THE RELATIONSHIP BETWEEN MUSIC PERFORMANCE ANXIETY AND SELF-
EFFICACY IN SIXTH TO EIGHTH GRADE INSTRUMENTAL STUDENTS

by

Brian David Bersh

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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ABSTRACT

This research study examined the relationship of self-efficacy to performance anxiety, as outlined in social cognitive theory. The purpose of this nonexperimental, quantitative study was to test the theory of social cognitive theory that relates self-efficacy to anxiety. MPA and music performance self-efficacy (MPSE) were tested within the context of a school setting for instrumental music-making. The participants ($N = 228$) included a stratified random sample of Grade 6 to 8 instrumental middle school students located within the Mid-Atlantic region. To determine levels of MPA and MPSE, participants completed the Music Performance Anxiety Inventory for Adolescents and the Music Performance Self-Efficacy Scale. A correlational research design was used to test both the strength of the relationship between MPA and MPSE and the extent to which MPA could be predicted by two sources of self-efficacy: mastery experience and verbal/social persuasion. A causal-comparative research design informed whether students' levels of MPA and MPSE differed based on their gender and grade level. Findings suggested a statistically significant, weak negative correlation between MPA and MPSE, a significant predictive relationship between MPA scores and the linear combination of mastery experience and verbal/social persuasion, and a statistically significant main effect of gender on MPA. Recommendations for future research include investigation into: (a) the higher levels of MPA that female students experience relative to their male peers, (b) the relationships between verbal/social persuasion and MPA among middle-school aged students, (c) strategies for teaching self-efficacy as a coping mechanism for MPA, and (d) how the relationship between MPA and MPSE is affected by proximity to a performance.

Keywords: music education, music performance anxiety, self-efficacy, social cognitive theory

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List of Abbreviations

American Academy of Child and Adolescent Psychology (AACAP)

American College Health Association (ACHA)

American Psychiatric Association (APA)

Anxiety and Depression Association of America (ADAA)

Diagnostic and Statistical Manual of Mental Disorders (DSM)

Institutional Review Board (IRB)

Multivariate Analysis of Variance (MANOVA)

Music Performance Anxiety (MPA)

Music Performance Anxiety Inventory for Adolescents (MPAI-A)

Music Performance Self-Efficacy (MPSE)

Music Performance Self-Efficacy Scale (MPSES)

National Institute of Mental Health (NIMH)

Social Anxiety Disorder (SAD)

Variation Inflation Factor (VIF)

World Health Organization (WHO)

CHAPTER ONE: INTRODUCTION

Overview

This study explored how middle school students' beliefs in their own music performance self-efficacy (MPSE) are related to music performance anxiety (MPA). A convenience sample of students was studied within the defined bounds of the middle school instrumental ensemble. This first chapter provides a brief overview of the background, problem, purpose, and significance of the study. It also presents the research questions and definitions of important terms.

Background

The National Education Association has ascertained, through a series of mental-health surveys, today's teens are the most anxious ever recorded (Flannery, 2018). An estimated 31.9% of adolescents have had an anxiety disorder, with nearly 8% having experienced severe impairment (National Institute of Mental Health, 2017). In 2019, a Pew Research Center report found that 70% of teens in the United States shared that anxiety and depression were a "major problem" in their peer group, with an additional 26% recognizing anxiety and depression as a minor problem (Horowitz & Graf, 2019). The American College Health Association (ACHA; 2018) reported that 26.5% of college students stated anxiety had affected their academic performance within the last 12 months, with 63.5% of respondents recognizing they had experienced overwhelming anxiety in the past year. Additionally, while all children experience some anxiety (American Psychiatric Association, 2017), anxiety does not affect males and females equally. All anxiety disorders occur more frequently among females than males (Beesdo et al., 2009), and both the ACHA (2018) and the National Institute of Mental Health (NIMH; 2017) have reported a greater incidence of anxiety among females than males.

Anxiety is likely caused by a combination of genetic, environmental, psychological and developmental factors (APA, 2017; NIMH, 2018), and is a normal reaction to stress. It is considered typical at specific times in development and can even be beneficial in some situations (AACAP, 2017; APA, 2017). Because anxiety is a universally experienced emotion, discerning the point at which normal anxiety escalates to a level where diagnosis as an anxiety disorder is appropriate can be challenging (Kenny, 2011). Differentiating normal and pathological anxiety is particularly difficult in children because they manifest many fears and anxieties as part of their typical development (Beesdo et al., 2009). Further complicating the task of identification is that the causes of anxiety disorders are not known (APA, 2017; Kenny, 2011).

Currently, anxiety disorders affect 40 million adults in the United States—nearly 18% of the population—making it the most common mental illness in the country (Anxiety and Depression Association of America, n.d.). Anxiety disorders are the most frequently diagnosed psychological conditions in both children and adults (Kenny, 2011). Nearly 30% of adults will be affected by an anxiety disorder at some point in their lives (APA, 2017). Even though half of all mental health conditions start by 14 years of age, most cases are undetected or untreated (World Health Organization [WHO], 2019). The consequences of not addressing adolescent mental health conditions can be long-lasting, impairing physical and mental health and limiting opportunities to lead fulfilling lives (WHO, 2019).

Historical Overview

A biological basis of anxiety has historically been conceptualized through the sympathetic and parasympathetic nervous systems, which are typically associated with the fight-or-flight response and ordinary functioning, respectively (Kenny, 2011). When a person perceives a real or imagined threat, the brain activates the body's emergency system, the nerves

stimulate the adrenal glands, and adrenaline affects organs throughout the body (Lehmann et al., 2007; Wilson & Roland, 2002). More recently, biologists have posited polyvagal theory, which suggests anxiety is a product of evolution that results from humans developing an increasingly complex neural system that can regulate different neurobehavioral states to account for a range of environmental challenges from survival to social-emotional engagement (Kenny, 2011).

Learning theorists suggest that anxiety is a conditioned response learned through either classical conditioning, operant conditioning, or observational learning (Kenny, 2011).

Behavioral/learning approaches were the dominant empirical perspective on anxiety disorders from the 1920s until the 1970s, but early learning theory approaches have been criticized for their inability to account for the diverse factors involved in the origins of people's anxieties (Mineka & Zinbarg, 2006). Since the 1960s, anxiety as a two-factor structure consisting of state and trait components has gained popularity. State anxiety can be understood as a transitory emotional state resembling fear, while trait anxiety refers to relatively stable individual propensities toward anxiety (e.g., a chronically worried person; Kemp, 1996; Kenny, 2011).

In the late 1980s, a model of anxiety developed by Lang et al. (1988) received widespread approval in clinical research literature; it was based on an interplay among physiological, behavioral, and cognitive variables (Salmon, 1990). This model delineated anxiety as a response to interactions between distressing, fearful thoughts, a state of autonomic arousal, and overt behavioral responses to perceived threats (Salmon, 1990). Multiple etiologies relative to anxiety continue to be studied. Many cognitive behaviorists believe anxiety is initiated by a cognitive appraisal of danger that activates physiological and behavioral responses, although there is also evidence that it is actually physiological arousal that leads to anxious thoughts (Salmon, 1990). Two prominent contemporary psychological approaches to anxiety disorders

include cognitive and psychodynamic approaches. Meanwhile, contemporary learning theorists continue to advocate for an approach that recognizes that individual differences in life experience strongly affect the outcome of conditioning experiences (Mineka & Zinbarg, 2006).

Performance Anxiety

Performance anxiety is usually presented as a characteristic of social phobia or social anxiety disorder (Powell, 2004). Although performance anxiety as a psychological construct has been described in the literature since the 1950s (Powell, 2004), it was not until 2013 that *performance only* was included in the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed., *DSM-5*) as a subtype of social anxiety disorder (SAD; APA, 2013). If anxiety is restricted to performing, and does not affect other social situations, it can be specified as a performance only type of SAD (Dobos et al., 2019).

Performance anxiety can be defined as “strong but delimited fears that severely compromise an individual’s capacity to execute a task at a level that could be reasonably expected, which is crucial to that person’s normal adjustment” (Powell, 2004, p. 804). In contrast, Powell (2004) expressed social phobia as “excessive and persistent fear of being with unfamiliar people or in situations of possible scrutiny by others, which triggers fears of acting in ways that will be embarrassing” (p. 803). A SAD diagnosis requires that the individual has suffered from persistent fear, anxiety, or avoidance for at least six months, while also experiencing considerably impaired social, occupational, or general functioning (Matei & Ginsborg, 2017). In children, the diagnosis involves anxiety that occurs in peer settings as well as during interactions with adults (APA, 2013).

There are several important distinctions between performance anxiety and social anxiety disorder (social phobia). A person with social anxiety disorder has significant and persistent fears, anxieties, and discomforts about being embarrassed, scrutinized, humiliated, rejected, or looked down on in social interactions (APA, 2013; Powell, 2004). In comparison with social phobia, individuals with performance anxiety are more likely to have higher expectations of themselves, greater fear of their self-evaluation of performance as opposed to the scrutiny of others, and higher degrees of post-event rumination (Kenny, 2011; Powell, 2004; Sieger, 2017). Furthermore, those with performance anxiety are more likely to sustain their commitment to the feared performance situation, as opposed to avoiding or escaping from a feared situation, which are behaviors typically indicative of a social phobia (Kenny, 2011; Powell, 2004).

Other distinctions between social anxiety and performance anxiety derive from the level of demand that individuals encounter. While social anxiety is not generally associated with social or behavioral skills deficits, musical and sports performances require complex skill acquisition, mental and physical rehearsal, intensive practice, coordination, and great demands on cognitive capacity and memory (Kenny, 2011). In social phobia, the audience is often imaginary; an individual may feel that everyone is watching and judging them even though it is possible they have not even been noticed in the feared social setting (Kenny, 2011). In contrast, an artistic or sports performer recognizes that, as performers, a real audience is watching and judging them (Kenny, 2011). Thus, performance anxiety, while categorized as a social anxiety, has multiple distinctions. Still, it is important to recognize that fear of negative evaluation is a core component of both SAD and MPA.

Music Performance Anxiety. Music performance anxiety is defined by persistent, anxious apprehension related to musical performance and is described as an anxious state

characterized by cognitive, psychological, and physiological arousal (Biasutti & Concina, 2014; Kenny, 2011). Salmon (1990) defined MPA 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).

Many people learn how to play an instrument during their school years, and knowledge of how to cope with MPA at this time is crucial for satisfactory engagement with music (Osborne, 2016). As much as 75% of the population of adolescent instrumental students have been reported to experience some form of performance anxiety (Britsch, 2005), and research indicates that MPA may increase with age, peaking at around 15 years of age (Osborne, 2016). The majority of cases of social anxiety (90%) occur by the age of 23 (Leigh & Clark, 2018). Furthermore, in findings consistent with the data on anxiety in other settings (ACHA, 2018; NIMH, 2017), music education researchers have reported that, beginning in late childhood, female musicians report higher MPA than their male peers (Osborne et al., 2005; Thomas & Nettelbeck, 2014; Wehr-Flowers, 2006).

Musical performance anxiety is a serious condition that affects musicians’ careers (Sieger, 2017). Overwhelming feelings of impending doom adversely affect musicians’ ability to take the stage, and aversive performance experiences influenced by performance anxiety could trigger a lifelong fear of performing (Kenny, 2011). The significant fear of negative evaluation that musicians experience—by the self, peers, or others—is cause for critical inquiry, especially as experienced during the adolescent years (Kenny, 2011).

Theoretical Background

According to Bandura's social cognitive theory, people's level of motivation, affective states, and actions are based more on their beliefs than on what is objectively true (Bandura, 1997).

Unless people believe they can produce desired effects by their actions, they have little incentive to act or to persevere in the face of difficulties. Whatever other factors serve as guides and motivators, they are rooted in the core belief that one has the power to effect changes by one's actions. (Bandura, 2006a, p. 3)

In social cognitive theory, perceived efficacy to exercise control over potentially threatening events plays a central role in anxiety arousal (Bandura, 1987).

Self-Efficacy

Social cognitive theory posits that human agency operates within a broad network of socio-structural influences and that human functioning is rooted in social systems (Bandura, 2006a). Among the mechanisms of human agency, beliefs of personal efficacy are the core belief that drives human motivation, well-being, and accomplishment (Bandura, 2006a). Self-efficacy beliefs are "domain-specific and refer to perceptions of capabilities to learn or perform given tasks within specified domains" (Schunk & Meece, 2006, p. 75). In social cognitive theory, both anxiety and impaired performance are coeffects of a low sense of efficacy to meet competitive demands (Bandura, 1987, 1997). Anxiety and phobic disorders are not only among the most prevalent and distressing of psychosocial problems, they were also the first phenomena to which self-efficacy theory was applied (Williams, 1995). Perceived efficacy regulates stress and anxiety through beliefs about personal control of action, thought, and affect (Bandura, 1997).

Bandura (1997) hypothesized that perceived inefficacy in coping with potential threats is the primary factor that stimulates both anticipatory anxiety and avoidant behavior—that people avoid situations and activities that can be aversive because they believe they will be unable to manage the risky aspects of an event, not because they are overwhelmed with anxiety. According to Bandura, to understand people's appraisals of external threats and their affective reactions to them, it is necessary to analyze their judgments of their coping capabilities. Social cognitive theory has direct implications for understanding adolescent instrumental music students' experience with MPA and the potential coping mechanisms related to self-efficacy that could help students navigate the perceived stresses of instrumental music performance. Accordingly, social cognitive theory will serve as a theoretical lens for understanding MPA among adolescent instrumental musicians in this study.

Problem Statement

Anxiety disorders are prevalent in adolescents, negatively affect multiple domains of functioning, and have the earliest age of onset among major mental health disorders (Hudson et al., 2019; Leigh & Clark, 2018). Musicians often begin their training before the age of 12 (Braden et al., 2015; Zarza-Alzugaray et al., 2018), and a focus on early individual differences could reduce the significant personal and societal costs of untreated anxiety disorders continuing into adulthood (Hudson et al., 2019; Kadosh et al., 2015). At least half of adult anxiety problems begin by the age of 18, with 90% of cases of SAD occurring by 23 years of age (Kadosh et al., 2015; Leigh & Clark, 2018). Despite the prevalence of MPA among musicians (Nicholson et al., 2015), there are a limited number of studies examining the effectiveness of treatment for MPA in young musicians (Braden et al., 2015).

There is a need to better understand how educators can support students with coping mechanisms and early interventions for MPA within school music curricula (Braden et al., 2015; Spahn et al., 2016). The conditions that student musicians suffer as a result of MPA can negatively impact their enjoyment while performing, as well as their psychological health and well-being (Kenny & Halls, 2018; Patston & Osborne, 2016). Symptoms of MPA negatively impact students' ability to cope with the demands of music education and can cause students to leave music education settings or develop unhealthy coping habits in their adult music careers (Braden et al., 2015; Coşkun-Şentürk & Çırakoğlu, 2018; Osborne, 2016).

According to social cognitive theory, perceived efficacy regulates stress and anxiety, and self-efficacy can be developed to reduce fear and anxiety (Bandura, 1997; Hendricks, 2016). Moreover, studies have revealed that, among variables including anxiety, grade level, and practice time, self-efficacy is the best predictor of music performance (Hendricks, 2016). Adolescents' belief in their own capacities to face challenges is a crucial factor for emotional well-being (Tak et al., 2017), and Hewitt (2015) recommended further research on students' music self-efficacy to enhance understanding of students' motivational beliefs. Previous research in music self-efficacy has demonstrated a relationship between self-belief and achievement and identified influences on self-efficacy perceptions, but relatively little attention has been directed toward Bandura's sources of self-efficacy, which include mastery experience, verbal/social persuasion, physiological/affective state and vicarious experience (Hendricks, 2016). There is also a lack of research exploring relationships between MPSE and variables such as gender and grade level (Hendricks, 2016).

Schnell et al. (2015) recommended future studies should examine domain-specific patterns across academic domains and age groups to better understand self-efficacy and possible

gender differences in the relationships between self-efficacy and achievement emotions (e.g., anxiety). They also noted that research findings on gender differences in the relationship between self-efficacy and performance are inconsistent. Given the enormous body of evidence in academic content areas that demonstrates self-efficacy's positive influence on academic achievement, unusually few studies have applied Bandura's (1997) theoretical framework to music performance (McPherson & McCormick, 2006; Zelenak, 2010). In addition to understanding the role that MPSE may play in affecting MPA, the phenomenon has also been shown to peak in mid-adolescence, with gender as a distinguishing correlated feature (Leigh & Clark, 2018; Osborne, 2016). Although researchers have studied gender differences related to the experience of MPA, drawing clear conclusions regarding gender differences is still difficult (Coşkun-Şentürk & Çırakoğlu, 2018). Kenny and Halls (2018) called for future research to study the differences between genders in the experience and expression of MPA.

Given the growing evidence for the ubiquity of MPA in student musicians, the young age at which musicians begin their training, the lack of researched coping mechanisms for MPA, self-efficacy's theorized relationship with anxiety, and the potential career-devastating effects of untreated MPA in adult musicians, there is a need to examine MPA and MPSE among adolescent musicians according to gender and grade to determine possible coping strategies that could serve as protective factors against music performance anxiety (Braden et al., 2015; Hendricks, 2016; Osborne, 2016). The problem is that there is a lack of research exploring the relationships between MPA, MPSE, grade level, and gender among adolescent student musicians.

Purpose Statement

The purpose of this nonexperimental, quantitative study is to test the theory of social cognitive theory that relates self-efficacy to anxiety. Music performance anxiety (MPA) refers to

the feelings of fear or apprehension that occur before and/or while performing in front of an audience (Braden et al., 2015; Spahn et al., 2016), and music performance self-efficacy (MPSE) represents the belief in one's ability to accomplish specific tasks within the domain of music performance (Hendricks, 2016). Despite the concern with MPA among young musicians, rigorous research on MPA interventions for adolescents is lacking (Braden et al., 2015), and relationships between MPSE and other variables such as gender and grade level have not been sufficiently explored (Hendricks, 2016). More research on the sources of self-efficacy (i.e., mastery experience, verbal/social persuasion, physiological/affective state, and vicarious experience) is needed to consider how self-belief might affect student experience in music-learning settings (Hendricks, 2016).

Two research designs were used to examine MPA and MPSE among sixth to eighth grade instrumental music students enrolled in middle school band or orchestra programs: correlational and causal-comparative. For the correlational research design, the variables for the Pearson's correlation were MPA and MPSE. For the multiple regression, the criterion variable was MPA and the predictor variables were two sources of self-efficacy: (a) mastery experience (i.e., prior task-based achievement); and (b) verbal/social persuasion (i.e., encouragement from others) (Hendricks, 2016). For the causal-comparative design, independent variables included gender and grade level, and dependent variables included MPA and MPSE.

Significance of the Study

This research study holds both theoretical and practical significance. The relationship of self-efficacy to performance anxiety, as outlined in social cognitive theory, was tested within the context of a school setting for instrumental music-making. There is a lack of research that examines MPA among adolescent musicians and musicians who are not pursuing music as a

career (Osborne & Kenny, 2005; Robson & Kenny, 2017; Ryan, 2004; Taborsky, 2007).

Although performance is an essential part of music education, the current state of knowledge in both academic and clinical psychology regarding MPA is lacking (Helding, 2016). While MPA is a serious problem for many musicians and has been studied among different age groups and genres of music, less research has been directed toward children and adolescents in comparison with college-aged students and adults (Dobos et al., 2019; Ryan, 2005).

There is also a gap in the literature that addresses the relationship between MPSE and MPA among adolescent instrumental musicians (Hewitt, 2015). According to González et al., (2018) one means of reducing anxiety is to raise self-efficacy through Bandura's four sources of self-efficacy. However, prior to their study of Spanish musicians, the researchers shared that no other studies had examined the role of performance self-efficacy as a predictor of MPA. González et al. showed that MPA was negatively predicted by self-efficacy among their sample of 270 Spanish musicians aged 15 to 56 years old (141 participants were students with an average age of 21.13). Given the small sample of students representing a narrow population in González et al.'s study, the results of the current study offer a valuable addition to the limited existing research literature on the relationships between MPSE and MPA.

Contributions to the body of knowledge on MPA among student musicians could help educators understand issues related to performance anxiety so that they might assist musicians' participation in enjoyable music-making experiences (Taborsky, 2007). Biasutti and Concina (2014) called for instrumental music training to focus on developing students' psychological skills to cope with MPA and to minimize its negative effects on music performance and personal well-being. Zelenak (2015) recommended that additional research include the investigation of

the self-efficacy beliefs of music students in different age groups to advance the understanding of how music self-efficacy develops with age.

From a theoretical perspective, this study provides important data relative to the influence of gender and grade level on both MPSE and MPA. Additionally, examining the relationship between self-efficacy and MPA makes an important contribution to the literature on self-efficacy. The relationship between anxiety and athletic performance, while hard to confirm, is one of the most widely discussed issues in sports psychology. High levels of anxiety in a sports context may affect a variety of important outcomes, including athletes' level of performance; degrees of enjoyment and satisfaction with competition; injury proneness; rehabilitation; monetary gain; and interactions with opponents, teammates, coaches, and officials (Ford et al., 2017; Zeidner & Matthews, 2005). The relationship between anxiety and athletic performance is examined at length in Bandura's (1997) seminal text, *Self-Efficacy: The Exercise of Control*. Parallels between athletic and music performance are clear. As Bandura wrote in 1997:

Athletic activities include many stressful elements . . . severe competitiveness linked to status and monetary consequences is an unremitting source of apprehension. Many talented players vie for a preciously small number of positions at the professional level . . . athletic performances that fall short of personal and team standards diminish social status in the eyes of one's teammates, coaches, and others. Last, but not least, athletes have to contend with self-devaluation for deficient performances . . . concern over what others think and what one thinks of oneself can be a competitive stressor. (p. 389)

Substitute "conductor/teacher" for "coach," "music" for "athletics," and "ensemble" for "team," and a clear picture of the music profession is described. Yet, music is not approached within Bandura's (1997) text on self-efficacy. In contrast, Kenny (2011) made clear comparisons

between the athlete and the artistic performer when analyzing performance anxiety in the text, *The Psychology of Music Performance Anxiety*.

