Introduction

Most musicians have experienced the sensations of a dry mouth, knot in one's stomach, lump in one's throat, that tingling feeling referred to as the "butterflies," or perspiration in the palms of their hands. These feelings are generally referred to as symptoms of "performance anxiety." These sensations distract the performer and can negatively affect the outcome of a musical performance: 1) a dry mouth may cause a singer to begin a phrase with a raspy tone, 2) a knot in one's stomach may cause a trombone player to produce a weak tone, or 3) perspiration in the palms of one's hands may cause a drummer to lose his grip on his sticks while playing (Allen, 1996). These examples are the outward manifestations of inner feelings generally referred to as "performance anxiety," which is a condition that can be so severe as to cause students to discontinue musical studies.

When musicians perform in public, psychological factors come into play (Ross, 2007). During performances of a preconceived musical product whose interpretation is pre-determined, levels of anxiety seem to increase (Sawyer, 2000). The performer's perception of what the listener expects may be at the center of performance anxiety. In a previous study, Roland (1993) found that performers experienced significant distress and marked impairment when performing in front of an audience. Rack (1995) identified specific symptoms of anxiety as debilitative: self-doubt, all-or-nothing thinking, and obsessive

worrying. These particular symptoms weakened subjects' ability to perform. In addition, Kim (2003) described stress and tension as two main characteristics of anxiety.

Lehrer (1987, p. 143) stated that "stage fright" seems to comprise "fear of fear, fear of social disapproval, problems with distraction, and a judgmental attitude." Furthermore, there seemed to be considerable evidence that stage fright is multifaceted; "in addition to partially independent somatic, cognitive, and behavioral manifestations, stage fright seems to comprise fear of fear, fear of social disapproval, problems with distraction, and a judgmental attitude" (p. 144). For this study, performance anxiety was defined as a performer's state of being uneasy, apprehensive, or worried about what may happen in a musical performance and the physical or physiological consequences of that anxiety. It is believed that an improved understanding of performance anxiety, if coupled with empirical research on music learning processes (i.e., Gordon, 1997; Campbell, 2009), might aid in the development of an effective approach for overcoming anxiety associated with playing music in the context of public performance.

Researchers have examined specific aspects of intervention, such as psychological, pharmacological, and physiological treatments, as means for reducing levels of anxiety that musicians experience in relation to musical performance. The published literature related to anxiety offered evidence of the

aforementioned treatments as means for reducing levels of anxiety during a musical performance. Quantitative studies of performance anxiety indicate a continued trend away from psychotherapy that began in the 1970s. Other studies showed that the use of beta-blockers reduced performance anxiety, particularly among string and keyboard players (Steptoe, 1982). Meichenbaum (1977) compared systematic desensitization with musical analysis and performance rehearsal and a no-training control group. Following the treatment, the systematic desensitization group performed at lower subjective anxiety levels, exhibited lower pulse rate, and made fewer performance errors than the other groups.

Lehrer (1987) concluded that the various forms of performance anxiety are treatable by a specific intervention. For example, relaxation therapies and drug therapy affect somatic symptoms. It is unclear to what extent, if any, that drug therapies may have the potential for side effects, including some that are deleterious to performance. Although studies of such interventions do exist, there is little to prove or disprove the long-term effects of medication. Furthermore, Lehrer found that there is little knowledge of “interactions between medication and various psychological approaches to managing somatic manifestations of stage fright” (p. 145). Although behavioral interventions in conjunction with an increase in the frequency of performance experience may have a beneficial effect on stage fright, little empirical evidence exists to support

this view.

Previous research in the areas of anxiety reduction regarding musical performance concludes that anxiety should be reduced in order for a musician to perform at his or her optimum level (Hamann, 1985). LeBlanc, Jin, Obert, and Siivola (1997) tested 27 male and female high school band members performing solos under three levels of audience presence: 1) alone in a practice room, 2) in a practice room with one researcher present, and 3) tape recorded performances in the rehearsal room with all researchers and a peer group. The study concluded that with each succeeding performance self-reported anxiety rose, and that each reported increase was significant. Gender emerged as a significant predictor of heart rate during performance. Female performers attained higher heart rates.

Ryan (2000) studied the differential responses of twenty-six sixth grade piano male and female piano students to musical performance anxiety, measuring the heart rates, behavior, performance quality, and anxiety levels before and during a piano recital. These variables were examined for possible gender differences. Results found that several relationships that emerged in analysis were driven by a strong relationship in a single gender, but were nearly absent, or in fact opposite, in the other.

