher-designed criterion measures. The *Frequency of Musical Performance Anxiety* (see Appendix A), modelled after the Performance Anxiety Questionnaire of Wesner et al. (1990), addresses the first primary problem, the overall effects of musical performance anxiety, and was administered only prior to treatment. To address primary problem number two, the self-reported physiological manifestations of musical performance anxiety, the *Self-Reported Symptoms of Musical Performance Anxiety* (see Appendix B) was administered both pre- and post-treatment. Symptoms listed were drawn from a variety of sources reviewed,

selected to represent a wide range of cognitive and somatic manifestations of anxiety. Finally, the *Effect of the Alexander Technique on Self-Reported Symptoms of Musical Performance Anxiety* (see Appendix C), which addresses primary problem number three, the effects of the Alexander Technique on specific symptoms of musical performance anxiety, was administered only to the treatment group following treatment and prior to their second performance.

Three days after the second performance, the treatment group completed another researcher-designed criterion measure, *The Alexander Technique and Vocal Performance* (see Appendix D). Development of this criterion measure used Duarte's (1981) questionnaires as models. *Section I* addresses secondary problem number one, measuring conceptual understanding of the Alexander Technique. *Section II* addresses secondary problem number two, perceived effects of the Alexander Technique on performance.

Analysis

Each question on the *Frequency of Musical Performance Anxiety* was analyzed through single t-tests to determine differences between treatment and control groups' previous experiences with anxiety. Results of the *Self-Reported Symptoms of Musical Performance Anxiety* were analyzed in terms of the percentages of subjects experiencing each symptom. Percentages were assessed for all subjects, the control group alone, treatment group alone, and the increase or decrease in percentage from pre- to post-test. The comparison of means and observation of trends was used to analyze the *Effect of the Alexander Technique on Self-Reported Symptoms of Musical Performance Anxiety.*

Results of *The Alexander Technique and Vocal Performance* questionnaire were analyzed using qualitative content analysis and in terms of emerging themes in the data.

Chapter Four

Results

Experience with Musical Performance Anxiety

To determine if there were preexisting statistically significant differences between treatment and control groups' previous experiences with musical performance anxiety, each question on the *Frequency of Musical Performance Anxiety* (see Appendix A) was analyzed using a one-tailed t-test. Subjects were asked to indicate on a five-point rating scale from zero (never) to four (always) how frequently they had encountered anxiety during solo performances, auditions, and ensemble performances. In addition, subjects' indicated on the same scale how often they had experienced anxiety that interfered with performance, was a distraction immediately prior to performance, or caused them to avoid performance opportunities entirely. As shown in Table 1, all t-tests revealed no statistically significant differences between treatment and control groups.

Table 1

T-tests Between Treatment and Control Groups

Experience with musical performance anxiety		M (Treatment)	SD	M (Control)	SD	t
1.	Solo performance	1.818	1.192	1.818	1.471	0.000
2.	Auditions	1.727	1.355	2.364	0.979	1.189
3.	Ensemble performance	1.364	0.979	1.273	1.213	0.182
4.	Anxiety interfering with performance	1.091	0.900	0.818	0.716	0.743
5.	Avoiding performance because of anxiety	0.455	0.782	0.273	0.445	0.067
6.	Distracted by anxiety prior to performance	1.091	0.996	0.818	1.029	0.596

Note: M = mean; SD = Standard deviation; $p < .05$; Treatment N=11; Control N=11. Rating scale included zero (never), one (occasionally), two (frequently), three (almost always), and four (always).

Mean scores of all subjects' (N=22) pre-test responses on the *Frequency of Musical Performance* Anxiety were assessed to determine the frequency of beginning female high school singers' experiences with musical performance anxiety in various settings (see Table 2). Mean scores indicated that experiences with anxiety were most frequent during auditions (M=2.045) and solo performances (M=1.818), supporting previous research that has distinguished high and low stress performance opportunities. Anxiety previously experienced during ensemble performance (M=1.318) was also reported by some.

Table 2

Mean Experience with Musical Performance Anxiety Scores

Experience with musical performance anxiety		M	SD
1.	Solo performance	1.818	1.302
2.	Auditions	2.045	1.224
3.	Ensemble Performance	1.318	1.103
4.	Anxiety interfering with performance	0.955	0.824
5.	Avoiding performance because of anxiety	0.364	0.643
6.	Distracted by anxiety prior to performance	0.955	1.021

Note: M = mean; SD = Standard deviation; $p < .05$; N=22. Rating scale included zero (never), one (occasionally), two (frequently), three (almost always), and four (always).

Subjects reported only occasional experience with anxiety that either interfered with performance (M=0.955) or distracted them immediately prior to performance (M=0.955). In addition, subjects reported very infrequent avoidance of performance opportunities because of anxiety (M=0.364). Other situations in which performance anxiety was reported included the following: oral presentations/projects (1 response, M=1.000), play performances (1, M=2.000), cheerleading competitions (1, M=2.000), dance concerts/competitions (2, M=2.500), and championship games (1, M=3.000).

Self-Reported Symptoms of Musical Performance Anxiety

Results from the *Self-Reported Symptoms of Musical Performance Anxiety* (see Appendix B) administered both pre- and post-treatment, revealed information about the physiological manifestations of anxiety in female high school choral members. Subjects were given a list of 20 symptoms associated with performance anxiety and were asked to indicate those that they were currently experiencing prior to performance. Pre- and post-test responses were analyzed in terms of frequency and percentages of the treatment group alone (N=11), the control group alone (N=11), and all subjects (N=22). To examine the prevalence of self-reported symptoms in a random sample of the subject population, the frequency and percentages of pre-test responses for all subjects were tabulated (see Table 3).

Table 3

Subjects' Pre-Test Self-Reported Experiencing of Musical Performance Anxiety Symptoms

Symptom	Frequency (*f*)	Percentage (%)
General Nervousness	12	54.5
Perspiration / Sweating	6	27.3
Panicky Feeling	5	22.7
Worry	5	22.7
Dry Mouth	4	18.2
Shortness of Breath	4	18.2
Dizziness	3	13.6
Increased Heart Rate	3	13.6
Irritability	3	13.6
Lack of Voice Control	3	13.6
Trembling	3	13.6
Coordination Problems	2	9.1
Lack of Confidence	2	9.1
Muscle Aches and Spasms	2	9.1
Poor Concentration	2	9.1
Chills	1	4.5
Cold Hands	1	4.5
Feeling Flushed	1	4.5
Nausea	1	4.5
Other: Anemia	1	4.5
Other: Hungry	1	4.5
Other: Temperature Increase	1	4.5
Diarrhea	0	0.0

Note: *f* = Frequency; % = Percentage; $p < .05$; N=22.