The gap in the literature on MPSE and its relationship to MPA creates an opportunity for focused inquiry. Performance anxiety is the most significant psychological issue for young performing musicians (Kenny, 2011), and can significantly detract from the psychological well-being and optimal performance of young performers (Osborne, 2016). Understanding the relationship between adolescent students' efficacy beliefs and music performance anxiety could better inform teachers who wish to support students' lifelong participation in music.

Research Questions

The research questions for this study are:

RQ1: Is there a relationship between music performance anxiety and music performance self-efficacy for secondary instrumental musicians?

RQ2: Is there a predictive relationship between music performance anxiety scores and the linear combination of sources of self-efficacy (mastery experience and verbal/social persuasion) for secondary instrumental musicians?

RQ3: Is there a difference between music performance anxiety and music performance self-efficacy for secondary instrumental musicians based on gender and grade level?

Definitions

1. *Music performance anxiety* – The experience of distinct, persistent, anxious apprehension related to musical performance (Kenny, 2011).
2. *Music performance self-efficacy* – Task and context-specific self-perceptions of music ability (Zelenak, 2015; Zimmerman & Cleary, 2006).

3. *Self-efficacy* – Perceived self-efficacy refers to context-specific beliefs in one's capabilities to plan and execute courses of action to attain set goals (Bandura, 1997, 2006a).
4. *Social anxiety disorder* – A persistent and excessive fear of embarrassing or humiliating oneself in social or performance situations (APA, 2013).
5. *Social cognitive theory* – Social cognitive theorists believe human functioning is rooted in social systems, and hypothesize that people's level of motivation, affective states, and actions are based more on what they believe rather than on objective truth. A major focus of inquiry by social cognitive theorists is on the exercise of human agency and people's beliefs in their causative capabilities (Bandura, 1987, 1997, 2006a).

CHAPTER TWO: LITERATURE REVIEW

Overview

This chapter provides a thorough review of existing research to identify studies that explore music performance anxiety (MPA). Research on MPA among secondary school students is a recent phenomenon, and thus a critical inquiry into the current research may provide new perspectives. The physical and psychological symptoms of performance anxiety can make the act of playing an instrument extremely challenging. With a better understanding of what variables are associated with performance anxiety, more students may be able to achieve success in music performance (Taborsky, 2007). The first section of this chapter discusses social cognitive theory and self-efficacy as a framework for understanding the central phenomenon of MPA. The second section synthesizes the recent literature pertaining to self-efficacy and MPA. A gap in the literature is discussed to support the need for this study.

Theoretical Framework

In quantitative studies, the researcher often uses a theory deductively with the intent of collecting data that will be tested to confirm or disconfirm the theory based on the study's results (Creswell, 2009). Within this quantitative study, theory was used as an overall orienting lens to inform the development of the research questions and the scope of the researcher's inquiry. The theoretical perspective of social cognitive theory was used to inform the researcher's synthesis and analysis of the research.

Social Cognitive Theory

In the 20th century, learning theorists shifted the field of psychology toward the pursuit of understanding overt behavior (Miller, 2011). In the early 1900s, prior to the influence of the learning theorists, psychologists focused on the structure of the mind and nature of consciousness

through the systematic examination of introspection. Alternatively, learning theorists attempted to predict and control overt behavior, motivated by the belief that observable behavior could be objectively measured and influenced by one's environment (Miller, 2011). Learning theorists adopted the physical sciences as a model for their examinations, tested research questions through tightly controlled laboratory experiments, and studied classical and operant conditioning and behavior modification (Miller, 2011).

Social learning theorists soon emerged with a focus on socialization as they extended learning principles to real-life social behaviors (Miller, 2011). Alfred Bandura made significant contributions to the development of social learning theory as he increasingly focused on cognition. In the 1960s, Bandura and Walters (1963) furthered psychologists' understanding of modeling by demonstrating how new behaviors could be acquired through vicarious reinforcement. In 1977, Bandura both published his work, *Social Learning Theory* (1977a), and introduced in an article the concept of self-efficacy (Bandura, 1977b). Nearly one decade later, Bandura (1986) put forth the key tenets of his social cognitive theory in *Social Foundations of Thought and Action: A Social Cognitive Theory*.

Social cognitive theory, as developed by Bandura, was used to analyze developmental changes in terms of involvement and the exercise of human agency (Bandura, 2006a). Social cognitive theorists hypothesize that people play a role in shaping the course of their personal development. They believe that people's levels of motivation, affective states, and actions are based more on what they believe rather than on objective truth (Bandura, 1997, 2006a). Therefore, a major focus of inquiry by social cognitive theorists is people's beliefs in their causative capabilities (Bandura, 1997).

Social cognitive theorists distinguish three modes of agency, which each derive from people's beliefs that they can influence a course of events by their actions: individual, proxy, and collective agency (Bandura, 2006a). Individual, or personal agency, can be exercised when people have direct control over their social conditions and the institutional practices that affect their everyday lives (Bandura, 2006a). According to Bandura (2006a), when a person lacks the ability to exercise direct control, they must seek the help of others (i.e., proxies) who have access to resources or expertise (e.g., a child seeking help from a parent). Because people do not live their lives in isolation and because many of the goals people pursue are achievable only through socially interdependent effort, collective agency capitalizes on people's shared beliefs in their joint capabilities and enables them to provide mutual support, form alliances, and work together to influence their environment and achieve what they cannot accomplish on their own (Bandura, 2006a).

Agency refers to intentional acts, not simply an expectation or prediction of future events, but a proactive commitment to bring outcomes to fruition (Bandura, 2001). In social cognitive theory, human agency operates within an interdependent causal structure involving triadic reciprocal causation among: (a) internal personal factors in the form of cognitive, affective, and biological events; (b) behavior; and (c) the environment (Bandura, 1997). Personal agency operates within a broad network of social structural influences. Efficacious people are able to take advantage of opportunity structures and change or circumvent institutional constraints while inefficacious people are less able to exploit enabling opportunities provided within social systems and are discouraged by institutional impediments (Bandura, 1997).

Agents intentionally influence their functioning and life circumstances through four core features of human agency: (a) intentionality, (b) forethought, (c) self-regulation, and (d) self-

examination (Bandura, 2006a). People form intentions that include action plans and strategies for realizing them. They set personal goals and anticipate the likely outcomes that their prospective actions will have as they pursue their goals. These visualized futures guide and motivate behavior (Bandura, 2006a). In addition to planning and forethinking, self-regulators adopt personal standards and monitor and regulate their actions, engaging in activities that provide satisfaction and a sense of self-worth while avoiding actions that bring self-censure. Through functional self-awareness, agents make corrective adjustments as needed based on their reflection of personal efficacy and the soundness of their thoughts and actions. Together, intentionality, forethought, self-regulation, and self-examination are important parts of a causal structure affecting human agency (Bandura, 2006a).

As applied to the current study, social cognitive theory's multi-faceted causal structure, which addresses both the development of competencies and the regulation of action, can be narrowed to focus on the component within the theory that governs human thought, motivation, and action: self-efficacy (Bandura, 1997). "Perceived self-efficacy refers to beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3). In the application of self-efficacy to this study of MPA, I would expect the independent variable of self-efficacy to influence the dependent variable of music performance anxiety given that, in social cognitive theory, efficacy beliefs are a key factor in the generative system of human competence (Bandura, 1997).

Self-Efficacy

Self-efficacy refers to subjective judgments of one's capabilities to plan and execute actions to achieve desired goals (Zimmerman & Cleary, 2006). The belief in one's self-regulative capability to accomplish goals is foundational to one's sense of personal agency (Zimmerman et

al., 2017). Self-efficacy is a belief about what a person can do rather than who a person is or judgments about one's personality traits or physical and psychological attributes (Zimmerman & Cleary, 2006). Belief in personal efficacy is the central mechanism of human agency and is fundamental to one's well-being, motivation, and accomplishments. If people do not believe that they can produce desired effects by their actions, they will lack incentive to act or to persevere when they encounter adversity (Bandura, 2006a). Efficacy beliefs affect whether individuals think optimistically or pessimistically, in self-enhancing or self-debilitating ways, and affect people's goals, aspirations, motivations, and perseverance (Bandura, 2006a).

Self-efficacy is domain-, task-, and context-specific (Zimmerman & Cleary, 2006). Self-efficacy beliefs are typically assessed prior to engaging in a particular task or activity because, in contrast to other measures of self-belief, efficacy self-judgments involve predicting future generative performances. Assessments of self-efficacy are also dependent on a goal-mastery criterion of performance; that is, people rate themselves relative to specific levels of performance rather than social/normative standards such as a comparison of one's competencies to others (Zimmerman & Cleary, 2006; Zimmerman et al., 2017). Compared with learners who doubt their capabilities, those who feel self-efficacious about learning or competently performing a task are more likely to work harder, readily participate, achieve at higher levels, and persist longer when encountering difficulties (Schunk & Meece, 2006). Self-efficacy is hypothesized to affect individuals' task choices, effort, persistence, and achievement (Schunk & Meece, 2006), and operates as one of many determinants within the broader conceptual framework of social cognitive theory. Collectively, these determinants govern human thought, affect, motivation, and action (Bandura, 2006a).

Self-efficacy should be viewed as distinct from self-concept, which can be understood as a generalized self-assessment. One's self-concept is developed through the incorporation of a variety of self-reactions and beliefs such as perceptions of self-worth, self-competence, and a basic question of "How good am I?" (Zimmerman & Cleary, 2006). Whereas self-efficacy responses are descriptive, self-concept responses are both descriptive and evaluative (Marsh et al., 2019). Many self-belief measures include affective feelings of self-worth and generalized judgments of personal adequacy and competence (Zimmerman et al., 2017). In contrast, self-efficacy focuses specifically on cognitive judgements relative to the tasks or activities that an individual feels capable of performing, such as one's ability to complete a specific math equation as opposed to earning an "A" in Math class (Zimmerman & Cleary, 2006; Zimmerman et al., 2017). The main distinction for self-efficacy judgements in comparison to other expectancy constructs, such as self-concept or self-esteem, is the task- and context-specificity of the judgement, which is focused exclusively on one's perceptions of capability (Zimmerman & Cleary, 2006; Zimmerman et al., 2017). Because self-efficacy beliefs are malleable to experience, they can be assessed over time and provide evidence of growth, making them a particularly helpful measure for educators (Zimmerman et al., 2017).

Self-Efficacy and Adolescence. The perceptions that adolescents have of their efficacy play a major role in their transition from childhood dependency to the self-sufficiency of adulthood (Zimmerman & Cleary, 2006). Adolescents' sense of personal efficacy is especially influenced by their capability to self-regulate their functioning by setting optimal goals, using effective strategies, through self-evaluation that uses appropriate criteria, and by means of accurate self-monitoring (Zimmerman & Cleary, 2006). Self-efficacy is also affected by students' intelligence and ability. High ability students generally feel higher levels of efficacy

regarding their ability to perform well in comparison to less-abled peers. However, self-efficacy is not a direct reflection of students' intelligence and ability (Schunk & Meece, 2006). While possessing skill can raise self-efficacy and lead to further skill acquisition, skill and self-efficacy are not synonymous. A person's belief about their capabilities (i.e., their self-efficacy) is often a better predictor of how they will act than their actual skills (Schunk & Meece, 2006).

Sources of Self-Efficacy. Perceptions of personal efficacy are principally derived from four sources: mastery experiences, vicarious experiences, verbal/social persuasion, and physiological and affective states (Bandura, 1997). Experiences of personal mastery are the strongest source of enhancing perceptions of personal efficacy (Usher & Pajares, 2006; Zimmerman & Cleary, 2006; Zimmerman et al., 2017). Part of what makes students' interpretations of their performances the most reliable influence on self-efficacy is that performances are tangible indicators of their capabilities (Zimmerman et al., 2017). As one's proficiency at an activity increases so does one's self-efficacy; frequent successes lead to higher self-efficacy and consistent failure experiences lower self-efficacy (Zimmerman & Cleary, 2006; Zimmerman et al., 2017). However, cognitive analysis of one's performance experience is an important mediating factor for affecting capability judgments. Accomplishments are interpreted through the lens of one's self-regulatory processes, including self-evaluations, attributions, strategies, and goal setting (Zimmerman & Cleary, 2006). The circumstances and factors surrounding accomplishments influence one's reflections on the perceived causes of performance and determine expectations for future performance. Stellar performance on an easy task is unlikely to enhance perceptions of self-efficacy, just as poor performance due to extenuating circumstances is unlikely to lessen one's perceptions (Zimmerman & Cleary, 2006).

Adolescents often judge their level of self-efficacy through vicarious experiences, acquiring information about their capabilities through knowledge of how others perform (Bandura, 1997; Zimmerman & Cleary, 2006; Zimmerman et al., 2017). Modeling is one of the most important ways to promote learning and self-efficacy, with its impact being strongest when observers believe that they are similar to the model in terms of age, ability, and gender (Zimmerman & Cleary, 2006; Zimmerman et al., 2017). A human model that adapts in performance and corrects errors is more effective at promoting self-efficacy than mastery models who perform without errors (Zimmerman & Cleary, 2006). However, vicarious increases in self-efficacy can be negated if subsequent performances are perceived as failures. Performances give the clearest information about capabilities, and experiences of personal mastery are the strongest influence on personal efficacy (Zimmerman & Cleary, 2006; Zimmerman et al., 2017).

Another influencer of perceptions of personal capability are instances of social persuasion (Bandura, 1997). According to social cognitive theory, an individual's social experiences are the primary determinant of functioning, attitudes, and beliefs. Accordingly, an adolescent's sense of efficacy can be influenced by various forms of verbal persuasion through the form of encouragement and progress feedback and through modeling specific strategies, behaviors, or thoughts (Zimmerman & Cleary, 2006). Zlomuzica et al. (2015) demonstrated that perceived self-efficacy can be experimentally manipulated through verbal persuasion. In a study of middle school students, Usher and Pajares (2006) found that, while perceived mastery experience accounted for the greatest proportion of the variance within their sample, social persuasions accounted for greater unique variance in the prediction of girls' academic self-efficacy.

Within the domain of social persuasion, the most effective and long-lasting changes in adolescent self-efficacy beliefs for academic tasks are achieved by providing feedback that links performance progress with strategy use (Zimmerman & Cleary, 2006). Social feedback can affect self-efficacy beliefs, focus attention on important learning processing, and enable students to make adaptive self-reflections, including evaluating performance in relation to mastery goals or attributing level of performance to effective strategy use (Zimmerman & Cleary, 2006). While positive feedback can raise learners' self-efficacy, similar to vicarious experience, the increase will not persist if they subsequently perform poorly or are consistently unable to attain perceived success (Zimmerman & Cleary, 2006; Zimmerman et al., 2017).

Physiological and emotional indicators such as anxiety and stress also provide self-efficacy information (Bandura, 1997; Zimmerman & Cleary, 2006; Zimmerman et al., 2017). Strong emotional reactions to a task provide cues about an anticipated success or failure, and a rapid heart rate or sweaty palms can be interpreted as indicators of personal ineffectiveness (Zimmerman & Cleary, 2006; Zimmerman et al., 2017). When learners experience negative thoughts or fears about their capabilities, those reactions can lower self-efficacy and trigger additional stress and agitation that can lead to inadequate performances (Zimmerman et al., 2017).

Self-Efficacy and Anxiety. Efficacy beliefs can regulate stress and anxiety through their impact on coping behaviors. Positive changes in perceived self-efficacy can benefit emotional learning (Zlomuzica et al., 2015). In social cognitive theory, perceived efficacy to exercise control over potentially threatening events influences anxiety arousal (Bandura, 1997). According to Bandura (1997), people's appraisals of, and affective reactions to, external threats should be understood by analyzing their judgments of their relative coping capabilities. People

possessing a high sense of coping efficacy adopt strategies designed to lessen threatening or challenging environments. In social cognitive theory, perceived inefficacy in coping with potential threats is a primary catalyst for both anticipatory anxiety and avoidance behavior (Bandura, 1997). Avoidance of feared situations is a common theme across various types of evaluative anxiety, together with a loss of motivation to perform (Zeidner & Matthews, 2005). Negative thoughts and fears about one's capabilities can lower self-efficacy and cause additional stress and agitation that can negatively influence performance (Zimmerman et al., 2017). One of the four sources of self-efficacy, physiological state, can also influence how an individual makes an efficacy judgment. If a student becomes anxious during an activity, rapid heart rate or sweating can be interpreted as an indication of personal ineffectiveness (Zimmerman & Cleary, 2006). Physiological responses, such as heart rate and feelings of anxiety, influence students' perceptions of skill level and self-efficacy (Schunk & Meece, 2006).

Research suggests that students' performance in academically threatening situations depends more on self-efficacy beliefs than on anxiety arousal (Zimmerman et al., 2017). Within the domain of mathematics, Siegel et al. (1985) found that self-efficacy beliefs are more predictive of performance than levels of anxiety. McPherson and McCormick (2006) similarly found that, in the context of a music performance examination, self-efficacy was the best predictor of music performance among the variables they studied, including anxiety. In social cognitive theory, both anxiety and impaired performance result from a low sense of efficacy to meet competitive demands (Bandura, 1997).

Efficacy beliefs affect the quality of emotional life and vulnerability to stress (Bandura, 2006a). If learners experience fewer emotional symptoms they may feel more self-efficacious (Schunk & Meece, 2006). Self-efficacy beliefs can influence students' capability to manage their

emotions by decreasing their stress, anxiety, and depression (Bandura, 1997; Bandura et al., 1999; Ehrenberg et al., 1991; Zimmerman et al., 2017). A greater understanding of the relationship between self-efficacy and MPA could advance social cognitive theorists' hypothesis that self-efficacy beliefs influence students' capacity to cope with performance anxiety.

Related Literature

The most frequently occurring mental health problems in children, adolescents, and adults are anxiety disorders (Kenny, 2011). Although related, there are important distinctions between performance anxiety and generalized anxiety. Generalized anxiety impacts many domains and is characterized by uncontrollable worry about the welfare of oneself or immediate family (Beilock et al., 2017). Performance anxiety is related to a specific domain (e.g., science), with a focus on performance. There is a psychological aspect to performance that all performers, regardless of ability, encounter. Subsequently, performance anxiety can undermine the performances of amateurs and professionals alike (Beilock et al., 2017).

Performance anxiety is associated with potential future threats and is characterized by the anticipatory reactions that individuals engage in to manage their uncertainty (Beilock et al., 2017). Fear and apprehension generated from performance anxiety can be associated with the completion of a specific task (e.g., improvisation) or engagement with a specific domain (e.g., music). The two components of performance anxiety are: (a) anxious apprehension, the cognitive aspect of anxiety (i.e., worry); and (b) anxious arousal (i.e., physiological arousal; Beilock et al., 2017).

Anxious apprehension, or the worries felt by individuals, often lead to increased attention to errors and problems. Increased worry and vigilance for threats in one's environment can result in negative attitudes, avoidance behaviors, and less access to cognitive resources such as

working memory, which individuals need to perform well on tasks (Beilock et al., 2017). If subsequent poor performance leads to increased performance anxiety, both performance anxiety and actual performance can worsen over time in a negative, recursive feedback loop (Beilock et al., 2017).

Anxious arousal, as a component of performance anxiety, refers to more than the increased physical arousal (e.g., increased heart rate) typically experienced during everyday events such as test-taking or social interaction. While physiological arousal in the form of increased blood flow or heart rate can be beneficial in certain situations, physiological arousal can also be interpreted as a threat that undermines task performance (Beilock et al., 2017). “In MPA, arousal appears to be subject to cognitive appraisals that determine the subsequent emotional response, and may or may not optimize performance, depending on how it is interpreted by the performer” (Kenny & Osborne, 2006, p. 108).

According to the Yerkes–Dodson Law, the relationship between arousal and performance can be represented as an inverted U (see Figure 1), with performance quality at its highest when arousal is at a moderate level (Lehmann et al., 2007; Wilson & Roland, 2002). The effect of physiological arousal is moderated by an individual’s level of performance anxiety, which in turn can be categorized as performance-enhancing or performance-disturbing (Beilock et al., 2017; Spahn et al., 2016). Criticisms of the inverse U-hypothesis include that it fails to take into account variables such as trait anxiety, levels of task mastery, and degrees of situational stress (McCambridge & Rae, 2004; Wilson & Roland, 2002). A catastrophe model (Hardy & Parfitt, 1991) has also been suggested to distinguish somatic and cognitive anxiety, and more accurately depict the precipitous decline in performance that can happen quite dramatically once arousal has passed a certain stress point (Wilson & Roland, 2002).

Figure 1*Yerkes–Dodson Inverted U Model* **Music Performance Anxiety**

Musicians of all ages and abilities experience music performance anxiety (Kenny, 2011). Professional musicians actually show a stronger disposition toward anxiety than non-performing artists (Lehmann et al., 2007). Anxiety is present in some children from their very first performances and early performance experiences can quickly shape children's responses for future performances (Boucher & Ryan, 2011). Lehmann et al. (2007) estimated around half of all performing musicians are affected by MPA. Unfortunately, while anxiety disorders are known to first manifest in childhood and adolescence, it is not known whether this is the case for MPA (Osborne & Kenny, 2005). Music performance anxiety is a complex construct closely linked to other concepts such as social anxiety, test anxiety, and social phobia (González et al., 2018). Papageorgi et al. (2007) recommended that future research consider whether there are different onset points for musicians experiencing debilitating performance anxiety. More research is necessary to determine the prevalence of MPA in adolescents.

Music Performance Anxiety as Social Anxiety Disorder

According to the *DSM-5*, performance anxiety is a specific expression of social anxiety disorder (Biasutti & Concina, 2014). Social anxiety refers to feelings of apprehension, self-consciousness, and emotional distress that are triggered during, or in anticipation of, social situations (Zeidner & Matthews, 2005). Social anxiety may occur in response to immediate, real social encounters or to imagined, future encounters (Zeidner & Matthews, 2005). High levels of anxiety can interfere with social competence and may be associated with clinical conditions such as social phobia (Zeidner & Matthews, 2005). Sieger (2017) challenged the identification of MPA as a social phobia, stating that, while musicians with MPA experience anxiety and consequent degrees of impairment, individuals with MPA also tend to have high expectations for their performance and remain committed to their performance despite their fears—traits uncharacteristic of social phobia sufferers.