Wilson and Roland (2002) suggested that hypnotherapy and the Alexander Technique may be effective in reducing performance anxiety.

Results showed that more than half of performers experience significant distress and marked impairment when performing in front of an audience. Studies comparing degrees of performance anxiety between sexes found that there is equal incidence among males and females (Hamann, 1982; Ryan, 2000). Wilson (2002) proposed three independent sources of stress: 1) Trait Anxiety – any personality characteristics, constitutional or learned, that mediate susceptibility to stress, 2) Situational Stress – environmental pressures such as public performance, audition, or competition, and 3) Task Mastery – ranging from performances of simple, well-rehearsed works to those of complex, underprepared material (Wilson, 2002).

Recent studies have attempted to evaluate the use of treatments based on free improvisation in order to reduce the extent to which an audience affects levels of performance anxiety. Kim (2003) examined the effects of two music therapy approaches on ameliorating the symptoms of performance anxiety: 1) improvisation-assisted desensitization, and 2) music-assisted progressive muscle relaxation and imagery. Thirty female college students were randomly assigned to one of two groups (N_1=15, N_2=15). The improvisation-assisted desensitization treatment was applied to Group 1 and the music-assisted progressive muscle relaxation and imagery treatment was used for Group 2. Four types of visual analogue scales were used: Music Performance Anxiety (MPA), stress, tension, and comfort. When the result of each condition was

compared from pretest to posttest, Kim found that there were six statistically significant results out of seven measures. Although all of the subjects from Group 1 were able to successfully complete the study, several had difficulty improvising. Both treatments provided significant reductions in performance anxiety among participants, but neither treatment was significantly more effective than the other. Although the aforementioned treatments have had encouraging results, little has been documented in regard to free improvisation as a treatment.

During the 1990s, a trend toward the use of music itself to reduce anxiety began to develop based on free improvisation methods (Darling, 2008). Free improvisation emphasizes the creative process, putting the decisions concerning musical content at the discretion of the performer, reducing or eliminating predetermined expectations, thus lowering levels of performance anxiety (Furth, 1969). For this study, free improvisation was defined as “a spontaneous musical creation produced in an unthinking state, one in which we are relaxed yet aware, incorporating and negotiating disparate personal perspectives and worldviews not limited by genre or methodology, applied to a wide range of highly personal, individual styles" (Allen, 2010, p. 41).

The purpose of this study was to compare the levels of anxiety that students experience according to whether their public performance consisted of a free improvisation or a repertory piece. This was based on the assumption

that a free improvisation instructional strategy might aid in reducing levels of performance anxiety among school aged piano students, and should therefore be systematically evaluated for its potential to offer improvements to music education. The researcher examined the extent to which specific criteria based on free improvisation affected levels of anxiety when students performed without an audience. Rather than gathering physiological data that might be correlated to performance anxiety, self-report tests such as Spielberger's State-Trait Anxiety Inventory for Children and the Musical Anxiety Report Scale were used to provide purely subjective data based on perceptual experiences.

The primary benefit of this study is that it may contribute to a better understanding of performance anxiety among musicians. Although some musicians have developed strategies for applying free improvisation to performance anxiety (Darling, 2008), this study appears to be the first study to test and measure the applicability of free improvisation as an individual treatment to problems of performance anxiety. This study had the following objectives: 1) examine the relationship of students' levels of anxiety to free improvisation and repertory pieces during a public performance and 2) determine the extent to which instruction in free improvisation is an effective treatment in reducing performance anxiety.

In this study in which elementary, middle, and high school piano students were taught a set of specific musical skills, there were two independent

variables. The first independent variable was the treatment in which subjects developed a free improvisation using a specific skill set of musical elements. The second independent variable was the control condition in which a control group did not receive the treatment. The aforementioned piano students were randomly assigned to perform a free improvisation, free improvisation and/or repertory piece, or a repertory piece, only, in public. The purpose of the experiment was to determine the effect that free improvisation had on a single dependent variable: state anxiety. In addition, this study employed two types of dependent measures: 1) the State-Trait Anxiety Inventory for Children (STAIC) --- used to measure participants' state and trait anxiety related to music performance situations and 2) the Musical Anxiety Report Scale (MARS) --- designed by the researcher as a way to measure each performer's personal views regarding the effects of free improvisation on their levels of anxiety with or without an audience. In addition, student interviews, conducted by the researcher, supported the findings from the STAIC and the MARS.