Nineteen of the 20 listed symptoms, with the exception of diarrhea, were reported by at least one subject during pre-test administration. Four symptoms were reported by at least 20 percent of subjects, including general nervousness (54.5%), perspiration/sweating (27.3%), worry (22.7%), and panicky feeling (22.7%). Seven additional symptoms were reported by at least 10 percent of subjects: dry mouth (18.2%), shortness of breath (18.2%), irritability (13.6%), lack of voice control (13.6%), dizziness (13.6%), trembling (13.6%), and increased heart rate (13.6%).

To ascertain what effect, if any, the treatment had on self-reported symptoms of performance anxiety, the percentage of self-reports of both treatment and control groups were analyzed and compared. Individual one-tailed t-tests were not applied to each symptom because of the small population (N=22) and the number of tests required, which could result in a Type One error. Table 4 shows the percentages of self-reports for both groups during pre- and post-treatment measurements, as well as the percentage change between pre- and post-test measurements.

Table 4

Control & Treatment Groups' Self-Reported Experiencing of Symptoms of Musical Performance Anxiety

	Control Group Percentage (%)			Treatment Group Percentage (%)		
Symptom	Pre-Test	Post-Test	Change	Pre-Test	Post-Test	Change
Chills	0.0	0.0	0.0	9.1	0.0	- 9.1
Cold Hands	9.1	9.1	0.0	0.0	0.0	0.0
Coordination Problems	9.1	0.0	- 9.1	9.1	0.0	- 9.1
Diarrhea	0.0	0.0	0.0	0.0	0.0	0.0
Dizziness	18.2	0.0	- 18.2	9.1	0.0	- 9.1
Dry Mouth	18.2	0.0	- 18.2	18.2	27.3	+ 9.1
Feeling Flushed	9.1	0.0	- 9.1	0.0	0.0	0.0
General Nervousness	45.5	36.4	- 9.1	63.6	54.5	- 9.1
Increased Heart Rate	9.1	0.0	- 9.1	18.2	9.1	- 9.1
Irritability	27.3	0.0	- 27.3	0.0	9.1	+ 9.1
Lack of Voice Control	9.1	9.1	0.0	18.2	0.0	- 18.2
Lack of Confidence	9.1	18.2	+ 9.1	9.1	9.1	0.0
Muscle Aches and Spasms	9.1	0.0	- 9.1	9.1	0.0	- 9.1
Nausea	9.1	0.0	- 9.1	0.0	0.0	0.0
Panicky Feeling	18.2	9.1	- 9.1	27.3	9.1	- 18.2
Perspiration / Sweating	18.2	9.1	- 9.1	36.4	18.2	- 18.2
Poor Concentration	0.0	18.2	+ 18.2	18.2	9.1	- 9.1
Shortness of Breath	9.1	18.2	+ 9.1	27.3	9.1	- 18.2
Trembling	9.1	18.2	+ 9.1	18.2	18.2	0.0
Worry	9.1	27.3	+ 18.2	36.4	54.5	+ 18.1

Note: $p < .05$; Treatment N=11; Control N=11.

Direction of change in the percentage of self-reports were similar between groups. Eleven symptoms decreased for the treatment group, while six experienced no change and three worsened and increased. The control group exhibited like trends: ten symptoms decreased, four had no change, and five became worse and increased.

The percentage of rate reduction also indicates similarity between groups. Five symptoms were observed to have greater decreases for the treatment group than the control: lack of voice control, poor concentration, panicky feeling, perspiration/sweating, and shortness of breath. Meanwhile, five other symptoms experienced greater decrease for the control group: irritability, nausea, feeling flushed, dizziness, and dry mouth.

Comparison of rate reduction differential between groups indicated the different effects of the treatment and control. Four symptoms exhibited 27.3 percent or greater differential between groups, including the following: irritability, dry mouth, poor concentration, and shortness of breath. Two of these symptoms decreased in the percentage of self-reports for the control group while increasing for the treatment group: irritability (-27.3% for control : +9.1% for treatment) and dry mouth (-18.2% : +9.1%). The other two symptoms decreased for the treatment group while increasing for the control: poor concentration (-9.1% for treatment : +18.2% for control) and shortness of breath (-18.2% : +9.1%).

Effects of Treatment on Self-Reported Symptoms

Means of the *Effect of the Alexander Technique on Symptoms of Musical Performance Anxiety* (see Appendix C) were compared to ascertain the perceived effect of treatment by the treatment subjects (see Table 5). Provided with a five-point rating scale, including zero (significantly worse), one (moderately worse), two (no change), three (moderately improved), and four (significantly improved), subjects (N=11) indicated the effect of treatment on the symptoms listed in the *Self-Reported Symptoms of Musical Performance Anxiety* criterion measure.

Table 5

Mean Effect of the Alexander Technique Scores

	All Subjects (N=11)	
Symptom	M	SD
Poor Concentration	2.182	1.266
Worry	2.182	1.029
General Nervousness	2.091	0.996
Panicky Feeling	1.909	0.996
Lack of Confidence	1.818	1.266
Lack of Voice Control	1.818	1.266
Increased Heart Rate	1.727	0.445
Irritability	1.636	1.150
Trembling	1.636	0.771
Chills	1.545	0.988
Coordination Problems	1.545	0.988
Shortness of Breath	1.545	1.305
Dry Mouth	1.500	1.025
Cold Hands	1.455	0.891
Dizziness	1.455	0.891
Feeling Flushed	1.455	0.891
Perspiration / Sweating	1.455	0.988
Muscle Aches and Spasms	1.364	0.881
Nausea	1.273	0.962
Diarrhea	1.273	0.962

Note: M = Mean; SD = Standard deviation; $p < .05$; All Subjects N=11; Rating scale included: 0.00 = Significantly Worse, 1.00 = Moderately Worse, 2.00 = No Change, 3.00 = Moderately Improved, 4.00 = Significantly Improved.

Analysis of the *Effect of the Alexander Technique on Symptoms of Musical Performance Anxiety* suggested that the criterion measure, which was not pilot-tested prior to administration, was misinterpreted by some. As indicated in Table 6, all subjects exhibited similar trends. It appears, however, that three subjects interpreted the rating scale incorrectly. Rating the effect of treatment on cognitive and somatic symptoms, the employed rating scale ranged from zero ("significantly worse") to four ("significantly improved"), with two indicating "no change." Comparison of means supports the assumption that three subjects indicated "no change" with a rating of zero rather than two, as those subjects' mean was 0.251, while the remaining subjects' (N=8) mean was M=2.195. Because similar trends were exhibited between the two groups, and the lack of pilot-testing, it is believed that the directions of the criterion measure were not followed correctly. Given the numbering system used (zero to four), it is understandable that some subjects may have inaccurately associated the treatment having no effect with a rating of zero. An alternate numbering system, such as negative two to positive two, with zero representing no change, may have allowed the directions of the criterion measure to be followed more accurately. Table 6 presents the results of all subjects (N=11), the assumed correct interpretation (N=8), and the assumed incorrect interpretation (N=3). All future discussion on these results will be based on the responses of the majority of subjects, those who apparently interpreted the criterion measure as intended.