In a study of MPA among conservatory and professional musicians, Biasutti and Concina (2014) operated under the definition of performance anxiety as a social phobia marked by fear or anxiety about one or more social situations in which individuals could be exposed to scrutiny by others. This definition is in alignment with social cognitive theory, in which Bandura (1997) suggests that perceived inefficacy in coping with potential threats leads to both anticipatory anxiety and avoidance behavior. Kenny (2011) expressed frustration that the *DSM-4-TR* (APA, 2000), the edition of the time, did not differentiate between experiences such as performance anxiety, shyness in social situations, and stage fright. The *DSM-5* (2013) does contain a specification for performance only within its diagnostic criteria for social anxiety disorder, specifying that musicians with performance only social anxiety disorder do not avoid or fear nonperformance social situations. But, while the *DSM-5* cites *musician* as a profession in which

performance fears can impair professional lives, there is no specific classification for music performance anxiety. Kenny (2011) declared that the inability of researchers to agree on criteria that distinguish MPA from other anxiety disorders is a major impediment that compromises the field of music performance anxiety research.

Symptoms of Music Performance Anxiety

The anxiety-performance relationship can be viewed as reciprocal in nature: high levels of test anxiety produce certain aversive patterns of motivation, coping, and task strategies that interfere with learning and performance (Zeidner & Matthews, 2005). Although many students possess the competencies to perform well on exams, they perform poorly because of debilitating levels of anxiety (Zeidner & Matthews, 2005). As a result, performance suffers and can lead to further anxiety over time, generating a cycle of increasing anxiety and degrading performance in evaluative situations, thus limiting educational or vocational development (Zeidner & Matthews, 2005). In the context of music, symptoms of MPA include increased heart rate, sweating, dry mouth, and persistent anxiety related to musical performance (Kenny, 2011; Taborsky, 2007).

The body's physiological responses to performance anxiety parallel the same symptoms one feels when feeling threatened or afraid (Lehmann et al., 2007). Once in a physical state of arousal, the changing functions of one's organs result in abnormal feelings, which have been outlined by Wilson and Roland (2002) and organized into a table (see Table 1) by Lehmann et al. (2007, p. 147). In a multiple case study with three instrumental music teachers, Sieger (2017) shared teachers' perspectives of their students' physical and mental MPA symptoms, including suffering from imposter syndrome and a multitude of symptoms conditioned by techniques and challenges specific to certain instruments (e.g., brass players having to perform specific partials, shaky bow arms for string players, and shallow breathing for wind players).

Table 1

How the Physical Changes of Arousal Translate into Physiological Symptoms of Anxiety

Adaptive bodily function	Sensation felt
Heart beats vigorously to increase oxygen supply to muscles	Pounding chest
Glands in the skin secrete perspiration to lower body temperature	Excessive sweating, wet palms
Lungs and bronchial airways open to supply more oxygen	Shortness of breath
Saliva flow decreases	Dry mouth, lump in the throat
Digestive system is inhibited as blood is diverted from stomach to muscles	"Butterflies in the stomach," nausea
Pupils dilate to sharpen distance vision	Blurring and focusing problems
Muscles tense in readiness for increased physical exertion	Tension, shaking hands, muscle tremors

Note. Adapted from "Psychology for Musicians: Understanding and Acquiring the Skills," by A. C. Lehmann, J. A. Sloboda, and R. H. Woody, 2007, p. 147 (<https://doi.org/10.1093/acprof:oso/9780195146103.001.0001>). Copyright 2007 by the Oxford University Press. Reprinted with permission.

Physiological symptoms can cause performance mistakes, hinder expressive control, and lead to behavioral symptoms. For example, such symptoms might involve undesirable adaptations in performance used to overcome physiological shortcomings, such as when a trumpet player suffering from poor breath support compensates by pushing the mouthpiece against the lips to achieve a higher pitch. Musicians may also encounter cognitive symptoms, such as mental preoccupations with negative thoughts about their performance (Lehmann et al., 2007).

Causes of Music Performance Anxiety

Music performance anxiety can be caused by a number of variables. A person might experience job uncertainty at work, or face competition from peers by whom they feel scrutinized (Sieger, 2017). High self-expectations and worries about the negative impact of excessive physical arousal prior to or during performance are the two most frequently cited reasons for MPA among professionals (Osborne et al., 2014). Low self-esteem, neuroticism, insufficient practice, and perceived expectations of high-level performance have been linked to higher levels of anxiety among adolescents (Boucher & Ryan, 2011). Although research has established strong associations between measures of anxiety and tests that screen for depression, few studies have examined what effect depression has on performance anxiety (Kenny et al., 2014). A better understanding of the factors that contribute to performance anxiety should help in its control (Papageorgi et al., 2007).

Music Performance Anxiety and Age. Age is believed to be a factor in one's susceptibility to anxiety (Papageorgi et al., 2007). Research has indicated that MPA may increase with age, peaking around 15 years of age (Osborne, 2016). However, students may begin experiencing anxiety at a young age (Kenny, 2011; Ryan, 2004, 2005). In a study of 26 sixth-grade students performing in a piano recital, Ryan (2004) reported that anxiety was present in young performers prior to sixth grade. Ryan (2005) also found children as young as the third grade experienced an increased level of anxiety prior to a school music concert, which is consistent with findings in the test anxiety literature that indicate test anxiety among children is established by the end of second grade. Individuals are not equally susceptible to performance anxiety across the age continuum; adolescence appears to be a particularly vulnerable period (Papageorgi et al., 2007).

Zarza-Alzugaray et al. (2018) found that musicians who start learning their instrument at 7 years old or younger experienced lower levels of anxiety than those who started at 9 to 10 years old. The researchers suggested that, due to stages of cognitive development that differ by age, children younger than 8 years old who confront audiences are somewhat protected against the stresses often associated with public performance for older musicians. Zarza-Alzugaray et al. acknowledged multiple variables that could affect the lower levels of anxiety experienced by musicians who begin their instruction prior to 8 years old. Musicians who begin their training at a young age tend to attain greater mastery than later-starting peers, which leads to more public performance opportunities and exposure to audiences from an early age. Such experiences could cause a greater sense of self-efficacy as well as skill mastery, which also serves to enhance self-efficacy and protect against anxiety.

Music Performance Anxiety and Gender. Both anxiety and music performance anxiety have been shown through research to be more prevalent among females, although studies have suggested that gender differences do not emerge before 9 years old (Boucher & Ryan, 2011; Thomas & Nettelbeck, 2014; Wehr-Flowers, 2006). Beginning in late childhood, female musicians report higher MPA than their male peers (LeBlanc et al., 1997; Liston et al., 2003; McCambridge & Rae, 2004; Osborne & Kenny, 2005; Osborne et al., 2005; Patston & Osborne, 2016; Thomas & Nettelbeck, 2014; Wehr-Flowers, 2006). Gender differences related to anxiety have been reported across academic disciplines. Females tend to report higher levels of test, math, and computer anxiety than men, even though gender is not often a predictor of objective performance (Zeidner & Matthews, 2005). According to Zeidner and Matthews (2005), gender differences related to anxiety are attributable to differential exposure and learning experiences, with appraisal processes also potentially playing an important role. Specifically, males may be

more likely than females to be socialized to perceive test situations as personal challenges rather than as threats.

In a quantitative study of gender differences in anxiety disorders and anxiety symptoms among adolescents from a state in the Pacific Northwest, Lewinsohn et al. (1998) found that by the age of 6 years, females were already twice as likely as males to have experienced an anxiety disorder. Boucher and Ryan (2011) suggested that gender may not emerge as a variable until the late elementary school/early middle school years when adolescence begins. In their study of 3- to 4-year-olds, they reported that gender was not a significant factor for any of the variables they studied. This finding was consistent with non-music-related anxiety studies with young children for which no gender differences were reported prior to school age (Boucher & Ryan, 2011).

According to Ryan (2005), gender differences become apparent among student musicians by Grade 5, at which point children of both genders experience increased anxiety on a concert day. Ryan (2004) also reported on MPA among 12-year-old musicians engaged in solo recitals and found that gender played a key role in students' anxiety experiences. In the context of solo piano recitals, the behavioral, physiological, performance quality, and self-report measures of girls tended to move synchronously in a predictable way according to anxiety level, while boys' measures displayed a lack of synchrony (Ryan, 2004). Patston and Osborne (2016) similarly reported a gendered experience of anxiety, reporting that, in children aged 10 to 17, females experienced a steeper and more intense developmental MPA trajectory than males. McCambridge and Rae (2004) found females reported higher levels of MPA than males within their sample of students aged 15 to 18 years old. These findings were supported by Osborne and Kenny (2008), who reported that female gender was a significant predictive factor for MPA among adolescents aged 11 to 19 years old.

Student musicians continue to encounter MPA beyond their initial school experiences. Levy et al. (2011) studied MPA among 780 world class drum and bugle corps performers who were 15 to 21 years old, and found female performers reported significantly greater experiences with cognitive symptoms of MPA than their male counterparts. However, no significant gender difference was found with regard to experiences with somatic symptoms of MPA (Levy et al., 2011). Abel and Larkin (1990) also reported that, in their study of undergraduate students, females reported higher levels of anxiety and thus might benefit from cognitive interventions for anxiety.

Gender affects musicians' experiences with performance anxiety later in life as well. Ackermann et al. (2014) found, in a 5-year study of 377 musicians from eight professional symphony orchestras, that female musicians reported significantly more MPA than their male counterparts. In a study involving a sample of 270 Spanish musicians aged 15 to 56 years, females experienced greater levels of MPA than males (González et al., 2018). And, among 170 undergraduates and 74 portfolio career musicians, females were again found to be more anxious than males in both group and solo performance, with larger differences between male and females present among professional musicians compared to undergraduate musicians (Papageorgi et al., 2013).

Kenny et al. (2014) demonstrated the continued divide in male and female experiences of anxiety in their study of 377 professional musicians. In comparison to male peers, female musicians reported significantly more trait anxiety, MPA, social anxiety, and other forms of anxiety and depression (Kenny et al., 2014). Additionally, the youngest musicians in the study were significantly more anxious as compared to oldest musicians, and the youngest female musicians were the most affected by MPA (Kenny et al., 2014).

Music Performance Anxiety and Experience. Understanding the relationships between gender, experience, and other factors related to MPA is challenging, and there are conflicting reports in the research literature. Experience has been found to affect anxiety, even among young musicians (Boucher & Ryan, 2011). In a study of 3- and 4-year-olds taking group music lessons, self-reports of anticipatory anxiety, cortisol secretion, and observation of anxious behaviors indicated that, while young children do experience stress with regard to performance situations, those who had performed publicly prior to the study had lower anticipatory stress scores than those who had never performed (Boucher & Ryan, 2011).

Taborsky (2007), in a peer-reviewed music performance anxiety literature review, shared that more performance experience has been found to lead to better performance quality, and recommended that teachers encourage students to perform in front of others in preparation for performances. Taborsky's review supports Hamann's (1982) research, which found that college-aged music students with high years of formal training performed at superior levels to less experienced peers when under conditions of significantly increased anxiety states.

Some researchers have found that experience does not mediate MPA. Patston and Osborne (2016) found a consistently strong, positive, and highly significant relationship between MPA and perfectionism, with levels of MPA and perfectionism increasing with years of experience. Mor et al. (1995) also found that, within a group of professional performers, self-oriented and socially prescribed perfectionism were associated with performance anxiety. Perfectionists tend to focus on what is wrong, discount what is right, and set unrealistic, high expectations while focusing on small flaws and mistakes (Wilson & Roland, 2002). In a study of college flute performance majors, Kenny et al. (2013) reported that the length of time one had

been playing the instrument was not associated with MPA; but rather, higher levels of achievement attained in solo and/or ensemble performance were correlated with less MPA.

Other researchers have found a negative correlation between experience and MPA. Results from Ryan and Andrews' (2009) research indicated that experience, but not age, was significantly related to anxiety, with experience negatively correlated with anxiety. In their study, participants with college music training reported less frequent, although not less severe, episodes of performance anxiety than untrained peers (Ryan & Andrews, 2009). McPherson and McCormick (1999) found that, among their sample of collegiate piano students, the subjects who stated they had engaged in greater amounts of practice during the month preceding performance examinations were more likely to feel anxious about their evaluation. Papageorgi et al. (2013) found that the effect of anxiety on performance was mediated by musicians' performance experience and their general susceptibility to anxiety. Kenny et al. (2013) found that frequent exposure to ensembles was associated with reduced performance anxiety. The experience of practicing also appears to affect musicians' MPA. González et al. (2018) found a low negative correlation between MPA and both number of performances and amount of music practice per week among a sample of 270 Spanish musicians ages 15 to 56. Kenny et al. (2013) reported that musicians who practiced least reported the highest levels of MPA.

Music Performance Anxiety and Trait Anxiety. A contributing factor for some musicians' struggle with MPA is their general predisposition for anxiety (Lehmann et al., 2007). Trait anxiety refers to the relatively stable individual propensities one has toward anxiety (Kenny, 2011). A positive correlation between high trait anxiety and higher levels of performance anxiety in comparison with low trait anxiety peers has been consistently reported by music education researchers (Cox & Kenardy, 1993; Hamann, 1982; Kenny et al., 2013).

A sentiment that has been shown to be related to state-anxiety levels is *catastrophizing* (Kemp, 1996). Student, amateur, and professional musicians imagine catastrophes in performance (Kemp, 1996). Liston et al. (2003) found catastrophizing to be the main predictor of MPA within their sample of 118 collegiate music students. In a review of MPA literature, catastrophic thinking and trait-anxiety levels were revealed as factors known to influence the intensity of MPA, along with the presence of an audience, performance experience, social phobia, and gender (Taborsky, 2007).

Thomas and Nettelbeck (2014), in a study of performance anxiety in 90 secondary school adolescent musicians, found that the relation of MPA in adolescents to gender, neuroticism, and extraversion was principally attributed to their level of trait anxiety. Osborne and Kenny (2005) found a modest positive relationship between MPA and trait anxiety among adolescent musicians, but found that, in their sample, MPA was more specifically related to social anxiety than trait anxiety. Osborne and Kenny (2008) examined the relationship between the self-perceived worst performance experiences of adolescent music students, MPA, and trait anxiety. They reported that the music students who shared a negative music performance experience scored significantly higher on MPA and trait anxiety. The most significant predictive factor for MPA in Osborne and Kenny's (2008) study was trait anxiety score.

Music Performance Anxiety and Setting. Many musicians who experience MPA with audiences do not experience symptoms when performing alone (Lehmann, 2007). Public performances are more anxiety-inducing than private performances (Wilson & Roland, 2002). Situational stress increases with: (a) larger audience size, (b) audiences that are slow to show approval for a performer, and (c) instances where musicians feel they have been put "on the spot" (LeBlanc, 1994; Lehmann, 2007). In a study of 278 undergraduate university students that

assessed MPA in ensemble rehearsals and concerts, ensemble rehearsals were found to be less anxiety-provoking than solo performances, but considerable MPA was reported in both settings (Robson & Kenny, 2017). Students in the study also expressed greater anxiety when their performances received a grade (Robson & Kenny, 2017). A meta-analysis of test anxiety data has shown test anxiety to be a prevalent and relatively homogenous cross-cultural phenomenon (Zeidner & Matthews, 2005). Still, cultural differences are important when considering the development, prevention, and treatment of MPA (Burin & Osório, 2017).

Solo performance has been shown to generate more anxiety compared to group performance among undergraduate and professional musicians, regardless of musical genre (Papageorgi et al., 2013). Among adolescent musicians, researchers have found similar results, reporting the lowest levels of performance anxiety when students performed in a practice or lesson context, moderate levels of performance anxiety in group settings, and the highest levels of performance anxiety in solo contexts (Fehm & Schmidt, 2006; Khalsa et al., 2013). Cox and Kenardy (1993) and Nicholson et al. (2015) each reported that music students experience significantly different levels of anxiety depending on the performance setting, with higher levels of performance anxiety present during solo performances.

Nicholson et al. (2015) studied 130 professional musicians and concluded that, not only did musicians experience increasing levels of anxiety from practice to group to solo settings, but also that fear of negative evaluation (a central component of social anxiety) was a constant, unique predictor of MPA. Statements pertaining to the fear of being negatively evaluated by others and negative self-evaluation comprised 60% of the total cognitions reported by adolescents in a study by Osborne and Kenny (2008). The results of their study supported previous findings that highly anxious individuals tend to overestimate the likelihood and

consequences of negative evaluation compared with low anxious people (Osborne & Kenny, 2008).

A study by Ryan and Andrews (2009), which examined the performance experiences of semi-professional choral singers with respect to MPA, indicated that performance anxiety was a common experience. They reported that solo performances induced more anxiety than ensemble performances, and instrumental settings caused more anxiety than choral settings. Papageorgi et al. (2013) found that Western classical musicians were generally found to report higher levels of performance anxiety compared to musicians from other genre specializations, including jazz, popular, and Scottish traditional styles.

The Role of Educators in Teaching Coping Mechanisms

There are many misunderstandings surrounding MPA. Even among medical professionals, robust healthcare and treatment options are not the norm, and the diagnosis of MPA is often compromised due to poor knowledge stemming from a lack of information (Burin & Osório, 2017). Music educators often give inaccurate advice to students with music anxiety. One common misconception of educators is that the more prepared students are, the less anxious they will be (Taborsky, 2007). In actuality, there are many risks and prognostic factors that need to be considered, including temperamental, environmental, genetic, and physiological factors (APA, 2013). In a study of advanced music students and professional musicians, Biasutti and Concina (2014) found that MPA is influenced by experience, hours of practice per week, social support, and avoidance strategies. The researchers underscored the importance of psychological factors in musical instrument training and performance (Biasutti & Concina, 2014). González et al. (2018) advocated for young musicians to engage in frequent, low-stress, positive performance

experiences almost from the beginning of their musical training so that they can learn that performance is an enjoyable and manageable part of music making.

Music educators often serve as conductors to students, and as such, the conductor's role in influencing performer anxiety should be examined. Ryan and Andrews (2009) reported that most of the choral singers they studied attributed at least some of their performance anxiety to characteristics and/or behaviors of their conductors. Conductor behaviors that choristers noted as anxiety-inducing included poor preparation, disorganization, lack of attention to musical detail, and making last-minute changes. Additionally, facial expressions and other nonverbal forms of communication affected performer anxiety and perceptions of overall conductor effectiveness (Ryan & Andrews, 2009).

Educators should also be aware of their influence on performer anxiety when they are present in an audience (Fehm & Schmidt, 2006). Certain people's judgments carry more weight than others, contributing to why auditions, juries, and competitions are among the most stressful performances for musicians (Lehmann et al., 2007). "Performers usually expect authorities and educators to be more critical of their efforts than an ordinary audience would be" (LeBlanc, 1994, p. 64). More than half of a sample of 15- to 19-year-old pupils attending a German music school indicated their level of anxiety depended strongly on the status of the audience, with teachers and professors eliciting the highest amount of performance anxiety given their professional knowledge and the high importance that students placed on their judgment (Fehm & Schmidt, 2006).

Perceptions of peer groups are also important to school-aged performers, and many young people principally value their peer group's judgments (LeBlanc, 1994). LeBlanc et al. (1997) studied a sample of 27 high school band students Grades 9 through 12 and found that

performance in front of a small peer group was associated with significant increases in anxiety. As performers look for approval from peers, the peer group can be a source of considerable performance anxiety (LeBlanc, 1994). Teachers can help by encouraging supportive members of peer groups to attend performances and engage in open displays of approval (LeBlanc, 1994).

Physiological Symptoms. Targeting physiological symptoms can be an expedient course of action for treating students (Lehmann et al., 2007). Relaxation techniques, such as deep breathing and muscle relaxation exercises, are popular coping strategies. Findings from Khalsa et al. (2013) suggest that yoga might be an effective intervention to address both cognitive and somatic symptoms of MPA, such as trembling, increased heart rate, and fear of failure. The Alexander Technique is a specific method that focuses on relaxation and body awareness (Lehmann et al., 2007). Widely used by musicians, the Alexander Technique uses enhanced sensory awareness and physical training to reduce tension caused by anxiety (Lehmann et al., 2007).

Additional behavioral strategies include adopting a pre-performance routine, following supportive lifestyle habits, and following an anxiety hierarchy (Wilson & Roland, 2002). An anxiety hierarchy is a means of gradually carrying out performances that have a low rating of anxiety until they become comfortable, and then working progressively up the hierarchy to become comfortable with each additional stage of anxiety-inducing performance (Wilson & Roland, 2002). Some musicians have used biofeedback training, employing devices to monitor their physiological responses, while others have used beta blockers to limit adrenaline's effect on the body (Lehmann et al., 2007; Wilson & Roland, 2002).

Strategies such as mental rehearsal can program the body and mind for special conditions to increase the likelihood of desired behaviors during an actual performance, and practice

performances have been correlated with less performance anxiety (Lehmann et al., 2007). Still, Kenny et al. (2014) cautioned that “the attempted application of positive coping strategies in the absence of attention to underlying psychopathology will be counter-productive and ultimately demoralizing for highly motivated musicians” (p. 230).

Cognitive Symptoms. How musicians think influences the extent to which they perceive performances as threatening (Lehmann et al., 2007). Researchers have suggested that teachers should develop their students’ meta-cognitive abilities and psychological skills, which can be used to cope with music performance anxiety (Biasutti & Concina, 2014). Professional musicians have indicated a number of positive coping strategies employed to promote psychological well-being, including: (a) increased practice, (b) deep breathing and other relaxation techniques, (c) positive self-talk, and (d) mock performance practice (Kenny et al., 2014).

In a semester-long intervention program designed to help undergraduate music students cope with MPA and improve the quality of musical performance, a multimodal approach that integrated psychological strategies and training in musical abilities (e.g., body-oriented exercises, cognitive strategies, mental training, and musical work) was shown to have positive influences on student perceptions of audition preparedness and how musicians felt MPA was handled during an audition (Spahn et al., 2016). Similarly, in a study of 31 classical music students at a conservatorium situated within a major Australian university, Osborne et al. (2014) found that a performance psychology coaching intervention significantly reduced music students’ performance anxiety.

A focal point of the coaching intervention in Osborne et al.’s (2014) study was a centering process used as a self-regulating technique pre- and mid-performance to “control over-active autonomic activity and refocus attention towards performance cues which assist the

execution of the musical piece in high pressure performance situations” (p. 5). Braden et al. (2015) also shared preliminary evidence that an 8-week psychological skills program that taught the cognitive skills essential for optimal performance in a group format was effective in reducing self-rated MPA in adolescent musicians.

Other treatment approaches include cognitive restructuring, which often involves self-talk as a means of identifying thinking that is unreasonable or counterproductive, and a focus on process-centered versus outcome-oriented goal setting (Lehmann et al., 2007). Unreasonable thinking can take the form of catastrophizing, which is reaching a point in performance when total disintegration is inevitable (Kemp, 1996). In a study of 33 musicians aged 19 to 66 years old, just three 1-hour workshops focusing on cognitive restructuring and imagery techniques were shown to reduce MPA (Hoffman & Hanrahan, 2012).

Ryan (2004) recommended teachers should be wary of leading students to believe that technical perfection is the ultimate goal in performance, indicating study results that found students' ruminations on not making any mistakes were related to their anxiety. Ryan's recommendation was to place more emphasis on musical expressiveness in performance to lessen student focus on technical mistakes. Similarly, Pajares et al. (2007) indicated teachers should frame feedback in terms of gains rather than shortfalls after finding that students' anxiety and stress about writing was related to a diminished sense of writing efficacy. Kenny and Halls (2018) studied 68 participants that underwent two interventions aimed at reducing MPA: (a) a cognitive behavioral therapy treatment focusing on cognitive, physiological, and behavioral symptoms; and (b) anxiety sensitivity reduction, which targeted physiological symptoms and included relaxation strategies. Both interventions reduced anxiety and improved performance quality.

Systematic desensitization is perhaps the best known behavioral therapy for the treatment of MPA (Wilson & Roland, 2002). Based on their study of professional musicians, Mor et al. (1995) recommended cognitive-behavioral interventions designed to lessen feelings of perfectionism and improve self-efficacy as an effective means of treating performance anxiety. Cognitive-behavioral therapy can include cue-controlled relaxation training, stress inoculation, and developing positive self-talk (Wilson & Roland, 2002). Cognitive strategies also include mental rehearsal of a performance, goal setting, and normalizing the experience of pre-performance anxiety (Wilson & Roland, 2002).

Fullagar et al. (2013) tracked 27 university music students over the course of a semester as they prepared a piece for recital performance. Their findings indicated that generating a flow state appeared to be an effective means of reducing performer anxiety. Wilson and Roland (2002) also highlighted the pursuit of flow (a performance state achieved with the presence of clear goals, feedback, and an accurate balance of challenge and skill level) as a consideration in coping with performance anxiety.

Music Performance Anxiety and Self-Efficacy. Researchers have suggested that one strategy educators can use to help reduce the effects of musical performance anxiety on their students is to build students' sense of self-efficacy (Taborsky, 2007). Self-efficacy has been shown to be a negative predictor of MPA (González et al., 2018). Self-efficacy beliefs influence the amount of stress and anxiety students experience with specific tasks (Pajares, 2002). While anxiety leads to a lower sense of self-efficacy, self-efficacy can be developed to reduce fears and anxieties (Hendricks, 2016). Moreover, self-beliefs may be a better predictor of achievement than the students' actual abilities, making it imperative for educators to help students monitor and challenge inaccurate self-perceptions (Hendricks, 2016).

Findings from recent studies of undergraduate musicians support the recommendation for self-efficacy training as a strategy for lessening MPA. Robson and Kenny (2017) found a negative correlation between self-efficacy and music performance anxiety, and Liston et al. (2003) found self-efficacy to be a significant predictor of music students' performance anxiety. In social cognitive theory, mastery experiences as determined by one's prior successes and failures are the strongest influence on one's self-efficacy beliefs (Zelenak, 2010, 2015). In a study of professional performing artists, Mor et al. (1995) found that associations between dimensions of perfectionism and performance anxiety depended on individuals' sense of personal control. Their findings were consistent with Bandura's (1986) self-regulation models indicating that feelings of control or self-efficacy determine whether individuals with high personal standards will experience anxiety.

Self-Efficacy

When students feel more efficacious about their learning, they are more likely to engage in self-regulatory actions and create ideal learning environments for themselves (Hewitt, 2015). Self-efficacy can influence both the choices students make and the goals they set, with self-efficacious learners likely to strategically plan ways to attain the high goals they set for themselves (Zimmerman et al., 2017). Efficacy beliefs shape people's outcome expectations regarding whether their efforts will result in favorable or adverse outcomes (Bandura, 2006a).

Self-efficacy helps determine the effort and perseverance levels of learners, including how resilient they are in the face of difficulties (Zimmerman et al., 2017). Students will likely avoid those activities for which they lack efficacy and focus on the tasks for which they feel self-efficacious. People of low efficacy are easily convinced of the futility of their efforts in the face of difficulties. In contrast, highly efficacious individuals view challenges as surmountable

through self-development and effort (Bandura, 2006a). If students do not believe that their efforts will result in their desired consequences, they have little incentive to participate.

Unsurprisingly, self-efficacy affects students' motivation and predicts achievement outcomes in both academic and sports settings (Moritz et al., 2000; Zimmerman et al., 2017). A meta-analysis by Moritz et al. (2000) demonstrated a significant relationship between self-efficacy and sports performance, with self-efficacy being both a cause and effect of performance. In a study of 230 college students, Choi (2005) found that task-specific self-efficacy was a significant predictor of term grades. Choi described how her findings supported social cognitive theory, citing Bandura's assertion that decontextualized global self-efficacy is usually inadequate as a measure because it is typically more in line with personality traits than self-efficacy. Results from Pajares and Miller's (1995) study of nearly 400 math students further supported Bandura's theory that task-specific judgments of self-efficacy are more powerful predictors of actual achievement than broad statements of ability. Students' reported confidence to solve specific math problems was a better predictor of their actual performance than either their confidence to: (a) perform math-related tasks in general, or (b) succeed in math-related courses (Pajares & Miller, 1995).

Among adolescents, academic achievement has been shown to be positively predicted by self-efficacy (Diseth et al., 2014), with self-efficacy explaining approximately a quarter of the variance when predicting academic performance (Pajares, 2006). Belief in one's efficacy impacts cognitive, motivational, affective, and decisional processes (Bandura, 2006a). Efficacy beliefs affect whether individuals think optimistically or pessimistically, which affects people's goals and aspirations, how well they motivate themselves, and their perseverance when facing challenges and adversity (Bandura, 2006a).

Self-Efficacy and Gender

In a study of first-year university students, Nielsen (2004) found that male students rated themselves as more efficacious than did female students. In a review of literature focusing on gender and perceived self-efficacy, Pajares (2002) shared that, while gender differences in students' academic self-efficacy were often reported, many differences in self-beliefs have been found to be negligible when controlling for previous achievement. Pajares also suggested that differences might be accounted for as a result of a tendency for boys and girls to self-report with different mindsets. Girls were reportedly more modest and boys more self-congratulatory in their feedback. Gender differences have also been shown to result from home, cultural, educational, and mass media influences (Pajares, 2002).

Pajares et al. (2007) examined the influence of Bandura's four sources of self-efficacy on students' writing self-efficacy beliefs and reported that self-efficacy beliefs can vary as a function of gender. In addition, the effects of the sources of self-efficacy have been shown to differ as a function of gender, with females tending to report stronger vicarious experiences and social persuasions than do males (Pajares et al., 2007). In Pajares et al.'s study, girls reported greater mastery experience, vicarious experience, and social persuasions, as well as lower anxiety. In contrast to those results, Pajares and Valiante (1999) had previously reported no gender differences in writing self-efficacy among a sample of middle school students ($N= 742$), while within the setting of science self-efficacy, Lofgran et al. (2015) reported females had lower self-efficacy scores in Grades 6 through 9.

Results found in the music literature do not appear to produce any trends relative to gender. Hewitt (2015) found that middle school males were more likely than females to overrate their self-efficacy as compared to their actual music performance scores, but these gender

differences were reversed in high school students. Ritchie and Williamon (2011), in a study of 404 primary school children in a music setting, found that girls scored significantly higher for rating of self-efficacy. In a nonprobability, purposive sample of university band members that included university undergraduate students ($N = 1,020$) participating in collegiate band programs from 12 universities, Royston (2013) found that the relationship of gender to self-efficacy was insignificant.

While social cognitive theory does not assign motivating properties to gender, Pajares (2002) recognized that researchers have observed certain domains as being perceived as gender-oriented (e.g., science, mathematics, and technology as male-oriented, and language arts as female-oriented). Norms and social influence can affect student motivational beliefs (Pajares, 2002). Wehr-Flowers (2006) found females within her sample of musicians from middle school through adulthood were significantly less confident, more anxious, and had lower self-efficacy in the domain of jazz improvisation, a field historically dominated by male instrumentalists and having little comparative representation among females.

Self-Efficacy and Age

While changes in students' self-efficacy as they progress in grade level has been a topic of interest (Friedel et al., 2010; Lofgran et al., 2015; Madjar & Chohat, 2017), research specifically tying perceptions of self-efficacy to age are less common. In a study of 340 middle and high school band students, Hewitt (2015) reported no statistically significant relationships between self-efficacy and grade level. In a study of middle and high school band, chorus, and string orchestra student participants, Zelenak (2011) found no significant difference in self-efficacy as reported by grade level. Similarly, in a study of 675 Italian adolescents with the intent of assessing self-image and perceived self-efficacy during different phases of adolescence, age

was not found to have a significant effect (Bacchini & Magliulo, 2003). Diseth et al. (2014), in a study of 2,091 students in Grades 6 to 8 who were 11 to 13 years of age, found that sixth graders had significantly higher mean levels of self-efficacy. Diseth et al.'s research appears to support Pajares and Valiante's (1999) finding within their sample of middle school language arts students, in which Grade 6 students reported higher writing self-efficacy beliefs than their Grade 7 and 8 peers. Research studies have not yielded consistent or generalizable results regarding the relationship between self-efficacy and age.

Pajares et al. (2007) examined the influence of Bandura's four hypothesized sources of self-efficacy on students' writing self-efficacy beliefs ($N = 1,256$) in Grades 4 to 11. Elementary school students reported stronger self-efficacy than middle school and high school students, including stronger mastery experience, vicarious experience, and social persuasions. According to Pajares et al., the sources of self-efficacy differently influenced writing self-efficacy as a function of academic level. Only mastery experience and anxiety proved predictive of self-efficacy at the elementary and middle school levels, while at the high school level, social persuasions were highly influential in creating students' writing self-efficacy beliefs. Vicarious experience was not a predictive variable. For middle school students, anxiety had a quadratic relationship with self-efficacy: low or high anxiety proved predictive of self-efficacy beliefs, but modest anxiety did not predict self-efficacy beliefs.

Madjar and Chohat (2017) explored the concept of transition self-efficacy by following a sample of 128 sixth-grade students for two consecutive years, before and after their school transition. They found that students' perceptions of their teachers' emphasis on mastery goal orientations predicted academic and social aspects of their self-efficacy. Friedel et al. (2010) conducted a study of adolescent students ($N = 929$) with the purpose of analyzing the impact of

school transition on students' self-efficacy beliefs within the context of mathematics and found similar results. While average levels of self-efficacy across individuals did not change as student transitioned from elementary to middle school (Grade 6 to Grade 7), hierarchical linear modeling did reveal that efficacy beliefs varied as a function of individual and group-level predictors (i.e., perceived parent and teacher mastery or performance goal emphasis). The researchers reported that declines in self-efficacy beliefs were most pronounced for students who perceived a lower emphasis on mastery goals in their middle school classroom compared with their experience during sixth grade, while students who perceived an increase in mastery goal emphasis across their transition showed a significant increase in their efficacy beliefs (Friedel et al., 2010). These findings are supported by Pajares et al.'s (2007) research. Mastery experiences typically emerge as the strongest of the four sources of self-efficacy (Pajares et al., 2007).

Lofgran et al. (2015) examined the science self-efficacy beliefs of students as they transitioned from elementary school (Grade 6) to middle school (Grade 7), as well as the transition from middle school (Grade 8) to high school (Grade 9). Their most important finding was that, while science self-efficacy scores for sixth-, seventh-, and eighth-graders were not significantly different from each other, they were each significantly different from ninth-grade scores. Students appeared to undergo a gradual decline in science self-efficacy as they moved up in grade level. However, whatever is unique about the transition from middle school to high school that prompts a more dramatic decline in science self-efficacy as compared to the transition from elementary school to middle school was beyond the scope of their study (Lofgran et al., 2015).

Self-Efficacy and Music Achievement

Multiple studies have indicated a positive relationship between self-efficacy and music achievement (Cahill Clark, 2010; Hewitt, 2015; McPherson & McCormick, 2006; Zelenak, 2019). Hewitt (2015) stated:

It is desirable for instrumental music teachers to understand and monitor student beliefs concerning their ability to achieve success in music performance so that students can further develop as independent, self-regulated musicians. A greater understanding of motivational beliefs also could lead to better teaching and learning. (p. 302)

In a study of 340 middle and high school band students, Hewitt used a multivariate analysis of variance to examine relationships between self-efficacy, gender, school level, instrument family, and music performance. Findings suggested a strong positive relationship between self-efficacy and music performance. Similarly, in a study of the self-efficacy beliefs of high school string students, Cahill Clark (2010) found a significant relationship between self-efficacy scores and performance rankings in a regional orchestra audition. Zelenak (2019) found the sources of self-efficacy predicted 15% of the variance in achievement among a sample of secondary school instrumental students auditioning for elite ensembles.

González et al. (2018) found no relationship between self-efficacy and the amount of practice reported by participants. Miksza's (2015) findings also showed a non-significant correlation between self-efficacy and practice time. Rather, self-efficacy appears to correlate with musical ability. Martin (2012) investigated the musical self-efficacy of 45 middle school band students and found through descriptive analysis that students most strongly attributed their success and failure in music to musical ability. In a recent review of general education and music research concerning Bandura's theoretical four sources of self-efficacy (enactive mastery

experience, vicarious experience, verbal/social persuasion, and physiological and affective states), Hendricks (2016) concluded that, while the four sources are reciprocally influenced by one another and by other contextual and demographic factors, the most reliable sources of efficacy information are typically derived from tangible accomplishments that serve as evidence of an individual's ability to succeed. After profiling changes in instrumental performance self-efficacy perception among students in an honor orchestra event, Hendricks (2014) used a concurrent, nested, mixed-method design to conclude that mastery experiences demonstrated the strongest overall influence on self-efficacy.

Hendricks' findings align with those of Ritchie and Williamon (2011), who also found that mastery experiences, in the form of prior experience with learning an instrument, were the strongest predictor for learning. Of note in Hendricks' 2014 study is that qualitative data suggested that females experience a more positive influence from participation in a cohesive, socially supportive climate versus a more competitive environment. These findings align with the importance of socialization among the tenets of social cognitive theory:

People do not live their lives in isolation. Many of the things they seek are achievable only through socially interdependent effort . . . Human functioning is rooted in social systems. Therefore, human agency operates within a broad network of socio-structural influences. (Bandura, 2006a, p. 5)

In a study of students' self-efficacy and music performance in relation to a performance examination, McPherson and McCormick (2006) identified self-efficacy as the most important predictor of achievement among nearly 700 university music students. Given the evidence showing self-efficacy's influence on academic achievement, the researchers expressed surprise at how few studies applied understandings of self-efficacy in music settings. McPherson and

McCormick's 2006 investigation was built on their 2003 study of 332 university music students, which also indicated self-efficacy was the best predictor of actual performance.

The Role of Educators in Teaching Self-Efficacy. Self-efficacy can be enhanced when children are: (a) motivated to achieve, (b) exposed to positive academic and social models, and (c) taught strategies they can use to overcome challenges (Schunk & Meece, 2006). How instruction is structured, the ease or difficulty of learning experiences, the type of feedback provided on performance, and the amount and type of teacher attention each influence adolescents' self-efficacy (Schunk & Meece, 2006).

Teachers can view self-efficacy as a tool for learning how to persevere when one does not succeed. While self-efficacy might not provide the skills required for students to succeed, it can sustain the effort and persistence necessary to obtain such skills and use them effectively (Pajares, 2006). Students who are provided strategy or effort feedback during and immediately following academic performance often experience an increase in personal efficacy (Pajares, 2006; Zimmerman & Cleary, 2006).

Effective self-regulatory practices can improve self-efficacy and achievement and can also be used across tasks and situations (Pajares, 2006). Teachers should foster the belief that ability is a changeable, controllable part of development while encouraging effort, perseverance, and persistence as ways to overcome obstacles (Pajares, 2006). Helping students to assess their use of strategies when pursuing goals can be motivating because they can view their successes or failures in the context of whether controllable strategies were used effectively rather than viewing an outcome as dependent on an unchangeable factor such as ability (Zimmerman & Cleary, 2006).

Students' self-efficacy beliefs develop primarily through actual success on challenging academic tasks. Selecting appropriate challenges for students is also important because successful performances can influence achievement by enhancing motivation and continued learning (Zimmerman et al., 2017). Teachers can facilitate mastery experiences by helping students set short-term goals that are more easily digestible than long-term goals, which in turn can raise self-efficacy by making a task appear more manageable while also offering more frequent feedback opportunities (Pajares, 2006).

As part of their investigation on the importance of self-efficacy in predicting young musicians' performance examination results, McPherson and McCormick (2006) shared that an implication of their research was the need for teachers to help students develop their competence and confidence as they progress on their instrument and attempt more challenging tasks. They recommended that teachers pay more attention to their students' perceptions of personal competence and shared that teachers can influence their student's self-beliefs about ability if they provide: (a) challenging tasks and meaningful activities to master, (b) active support and encouragement, and (c) instructional experiences that demonstrate that they believe in their students (McPherson & McCormick, 2006).

In a study that explored the effects of a 9-week music-specific mental skills training program delivered to students at a music conservatoire in England, Clark and Williamon (2011) found that students experienced a significant increase in self-efficacy after they engaged in:

- (a) motivation and effective practice, comprising goal-setting, peak performance awareness, and effective practice and time management; (b) relaxation and arousal control, comprising relaxation strategies, arousal control through cognitive restructuring, and self-talk; and (c) performance preparation and enhancement, comprising mental

rehearsal and imagery, focus and concentration, and performance preparation and analysis. (p. 349)

As a result of systematic training for performance preparation mental skills, students shared an increased self-awareness of effective performance preparation, improved practice efficiency, a shift in views toward anxiety, and more positive attitudes toward music making. Clark and Williamon noted that one possibility for the significant increase in self-efficacy could have been students' feelings of greater control over debilitating aspects of performance anxiety.

Educators should also be aware of the social engagements they facilitate in their classrooms. There are multiple reasons for why peers have a strong influence on each other's self-efficacy. Adolescents are especially susceptible to peer influence because peers contribute so significantly to their socialization and self-perceptions (Schunk & Meece, 2006). They form their efficacy beliefs through the vicarious experiences of observing others perform tasks and observing the successes and failures of peers perceived as similar in capability (Pajares, 2006). Throughout adolescence, peers become responsible for a greater proportion of the socialization functions formerly carried out by parents and caregivers. Moreover, because adolescents are unfamiliar with so many tasks, they have little information, outside of their friends' behaviors, by which to gauge their self-efficacy (Schunk & Meece, 2006).

Summary

Researchers have suggested that performance anxiety is a public health issue and occupational health issue for musicians (Osborne & Kenny, 2005). The conditions that musicians suffer as a result of MPA can negatively impact their enjoyment while performing, as well as their psychological health and well-being (Patston & Osborne, 2016). Many musicians suffering

from MPA do not seek treatment, and yet the condition's prevalence has led researchers to recognize the need for more musician-specific study (Sieger, 2017).

There is a lack of research that examines MPA among adolescent musicians and musicians who are not pursuing music as a career (Osborne & Kenny, 2005; Taborsky, 2007). Still, teachers can help students to embrace anxiety as an obstacle to overcome rather than a danger to be avoided (Sieger, 2017). One possible coping mechanism for MPA is developing students' sense of self-efficacy (Taborsky, 2007). Hewitt (2015) recommended further research on students' music self-efficacy. Self-efficacy beliefs impact cognitive, motivational, affective, and decisional processes (Bandura, 2006a), and influence the amount of stress and anxiety students experience with specific tasks (Pajares, 2002). Efficacy beliefs affect whether individuals think optimistically or pessimistically, which affects people's goals and aspirations, how well they motivate themselves, and their perseverance when facing challenges and adversity (Bandura, 2006a).

The presence of high levels of self-efficacy and coping strategies for music performance anxiety have each been shown to have a positive effect on student performance (Hewitt, 2015; Sieger, 2017). In those instances where research has explored relationships between MPA and self-efficacy, increases in self-efficacy have been shown to be related to shifts in views on MPA (Clark & Williamon, 2011; González et al., 2018). Yet, a gap in the literature exists. Research concerning the relationship that self-efficacy and MPA have to one another in U.S. secondary school settings for instrumental music is lacking. As recently as 2018, González et al. shared that, prior to their study of Spanish musicians, no other studies had examined performance self-efficacy as a predictor of MPA. A contribution to the body of knowledge on MPA among student

musicians could help educators understand issues related to performance anxiety so that they might assist musicians to participate in enjoyable music-making experiences (Taborsky, 2007).

CHAPTER THREE: METHODS

Overview

The intent of this study was to explore how beliefs of music performance self-efficacy (MPSE) are related to music performance anxiety (MPA). According to social cognitive theory, perceived inefficacy in coping with potential threats leads to both anticipatory anxiety and avoidance behavior (Bandura, 1997). Understanding the relationship between adolescent students' efficacy beliefs and MPA could better inform teachers who wish to support students' lifelong participation in music. For this nonexperimental research project, a stratified random sample of students was studied within the defined bounds of the middle school instrumental ensemble. This chapter presents a detailed account of the study's research design, research questions, null hypotheses, participants and setting, instrumentation, procedures, and data analysis.