Table 6

Interpretation of the Effect of the Alexander Technique Mean Scores

	All Subjects (N=11)		Assumed Correctly Interpreted (N=8)		Assumed Incorrectly Interpreted (N=3)	
Symptom	M	SD	M	SD	M	SD
Chills	1.545	0.988	2.125	0.331	0.000	0.000
Cold Hands	1.455	0.891	2.000	0.000	0.000	0.000
Coordination Problems	1.545	0.988	2.125	0.331	0.000	0.000
Diarrhea	1.273	0.962	2.000	0.000	0.000	0.000
Dizziness	1.455	0.891	2.000	0.000	0.000	0.000
Dry Mouth	1.500	1.025	2.14	0.350	0.000	0.000
Feeling Flushed	1.455	0.891	2.000	0.000	0.000	0.000
General Nervousness	2.091	0.996	2.500	0.866	1.000	0.000
Increased Heart Rate	1.727	0.445	2.000	0.000	1.000	0.000
Irritability	1.636	1.150	2.250	0.661	0.000	0.000
Lack of Confidence	1.818	1.266	2.500	0.707	0.000	0.000
Lack of Voice Control	1.818	1.266	2.500	0.707	0.000	0.000
Muscle Aches and Spasms	1.364	0.881	1.875	0.331	0.000	0.000
Nausea	1.273	0.962	2.000	0.000	0.000	0.000
Panicky Feeling	1.909	0.996	2.375	0.696	0.667	0.471
Perspiration / Sweating	1.455	0.988	2.000	0.500	0.000	0.000
Poor Concentration	2.182	1.266	2.750	0.968	0.667	0.471
Shortness of Breath	1.545	1.305	2.125	1.053	0.000	0.000
Trembling	1.636	0.771	2.000	0.500	0.667	0.471
Worry	2.182	1.029	2.625	0.857	1.000	0.000

Note: M = Mean; SD = Standard deviation; $p < .05$; Rating scale included: 0.00 = Significantly Worse, 1.00 = Moderately Worse, 2.00 = No Change, 3.00 = Moderately Improved, 4.00 = Significantly Improved.

Fifteen of the twenty symptoms appeared to have been unaffected by the treatment, as mean scores ranged from 1.875 to 2.375 and averaged 2.068. Some symptoms reported mean scores of 2.500 or above, indicating moderate improvement as a result of treatment. These were predominantly cognitive components of anxiety, including: poor concentration (M=2.750), worry (M=2.625), general nervousness (M=2.500), and lack of confidence (M=2.500). Lack of voice control (M=2.500) was the only somatic component of anxiety with a mean score of 2.500 or above. Only one symptoms' mean score was below the "no change" rating of 2.000, muscle aches and spasms (M=1.875).

The Alexander Technique and Vocal Performance

Results from the follow-up questionnaire, *The Alexander Technique and Vocal Performance*, were analyzed through qualitative content analysis and in terms of emerging themes in the data. Analysis provided insight into the conceptual understanding gained and the perceived effects of treatment. Because of unforeseeable schedule conflicts, only nine of the 11 treatment subjects completed this criterion measure. Though data was collected anonymously, for the purpose of discussion and comparison, respondents have been randomly assigned a subject number, one through nine. See Appendix E: Treatment Subjects' Qualitative Responses for complete transcripts of subjects' responses.

Section I focused on terminology, asking subjects to explain or define terms related to the Alexander Technique, including: primary control, misuse, awareness, inhibition of bad habits, and "means-whereby." Of these, correct explanations of misuse and awareness were most frequent. Primary control, inhibition of bad habits, and "means-whereby" appeared to be the least understood by the subjects, demonstrated through vague definitions that occasionally combined multiple concepts related to the Alexander Technique.

Six respondents provided explanations of *misuse*, which refers to the use of all parts of an organism not acting in concert, some indicating specific application to the body. Four responses described the act of doing something incorrectly, such as "to use something in the wrong way" (Subject Two). Two responses made connections to use of the physical being. Subject Five stated that "misuse is when you fail to use your body properly and when you unvoluntaringly [*sic*] do something," while Subject Seven defined misuse as "not corectly used. In this case the misuse of breaths would be key."

Awareness, the ability to perceive misuse of the physical being, was defined by seven subjects, with two emerging themes. First, two descriptions focused on the ability to perceive surrounding environmental factors:

> Subject Two: "To be able to notice your surroundings, such as sounds, what you see, and how you move."
>
> Subject Three: "To be alert and to have a sense of what is going on around you; to be aware of what your body is doing."

Second, some explanations referred to having a specific understanding of the physical being while in action, including the act of singing. Examples included:

> Subject Five: "This is when you intentional/voluntaringly [*sic*] make a change or difference in your body."
>
> Subject Seven: "Sense of knowing. In this case the sense of knowing should be applied to your performance."
>
> Subject Nine: "Means that you are aware of certain things when you are singing, that include voice control and breath taking."

Seven of nine respondents attempted to define *primary control*, although none accurately explained the interaction between head, neck, and torso. Some responses described maintaining control over one's body during a specific action, including Subject Five's comment that "this means to have control of your body and be able to correctly use the parts of your body the way you intended." Other subjects maintained the notion of

controlling something, though they connected this idea to vocal performance. Examples included:

> Subject One: "To be able to control yourself and your movements and your posture while in performance and/or singing."
>
> Subject Seven: "Having control of or over/under control. In this situation, having control over your breaths, notes, body language, poise, emotional performance.

Three subjects described the *inhibition of bad habits*, or the application of new directives towards the misuse of the primary control, although all responses mentioned the reliance on poor behavior. Definitions included: "it's when you continue to do something, sometimes not knowing you are doing it incorrectly. Over time it may become a bad habit that may not be so easy to break" (Subject Six); and "Use of bad habits. Unawareness of bad habits. Ex. tensing, moving involuntarily" (Subject Seven).

Only two subjects attempted to define *"means-whereby,"* Alexander's term referring to the reasoned means to the gaining of a specific end. Both definitions were ambiguous and did not resemble the formal defintion: "Use what you have around you" (Subject Two); and "by any means/all means" (Subject Seven).

Section II of *The Alexander Technique and Vocal Performance* asked subjects to describe the perceived effects of the treatment on their singing. Responses reflected a variety of self-reported effects, and have been placed in three categories: positive outcomes, negative outcomes, and neutral responses.