Design

To address the research questions in this nonexperimental, quantitative study, both correlational and causal-comparative research designs were used to study relationships among variables within a sample of middle school instrumental students. A correlational design was used to frame the first and second research questions. Correlational research refers to studies in which the purpose is to discover the direction and magnitude of relationships among variables through the use of correlational statistics (Gall et al., 2007). When changes in one variable are accompanied by consistent and predictable changes in another variable, a relationship exists (Phillips, 2008; Rovai et al., 2013). Correlational research designs are useful for studying problems in education and have an advantage over causal-comparative or experimental designs because they include the ability to analyze relationships among large numbers of variables in one

study to determine how variables affect patterns of behavior and degrees of relationship (Gall et al., 2007).

A correlational research design was used by McPherson and McCormick (2006) in their study of self-efficacy and music performance. In the current research study, the strength of the relationship between MPA and MPSE, two measures collected using interval scales, were sought using Pearson product-moment correlation. MPA was defined as the experience of persistent anxious apprehension related to musical performance (Kenny, 2011), and MPSE represented task- and context-specific self-perceptions of music ability (Zelenak, 2015; Zimmerman & Cleary, 2006). Multiple regression provided further analysis regarding the degree to which the criterion variable, MPA, could be predicted from a linear combination of the predictor variables, mastery experience and verbal/social persuasion (two sources of self-efficacy), for secondary instrumental musicians. Mastery experience represented prior task-based achievements, and verbal/social persuasion was understood as encouragement from others (Hendricks, 2016).

A causal-comparative design framed the third research question. Causal-comparative research is a type of nonexperimental investigation in which researchers seek to identify cause-and-effect relationships (Gall et al., 2007). Causal-comparative studies are also known as *ex post facto* studies because both the effect and the presumed cause have already occurred and must be studied after-the-fact (Rovai et al., 2013). Causal-comparative investigations are not experimental in that the researcher does not use random sampling or manipulate variables. The independent variables observed are already present or absent among the participants (Gall et al., 2007). In causal-comparative research, the independent variable is measured in the form of categories, such as items on a nominal scale (Gall et al., 2007; Phillips, 2008).

A causal-comparative research design was used by Hewitt (2011, 2015) and Nielsen (2004), who each sought to determine differences in students' self-efficacy based on gender and instrument family, among other variables. In the context of the current study, gender and grade level served as categorical, independent variables. MPA and MPSE served as the dependent variables. To determine how students with varying levels of MPA and MPSE differed based on their gender and grade level, the researcher used a two-way multivariate analysis of variance (MANOVA).

Research Questions

The research questions for this study were:

RQ1: Is there a relationship between music performance anxiety and music performance self-efficacy for secondary instrumental musicians?

RQ2: Is there a predictive relationship between music performance anxiety scores and the linear combination of sources of self-efficacy (mastery experience and verbal/social persuasion) for secondary instrumental musicians?

RQ3: Is there a difference between music performance anxiety and music performance self-efficacy for secondary instrumental musicians based on gender and grade level?

Hypotheses

The null hypotheses for this study were:

H₀₁: There is no statistically significant relationship between music performance anxiety scores and music performance self-efficacy scores for secondary instrumental musicians.

H₀₂: There is no significant predictive relationship between music performance anxiety scores and the linear combination of sources of self-efficacy (mastery experience and verbal/social persuasion) for secondary instrumental musicians.

H₀₃: There is no statistically significant difference between music performance anxiety scores and music performance self-efficacy scores for secondary instrumental musicians based on gender and grade level.

Participants and Setting

The participants for the study were drawn from a stratified random sample of middle school instrumental music students located within the Mid-Atlantic region during the 2019–2020 school year. The chosen district comprised a population of 226,400 people and is considered an urban county located in close proximity to a major metropolitan city (Arlington County Community Planning, Housing and Development, 2019). Students within the school district hailed from 147 nations and spoke 112 languages (Arlington Public Schools [APS], 2019a). A school division report from October 2019 indicated that 29.2% of its middle school students qualified for subsidized meals (APS, 2019b). Additionally, the school division posted the following demographic details on their website regarding middle school students (APS, 2019c): 45.4% identified as White; 29.4% identified as Hispanic; 10.3% identified as Black/African American; 8.2% identified as Asian; 6.4% identified as Multiple; 0.2% identified as American Indian/Alaskan Native; 0.0% (2 students) identified as Native Hawaiian/Pacific Islander. Median household income was \$112,138, and per capita income was \$89,487 (APS, 2019a). School division demographics may not accurately represent the demographics of the students who were involved in the division's instrumental programs.

Student participants were drawn from each of the seven middle school instrumental music programs within the sampled school district. The population for the study was all students enrolled in instrumental music within the school district being studied. The initial data set collected was a convenience sample consisting of all students whose parents provided consent to

participate in the study and who were enrolled in instrumental music at the middle school level. The sample was convenient because I, the researcher, work within the district, although not at any of the specific research sites (Gall et al., 2007). From the convenience sample, a stratified random sample was used to ensure that certain subgroups within the population were the same (Gall et al., 2007). A random number generator was used by the researcher to select an equal number of students from the convenience sample from each grade level, and an equal number of males and females from each grade level.

Within each school, students were selected from the existing band and orchestra ensemble classes. Grade 7 and 8 ensembles were scheduled slightly differently at each school. Generally speaking, Grade 6 ensembles met separately from Grade 7 and 8 classes, which were grouped by ability and/or instrumentation. I introduced the teachers of the student participants to the study, and the student participants were introduced to the study through their teachers, who shared a recruitment letter with students and families to explain the research. The stratified random sample consisted of 114 males and 114 females, with equal representation of males and females for each grade level: 76 sixth-grade students, 76 seventh-grade students, and 76 eighth-grade students. Ninety participants were members of the orchestra and 138 were members of the band. The sample consisted of students who identified as the following: 50.88% White; 19.74% Hispanic; 13.16% Multiple; 8.33% Asian; and 7.89% Black/African American.

The number of participants ($N = 228$) in the sample exceeded the required minimum of 66 students for a medium effect size with statistical power of .7 at the .05 alpha level when completing a Pearson product-moment correlation (Gall et al., 2007). A minimum of 106 cases was desirable for a medium effect size with statistical power of .7 at the .05 alpha level when completing a multiple regression with two predictor variables (Warner, 2013). For the causal-

comparative hypothesis, 198 participants were required for a large effect size with statistical power of .7 at the .05 alpha level when completing a two-way MANOVA (Warner, 2013, p. 795).

Instrumentation

To collect data for analysis within the correlational and causal-comparative research designs, two research-based and validated survey instruments were used. To determine MPA scores among students, participants completed the Music Performance Anxiety Inventory for Adolescents (MPAI-A; see Appendix A for instrument). To determine music performance self-efficacy scores, participants completed the Music Performance Self-Efficacy Scale (MPSES; see Appendix B for instrument). Permission was granted to use both instruments. Demographic information was also obtained from the students through a survey (see Appendix C for instrument).

Music Performance Anxiety Inventory for Adolescents (MPAI-A)

The MPAI-A was titled, “What I Think About Music and Performing” on the form that students received (see Appendix A). The MPAI-A is a scale that was designed with the purpose of being the first empirically validated measure for use with adolescents (young musicians ages 12 to 19) to assess the somatic, cognitive, and behavioral components of MPA (Osborne & Kenny, 2005). Osborne and Kenny (2005) stated there is no self-report measure of MPA for children or adolescent musicians published within the public domain. They noted that the MPAI-A would be useful to researchers in the assessment of MPA in young performers.

The scale was developed to represent each of the three domains (cognitive, physiological, and behavioral) known to be affected by MPA, and the wording of all items was tested for readability by 12-year-olds (Osborne & Kenny, 2005). To develop the scale, the researchers

conducted five studies with a total of 381 musicians, aged 12 to 19 years old (Osborne & Kenny, 2005). The scale was adapted based on the results of each study, and they established a scale that demonstrated acceptable internal reliability (Cronbach's $\alpha = .91$) for their final research sample ($N = 64$; 34 female and 30 male, ages 13 to 17; Osborne & Kenny, 2005).

In order to extend the use of the MPAI-A to students of a different demographic, Osborne et al. (2005) completed a cross-validation study of the MPAI-A with musicians aged 11 to 13 years ($N = 84$ children, 43 boys and 41 girls). The results demonstrated that the MPAI-A is a psychometrically robust measure, with very good internal consistency ($\alpha = .91$) for a sample of band musicians in Grades 6 and 7 in the United States (Osborne et al., 2005), and:

Support for the instrument's validity was determined by (a) comparisons with trait anxiety and MPAI-A, and social anxiety and MPAI-A, that demonstrated the phenomenological distinction between MPA, trait anxiety, and general social anxiety, and (b) the significant and expected gender effect of girls' scoring significantly higher than boys on the MPAI-A, a robust finding echoed throughout the performance anxiety literature. (Osborne et al., 2005, p. 328)

The MPAI-A has been used in a number of peer-reviewed studies. In a study of performance anxiety in adolescent musicians, Thomas and Nettelbeck (2014) reported the MPAI-A as a useful self-report tool for measuring MPA and suggested that it be used as a screening tool for the early identification of potential MPA. Osborne and Kenny (2008) used the MPAI-A in their study on the role of sensitizing experiences in MPA in adolescent musicians. Khalsa et al. (2013) used the MPAI-A to evaluate the effects of a yoga intervention on MPA among adolescent music students, and González et al. (2018) found the MPAI-A to be the best way to evaluate personal aspects of MPA in their study of MPA and self-efficacy. Patston and Osborne (2016) used the

MPAI-A to study the developmental features of music performance anxiety and perfectionism in music students aged 10 to 17, and shared that scores met criteria for normality and homogeneity.

The MPAI-A demonstrated a three-factor structure of: (a) somatic and cognitive features, (b) performance context, and (c) performance evaluation (Osborne & Kenny, 2005). The first factor, somatic and cognitive features, accounted for 43% of the variance, and included questions related to worry, fear of making mistakes, and physical manifestations of performance anxiety immediately prior to and during a performance. Performance context, the second factor, described performers' preference for either solo or group contexts and audience type. Performance context accounted for 6% of the variance. The third factor, performance evaluation, accounted for 3% of the variance, and included items relating to difficulty concentrating in front of an audience when performing, evaluations that an audience and performer make during a performance, and the consequences of said evaluations (Osborne & Kenny, 2005).

Construct validity was demonstrated because the MPAI-A correlated most highly with the adult measure of MPA, the Kenny Music Performance Anxiety Inventory (K-MPAI), an inventory that was developed to assess the emotion-based theory of anxiety proposed by Barlow. The MPAI-A correlated the least with the Youth Self-Report-Externalizing Scale (a self-report form used to assess the feelings and behaviors of 11- to 18-year-olds), and demonstrated weak yet significant correlations with the Children's Depression Inventory (CDI)-Total and CDI-Negative Self-Esteem scales (a 27-item, self-rated symptom-oriented scale measuring symptoms associated with depression for school-aged adolescents aged 7 to 17 years). The MPAI-A obtained moderate and highly significant correlations with the State-Trait Anxiety Inventory (STAI), which measures relatively stable individual differences in the tendency to perceive stressful situations as dangerous or threatening; the Social Phobia and Anxiety Inventory for

Children (SPAI-C); and the Social Phobia and Anxiety Inventory (SPAI). SPAI and SPAI-C each screen for maladaptive social anxiety (Osborne & Kenny, 2005).

The 15 questions of the instrument (e.g., when I perform, I tremble or shake) use a seven-point Likert scale. Somatic and Cognitive Features comprises eight questions; Performance Context comprises three questions; and Performance Evaluation comprises four questions. Responses on the Likert scale range from 0 = *not at all*, to 6 = *all of the time*. Regarding scoring procedures, the scores on the inventory are summed, with a maximum score of 90 and minimum score of 0. Question 10 is reverse-scored before summing. The higher the score a student receives, the higher their level of MPA. Patston and Osborne (2016) provided mean scores for the MPAI-A by age and gender.

For the current study, this inventory was taken one time in the spring of 2020. There is no official manual for administering the survey. The scale can be administered during class time, should be scored by the researcher, and should take under 10 minutes to complete. Reliability analysis has indicated in multiple studies that the 15-item MPAI-A has very good internal consistency, with a Cronbach's alpha of .91 (Kenny & Osborne, 2015; Osborne et al., 2014). The measure is freely available in the public domain.

Music Performance Self-Efficacy Scale (MPSES)

The purpose of the Music Performance Self-Efficacy Scale (see Appendix B) was to measure Bandura's four sources of self-efficacy (i.e., mastery experiences, vicarious experiences, verbal/social persuasion, and physiological state) for middle and high school students within the context of music performance (Zelenak, 2010). The scale was first published in 2010, and was used to measure self-efficacy in music performance among secondary school music students participating in large ensembles when Zelenak (2010) completed a preliminary

study with 293 participants enrolled in Grade 6 ($n = 165$), Grade 7 ($n = 52$), and Grade 8 ($n = 76$), with participant ages ranging from 11 to 14 years. In a follow-up study that investigated whether evidence supported the MPSES as a valid and reliable scale, Zelenak (2015) used a revision of the scale from the 2010 preliminary investigation in a study of 290 middle ($n = 150$) and high school ($n = 140$) band, chorus, and string orchestra students enrolled in 10 public schools in the western and southeastern regions of the United States.

An expert panel recommended that the preliminary study scale (Zelenak, 2010) be adjusted to include: (a) separate questions for mastery experiences in solo and small-ensemble performance, (b) descriptive numbers to differentiate small and large ensembles, and (c) a new item that asked whether the participant used someone other than a peer or professional as a model (Zelenak, 2015). The panel also recommended rearranging the item order and removing both a redundant question and an item that was unrelated to any construct that had been used to check participants' reading accuracy (Zelenak, 2015).

Both versions of the MPSES (Zelenak 2010, 2015) have been used in peer-reviewed research studies. Zelenak's (2010) preliminary scale was used to: (a) study of the effects of an intense piano training program on musical self-efficacy (Bugos et al., 2016), (b) examine the effects of mallet training on self-efficacy in older adults (Bugos & Cooper, 2019), and (c) investigate the effects of piano training on cognitive performance (Bugos, 2018). In an examination of sight-singing self-efficacy in middle school choral students, Elam et al. (2019) based their sight-singing self-efficacy scale on Zelenak's (2010) preliminary scale. Regier (2019) adapted Zelenak's (2015) revised MPSES to examine secondary school band directors' self-efficacy in concert, marching, and jazz ensemble pedagogy, and Zelenak (2019) used the revised 2015 MPSES to predict music achievement from the sources of self-efficacy.

Scores from the MPSES serve as evidence from which to identify strengths and weaknesses in student self-perceptions of self-efficacy (Zelenak, 2010). The sources of self-efficacy measured by the MPSES include mastery experiences, vicarious experiences, verbal/social persuasions, and physiological states. Mastery experiences are defined as being based on one's prior successes or failures. Vicarious experiences consist of the predictions of achievement made by individuals based on observations of others similar to themselves engaged in like-activities. Verbal/social persuasions relate to how the judgments of others influence one's decision-making process. Physiological states are the feelings experienced by people when they participate in, or think about, an activity or behavior (Zelenak, 2010).

The construct validity of the MPSES is supported by numerous analyses. Analysis of individual items on the MPSES used in Zelenak's (2010) preliminary study indicated strong internal relationships. Internal consistency of the items was high within each section (mastery experience $\alpha = .93$, vicarious experience $\alpha = .90$, verbal/social persuasion $\alpha = .94$, and physiological state $\alpha = .90$), and within the total scale ($\alpha = .97$; Zelenak, 2010). To establish evidence of discriminant validity, the data were analyzed using multivariate analysis of variance (MANOVA). Zelenak's results indicated that scores generated by the MPSES were significantly different between musicians and non-musicians on self-efficacy as a composite variable, $\Lambda = 0.63$, $F(4, 287) = 42.88$, $p < .001$.

Correlations were used to establish further evidence of validity. In a multi-method design, scores from the MPSES were correlated with teacher ratings of students with very high and very low self-efficacy and were compared with Bandura's (1990) CPSES (academic) and Pajares and Valiante's (1999) WSES (writing) self-efficacy scales to determine whether the MPSES was investigating the same or similar types of self-efficacy (Zelenak, 2010). This comparison of the

MPSES, CPSES, and WSES scales indicated a difference between music self-efficacy and writing and academic self-efficacy, establishing additional evidence of the MPSES's ability to generate scores that represent a unique form of self-efficacy (Zelenak, 2010). MPSES scores were also correlated with teacher ratings ($r = .44$), indicating a positive yet moderate relationship. Furthermore, confirmatory factor analysis provided evidence that the scale generated data that fit Bandura's proposed model of four sources of self-efficacy (Zelenak, 2010).

There is evidence in Zelenak's (2015) research to support the use of the revised MPSES as a valid and reliable instrument for assessing self-efficacy in music performance. For the revised MPSES (Zelenak, 2015), which was used in the current study, confirmatory factor analysis was used to estimate the loadings (i.e., degree of influence) of the sources of self-efficacy on the composite construct of self-efficacy. Zelenak's (2015) results indicated that mastery experience had the strongest influence ($\text{StxYX} = .98$), followed by verbal/social persuasion ($\text{StxYX} = .91$), physiological state ($\text{StxYX} = .83$), and vicarious experience ($\text{StxYX} = .75$).

Content validity was confirmed by a panel of experts within the field of music education who determined the items on the revised MPSES accurately reflected Bandura's construct of self-efficacy within the context of music performance in the secondary school classroom (Zelenak, 2015). The effectiveness of the response process was established by examining the relationship between scores from the MPSES with teacher ratings of the participants ($r = .42$, $p < .001$; Zelenak, 2015). This relationship was similar to the relationship found in Zelenak's (2010) prior research ($r = .44$). Data generated from the MPSES through confirmatory factor analysis had good fit with Bandura's (1997) theoretical model [$\chi^2 (245, N = 290) = 501.62$, $p = .001$, CFI

= .87, SRMR = .06, RMSEA = .06]. “As further evidence of the internal structure, the factor loadings of the four sources of self-efficacy onto the composite construct were consistent with theory and findings from studies in other subject areas” (Zelenak, 2015, p. 401).

The revised MPSES includes 24 questions requiring participants to write a number between 1–100 (continuous, interval scale) on a line before each item (e.g., I have had positive experiences performing music solo; Zelenak, 2015). Eight items reflect mastery experience, five items reflect vicarious experience, six items reflect verbal/social persuasion, and five items reflect physiological state. There are more items representing mastery experience and verbal/social persuasion to accommodate the generality, strength, and level of those sources of self-efficacy as recommended by Bandura (Zelenak, 2015).

The construction of the MPSES followed Bandura’s (2006b) guidelines for measuring self-efficacy with the exception of using the 1–100 numerical response format (1 = *strongly disagree*, 100 = *strongly agree*) as opposed to an 11-point Likert-type response format (0 to 10), based on evidence of stronger internal consistency in the former format (Zelenak, 2015). Mean scores for MPSE and each of the four sources of MPSE can be calculated using spreadsheet or statistical software such as Microsoft Excel or IBM SPSS (Zelenak, 2011). For the current research study, I used Google Sheets to calculate MPSES scores (see Appendix D), using instructions provided by Zelenak (2011).

Regarding scoring procedures, Zelenak (2011) provided the mean scores from his research study as general benchmarks with which teachers can compare their students’ scores. If a student strongly disagreed with each item on the MPSES, and gave the lowest possible score of 1, the minimum score possible would be 24 (24 items). If a student strongly agreed with each item on the MPSES, and gave a score of 100 for each item, the maximum score would be 2,400.

As a basis for being able to use the same set of mean scores for middle or high school students, Zelenak (2011) shared that no significant differences in mean scores were found among grade levels or ensembles. By comparing scores to the findings of Zelenak's (2011) study, one can approximate the relative strength or weakness of total MPSE as well as the sources of MPSE: (a) mastery experience, (b) vicarious experience, (c) verbal/social persuasion, and (d) physiological state.

The MPSES can be administered during class time, should be scored by the researcher, and should take under 10 minutes to complete. There is no official manual for administering the survey. For this study, the MPSES (see Appendix B) inventory was taken one time and at the same time as the MPAI-A, in the spring of 2020.

The reliability of responses from the revised MPSES was examined, and the item responses exhibited a high degree of internal consistency for combined responses ($\alpha = .88$) (Zelenak, 2015). Participants provided similar responses to items associated with each source of self-efficacy, and MPSES items generated consistent responses over a 3-week time period (Zelenak, 2015). For the individual sources of self-efficacy, the most consistent responses came from items reflecting verbal/social persuasion ($\alpha = .77$) and mastery experience ($\alpha = .74$). Levels of internal consistency for physiological state ($\alpha = .67$) and vicarious experiences ($\alpha = .59$) were less consistent, mirroring problems that had been reported in other self-efficacy studies, particularly relative to vicarious experiences (Lent et al., 1991; Lent et al., 1996; Usher & Pajares, 2006; Zelenak, 2015). Because of the low reliability of the physiological state ($\alpha = .67$) and vicarious experiences ($\alpha = .59$) subscales of the MPSES, only the verbal/social persuasion ($\alpha = .77$) and mastery experience ($\alpha = .74$) subscales were used to answer the second research question. Confirmatory factor analysis indicated that mastery experience ($\text{StxYX} = .98$) and

verbal/social persuasion ($StxYX = .91$) had the strongest influence on the composite construct of self-efficacy in the MPSES. Test-retest assessment among a small number of students ($n = 14$) indicated scores were stable over time ($r = .87$; Zelenak, 2015). Permission was granted by Zelenak in May 2019 to the researcher to use the MPSES (2015). See Appendix E for permission to use instrument.

Procedures

In the summer of 2019, the researcher applied for research approval through the selected school district's Department of Planning and Evaluation. An initial design for the research was approved through the Assistant Director of Evaluation in the fall of 2018, and the district research committee formally approved the study in the fall of 2019 (see Appendix F). A letter of permission was also provided by the school district's supervisor for Arts Education (see Appendix G). After completion of a successful proposal defense in the winter of 2019, the researcher received Institutional Review Board (IRB) approval (see Appendix H) following the protocols listed on the Liberty University IRB website.