The following three themes emerged as having been positively influenced by treatment: relaxation, posture, and stage presence. Relaxation and comfortability in singing were noted by two subjects. Subject Eight suggested that "some of the exercises helped loosen our muscles, so that we could relax and feel comfortable." Subject One mentioned that the treatment "helped me to be more comfortable and able [*sic*] when I sing extremely high or low pitches." Subject One was also the only subject to mention

the effect of treatment on stage presence, stating only that "this technique has directly helped with stage presence."

The positive influence of treatment on singing posture was noted by three subjects. Subject Nine wrote of applying rudimentary elements of posture, such that "another [positive effect] was to keep my shoulders straight and high and not slouching when I am going to sing [*sic*]." Subject Two suggested an element of control related to posture, saying that "the positive effect of this technique is I now know how to control movement when I sing." Succinctly stated, Subject Five wrote that "posture has really improved my singing in some cases; however sometimes it didn't make a difference." These responses indicated reliance on an assumed posture rather than Alexander's notion of proper alignment through redirection of the musculature.

Another emerging theme from *Section II* was the effect of treatment on either vocal technique or breath control. Three subjects suggested that the treatment had had specific positive effects on their vocal technique. Subjects Five and Eight echoed similar sentiments that "sometimes I am able to hold longer and steadier notes than before" and "the [treatment] helped me sing better and I didn't 'crack' as much," respectively. Subject Four briefly noted that the treatment "help[ed] me sing better." Three subjects indicated improvement in their breath control, including Subject One's reflection that "the Alexander Technique has helped me pay attention to my breath," Subject Two's comment that "I now know the proper breathing skills, as well as now when to breathe," and Subject Nine's declaration that "it helps me control my breathing."

Similar statements were made, however, suggesting that the treatment had negatively impacted breath control. Three subjects indicated specific problems as a result of treatment, all related to inspiration. Subject Seven noted that "when I tried to take a quick deep breath, the breath didn't come." Subject Five described the effect such that "sometimes I wouldn't be able to breathe when I intended, and I would just stop in the

middle of a note." Finally, Subject Nine stated "I have a negative effect, trying to control my breath, when I try to sing a certain note it won't come out."

The final theme of subjects' responses to *Section II* was that of neutrality, statements that indicated the treatment had had little or no impact on either their singing or approach to singing. Subject Three noted that "the Alexander Technique didn't really do anything to enhance or halter my singing." Subject Six, meanwhile, explained that "the Alexander Technique did not have an affect [*sic*] upon my singing and how I approach it. I also thought and could not figure out how it could change your singing and how you may approach it."

Interpretations

The self-reported symptoms of musical performance anxiety in this research require brief examination. Of the 20 listed symptoms in the *Self-Reported Symptoms of Musical Performance Anxiety*, 19 were reported by at least one individual, the exception being diarrhea. While the students were very forthcoming in regards to the other 19 symptoms, their age and maturity may have caused heightened reluctance to indicate diarrhea, even if present. Because of space limitations, all criterion measures were administered to all subjects in one room. Increased privacy may have encouraged additional self-reports of diarrhea and other symptoms that caused similar hesitancy.

The most widely reported symptom during pre-test measurements was general nervousness, reported by 54.5 percent of all respondents. Because of the ambiguous nature of the terminology, it is possible that the response rate does not exclusively indicate nervousness that negatively affects performance quality, but high amounts of cognitive arousal instead.

Results from the *Effect of the Alexander Technique on Symptoms of Musical Performance Anxiety* reflected students' perceptions of the effect of treatment. Though nearly all symptoms were observed to improve, as indicated by mean scores, one symptom, muscle aches and spasms (M=1.875), reported a mean score below 2.000 that

indicates "no change." As much of the treatment was geared towards sensory awareness, it is possible that subjects' heightened attention to the physical musculature may have caused this rating. Transitioning from comfortable but restrictive postures to free and natural functioning could have caused the perception of muscle aches, as the physical musculature resisted the change and attempted to resume the habitual posture.

Responses from *Section I* of *The Alexander Technique and Vocal Performance* indicate that students did not develop a conceptual understanding of the treatment approach. Conceptual ideas such as natural functioning, redirection of behavioral patterns, and inhibition of habitual actions were completely absent from subjects' responses. Subjects were unable to identify the components of the primary control, nor the meaning of Alexander's term, "means-whereby." Was this a result of the treatment approach or the criterion measures employed?

While the treatment presented general terminology associated with the Alexander Technique, it is understandable that subjects had difficulty explaining specific vocabulary on the given criterion measure. The treatment approach was not designed nor intended to teach students terminology but to provide the opportunity for experiential learning. Vocabulary was used strictly to augment and heighten their experience and understanding. Nonetheless, this specific treatment approach appears to have had little impact in developing a conceptual understanding of the Alexander Technique as measured in this manner. Perhaps the greater question is not whether subjects gained a conceptual understanding, but did this criterion measure provide an accurate reflection of their knowledge? In retrospect, measuring conceptual understanding through the definition of terms seems highly questionable. Allowing only one opportunity to express a level of comprehension, after the conclusion of treatment, may have failed to promote the most accurate reflection of students' understanding. If qualitative measures had been administered throughout the period of treatment, perhaps a clearer picture of students' conceptual understanding would have emerged.

Subjects' vague qualitative responses, however, accentuate their lack of experience and highlight the difficulty of this approach to treatment and measurement at the beginning level. All concepts of posture, breath control, vocal technique, and vocal tone are completely or relatively new to beginning vocalists. Their attitude towards them may be quite malleable, based primarily on their teachers' instructions, not previous experience. As a result, they may not be able to discern between free and natural functioning and inhibitive and restrictive habitual patterns. Typical postural instructions, such as "place both feet flat on the floor," "sit on the front edge of your chair," and "keep your back straight" are just as new to the subjects as the principles underlying the treatment approach. Through observation, it appears that a general understanding of rudimentary postural elements, regardless of their freedom in functioning, may be required so as to provide a physical reference point for comparison. Lacking previous singing experience, the subjects appeared to apply the Alexander-derived exercises without what may be classified as necessary readiness. Perhaps, however, if Alexander's concepts are introduced during initial instruction and applied over a greater period of time, students will maintain free and natural functioning. Thus, student vocalists may be able to entirely avoid the adoption of poor postural habits that then can be reversed and undone through instruction in the Alexander Technique.

At the beginning stages of instruction, students have also had minimal, if any, experience articulating their personal thoughts about singing. The treatment group's qualitative responses reflect this limited background, through inappropriate use of vocabulary and confusion regarding the process of singing. If students had been given the chance to journal on a regular basis throughout the treatment period, perhaps they would have developed a working vocabulary with which to express themselves and achieved a higher level of comfortability in writing about their voices and the act of singing. Additionally, this approach would have yielded substantially more qualitative data and possibly provided greater insight into students' experiences with and perceptions

of the Alexander Technique over the course of treatment, rather than simply following its administration.

While the male data collected was not evaluated in this document, the role gender plays in the application of this treatment must be briefly discussed. Members of the women's choir, which received treatment, were generally open-minded towards the new concepts and approaches to singing as a part of the treatment. Hesitance towards and resistance to the treatment exercises were minimal and mild. Additionally, they were accepting of the general teaching methods of the author, who served as a student teacher. Though also comprised of beginning singers, the mixed voice choir, which served as the control, responded less willingly to the teaching methods of the author. The classroom environment of the mixed voice choir was far less conducive to learning than the women's choir, as students exhibited heightened distraction and limited ability to focus during rehearsal. Had the control and treatment groups been reversed, it is possible the administration of treatment would not have gone as smoothly, nor been received as well. The focus required by several of the exercises, and the variance from normal activities may have proved to be too extreme for the mixed voice ensemble. Perhaps the role of adolescent maturity must be considered when choosing to apply the Alexander Technique in a mixed gender setting. Ideal research conditions would have provided comparison of like rather than similar ensembles.

Chapter Five

Summary

The purpose of this research was to increase understanding about the relationship between musical performance anxiety and Alexander Technique-derived exercises within the secondary choral classroom. Specifically, this research attempted to answer several questions related to musical performance anxiety and instruction in the Alexander Technique. First, how often has musical performance anxiety been experienced by high school beginning female singers in various settings? Second, what were the self-reported symptoms of these singers prior to ensemble performance? Third, what effects, if any, would instruction in sensory awareness and body alignment exercises in the context of warm up exercises have on the musical performance anxiety of these students? Did their musical performance anxiety differ from similar students with no exposure to said exercises?

Additional concerns focused on students' understanding of the treatment approach and their perception of ways in which the treatment had affected their singing, following administration. Specifically, would such exposure allow students to develop a conceptual understanding of the Alexander Technique? What concepts would they glean from the process? How did they perceive the treatment to have impacted their singing and approach to singing?

Subjects were enrolled in one of two beginning choral ensembles at a Detroit, Michigan high school. One ensemble, a women's choir (N=11), was randomly selected as the treatment group, and received instruction in sensory awareness and body alignment exercises based on the Alexander Technique from the author over a thirteen week treatment period. The other ensemble, a mixed voice choir (N=11 females), was randomly selected as the control group, and received no such instruction. For the purpose of comparison, only the female's data was considered in this research. Criterion

measures were administered pre- and post-treatment, prior to two similar school performances.

Results suggested that this subject population has had substantial experience with performance anxiety. More than three-fourths of subjects indicated having experienced musical performance anxiety prior to or during solo, audition, and ensemble performances. Additionally, most subjects indicated having at least occasionally experienced anxiety that was either distracting to or interfered with performance. Subjects expressed minimal experience with anxiety that caused them to avoid performing entirely.

Self-reported symptoms of musical performance anxiety prior to ensemble performances indicated substantial experience with both cognitive and somatic components of anxiety. General nervousness, perspiration/sweating, worry, panicky feeling, dry mouth, and shortness of breath were the most widely reported symptoms during pre-test measurements. Nineteen of the 20 listed symptoms were reported by at least one individual during pre-treatment measurement.

The effect of the treatment on musical performance anxiety is largely inconclusive. Comparison of the self-reported symptoms of treatment and control groups indicated no distinct differences, though single t-tests were not administered because of sample size and the number of tests required, which could have resulted in a Type One error. Subjects did self-report, however, that the treatment approach moderately improved such symptoms as general nervousness, lack of confidence, lack of voice control, worry, and poor concentration. Qualitative data did not suggest that the treatment had had any affect on subjects' musical performance anxiety, though it may have had positively influenced their understanding of vocal functioning.

Several subjects reported that elements of posture, relaxation, stage presence, breath control, and/or vocal technique had improved as a result of treatment. Other subjects indicated that the treatment had negatively affected breath control, while some

stated that the treatment had had little or no impact on their singing or approach to singing.

Subjects' conceptual understanding of the technique, as measured by this research, did not appear to be substantial. The criterion measure, however, was only administered following treatment, and was questionable for the intended purposes.

Conclusions

Despite the relative absence of scholarly literature investigating musical performance anxiety in secondary ensemble students (Shoup, 1995; LeBlanc et al., 1997), the results of this study show that it is prevalent among high school female singers. In all performance settings measured by the *Frequency of Musical Performance Anxiety*, including auditions, solo performances, and ensemble performances, more than 70 percent of respondents indicated at least occasional or more frequent experience with anxiety. Previous distinctions between high and low stress performance settings (Abel & Larkin, 1990; Hamann, 1982; LeBlanc et al., 1997; Tartalone, 1992; Tobacyk & Downs, 1986; Wesner et al., 1990; Widmer et al.) were maintained, as auditions (86.4% of respondents, M=2.045) and solo performances (81.8%, M=1.820) were more frequently accompanied by anxiety than ensemble performances (72.7%, M=1.315). Nonetheless, the high occurrence of anxiety prior to ensemble performance was intriguing. Unfortunately, the administered criterion measures did not assess the severity of performance anxiety experienced or the specificity of self-reported effects, only it's presence in various situations.

Though the degree of anxiety was not measured by the *Frequency of Musical Performance Anxiety*, the impact of anxiety on performance was noted by the subjects. Over half of all respondents (N=22) indicated having been at least occasionally distracted prior to performance as a result of anxiety (54.5%, M=0.955). Occasional or more frequent experience with anxiety that interfered with performance was also reported by more than two-thirds of subjects (68.2%, M=0.955). Identifying previous experiences

with anxiety as *distracting* or *interfering* does not indicate the specific level of arousal encountered but does suggest a certain negativity or bothersome quality of anxiety associated with performance.

The abundance of self-reported symptoms of musical performance anxiety as reported by the *Self-Reported Symptoms of Musical Performance Anxiety* exceeded expectations (Wesner et al., 1990; Shoup, 1995). Analysis of the pre-test responses of all subjects (see Table 3) highlights the occurrence of these symptoms in a random sample of beginning high school female choral singers. Of the 20 listed symptoms, 19 were reported by at least one individual, the exception being diarrhea. Reports of perspiration/sweating (27.3%), worry (22.7%) and panicky feeling (22.7%) were substantial, highlighting both cognitive and somatic components of anxiety that may negatively impact performance quality.

Comparison of treatment and control groups' self-reported symptoms suggested some differences between subject populations prior to treatment. The percentage of subjects reporting physiological symptoms of musical performance anxiety was higher for the treatment group at both pre- and post-test measurements. This difference between groups occurred despite t-test results from the *Frequency of Musical Performance Anxiety* that indicated no statistically significant differences in the regularity of experiences with performance anxiety between groups. The differences between the two measurements suggests the independent variance of individual cognitive and somatic manifestations during anxiety experiences, regardless of frequency.