Eliciting Participants

Once approval was granted by the school district and the IRB, the researcher met with the assisting band and orchestra teachers within the school district who taught sixth to eighth grade students. Teachers sent home the recruitment letter (see Appendix I) with an attached parental opt-out form (see Appendix J) to students in their class. Forms were distributed via email and any other communication systems regularly used by teachers (e.g., Synergy, the County's online gradebook system; and Canvas, the County's online learning management platform). After sharing the recruitment letter and opt-out form with families, teachers waited approximately two weeks from the date of distribution before sharing the surveys (see Appendices A–C) with

students. Prior to distributing the surveys, the researcher contacted each teacher directly to confirm whether there were any students who had opted out of the study.

The three surveys were presented to students in the form of a single Google form with three parts. Teachers were taught how to administer the survey (single Google form), which included: (a) the Demographic Survey (Appendix C), (b) the Music Performance Anxiety Inventory for Adolescents (MPAI-A; Appendix A), and (c) the Music Performance Self-Efficacy Scale (MPSES; Appendix B). Before students accessed the survey, there was an assent page (Appendix K) on which students reviewed: (a) the name of the study and who was conducting the study, (b) why the study was being completed, (c) why they (the students) were being asked to participate, (d) the next steps they would take if they agreed to participate, (e) their choice regarding participation in the study, and (f) options for asking questions.

Consent

The Department of Planning and Evaluation for this study's participant district approved consent forms that required students and their families to provide passive consent via a parental notification form regarding participation in a research study (see Appendix J). A student assent page had to be completed to start the student survey (see Appendix K). The student assent page included pertinent information and the final sentence: "By clicking 'Next' to start the survey you (the student) are agreeing to participate." This statement addressed consent while preserving the anonymous nature of the survey data. A passive consent procedure for student participants is recommended for the current research study based on the literature (Liu et al., 2017; Noll et al., 1997; Shaw et al., 2015). Passive procedures refer to instances in which parents are informed that, if they do not indicate their refusal and opt-out of the study, their consent will be assumed.

Active consent procedures require parents or guardians to indicate their permission for their child to participate, usually by signing a consent form (Shaw et al., 2015).

The use of active consent procedures for parental consent have been found to substantially reduce the size of subject samples (Chartier et al., 2008; Ellickson & Hawes, 1989; Hollmann & McNamara, 1999; Liu et al., 2017; Shaw et al., 2015). Active consent procedures present a possible threat to external validity and the generalizability of findings because: (a) as sample sizes are reduced, it is less likely that anything other than the strongest treatment effects will be statistically detected; and (b) reduced sample sizes increase the risk of subject selection bias; children with parental permission to participate in research may be systematically different from those unable to obtain permission (Ellickson & Hawes, 1989; Hollmann & McNamara, 1999; Noll et al., 1997; Pokorny et al., 2001).

Participants with active consent are more likely to be White, live in two-parent households, have a grade point average of B or above, and to be involved in extracurricular activities (Anderman et al., 1995; Chartier et al., 2008). Active consent procedures also tend to underrepresent minority children, male children, older children, low achievers, children whose parents have less education, children with higher rates of absenteeism, and those at risk for engaging in problem behaviors (Ellickson & Hawes, 1989; Hollmann & McNamara, 1999; Lui et al., 2017; Shaw et al., 2015). Passive consent has been found to: (a) increase the probability that significant treatment effects can be detected within the larger sample sizes that result from higher parental consent rates; and (b) produce more representative samples, even in comparison to active consent groups that included extensive follow-up measures (Hollmann & McNamara, 1999).

Data Collection

Teachers shared the survey link via email and through the county's online learning management system, Canvas, during a distance learning portion of the spring semester. All instructions for completing the survey were included within the research instruments. All students were provided iPads by the County on which they could complete the survey. Opt-out forms were distributed approximately two weeks in advance of data collection. In a study of MPA among adolescent musicians, Osborne et al. (2005) took a similar approach by having band directors administer questionnaires to their students during class time. The researcher was the only person who could access the questionnaire responses, and no individual results were shared. This information, and the anonymous, digital nature of the survey endeavored to support students in completing the surveys without feeling intimidated or worried that their teachers would know their feelings.

Results of the surveys, completed via Google Forms, were accessed by the researcher online through a password-protected Google Drive. Data were kept confidential, and the anonymous nature of the survey helped to protect student confidentiality. No further data collection was conducted after the surveys were completed. The researcher coordinated with each teacher so that, during survey completion, students who were not participating in the study were academically engaged in a manner consistent with typical classroom expectations.

Data Analysis

This study utilized three methods of data analysis. For RQ1, a Pearson product-moment correlation, or Pearson's r , was used. A multiple regression was used for RQ2, and a two-way MANOVA was used for RQ3. For each statistical analysis used, data were screened for any missing data points, and incomplete data sets were eliminated.

RQ1: Pearson Product-Moment Correlation

RQ1 addressed whether there is a relationship between MPA scores and MPSE scores for secondary instrumental musicians. To test the hypothesis that there is no relationship between MPA and levels of MPSE for secondary instrumental musicians, a Pearson's r was used (Gall et al., 2007; Warner, 2013). This statistical analysis was appropriate because a Pearson product-moment correlation expresses the direction and magnitude of the relationship between two measures that produce continuous scores (Gall et al., 2007). Data were screened for any missing data points and any incomplete data sets were eliminated. The following assumption tests were performed using a scatter plot: (a) assumption of bivariate outliers; (b) assumption of linearity; and (c) assumption of bivariate normal distribution (Rovai et al., 2013; Warner, 2013). An alpha level of .05 was used, with a power level of .7 (Warner, 2013, p. 300).

The indexes that are used to describe the effect size or strength of linear relationship in studies that report Pearson's r values are usually either just r itself or r^2 , which estimates the proportion of variance in Y that can be predicted from X . (Warner, 2013, p. 298)

RQ2: Multiple Regression

RQ2 sought to identify whether there is a predictive relationship between MPA scores and sources of self-efficacy (mastery experience, verbal/social persuasion) scores for secondary instrumental musicians. To test the hypothesis that there will be no significant predictive relationship between the criterion variable (music performance anxiety) and the linear combination of predictor variables (mastery experience, verbal/social persuasion) for secondary instrumental musicians, a simultaneous multiple regression analysis was used. This statistical analysis was appropriate because multiple regression can be used to predict scores on a dependent variable based on scores of multiple independent variables (Rovai et al., 2013). Data

were screened for any missing data points and any incomplete data sets were eliminated. The researcher checked for the assumption of bivariate outliers (scatter plots), multivariate normal distribution (scatter plots), and non-multicollinearity among the predictor variables (Pearson's r and variation inflation factor [VIF]; Rovai et al., 2013; Warner, 2013).

The F ratio that tests the null hypothesis for the overall test of the regression ($H_0: R = 0$) was calculated from the overall R^2 for regression (Warner, 2013). The risk of Type I error was reduced by avoiding data fishing and running a single regression analysis (Warner, 2013). The effect size for the overall regression model was indexed by multiple R and R^2 (Warner, 2013). For a regression analysis to provide believable results, the ratio of the number of cases (n) to the number of predictors (k) must be substantial ($n > 104 + k$). In the present study, at least 106 cases were used for the multiple regression with two predictor variables to provide adequate statistical power to detect medium effect sizes ($f^2=.15$; Wagner, 2013).

RQ3: Two-Way MANOVA

RQ3 considered whether there is a difference between MPA and MPSE for secondary instrumental musicians based on gender and grade level. To test the hypothesis that there is no difference between MPA and MPSE for secondary instrumental musicians based on gender and grade level, a two-way MANOVA was used (Gall et al., 2007). This statistical analysis was appropriate because MANOVAs determine whether groups (i.e., gender and grade level) differ on more than one dependent variable (i.e., MPA and MPSE; Rovai et al., 2013). Data were screened for any missing data points and any incomplete data sets were eliminated.

There are a number of assumptions that must be met and data screening protocols for a MANOVA: (a) extreme outliers (box and whisker plot), (b) assumption of normality (Shapiro–Wilk test), (c) assumption of multivariate normal distribution (scatter plot), (d) assumption of

homogeneity of variance-covariance matrices (Box's M test), and (e) absence of multicollinearity (Pearson's r ; Rovai et al., 2013; Warner, 2013). The alpha level was set at .05 with six groups ($k = 6$) of 38 participants per group ($N = 228$), assuming a large effect size with estimated power of .7 (Wagner, 2013, p. 795). Effect size for the two-way MANOVA was calculated through use of partial eta squared (partial η^2 ; Warner, 2013).

CHAPTER FOUR: FINDINGS

Overview

The purpose of this study was to explore the relationship between music performance self-efficacy beliefs and music performance anxiety for secondary instrumental musicians. The researcher examined whether differences exist between MPA and MPSE based on gender and grade level, and whether MPA can be predicted based on sources of self-efficacy. In this chapter, descriptive statistics were used to describe the data and provide an overview of the findings. The presentation of results was organized according to each of the study's three hypotheses.

Research Questions

RQ1: Is there a relationship between music performance anxiety and music performance self-efficacy for secondary instrumental musicians?

RQ2: Is there a predictive relationship between music performance anxiety scores and the linear combination of sources of self-efficacy (mastery experience and verbal/social persuasion) for secondary instrumental musicians?

RQ3: Is there a difference between music performance anxiety and music performance self-efficacy for secondary instrumental musicians based on gender and grade level?

Null Hypotheses

H₀1: There is no statistically significant relationship between music performance anxiety scores and music performance self-efficacy scores for secondary instrumental musicians.

H₀2: There is no significant predictive relationship between music performance anxiety scores and the linear combination of sources of self-efficacy (mastery experience and verbal/social persuasion) for secondary instrumental musicians.

H₀₃: There is no statistically significant difference between music performance anxiety scores and music performance self-efficacy scores for secondary instrumental musicians based on gender and grade level.

Descriptive Statistics

Six band teachers and six orchestra teachers shared surveys with 1,061 students from six bands and six orchestras across seven schools. Demographic characteristics of the convenience sample ($N = 363$) and stratified random sample ($N = 228$) are shown in Table 2. Descriptive statistics regarding the MPA and MPSE scores of the participants in the stratified random sample are included in Table 3.

Table 2

Sample Demographics

Baseline Characteristic	Convenience Sample ^a		Stratified Random Sample ^b	
	<i>N</i>	%	<i>n</i>	%
Gender				
Female	189	52.07	114	50.00
Male	174	47.93	114	50.00
Grade Level				
Grade 6	172	47.38	76	33.33
Grade 7	100	27.55	76	33.33
Grade 8	91	25.07	76	33.33
Age ^c	12.39		12.59	
Ensemble				
Orchestra	152	41.87	90	39.47
Band	211	58.13	138	60.53
Ethnicity				
White	182	50.14	116	50.88
Hispanic	63	17.36	45	19.74
Multiple	50	13.77	30	13.16
Asian	37	10.19	19	8.33
Black/African American	31	8.54	18	7.89

Note. ^a $N = 363$. ^b $N = 228$. ^c Average age of the sample.

Table 3*Descriptive Statistics*

Statistic	MPSE	Mastery Experience ^a	Verbal/Social Persuasion ^a	MPA
N	228	228	228	228
Mean	74	75.56	80.35	35.29
Std Error of Mean	0.99	1.10	1.09	1.22
Median	76.36	78.44	84.34	32
Mode	75.54	93.75	100	16
Std. Deviation	14.89	16.56	16.53	18.48
Variance	221.58	274.32	273.28	341.47
Skewness	-.79	-.73	-1.18	.62
Std. Error of Skewness	.16	.16	.16	.16
Kurtosis	0.54	-0.07	1.09	-.33
Std. Error of Kurtosis	.32	.32	.32	.32
Range	75.04	75	79.67	85
Minimum	29.46	25	20.33	1
Maximum	100	100	100	86

Note: ^a Mastery experience and verbal/social persuasion are two sources of MPSE.

Results

Three hundred eighty-eight surveys were returned by students. Data were screened for missing data points and incomplete data sets were eliminated. Data were reviewed for irregularities, including: (a) duplications, (b) respondents who did not follow the instructions, and (c) suspicious entries.

Data Screening

Ten submissions were removed because they were duplications. Accounting for duplications, 378 surveys represented a 35.63% return rate. Eleven entries were identified that did not follow instructions regarding the use of whole numbers (e.g., on a scale of 1–100, a participant entered 99.9 instead of 99 or 100) and were therefore rounded to the nearest whole

number. Five submissions were removed because of suspicious data entry (e.g., rating every question the same, even for a reverse coded item). Six entries were removed because participants' gender selection disqualified their inclusion in the stratified random sample. The removal of these 21 submissions meant 367 responses remained in the convenience sample.

Stratified Random Sample

Because the researcher chose to use the same sample for each of the three analyses, the stratified random sample was determined prior to running statistical analyses to test the null hypotheses. Convenience sample data were entered into a spreadsheet using Google Sheets to determine levels of MPA and MPSE. Demographic data and total outcomes for the MPAI-A and MPSES were entered into IBM SPSS Statistics software to identify extreme outliers prior to the selection of a stratified random sample. Two extreme outliers were identified within the convenience sample after reviewing (a) a simple scatter plot of the association between MPA and MPSE (see Figure 2), (b) boxplots that represented the distribution of MPSE and MPA scores within the convenience sample (see Figure 3), and (c) boxplots that represented the distribution of MPSE and MPA scores within the convenience sample according to six subgroups of grade and gender (see Figure 4).

Figure 2

Association Between MPA and MPSE Among Convenience Sample Participants

Note. Each dot represents an individual participant.

Figure 3

Distribution of MPSE and MPA Scores Within Convenience Sample

Note. Each dot represents individual participants who are considered to be outliers.

* Indicates an extreme outlier.

Figure 4

Distribution of MPSE and MPA Scores Within the Grade 6 Male Convenience Sample

Note. Each dot represents individual participants who are considered to be outliers.

* Indicates an extreme outlier.

Two additional extreme outliers were identified after boxplots for the subscales of mastery experience and verbal/social persuasion were examined (see Figure 5). Because the extreme outliers were more than +3 or -3 standard deviations from the mean, they were eliminated from the data set. Removal of four extreme outliers from the dataset left 363 survey entries in the convenience sample.

To select the stratified random sample that would be used in each of the three analyses, data were organized according to gender and grade level ($k = 6$), with each entry within each subset assigned a consecutive number, 1 to N . Grade 8 male students ($n = 38$) represented the smallest available subset from the convenience sample. A random number generator was used to select the stratified random sample ($N = 228$), providing 38 participants for each of the six variable subsets (2 x 3; gender by grade level).

Figure 5

Distribution of Mastery Experience and Verbal/Social Persuasion Scores Within the Convenience Sample

Note. Each dot represents individual participants who are considered to be outliers.

* Indicates an extreme outlier.

Hypotheses

This study used three methods of data analysis. For RQ1, a Pearson product-moment correlation was used. A multiple regression was used for RQ2 and a two-way MANOVA was used for RQ3. For each statistical analysis used, data were screened for missing data points and irregularities; any incomplete data sets were eliminated.

Null Hypothesis One

To determine whether a relationship between MPA scores and MPSE scores existed, data were prepared for a Pearson product-moment correlation. The assumption of bivariate outliers, assumption of linearity, and assumption of bivariate normal distribution were each evaluated using a scatter plot, which can be seen in Figure 6 (Rovai et al., 2013; Warner, 2013).

Preliminary analysis showed an approximately linear relationship; all three assumptions were deemed tenable.

Figure 6

Scatter Plot of MPA vs. MPSE Scores

Note. Each dot represents an individual participant within the stratified random sample ($N = 228$).

A Pearson product-moment correlation was run to assess the relationship between MPA and MPSE in secondary instrumental students in Grades 6 to 8 (see Table 4). Two hundred twenty-eight participants participated as part of the stratified random sample. An alpha level of .05 was set, with a power level of .7 (Warner, 2013, p. 300). There was a small effect size according to Cohen (1988), and a statistically significant, weak negative correlation between MPA and MPSE [$r(226) = -.292, p < .001$]. The coefficient of determination indicated MPSE statistically explained 8.5% of the variability in MPA ($r^2, -.292^2 = .085$). Therefore, the null hypothesis is rejected. A decrease in music performance self-efficacy scores was weakly associated with an increase in MPA scores for secondary instrumental musicians.

Table 4*Relationship Between MPA and MPSE – Pearson Product-Moment Correlation*

		MPSE	MPA
MPSE	Correlation Coefficient	1.00	-.292**
	Sig. (2-tailed)	.	.000
	N	228	228
MPA	Correlation Coefficient	-.292**	1.00
	Sig. (2-tailed)	.000	.
	N	228	228

Note. ** Correlation is significant at the .01 level (2-tailed).

Null Hypothesis Two

To test the hypothesis that there would be no significant predictive relationship between the criterion variable (MPA) and the linear combination of predictor variables (mastery experience, verbal/social persuasion) for secondary instrumental musicians, a multiple linear regression analysis was used (Rovai et al., 2013). Multiple regression analysis was able to determine how much of the variation in MPA could be explained by the relative, unique contribution of each of the two sources of MPSE tested: mastery experience and verbal/social persuasion (Laerd Statistics, 2015).

The risk of Type I error was reduced by avoiding data fishing and running a single regression analysis (Warner, 2013). The alpha level was set to .05, and the effect size for the overall regression model was indexed by multiple R and R^2 (Warner, 2013). The ratio of the number of cases (n) to the number of predictors (k) was deemed to be substantial ($n > 104 + k$). Two hundred twenty-eight cases surpasses what is recommended as the minimum number of cases (106) for a multiple regression with two predictor variables to provide adequate statistical power to detect medium effect sizes (Warner, 2013).

Assumptions. Data were screened for missing data points and incomplete data sets were eliminated. The researcher used scatter plots to check for the assumption of bivariate outliers and multivariate normal distribution. Non-multicollinearity among the predictor variables were determined through an evaluation of correlations (Pearson's r) and the VIF (Rovai et al., 2013; Warner, 2013).

The assumption of bivariate outliers and assumption of multivariate normal distribution were each checked and met by using a scatter plot between the predictor variables (verbal/social persuasion, mastery experience; see Figure 7) and also the predictor variables and criterion variable (MPA; see Figures 8 and 9). There was a linear relationship between mastery experience and verbal/social persuasion, an approximately linear relationship between MPA and verbal/social persuasion, and a somewhat linear relationship between MPA and mastery experience.

Figure 7

Scatter Plot of Verbal/Social Persuasion vs. Mastery Experience

Figure 8

Scatter Plot of Music Performance Anxiety vs. Verbal/Social Persuasion

Figure 9

Scatter Plot of Music Performance Anxiety vs. Mastery Experience

An inspection of correlation coefficients revealed the independent variables mastery experience and verbal/social persuasion had a strong positive correlation of .758 (see Table 5). However, tolerance/VIF values indicated there was not a problem with collinearity in this particular data set (all tolerance values were greater than 0.1; see Table 6). The assumption of non-multicollinearity among the predictor variables was met.

Table 5

Pearson's Correlations for Criterion and Predictor Variables

	Music Performance Anxiety	Mastery Experience	Verbal/Social Persuasion
Music Performance Anxiety	1	-.320	-.230
Mastery Experience	-.320	1	.758
Verbal/Social Persuasion	-.230	.758	1

Table 6

Correlation Coefficients and Collinearity Statistics

		Unstandardized Coefficients		Sig	Collinearity Statistics	
Model		B	Std. Error		Tolerance	VIF
1	(Constant)	61.54	6	.000		
	Mastery Experience	-0.38	0.11	.001	.426	2.347
	Verbal/Social Persuasion	-0.03	0.11	.774	.426	2.347

Note. Dependent Variable: Music Performance Anxiety.

Interpreting Results. R^2 is the proportion of variance in the dependent variable that is explained by the independent variables. R^2 is based on the sample and is considered a positively-

biased estimate of the proportion of the variance of the dependent variable accounted for by the regression model (Warner, 2013). The adjusted R^2 corrects for this positive bias to provide a value that would be expected in the population (Warner, 2013). R^2 for the overall model was 10.3% with an adjusted R^2 of 9.5% (see Table 7), a medium effect size according to Cohen (1988). As shown in Table 8, mastery experience and verbal/social persuasion statistically significantly predicted music performance anxiety, $F(2, 225) = 12.867, p < .001$.

Table 7

Durbin–Watson Statistic

Model	Model Summary ^b				
	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin–Watson
1	.320 ^a	.103	.095	17.58	1.657

Note. ^a Predictors: (Constant), Verbal/Social Persuasion, Mastery Experience. ^b Dependent Variable: Music Performance Anxiety.

Table 8

Statistical Significance of the Model: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7,956.13	2	3978.07	12.867	.000 ^b
	Residual	69,557.18	225	309.14		
	Total	77,513.31	227			

Note. ^a Dependent variable: Music Performance Anxiety. ^b Predictors: (Constant), Verbal/Social Persuasion, Mastery Experience.

The coefficient for mastery experience was -0.38 (see Table 6). The slope coefficient represents the change in the criterion variable for a one unit change in the predictor variable. Mastery experience had a statistically significant slope coefficient ($p = .001$), which can

be interpreted as meaning that mastery experience has a linear relationship in the population (Laerd Statistics, 2015). An increase in mastery experience of 10 units is associated with a predicted decrease in MPA by 3.8 units. The slope coefficient for verbal/social persuasion alone was not statistically significant ($p = .774$). The regression equation for the model is expressed in the following form: $Y' = b_0 + b_1 X^1 + b_2 X^2$, where Y' is predicted MPA, b_0 is the intercept (i.e., constant) and b_1 through b_2 are the slope coefficients (one for each variable; X^1 is mastery experience and X^2 is verbal/social persuasion). For this study, the predictive equation is: Predicted MPA = 61.54 + (-0.38 x Mastery Experience) + (0.03 x Verbal/Social Persuasion).

Summary. A multiple regression was run to predict MPA from two components of MPSE: mastery experience and verbal/social persuasion. There was homoscedasticity, and the assumption of bivariate outliers, multivariate normal distribution, and non-multicollinearity were each met. The multiple regression model statistically significantly predicted MPA, $F(2, 225) = 12.867, p < .001$, adj. $R^2 = .095$. Mastery experience added statistically significantly to the prediction, $p = .001$. Regression coefficients and standard errors can be found in Table 9. The null hypothesis is rejected. There is a significant predictive relationship between music performance anxiety scores and the linear combination of mastery experience and verbal/social persuasion (two components of MPSE) for secondary instrumental musicians.

Table 9*Multiple Regression Results for MPA*

MPA	<i>B</i>	95% CI for <i>B</i>		<i>SE B</i>	β	R^2	ΔR^2
		<i>LL</i>	<i>UL</i>				
Model						.103	.095*
Constant	61.54*	49.71	73.36	6			
Mastery Experience	-0.38**	-0.59	-0.17	0.11	-0.34**		
Verbal/Social Persuasion	0.03	-0.218	0.241	0.11	0.03		

Note. Model = “Enter” method in SPSS Statistics; *B* = unstandardized regression coefficient; CI = confidence interval; *LL* = lower limit; *UL* = upper limit; *SE B* = Standard error of the conversation; β = standardized coefficient; R^2 = coefficient of determination; ΔR^2 = adjusted R^2 .

* $p < .001$. ** $p = .001$.

Null Hypothesis Three

To test the null hypothesis that there is no difference between MPA and MPSE for secondary instrumental musicians based on gender and grade level, a two-way MANOVA was used (Gall et al., 2007). Data were screened for missing data points or irregularities. No incomplete data sets were identified.

There are a number of assumptions required to run a MANOVA. A box and whisker plot was used to identify extreme outliers. The assumption of normality was tested using a Shapiro–Wilk test. A scatter plot matrix was used to test for the assumption of multivariate normal distribution. The assumption of homogeneity of variance-covariance matrices was tested using a Box's M test, and the absence of multicollinearity was tested using a Pearson's r (Rovai et al., 2013; Warner, 2013). The alpha level was set at .05. Effect size for the two-way MANOVA was

calculated through use of partial eta squared (partial η^2 ; Warner, 2013). Moreover, with an alpha level of .05 and six groups ($k = 6$) of 38 participants, the researcher expected a large effect size with an estimated power of .7 (Wagner, 2013, p. 795).

Assumptions. Six univariate outliers and no extreme outliers were identified in the data, as assessed by inspection of a boxplot for each subset of data (see Figure 10). These outliers were not the result of data entry errors or measurement errors, and because they were not extreme, they were kept in the analysis. Shapiro–Wilk tests were used to test the assumption of normality (see Table 10). MPA scores were normally distributed for male and female participants in Grade 6 and Grade 7 ($p > .05$). MPA scores were not normally distributed for Grade 8 female or male participants ($p < .05$). MPSE scores were normally distributed for Grade 6 male and female participants and Grade 8 female participants, as assessed by Shapiro–Wilk's test ($p > .05$). MPSE scores were not normally distributed for Grade 7 male participants, Grade 7 female participants, and Grade 8 male participants ($p < .05$). The MANOVA was run despite these violations of univariate normality because the two-way MANOVA is robust to non-normality, including deviations from normality with respect to Type I error (Warner, 2013).

There was an approximately linear relationship between the dependent variables and the assumption of multivariate normal distribution was met, as assessed by a scatter plot matrix (see Figure 11). There was homogeneity of covariance matrices, as assessed by Box's M test ($p = .605$). There was no evidence of multicollinearity, as assessed by Pearson's correlation ($|r| < 0.9$; see Table 11).

Figure 10*Box Plots for Each Subset of Gender and Grade Level*

Figure 11

Scatter Plots for Each Subset of Gender and Grade Level

Grade 6 Female

Grade 6 Male

Grade 7 Female

Grade 7 Male

Grade 8 Female

Grade 8 Male

Table 10*Shapiro–Wilk Tests of Normality for Each Subset of Gender and Grade Level*

	Grade 6 Female			Grade 6 Male		
	Statistic	df	Sig.	Statistic	df	Sig.
MPSE	.958	38	.164	.957	38	.148
MPA	.950	38	.089	.956	38	.138
	Grade 7 Female			Grade 7 Male		
	Statistic	df	Sig.	Statistic	df	Sig.
MPSE	.931	38	.022	.924	38	.013
MPA	.971	38	.422	.951	38	.095
	Grade 8 Female			Grade 8 Male		
	Statistic	df	Sig.	Statistic	df	Sig.
MPSE	.946	38	.065	.940	38	.041
MPA	.932	38	.023	.934	38	.027

Table 11*Correlations for Each Subset of Gender and Grade Level*

		Grade 6 Female		Grade 6 Male	
		MPSE	MPA	MPSE	MPA
MPSE	Pearson's Correlation	1	-.403*	1	-.142
	Sig. (2-tailed)		.012		.393
	N	38		38	
MPA	Pearson's Correlation	-.403*	1	-.142	1
	Sig. (2-tailed)	.012		.393	
	N	38	38	38	38
		Grade 7 Female		Grade 7 Male	
		MPSE	MPA	MPSE	MPA
MPSE	Pearson's Correlation	1	-.495**	1	-.353*
	Sig. (2-tailed)		.002		.030
	N	38	38	38	38
MPA	Pearson's Correlation	-.495**	1	-.353*	1
	Sig. (2-tailed)	.002		.030	
	N	38	38	38	38
		Grade 8 Female		Grade 8 Male	
		MPSE	MPA	MPSE	MPA
MPSE	Pearson's Correlation	1	-.231	1	-.276
	Sig. (2-tailed)		.162		.094
	N	38		38	
MPA	Pearson's Correlation	-.231	1	-.276	1
	Sig. (2-tailed)	.162		.094	
	N	38	38	38	38

Note: * Correlation is significant at the .05 level (2-tailed).

** Correlation is significant at the .01 level (2-tailed).

Interpreting Results. The interaction effect between gender and grade on the combined dependent variables was not statistically significant, $F(4, 442) = 0.148, p = .964$, Wilks' $\Lambda = .997$, partial $\eta^2 = .001$. Results from the multivariate test are listed in Table 12. The grade effect on the combined dependent variables was not statistically significant, $F(4, 442) = 1.697, p = .150$, Wilks' $\Lambda = .970$, partial $\eta^2 = .015$. The main effect of gender on the combined dependent variables was statistically significant, $F(2, 221) = 14.068, p < .001$, Wilks' $\Lambda = .887$, partial $\eta^2 = .113$.

There was a statistically significant main effect of gender for MPA, $F(1, 222) = 23.357$ $p < .001$, partial $\eta^2 = .095$, but not for MPSE score, $F(1, 222) = 0.266$, $p = .607$, partial $\eta^2 = .001$ (see Table 13). The marginal means for MPA score were 29.67 ($SE = 1.65$) for males (95% CI, 26.42 to 32.91) and 40.92 ($SE = 1.65$) for females (95% CI, 37.68 to 44.17), a statistically significant mean difference of 11.25 (see Table 14).

Table 12

Wilk's Lambda Multivariate Test^a

Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	.024	4,416.490 ^b	2	221	.000	.976
Gender	.887	14.068 ^b	2	221	.000	.113
Grade	.970	1.697 ^b	4	442	.150	.015
Gender * Grade	.997	0.148 ^b	4	442	.964	.001

Note. ^a Design: Intercept + Gender + Grade + Gender * Grade. ^b Exact statistic.

Table 13*Tests of Between-Subject Effects*

Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	MPSE	217.87 ^a	5	43.58	0.193	.965	.004
	MPA	8,891.92 ^b	5	1,778.38	5.753	.000	.115
Intercept	MPSE	1,248,692.29	1	1,248,692.29	5,535.378	.000	.961
	MPA	284,009.69	1	284,009.69	918.812	.000	.805
Gender	MPSE	59.97	1	59.97	0.266	.607	.001
	MPA	7,219.69	1	7,219.69	23.357	.000	.095
Grade	MPSE	54.54	2	27.27	0.121	.886	.001
	MPA	1,643.80	2	821.90	2.659	.072	.023
Gender * Grade	MPSE	103.37	2	51.68	0.229	.795	.002
	MPA	28.43	2	14.22	0.046	.955	.000
Error	MPSE	50,079.64	222	225.58			
	MPA	68,621.40	222	309.11			
Total	MPSE	1,298,989.79	228				
	MPA	361,523	228				
Corrected Total	MPSE	50,297.51	227				
	MPA	77,513.31	227				

Note. ^a R Squared = .004 (Adjusted R Squared = -.018). ^b R Squared = .115 (Adjusted R Squared = -.095).

Table 14*Gender – Marginal Means*

Dependent Variable	Gender	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
MPSE	Female	74.52	1.41	71.75	77.29
	Male	73.49	1.41	70.72	76.26
MPA	Female	40.92	1.65	37.68	44.17
	Male	29.67	1.65	26.42	32.91

Summary. A two-way MANOVA was run with two independent variables (2 x 3; gender by grade) and two dependent variables (MPA and MPSE). There was a linear relationship between the dependent variables, as assessed by scatter plot, and no evidence of multicollinearity, as assessed by Pearson's correlation ($|r| < 0.9$). There were no extreme univariate outliers in the data, as assessed by inspection of boxplots. The MANOVA was run despite some violations of univariate normality for MPA and MPSE because the two-way MANOVA is robust to non-normality. There was homogeneity of covariance matrices, as assessed by Box's M test ($p = .605$).

The interaction effect between gender and grade on the combined dependent variables was not statistically significant, $F(4, 442) = 0.148, p = .964$, Wilks' $\Lambda = .997$, partial $\eta^2 = .001$. There was a statistically significant main effect of gender on the combined dependent variables, $F(2, 221) = 14.068, p < .001$, Wilks' $\Lambda = .887$, partial $\eta^2 = .113$. Follow-up univariate two-way ANOVAs were run, and the main effect of gender was considered. There was a statistically significant main effect of gender for MPA, $F(1, 222) = 23.357, p < .001$, partial $\eta^2 = .095$, but not for MPSE score, $F(1, 222) = 0.266, p = .607$, partial $\eta^2 = .001$. As such, estimated marginal means were reviewed.

The marginal means for MPA score were 29.67 ($SE = 1.65$) for males (95% CI, 26.42 to 32.91) and 40.92 ($SE = 1.65$) for females (95% CI, 37.68 to 44.17), a statistically significant mean difference of 11.25. The researcher failed to reject the null hypothesis. There was not a significant interaction of grade and gender on MPA or MPSE scores. There was a significant main effect of gender on MPA.

CHAPTER FIVE: CONCLUSIONS

Overview

This study investigated music performance anxiety and music performance self-efficacy among adolescent students enrolled in middle school instrumental music ensembles (Grades 6 to 8). To address the research questions in this nonexperimental, quantitative study, both correlational and causal-comparative research designs were used to study relationships among variables within a stratified random sample of band and orchestra members. The theoretical perspective of social cognitive theory was used to inform the researcher's synthesis and analysis of the research. The contents of this chapter include a discussion of the results, implications, and limitations of the research, in addition to recommendations for future research.

Discussion

The purpose of this study was to test the theory of social cognitive theory that relates self-efficacy to anxiety. Musicians of all ages and abilities experience MPA (Kenny, 2011), but according to social cognitive theory, self-efficacy beliefs can influence students' capability to manage their emotions by decreasing their stress, anxiety, and depression (Bandura, 1997; Bandura et al., 1999; Ehrenberg et al., 1991; Zimmerman et al., 2017). Based on a review of related literature, the researcher believed that a greater understanding of the relationship between self-efficacy and MPA could advance social cognitive theorists' hypothesis that self-efficacy beliefs influence students' capacity to cope with performance anxiety.

To test the theory of social cognitive theory that relates self-efficacy to anxiety, the researcher examined MPSE and MPA among secondary instrumental musicians. A stratified random sample of middle school band and orchestra students was investigated to determine: (a) whether there was a relationship between MPA and MPSE, (b) whether MPA could be predicted

from a linear combination of sources of self-efficacy (mastery experience and verbal/social persuasion), and (c) whether there was a difference between MPA and MPSE based on gender and grade level. These research questions served to organize this discussion.

Null Hypothesis One

A Pearson product-moment correlation was run to assess the relationship between MPA and MPSE in secondary instrumental students in Grades 6 to 8 ($N = 228$). Based on the literature review, the first hypothesis established was:

H₀₁: There is no statistically significant relationship between music performance anxiety scores and music performance self-efficacy scores for secondary instrumental musicians.

In social cognitive theory, perceived efficacy to exercise control over potentially threatening events influences anxiety arousal and efficacy beliefs can regulate stress and anxiety through their impact on coping behaviors (Bandura, 1997). Positive changes in perceived self-efficacy can benefit emotional learning (Zlomuzica et al., 2015), while perceived inefficacy in coping with potential threats is a primary catalyst for both anticipatory anxiety and avoidance behavior (Bandura, 1997). Furthermore, negative thoughts and fears about one's capabilities can lower self-efficacy and cause additional stress and agitation that can negatively influence performances (Zimmerman et al., 2017). The research established in social cognitive theory gave the researcher reason to believe that MPSE would be negatively related to MPA.

The Pearson product-moment correlation demonstrated a statistically significant, weak negative correlation between MPA and MPSE, $r(226) = -.292, p < .001$. Therefore, the null hypothesis was rejected, in support of social cognitive theorists' assertions that self-efficacy is related to anxiety. A decrease in music performance self-efficacy scores was weakly associated

with an increase in music performance anxiety scores for secondary instrumental musicians. This research finding not only supports social cognitive theory, it supports the research of González et al. (2018), Robson and Kenny (2017), and Liston et al. (2003), all of whom found self-efficacy to be a negative predictor of MPA.

Null Hypothesis Two

A multiple regression was run to predict MPA from two components of MPSE (mastery experience and verbal/social persuasion) within the stratified random sample of secondary instrumental students in Grades 6 to 8 ($N = 228$). Based on the literature review, the second hypothesis established was:

H₀₂: There is no significant predictive relationship between music performance anxiety scores and the linear combination of sources of self-efficacy (mastery experience and verbal/social persuasion) for secondary instrumental musicians.

Perceptions of personal efficacy are principally derived from four sources: mastery experiences, vicarious experiences, verbal/social persuasion, and physiological and affective states (Bandura, 1997). Because of the low reliability of the physiological state ($\alpha = .67$) and vicarious experiences ($\alpha = .59$) subscales of the MPSES, only the verbal/social persuasion ($\alpha = .77$) and mastery experience ($\alpha = .74$) subscales were used for the second research question. Experiences of personal mastery are the strongest source of enhancing perceptions of personal efficacy (Usher & Pajares, 2006; Zimmerman & Cleary, 2006; Zimmerman et al., 2017), and according to social cognitive theory, an individual's social experiences are the primary determinant of their functioning, attitudes, and beliefs (Bandura, 1997). Therefore, both factors were expected to contribute statistically significantly to the multiple regression model predicting the relationship between MPA scores and the linear combination of mastery experience and verbal/social

persuasion. The multiple regression model did statistically significantly predict MPA, $F(2, 225) = 12.867, p < .001$, adj. $R^2 = .095$. The null hypothesis was rejected. However, both factors did not contribute as had been predicted by the researcher.

Zelenak (2015) reported that mastery experience and verbal/social persuasion had the strongest influence on the composite construct of self-efficacy in the MPSES. Yet, as factors predicting MPA in the current study, mastery experience added statistically significantly to the prediction ($p = .001$) and verbal/social persuasion did not ($p = .774$). Given that: (a) the Pearson's r run to test H_01 demonstrated a statistically significant, weak negative correlation between MPA and MPSE; and (b) mastery experience and verbal/social persuasion are the two strongest and most reliable indicators of self-efficacy (Zelenak, 2015), the statistically significant prediction of MPA levels from the multiple regression model was logical. The finding that mastery experience was more influential than verbal/social persuasion also supported both social cognitive theory and findings from the research literature, in which mastery experiences were consistently reported as the strongest influence on perceptions of self-efficacy (Bandura, 1997; Friedel et al., 2010; Hendricks, 2014; Pajares et al., 2007; Usher & Pajares, 2006; Zimmerman & Cleary, 2006; Zimmerman et al., 2017).

Verbal/social persuasion's insignificant influence on the prediction in the current study appeared to contradict social cognitive theory. While there was not a large body of research within the field of music education regarding verbal/social persuasion and self-efficacy, the researcher expected that, given Bandura's (1997) assertion within social cognitive theory that human agency operates within a broad network of socio-structural influences, verbal/social persuasion would have had the potential to statistically significantly contribute to the multiple regression model. There was evidence in the research literature to suggest that verbal/social

persuasion could have been a significant predictor. In a study of middle school students, Usher and Pajares (2006) found that, while perceived mastery experience accounted for the greatest proportion of the variance within their sample, social persuasions accounted for greater unique variance in the prediction of girls' academic self-efficacy. Zlomuzica et al. (2015) demonstrated that perceived self-efficacy could be experimentally manipulated through verbal persuasion. And, qualitative data in the 2014 Hendricks study of high school orchestra musicians suggested that females experienced a more positive influence from participation in a cohesive, socially supportive climate versus a more competitive environment. What the current research study's results suggest is that, while verbal/social persuasion may be a strong and reliable influence on student's perceptions of self-efficacy, it alone is not a significant predictor of MPA.

Null Hypothesis Three

A two-way MANOVA was used to test whether there was a difference between MPA and MPSE for secondary instrumental musicians based on gender and grade level. Based on the literature review, the third hypothesis established was:

H₀₃: There is no statistically significant difference between music performance anxiety scores and music performance self-efficacy scores for secondary instrumental musicians based on gender and grade level.

The interaction effect between gender and grade on the combined dependent variables of MPA and MPSE was not statistically significant, $F(4, 442) = 0.15, p = .964$, Wilks' $\Lambda = .997$, partial $\eta^2 = .001$. There was a statistically significant main effect of gender on the combined dependent variables, $F(2, 221) = 14.068, p < .001$, Wilks' $\Lambda = .887$, partial $\eta^2 = .113$. A statistically significant main effect of gender for MPA was found, $F(1, 222) = 23.357, p < .001$, partial $\eta^2 = .095$, but not for MPSE score, $F(1, 222) = 0.266, p = .607$, partial $\eta^2 = .001$.

The marginal means for MPA score were 29.67 ($SE = 1.65$) for males (95% CI, 26.42 to 32.91) and 40.92 ($SE = 1.65$) for females (95% CI, 37.68 to 44.17), a statistically significant mean difference of 11.25. Because the only statistically significant main effect detected was of gender for MPA, the researcher failed to reject the null hypothesis that there is no statistically significant difference between MPA scores and MPSE scores for secondary instrumental musicians based on gender and grade level. However, there was a significant main effect of gender on MPA. These findings largely support the research literature and social cognitive theory.

Grade Level

In reference to MPA and age, adolescence appears to be a particularly vulnerable period (Papageorgi et al., 2007). Research indicated that MPA may increase with age, peaking around 15 years old (Osborne, 2016). However, students may begin to experience anxiety from a young age (Kenny, 2011; Ryan, 2004, 2005). Ryan (2005) found children as young as the third grade experienced an increased level of anxiety prior to a school music concert.

Research studies have not yielded consistent or generalizable results regarding the association of age (i.e., grade level) with self-efficacy. Zelenak (2015) expressed the need for research related to how music self-efficacy develops with age. Diseth et al. (2014), in a study of students in Grades 6 to 8, found that sixth graders had significantly higher mean levels of self-efficacy. Their findings supported the discovery of Pajares and Valiante (1999) that, within their sample of middle school language arts students, Grade 6 students reported higher writing self-efficacy beliefs than their Grade 7 or 8 peers. Hewitt (2015) and Zelenak (2011) reported no statistically significant relationships between self-efficacy and grade level among adolescent

student musicians. There were no clear trends related to grade level in reference to MPA or MPSE for the current study's findings to support or contradict.

Gender

Findings in the research literature were more definitive in reference to the relationship between MPA and gender. Music performance anxiety has been shown through research to be more prevalent among females, although studies have suggested that gender differences do not emerge before the age of 9 years (Boucher & Ryan, 2011; Thomas & Nettelbeck, 2014; Wehr-Flowers, 2006). Beginning in late childhood, female musicians report higher MPA than their male peers (LeBlanc et al., 1997; Liston et al., 2003; McCambridge & Rae, 2004; Osborne & Kenny, 2005; Osborne et al., 2005; Patston & Osborne, 2016; Thomas & Nettelbeck, 2014; Wehr-Flowers, 2006). Osborne and Kenny (2008) reported that, among a sample of adolescents aged 11 to 19 years old, female gender was a significant predictive factor for scores on the MPAAI-A. The results of the current study support the research literature, having indicated a statistically significant main effect of gender for MPA, with female musicians' MPA scores significantly higher than those of their male counterparts. The marginal means for MPA score were 29.67 for males and 40.92 for females, a statistically significant mean difference of 11.25. The MPAAI-A has a maximum total score of 90 and minimum score of 0 (Osborne & Kenny, 2005). The total score indicates students' overall susceptibility to performance anxiety (Osborne, 2016). The higher the score a student receives, the higher their level of MPA. No manual was developed to determine anxiety descriptors for scores on the MPAAI-A (e.g., MPAAI-A total score of 20 to 40 indicates moderate levels of MPA).

Results within the MPSE literature did not appear to produce any trends relative to gender. Hewitt (2015) found that middle school males were more likely than middle school

females to overrate their self-efficacy as compared to their actual music performance scores, but these gender differences were reversed for high school students. Ritchie and Williamon (2011) found that girls scored significantly higher for ratings of self-efficacy. Royston (2013) found that the relationship of gender to self-efficacy was insignificant.

Implications

Performance anxiety is the most significant psychological issue for young performing musicians (Kenny, 2011) and can significantly detract from the psychological well-being and optimal performance of young performers (Osborne, 2016). There is a lack of research that examines MPA among adolescent musicians and musicians who are not pursuing music as a career (Osborne & Kenny, 2005; Robson & Kenny, 2017; Ryan, 2004; Taborsky, 2007), and an insufficient amount of research has been directed toward children and adolescents in comparison with college-aged students and adults (Dobos et al., 2019; Ryan, 2005). Although performance is an essential part of music education in the United States, the current state of knowledge in both academic and clinical psychology regarding MPA is lacking (Helding, 2016). Consequently, this study, which examined the relationship of self-efficacy to performance anxiety within the context of a school setting for instrumental music-making, has helped to address a gap in the research literature.