Comparison of groups' responses to the *Self-Reported Symptoms of Musical Performance Anxiety* provided no conclusive evidence that suggests decreased performance anxiety as a result of treatment. Though five symptoms were found to experience greater decreases under the treatment condition, the same number were found to do so under the control condition. Certain symptoms, including lack of voice control, poor concentration, and shortness of breath, decreased for the treatment condition while

increasing for the control group. While not conclusive, this data could suggest that the applied treatment approach may heighten concentration, which may in turn improve perceptions of breath and voice control.

Effects of treatment on self-reported symptoms are best observed through the treatment groups' responses to the *Effect of the Alexander Technique on Symptoms of Musical Performance Anxiety.* The Alexander Technique appears to have had the most positive impact on cognitive components of anxiety. Areas of cognitive anxiety, including poor concentration, worry, lack of confidence, and general nervousness all experienced moderate improvement as a result of treatment. Moderate improvement in somatic anxiety as a result of the Alexander Technique was far more infrequent, demonstrated only through an improvement in voice control. The application of Alexander-derived exercises in the ensemble context may help to alleviate students' cognitive anxiety, moreso than physiological anxiety. Maintaining low levels of cognitive anxiety would facilitate improved performance quality and minimize the chance of catastrophe, according to Hardy and Parfitt (1991), regardless of physiological arousal or somatic anxiety.

While subjects' responses from *The Alexander Technique and Vocal Performance* suggest that the Alexander Technique may improve certain aspects of musical performance anxiety, what have they learned about the treatment approach? What non-anxiety related benefits have occured? Subjects' identification of positive and negative impacts of the treatment approach support further application of Alexander Technique-derived exercises in the ensemble setting. Comments related to posture, relaxation, stage presence, and vocal technique indicated self-reported improvement as a result of treatment. Responses tended to suggest an understanding of the relationship between posture and vocal production, as the treatment may have developed a new awareness of the components involved in singing. Though no qualitative responses indicated a relationship between treatment and anxiety, subjects appear to have gained insight into

the process of singing and the relationship between the singing voice and the rest of the physical being.

The results of this research suggest that additional research and informal investigation is necessary so as to better understand the role of musical performance anxiety in the secondary ensemble setting. Students' self-reported substantial experiences with anxiety, including forms of tension that directly affected their perception of performance or willingness to perform. In addition, cognitive and somatic symptoms were widely reported prior to ensemble performance. Though the effect of Alexander Technique-derived exercises on the anxiety of beginning high school female singers was generally inconclusive, the treatment appears to have heightened students' understanding of the vocal mechanism and vocal functioning. Because of these research findings, several implications for music education and suggestions for future research emerge.

Implications for Music Education

How can this research improve instruction, specifically in the area of secondary vocal music education? This research has yielded four ways to improve instruction: acknowledge anxiety in the performance ensemble; use the Alexander Technique to alleviate tension; employ the Alexander Technique to teach about the vocal mechanism; and provide opportunities for student writing.

First, the prevalence of musical performance anxiety in the ensemble setting, as measured by this research, was extremely high. Further, students reported an extensive number of symptoms, both cognitive and somatic. Where and when is this anxiety related to performance initiated? Because the subjects were high school students, the results suggest that such experiences could have been initiated earlier, during middle or elementary level musical experiences. Perhaps, however, the prevalence of anxiety was unaffected by previous musical experiences, and may have been largely an effect of adolescence and students' heightened awareness of the self. Alternately, actions on the

part of the choral conductor, be they verbal, gestural, or otherwise, may have contributed to students' anxiety levels. To determine if the origination of cognitive and somatic components of musical performance anxiety is related to past musical experiences, music educators must evaluate their pedagogical approaches towards performance and the adjudicated and non-adjudicated performance opportunities presented during grades K-12. Ensemble directors, in particular, must evaluate all aspects of their instruction, from classroom instruction to conducting gesture, to determine if any elements may indirectly cause an increase in students' performance anxiety.

Music educators must also acknowledge the symptoms that may arise as a result of anxiety, and take the necessary steps to diminish such detrimental manifestations of musical performance anxiety. The occurrence of dry mouth and shortness of breath in this study suggests that vocal music educators evaluate the pre-performance activities of their vocal ensemble. Addressing such issues as dehydration and breath support in the context of performance well in advance as well as immediately prior to performance may serve to alleviate any cognitive concerns that may affect somatic anxiety responses.

Second, though the results from this research are largely inconclusive regarding the effects of the Alexander Technique on anxiety levels, the potential for improvement as a result of instruction exists. Because these subjects were all beginning singers, they may have had minimal experience with tension as a result of posture. Thus, it was difficult to contrast the freedom of natural functioning promoted by the Alexander Technique with previous notions of physical tension. If experience with tension in performance is necessary for instruction in the Alexander Technique to be most effective, it could yield reduced anxiety in more experienced singers. The incorporation of Alexander Technique-derived exercises into the vocal and physical warm-up process was unproblematic.

Third, between qualitative data and observations, it appears that instruction in Alexander Technique-derived exercises improved students' understanding of the vocal

mechanism. Students developed an increased understanding of the relationship between posture, breath support, and the singing voice, in a manner that may not have been experienced previously. If such exercises are incorporated into daily or weekly warm-up activities, over a significant period of time, students may develop a greater understanding of vocal functioning. Development of such awareness may improve vocal technique and tone, though further research is required in this regard.

Finally, the qualitative data from this study accentuates students' lack of experience discussing their experiences in vocal music and emphasizes the need for increased writing and reflective opportunities in the performance ensemble classroom. If opportunities are provided for students to write about their voice, the act of singing alone, or singing with others, it will likely serve to fuel their growth as a vocalist. Through experience, students may develop a working vocabulary with which to articulately and descriptively reflect on their experiences. Opportunities to write and reflect will also develop students' abilities to think critically about vocal performance and functioning.

Suggestions for Future Research

The results of this research support the observations of Shoup (1995) and highlight the need for additional research and informal inquiry into the prevalence of musical performance anxiety in the secondary choral singers. By omission, researchers have given little credence to the presence of anxiety in an ensemble setting, much less at the secondary level. Such results from the sample population suggest that music educators and researchers investigate further the prevalence and frequency of and responses to musical performance anxiety in the secondary ensemble setting, both choral and instrumental. Future research should also focus on the prevalence of musical performance anxiety in younger subjects and attempt to further illuminate the perceived types of interference and distraction, be they cognitive, physiological, or behavioral.

What were the motivations for such feelings of concern? Future application of qualitative criterion measures in similar research settings may help to elucidate the

anxiety-provoking stimuli perceived by secondary ensemble musicians. Such additional data would provide helpful insight into subjects' perceptions of musical performance anxiety related to performance setting.

What of those subjects who indicated no previous experience with musical performance anxiety? How do their performance experiences relate to the Yerkes-Dodson assumptions of arousal? Are these subjects devoid of such experiences, or have they simply not recognized their presence? Perhaps students at this age, level of development, and most importantly, experience, have yet to encounter performance anxiety or cognitive and physiological arousal they considered negative or detrimental to performance quality. Qualitative inquiry into students' experiences with performance anxiety would help clarify student definitions of anxiety experiences.

While significantly less frequent than distraction or interference, more than one-quarter of respondents (27.3%, M=0.360) reported having avoided performing because of anxiety. The percentage of subjects is three times that reported by Wesner et al. (1990), and the presence of any such responses from musicians of this age should be cause for concern for music educators. By the beginning of their high school career, more than one-quarter of subjects had experienced performance anxiety in some setting to the point that they deemed it more beneficial to avoid the activity in its entirety rather than continue. It is critical that future research investigate other settings in which anxiety manifests itself, to what degree, and to what end. Respondents' admissions that non-musical activities, such as oral presentations, play performances, cheerleading and dance competitions, and championship games, caused occasional to regularly occurring anxiety should alert educators to its presence and potentially devastating repercussions in a variety of mediums. What will happen to the rate of performance avoidance as students increase in age, experience, and musical development? Will frequencies of avoidance increase or abate? Longer-term research is necessary to answer such questions and is prudent given the theory of musical performance anxiety proposed by LeBlanc (1994).

While this research has pointed to several areas of anxiety and vocal performance that instruction in the Alexander Technique may improve, there is significant room for improvement in future research applications of the treatment approach. Future research on the application of the Alexander Technique to the secondary ensemble classroom can be enhanced on three fronts: sample population, longevity, assessment. First, the sample population in this study were beginning singers. What effects would the treatment have had on more experienced secondary performers? What differences in effect of treatment exist between students with great or minimal previous performing experience? Does an understanding, or lack thereof, of rudimentary postural elements positively or negatively influence the effectiveness of Alexander Technique-derived exercises? Hypotheses in this regard have already been previously advanced, and suggest that additional research be focus on the effects of treatment on a more experienced sample population. Second, researchers need to ascertain the effects of this treatment approach over a longer-period of application. How will students fare after instruction over four-year period? Were the treatment approach and period of application substantial enough to develop the necessary conceptual understanding so as to apply the technique in the future? The applied treatment period may not have been substantial enough to provide enough exposure to and instruction in the Alexander Technique such that noticeable differences occurred in measurements of performance anxiety. Longer-term research may provide the exposure necessary to better evaluate the effectiveness of this treatment approach. Third, the methods of assessment must provide greater insight into musical performance anxiety at the secondary level, and the prevalence of alternate treatment methods. Alternate criterion measures must allow for greater understanding of the degree of and reaction to anxiety experienced in various situations. Suggestions for future research include measuring vital signs, including blood pressure and heart rate, and peak breath flow. Such information would be beneficial in comparison with self-reported somatic symptoms of anxiety. Additionally, use of reliable and valid criterion measures of state

anxiety and personal confidence should be administered so as to further validate the results.

The results of this research are only the beginning of inquiry into treatment approaches of musical performance anxiety in the secondary choral classroom. Music educators should evaluate their pedagogical approaches to performance, acknowledging the potential effects on performance anxiety. Additional research must be conducted to evaluate students' performance anxiety experiences in the ensemble context in greater detail. While the effect of Alexander Technique-derived exercises on tension levels was largely inconclusive, it was observed to have substantial non-anxiety related benefits. Further research must investigate the effect of this treatment approach on more experienced students and over a longer period of time, contributing to the illumination of practical treatment approaches in the secondary ensemble setting.

Appendix A

Frequency of Musical Performance Anxiety

Please circle the response that best reflects your own experience.

never	occasionally	frequently	almost always	always
0	1	2	3	4

1. How often do you experience anxiety during solo performance?

0 1 2 3 4

2. How often do you experience anxiety during auditions?

0 1 2 3 4

3. How often do you experience anxiety during ensemble performance?

0 1 2 3 4

4. How often does anxiety interfere with your performance?

0 1 2 3 4

5. How often do you avoid performing because of anxiety?

0 1 2 3 4

6. How often are you distracted by anxiety immediately prior to performance?

0 1 2 3 4

Other situations in which you have experienced performance anxiety

(please describe and rate):

_____

0 1 2 3 4

_____

0 1 2 3 4

Appendix B

Self-Reported Symptoms of Musical Performance Anxiety

Please place an "X" next to any of the following items you are currently experiencing.

_____ Increased Heart Rate	_____ Muscle Aches & Spasms	_____ Irritability
_____ Cold Hands	_____ Shortness of Breath	_____ Chills
_____ Dry Mouth	_____ Trembling	_____ Dizziness
_____ Perspiration / Sweating	_____ Feeling Flushed	_____ Diarrhea
_____ Nausea	_____ General Nervousness	_____ Panicky Feeling
_____ Poor Concentration	_____ Worry	_____ Lack of Confidence
_____ Lack of Voice Control	_____ Coordination Problems	

Other: _____

_____

_____

Appendix C

Effect of the Alexander Technique on Symptoms of Musical Performance Anxiety

Please circle the response which best reflects your own experience.

significantly worse	moderately worse	no change	moderately improved	significantly improved
0	1	2	3	4

1. In your estimation, how has experience with the Alexander Technique affected the following prior to performance?

a. Increased Heart Rate

0 1 2 3 4

b. Muscle Aches & Spasms

0 1 2 3 4

c. Coordination Problems

0 1 2 3 4

d. Cold Hands

0 1 2 3 4

e. Shortness of Breath

0 1 2 3 4

f. Chills

0 1 2 3 4

g. Dry Mouth

0 1 2 3 4

h. Trembling

0 1 2 3 4

j. Dizziness

0 1 2 3 4

k. Perspiration / Sweating

0 1 2 3 4

significantly worse	moderately worse	no change	moderately improved	significantly improved
0	1	2	3	4
l. Feeling Flushed				
0	1	2	3	4
m. Diarrhea				
0	1	2	3	4
n. Nausea				
0	1	2	3	4
o. General Nervousness				
0	1	2	3	4
p. Panicky Feeling				
0	1	2	3	4
q. Poor Concentration				
0	1	2	3	4
r. Worry				
0	1	2	3	4
s. Lack of Confidence				
0	1	2	3	4
t. Lack of Voice Control				
0	1	2	3	4
u. Irritability				
0	1	2	3	4

Appendix D

The Alexander Technique and Vocal Performance

Section I

Please define / explain these terms to the best of your ability:

1. Primary Control _____

_____

_____

2. Misuse _____

_____

_____

3. Awareness _____

_____

_____

4. Inhibition of bad habits _____

_____

_____

5. "Means-whereby" _____

_____

_____

Section II

Please describe and explain in detail what positive or negative effects, if any, experience with the Alexander Technique has had upon your singing or approach to singing.

Appendix E

Treatment Subjects' Qualitative Responses

Subject Number	Primary Control	Misuse	Awareness	Inhibition of Bad Habits	Means-Whereby	Effects of Alexander Technique
One	To be able to control yourself & your movements and your posture while in performance and/or singing.	To use wrongly or not in the right way.	To be aware of what you're doing at all times.	NR	NR	The Alexander Technique has helped me to pay attention to my breath and to be more comfortable and able when I sing extremely high or low pitches. This technique has also directly helped with stage presence.
Two	NR	To use something in the wrong way.	To be able to notice your surroundings, such as sounds, what you see, and how you move.	NR	Use what you have around you.	The postive effect of this technique is I now know how to control movement when I sing. I now know the proper breathing skills, as well as know when to breathe. I know how to listen and observe others' pitches, so I can know if I'm singing too sharp or too flat.
Three	To have ultimate control over something without interference from outside sources.	To handle something incorrectly.	To be alert and to have a sense of what is going on around you; to be aware of what your body is doing.	NR	NR	The Alexander Technique didn't really do anything to enhance or halter my singing.

Note: NR = No Response.

Subject Number	Primary Control	Misuse	Awareness	Inhibition of Bad Habits	Means-Whereby	Effects of Alexander Technique
Four	NR	NR	NR	NR	NR	Positive-Real good warm-ups; help me sing better; we looik silly!!! Negative-kind of boring.
Five	This means to have control of your body and be able to correctly use the parts of your body the way you intended.	Misuse is when you fail to use your body properly & when you unvoluntaringly do something.	This is when you intentional / voluntaringly make a change or difference in your body.	This is when your body is immune to incorrect posture etc...and when you fail to correct it in its early stages.	NR	When rehearsing or performing I experienced negative and positive outcomes related to the Alexander Technique. Sometimes I wouldn't be able to breathe when I intended, and I would just stop in the middle of a note. And sometimes I am able to hold longer, and steadier notes than before. Posture has really improved my singing in some cases; however sometimes it didn't make a difference.

Note: NR = No Response.

Subject Number	Primary Control	Misuse	Awareness	Inhibition of Bad Habits	Means-Whereby	Effects of Alexander Technique
Six	This term is how to control what you are doing when doing something	It is when you use something incorrectly	When you realize what you may have done wrong and you become aware of it.	It's when you continue to do something, sometimes not knowing you are doing it incorrectly. Over time it may become a bad habit that may not be so easy to break.	NR	The Alexander Technique did not have an affect upon my singing and how I approach it. I thought the technique was fun and different. I also thought and could not figure out how it could change your singing and how you may approach it.
Seven	Having control of or over/under control. In this situation, having control over your breaths, notes, body language, poise, emotional performance.	Not correctly used. In this case the misuse of breaths would be key.	Sense of knowing. In this case the sense of knowing should be applied to your performance.	Use of bad habits. Unawareness of bad habits. ex. tensing, moving involuntarily.	By any means/all means.	On some notes when I tried to sing it my voice came out on another note. Or when I tried to take a quick deep breath, the breath didn't come. As far as relaxing it came naturally because I cannot sing tensely.

Note: NR = No Response.

Subject Number	Primary Control	Misuse	Awareness	Inhibition of Bad Habits	Means-Whereby	Effects of Alexander Technique
Eight	The ability to control your voice.	NR	NR	NR	NR	The Alexander Technique did not effect me at all in a negative way. Positively, the warm-ups, mostly, helped me sing better and I didn't "crack" as much. Some of the exercises helped loosen our muscles, so that we could relax and feel comfortable, while others did actually nothing. The "stacking of our spine" was weird but worth a try. Aside of these positvie things, the Alexander Technique did not effect me at all.
Nine	When you control your body and voices to the best of your ability.	NR	Means that your are aware of certain things when you are singing, that include voice control and breath taking.	NR	NR	Posture, it had a positive effect that helps me control my breathing. Another thing was to keep my shoulders straight and high and not slouching when I am going to sing. Then I have a negative effect and that is trying to control my breath. When I try to sing a certain note it won't come out.

Note: NR = No Response.

Appendix F

Consent Form

CONSENT FORM

Steven Lorenz
MM Candidate
Michigan State University
(810) 632-5375

Dear Parent / Guardian,

My name is Steven Lorenz. I am a student teacher from Michigan State University, currently working with your child in the Renaissance High School Vocal Music Program under Ms. Nina Scott. As a part of my graduate work at Michigan State University, I am interested in studying the effects of performance anxiety on high school choral singers. As such, I would like to conduct my thesis research with the Renaissance Beginning Choir and Ladies' Vocal ensembles, of which your child is a member.

Students will be asked to anonymously complete a single questionnaire, identifying certain characteristics of performance anxiety that they may experience. The questionnaire will be administered prior to two scheduled performances during the Spring 2002 semester. Results will be gathered anonymously, and all personal information will be excluded from the research. During the Spring 2002 semester, the ensembles will explore relaxation and postural exercises during their daily warm-up exercises, to investigate possible effects on performance anxiety. Following the second performance, an additional questionnaire regarding the effectiveness of the exercises will be administered.

Please feel free to contact me at the above number with any questions or concerns you may have.

Sincerely,

Steven Lorenz

- - - - - - - - - - - - - - - - - - - Please Sign and Return - - - - - - - - - - - - - - -

I give permission for my child, _____, to participate fully
(please print)
in this research as outlined above.

Parent / Guardian signature: _____
(please print)

_____
(please sign)

Appendix G

UCRIHS Approval Letter

MICHIGAN STATE
UNIVERSITY

March 15, 2002

TO: Cynthia TAGGART
209 Music Practice Bldg.

RE: **IRB# 02-135** CATEGORY: EXPEDITED 2-4
APPROVAL DATE: March 15, 2002

TITLE: PERFORMANCE ANXIETY WITHIN THE SECONDARY CHORAL CLASSROOM: EFFECTS OF THE ALEXANDER TECHNIQUE UPON TENSION IN PERFORMANCE

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete and I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the **UCRIHS approved this project.**

RENEWALS: UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Projects continuing beyond one year must be renewed with the green renewal form. A maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for a complete review.
REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB# and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.
PROBLEMS/CHANGES: Should either of the following arise during the course of the work, notify UCRIHS promptly: 1) problems (unexpected side effects, complaints, etc.) involving human subjects or 2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of further assistance, please contact us at (517) 355-2180 or via email: UCRIHS@msu.edu. Please note that all UCRIHS forms are located on the web: http://www.msu.edu/user/ucrihs

Sincerely,

Ashir Kumar, M.D.
UCRIHS Chair

AK:
cc: br

Steven Lorenz
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Howell, MI 48843

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