Music Performance Self-Efficacy

Results from this study indicate that MPSE scores are negatively associated with MPA scores for secondary instrumental musicians. Researchers have suggested that one strategy educators can use to reduce the effects of MPA on their students is to build students' sense of self-efficacy (Taborsky, 2007). The current study adds to the body of research that shows self-efficacy to be a negative predictor of MPA and offers an important contribution to the literature

by examining the relationship of MPSE to MPA in middle school-aged students in the United States (González et al., 2018; Liston et al., 2003; Robson & Kenny, 2017).

In reference to social cognitive theory, music was not approached within Bandura's 1997 text on self-efficacy. However, Bandura did write that efficacy beliefs affect the quality of emotional life and vulnerability to stress (Bandura, 2006a), and that feelings of control or self-efficacy determine whether individuals with high personal standards will experience anxiety (Bandura, 1986). The current study promotes a greater understanding of the relationship between self-efficacy and MPA and could advance social cognitive theorists' hypothesis that self-efficacy beliefs influence students' capacity to cope with performance anxiety. The finding that MPSE is associated with MPA is an important addition to the literature related to social cognitive theory, which lacked research relating self-efficacy to music performance anxiety.

MPA's association with MPSE also has implications for the role of educators in teaching self-efficacy. Self-efficacy can be enhanced when children are: (a) motivated to achieve, (b) exposed to positive academic and social models, and (c) taught strategies they can use to overcome challenges (Schunk & Meece, 2006). Teachers should foster the belief that ability is a changeable, controllable part of development while encouraging effort, perseverance, and persistence as ways to overcome obstacles (Pajares, 2006). There is also evidence that music-specific mental skills training programs can significantly increase self-efficacy for performing and facilitate perceptions of heightened control over anxiety (Clark & Williamon, 2011).

McPherson and McCormick (2006) shared that music teachers should pay more attention to their students' perceptions of personal competence and that teachers can influence their student's self-beliefs about ability if they provide: (a) challenging tasks and meaningful activities to master, (b) active support and encouragement, and (c) instructional experiences that

demonstrate that they believe in their students. Much of the research related to self-efficacy has been in the context of promoting achievement, but it is important to also recognize its relationship to MPA, as supported in the current study.

Mastery Experience

Another important implication from the current study derives from the statistical significance of mastery experience as a source of MPSE that can predict levels of MPA. Mastery experiences represent achievements, and self-efficacy has consistently been related to achievement. Multiple research studies with student instrumentalists have indicated a positive relationship between self-efficacy and music performance (Cahill Clark, 2010; Hewitt, 2015; McCormick & McPherson, 2003; McPherson & McCormick, 2006; Sieger, 2017). The understanding that mastery experience is both the most reliable source of efficacy information (Hendricks, 2016) and demonstrates the strongest overall influence on self-efficacy within the context of music performance (Hendricks, 2014; Ritchie & Williamon, 2011) provides a clear mandate for educators looking to support students with MPA. Facilitating mastery experiences with students has the potential to increase self-efficacy, increase achievement, and lessen MPA.

Students' self-efficacy beliefs develop primarily through tangible indicators of capability, like actual success on challenging academic tasks (Zimmerman et al., 2017). As one's proficiency at an activity increases so does one's self-efficacy (Zimmerman & Cleary, 2006; Zimmerman et al., 2017). Teachers can facilitate mastery experiences by helping students set short-term goals and offering more frequent feedback opportunities (Pajares, 2006). The current study adds to the research literature by presenting mastery experience in the context of MPSE as a predictor of MPA in middle school-aged students in the United States. This finding further supports social cognitive theory's assertions relating self-efficacy to anxiety.

Gender

The interaction effect between gender and grade on the combined dependent variables MPA and MPSE was not statistically significant, but there was a statistically significant main effect of gender for MPA. Female students scored statistically significantly higher than their male counterparts on the MPAI-A. This finding has implications for teachers of instrumental music ensembles. Findings in the research literature have consistently identified the relationship between MPA and gender, with both anxiety and MPA more prevalent among females (LeBlanc et al., 1997; Liston et al., 2003; McCambridge & Rae, 2004; Osborne & Kenny, 2005; Osborne et al., 2005; Patston & Osborne, 2016; Thomas & Nettelbeck, 2014; Wehr-Flowers, 2006). The current study, which focused on secondary instrumental musicians, corroborates these findings and provides additional data for music educators to consider when planning on how to best support female students in regard to mitigating MPA.

The MPAI-A assesses somatic, cognitive, and behavioral components of MPA, and “can be used item by item to identify and target strategies to address individual performance anxiety concerns” (Osborne, 2016, p. 427). Effective use of the MPAI-A by teachers could inform instructional approaches that better support female students in regard to MPA. While there are a limited number of studies examining the effectiveness of treatment for MPA in young musicians, Braden et al. (2015) did use the MPAI-A to track MPA while implementing a psychological skills program that was effective in reducing self-rated MPA in adolescent musicians. The MPAI-A can be a powerful tool to improve teachers’ understanding of adolescents’ experience of MPA and to facilitate the creation of effective, targeted interventions for MPA (Osborne, 2016).

As a result of this study, music educators can be equipped with more knowledge related to the relationship between MPA and MPSE, mastery experience's statistical significance in predicting levels of MPA, and the significant relationship of gender to MPA among secondary instrumental students. From a theoretical perspective, this study serves to provide important data regarding the relative influence of gender and grade level on both MPSE and MPA. Additionally, examining the relationship between self-efficacy and MPA makes an important contribution to the literature on self-efficacy, a field that has been thoroughly studied within the contexts of academics and athletic performance, but has lacked music-specific research.

Limitations

The researcher took precautions to limit threats of both internal and external validity. Internal validity "is the extent to which extraneous variables have been controlled by the researcher so that any observed effects can be attributed solely to the treatment variable" (Gall et al., 2007, p. 383). Because of the research design of this study, which included a single survey and no control group (as opposed to a true experimental design with a pretest-posttest procedure), many of the extraneous variables typically associated with the internal validity of a study were not applicable (e.g., history, maturation, testing, instrumentation, statistical regression, differential selection, etc.; Gall et al., 2007). However, there were limitations to the research designs chosen for this study.

Critics of causal-comparative and correlational research have asserted that neither type of research can produce evidence of causal relationships (Brewer & Kubn, 2010). Although proponents of causal-comparative designs maintain that researchers can suggest causal relationships between variables without experimentation and control groups, critics would assert that the researcher could not establish whether the observed relationships were cause-and-effect

in the current study (Gall et al., 2007). Because causal-comparative research occurs *ex post facto*, a limitation of the current study is that the researcher had no control over the variables. Without random assignment or the ability to manipulate variables, and with the understanding that there were likely additional variables to those studied in the current research that may have impacted the dependent variables, the researcher cannot be certain that the independent variables were responsible for the causal relationships and thus cannot generalize results (Brewer & Kubn, 2010). Within quantitative research methods, experiments provide the most rigorous test of causal hypotheses (Brewer & Kubn, 2010; Gall et al., 2007).

The complexity of constructs such as MPA and MPSE also present a limitation within this study because each variable was likely influenced by many different variables, making the use of correlational statistics to identify variables that were causally related challenging (Gall et al., 2007). Correlational research can yield useful findings, but multiple lines of research and theory-building are necessary to develop fuller understandings of complex phenomena such as MPA and MPSE (Gall et al., 2007).

External validity is “the extent to which the results of a research study can be generalized to individuals and situations beyond those involved in the study” (Gall et al., 2007, p. 388). Random assignment is the best technique available to attain initial equivalence between groups, which is essential to the internal validity of a study (Gall et al., 2007). Therefore, to control for the potential threat of participant selection as a limitation of the study, a stratified random sample was used. Still, results of the current study cannot be generalized to all students. The results can be generalized to the experimentally accessible population from which the sample was drawn. The stratified random sample was an accurate representation of male and female band and orchestra students, Grades 6 to 8, from the participating school district. Anyone looking to

generalize results to the target population of all secondary middle school students within the United States should take caution and review the demographic data provided in this study to assess whether similarities in critical respects of the sample would support such generalization (Gall et al., 2007). To achieve ecological validity, the methodology is described in great detail to increase generalizability and so that the study can be easily replicated (Gall et al., 2007).

One threat to internal validity that did arise was that data collection for this study occurred during the spring semester of 2020, a period of time during which students were engaged in distance learning due to the Governor's orders related to the COVID-19 pandemic. A limitation of this situation is that teachers could not be physically present in the class to answer questions from students taking the survey. There were also potentially fewer students who participated in the study than would have in an "in-school" experience. However, the survey was always voluntary and enough students participated to produce valid results. A confounding factor was the possibility that some students may have felt increased levels of anxiety during the time of data collection. However, the MPAI-A is a valid, reliable survey that specifically addresses the variable of anxiety within the context of music performance. Additionally, while students were not able to take the survey within the controlled environment of a classroom, the necessity of accessing information related to the survey online did mean that all students received the exact same information via the parental opt-out form and recruitment letter shared with each family.

Experimenter bias could also have been a threat to external validity. If students knew how the researcher wanted them to respond, their answers could have been influenced. To control for experimenter bias, the researcher was never in direct contact with participants, did not share expectations regarding outcomes of the study, and did not share the study's hypotheses. There was also no reward or benefit to participants for volunteering to take the survey, and given

the anonymous nature of the survey, no reason for participants to believe they would be judged in any way for their honest answers to questions. Similarly, the researcher took measures to minimize response biases. Specifically, the researcher followed Bandura's (2006b) advice regarding the measurement of self-efficacy to minimize any potential motivational effects of self-assessment. Responses were identified by code number rather than by name, and participants were informed that their responses would remain confidential. Students were able to record their answers to the survey privately, without personal identification, to reduce social evaluative concerns.

Recommendations for Future Research

As a result of this study, a number of recommendations are made in regard to opportunities for future research. Given verbal/social persuasion's strength as a source of MPSE, and MPSE's relationship with MPA, additional research is recommended to further understanding of the relationship between verbal/social persuasion and MPA among middle school-aged students. In the multiple regression that was run to predict MPA from mastery experience and verbal/social persuasion within the current study, the slope coefficient for verbal/social persuasion was not found to be statistically significant. Based on the research literature related to social cognitive theory, that was a surprising finding. Social feedback can affect self-efficacy beliefs, focus attention on important learning processing, and enable students to evaluate their performance in relation to mastery goals or to effective strategy use (Zimmerman & Cleary, 2006). Additionally, students who are provided strategy or effort feedback during and immediately following academic performance often experience an increase in personal efficacy (Pajares, 2006; Zimmerman & Cleary, 2006).

This researcher also recommends that replication studies and further research investigating the relationship between MPA and MPSE among various populations within the United States be conducted. A dearth of research exists examining the relationship of MPSE and MPA among school-aged students in the country. More studies representing a variety of populations could increase opportunities for educators to generalize results for their teaching context so that they might be in a better position to meet the needs of their students.

Another area to be investigated involves strategies for teaching self-efficacy as a coping mechanism for MPA that account for the predictive quality of mastery experience to MPA. Clark and Williamon (2011) explored the effects of a 9-week music-specific mental skills training program delivered to students at a music conservatoire in England and found that students experienced a significant increase in self-efficacy after they engaged in systematic training for performance preparation mental skills. Clark and Williamon noted that one possibility for the significant increase in self-efficacy could have been students' feelings of greater control over debilitating aspects of performance anxiety. More research is needed related to strategies for teaching self-efficacy as a coping mechanism for MPA.

Moreover, further research is recommended to investigate the higher levels of MPA that female students experience relative to their male peers. A more robust understanding of why female students experience greater MPA than their male counterparts can inform instructional practices and the development of early interventions and coping strategies for MPA. Both anxiety and MPA have consistently been shown to be more prevalent among females, but studies have also suggested that gender differences do not emerge before the age of nine (Boucher & Ryan, 2011; Thomas & Nettelbeck, 2014; Wehr-Flowers, 2006). Zeidner and Matthews (2005) suggested gender differences related to anxiety are attributable to differential exposure and

learning experiences, with males being more likely than females to be socialized to perceive test situations as personal challenges rather than as threats. More music-specific research is recommended to provide content- and context-specific recommendations to music educators looking to reduce MPA among female adolescent musicians.

The current research study looked at the total construct of MPSE as measured by the MPSES. The relationship between MPA and MPSE should also be studied within the context of a specific performance event to see how the relationship between MPA and MPSE might be affected with the added variable of proximity to a performance. McCormick and McPherson (2003) and Bandura (1997) indicated that, given the task- and context-specific nature of self-efficacy perceptions, the closer in time to a performance event, the better the test of causation will be. Bandura (2006b) also suggested that “self-efficacy appraisals reflect the level of difficulty individuals believe they can surmount. If there are no obstacles to overcome, the activity is easily performable and everyone is highly efficacious” (p. 311). One possibility for future research could be to have students complete a task-specific self-efficacy scale and MPA scale at the registration table prior to an audition.

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APPENDIX A: MPAI-A SURVEY

What I Think About Music and Performing (MPAI-A)

Please think about music in general and your major instrument and answer the questions by circling the number, which describes how you feel.

		Not at all		About half the time			All of the time	
		0	1	2	3	4	5	6
1	Before I perform, I get butterflies in my stomach.	0	1	2	3	4	5	6
2	I often worry about my ability to perform.	0	1	2	3	4	5	6
3	I would rather play on my own, than in front of other people.	0	1	2	3	4	5	6
4	Before I perform, I tremble or shake.	0	1	2	3	4	5	6
5	When I perform in front of an audience, I am afraid of making mistakes.	0	1	2	3	4	5	6
6	When I perform in front of an audience, my heart beats very fast.	0	1	2	3	4	5	6
7	When I perform in front of an audience, I find it hard to concentrate on my music.	0	1	2	3	4	5	6
8	If I make a mistake during a performance, I usually panic.	0	1	2	3	4	5	6
9	When I perform in front of an audience I get sweaty hands.	0	1	2	3	4	5	6
10	When I finish performing, I usually feel happy with my performance.	0	1	2	3	4	5	6
11	I try to avoid playing on my own at a school concert.	0	1	2	3	4	5	6
12	Just before I perform, I feel nervous.	0	1	2	3	4	5	6
13	I worry that my parents or teacher might not like my performance.	0	1	2	3	4	5	6
14	I would rather play in a group or ensemble, than on my own.	0	1	2	3	4	5	6
15	My muscles feel tense when I perform.	0	1	2	3	4	5	6

M. S. Osborne and D. T. Kenny © 2001

Note. This scale, taken from Osborne and Kenny (2005), will help to determine students' levels of MPA. Students will complete the inventory on the same day as the MPSES (see Appendix B). This research instrument is in the public domain (M. Osborne, personal communication, May 9, 2019). Permission was granted to publish this instrument in the dissertation (D. Kenny, personal communication, April 11, 2020).

APPENDIX B: MUSIC PERFORMANCE SELF-EFFICACY SCALE

Directions: Respond to the following statements based on your current level of musical ability, experience, and primary instrument/voice. There are no right, or wrong, answers. Indicate to what degree you either agree or disagree with the statement by inputting any whole number between 1 (Strongly Disagree) and 100 (Strongly Agree) into the box. Carefully consider the number you choose.

1, 2, 3, 4.....10.....20.....30.....40.....50.....60.....70.....80.....90.....97, 98, 99, 100

Strongly
Disagree

Strongly
Agree

- _____ 1. I have had positive experiences performing music in the past (Choose a number between 1–100).
- _____ 2. I have improved my music performance skills by watching professional musicians perform well.
- _____ 3. My friends think I am a good performer on my primary instrument/voice.
- _____ 4. I have had positive experiences performing in large ensembles (more than 11 performers)
- _____ 5. I have improved my music performance skills by watching someone I know perform well (parent, brother, sister, church member, etc.,).
- _____ 6. I have had positive experiences performing music solo.
- _____ 7. Members of my family believe I perform well.
- _____ 8. I have had positive experiences performing simple music.
- _____ 9. People have told me that my practice efforts have improved my performance skills.
- _____ 10. I have had positive experiences performing complicated music.
- _____ 11. I have used other music students as models to improve my performance skills.
- _____ 12. I have overcome musical challenges through hard work and practice.

- _____ 13. I have received positive feedback on music performance evaluations.
- _____ 14. I have used a practice routine to help me prepare for my performances.
- _____ 15. I am learning, or have learned, to control my nervousness during a performance.
- _____ 16. I have had positive experiences performing music in a small ensemble (2–10 performers).
- _____ 17. Performing with instrument/voice makes me feel good.
- _____ 18. I have watched other students with similar music ability as me perform a piece of music, and then decided whether I could, or could not, perform the same piece of music.
- _____ 19. I do not worry about making small mistakes during a performance.
- _____ 20. I have compared my performance skills with those of other students who are similar in musical ability to me.
- _____ 21. My music teacher has complimented me on my musical performance.
- _____ 22. I have met or exceeded other people's expectations of being a good musician for someone my age.
- _____ 23. I enjoy participating in musical performances.
- _____ 24. I have positive memories of most, or all, of my past music performances.

Note. This scale, taken from Zelenak (2015), was distributed to participants on the same day as the MPAI-A (see Appendix A), to determine students' perceptions of music performance self-efficacy. Permission to use this instrument was granted by M. Zelenak (personal communication, May 22, 2019). Permission was granted to publish this instrument in the dissertation (M. Zelenak, personal communication, April 10, 2020).

APPENDIX C: DEMOGRAPHIC INFORMATION SURVEY

Welcome! As part of this research study, you will begin by answering some questions about yourself.

Privacy Protection: Only the principal investigator will have access to the information you provide in this survey. You will not be asked for your name but will be asked for other information that will be used to compare groups of students.

Please tell me about yourself.

What is your age? _____

What is your gender? _____ Male _____ Female _____ Other

Which ethnicity do you identify with?

_____ White _____ Black/African American _____ Asian _____ Hispanic

_____ American Indian/Alaskan Native _____ Multiple _____ Native Hawaiian/Pacific Islander

What is your grade level?

_____ 6. _____ 7. _____ 8.

In what music class did you turn in your parent permission form and gain access to this study?

_____ Band _____ Orchestra

Who is your music teacher for this class? _____

APPENDIX D: USE OF EXCEL TO CALCULATE SELF-EFFICACY SCORES

Background information: Columns contain item results and are identified by letter names. Rows contain student results and are identified by numbers. This example is for a class of 10 students.

Adjust the class size as necessary.

- I. Label cells A1–X1 as Item 1–Item 24.
- II. Enter each student’s data as rows, 2–11.
- III. Calculate column totals. In cell A12, enter “= SUM(A2:A11)” for column A, in cell B12, enter “=SUM(B2:B11)” for column B, etc. through column X.
- IV. Calculate item averages. In cell A13, enter “= AVERAGE(A2:A11)” for column A, in cell B13 enter “=AVERAGE(B2:B11)” for column B, etc. through column X.
- V. Calculate sources of self-efficacy totals.
 - a. Create labels. In cell A14, enter “Mastery”, in cell A15, enter “Vicarious”, in cell A16 enter “Verbal”, in cell A17, enter “Phys”, in cell A18, enter “Total”.
 - b. Calculate sources of self-efficacy totals.
 - i. Mastery experience: In cell B14, enter “= SUM(A12, D12, F12, H12, J12, L12, N12, P12)”.
 - ii. Vicarious Experience: In cell B15, enter “= SUM(B12, E12, K12, R12, T12)”.
 - iii. Verbal/Social Persuasion: In cell B16, enter “= SUM(C12, G12, I12, M12, U12, V12)”.
 - iv. Physiological State: In cell B17, enter “= SUM(O12, Q12, S12, W12, X12)”.
 - v. Total: In cell B18, enter “= SUM(A12–X12)”.

- c. Calculate sources of self-efficacy mean scores.
 - i. Mastery Experience: In cell C14 enter “= B14/80”. (The denominator is the number of students times the number of items – 10 students * 8 items)
 - ii. Vicarious Experience: In cell C15 enter “= B15/50)”
 - 3. Verbal/Social Persuasion: In cell C16, enter “= B16/60)”. 4.
 - Physiological State: In cell C17, enter “= B17/50)”.
 - 5. Total: In cell C18, enter “= B18/240”.
- VI. Calculate student scores.
- a. Create labels. In Y1, enter “Mastery”, in Z1, enter “Vicarious”, in AA1, enter “Verbal”, in AB1, enter “Phys”, and in AC1, enter “Total” B. Calculate student mean scores.
 - i. Mastery Experience: For the student whose scores are listed in row 2, enter “= SUM(A2, D2, F2, H2, J2, L2, N2, P2)/8” into cell Y2.
Change row numbers for each student.
 - ii. Vicarious Experience: For the student whose scores are listed in row 2, enter “= SUM(B2, E2, K2, R2, T2)/5” into cell Z2.
 - iii. Verbal/Social Persuasion: For the student whose scores are listed in row 2, enter “= SUM(C2, G2, I2, M2, U2, V12)/6” into cell AA2.
 - iv. Physiological State: For the student whose scores are listed in row 2, enter “= SUM(O2, Q2, S2, W2, X)/5” into cell AB2.
 - v. Total: For the student whose scores are listed in row 2, enter “= SUM(A2–X2)/24” into cell AC2.

- VII. VII. Compare student scores (columns Y–AC) to class mean scores (cells C14–C18) or use mean scores in this study (Table 20) to identify strengths and weaknesses.

Note. These instructions were provided by Zelenak (2011).

APPENDIX E: PERMISSION TO USE MPSE SCALE

On May 22, 2019, at 5:40 PM, Michael Zelenak <[REDACTED]> wrote:

Brian,

After reviewing the description of your study, I hereby grant you permission to use the Music Performance Self-Efficacy Scale in your dissertation. Let me know if you need a more formal permission letter.

There are a few issues that you need to consider in your study.

1. Please refer to the scale as the Music Performance Self-Efficacy Scale or MPSES.

Although it measures the sources of self-efficacy, the title is not the Sources of Music Performance Self-Efficacy Scale as mentioned in your email message.

2. The MPSES has been found to generate valid and reliable data among middle school (6–8th grade) musicians. This is a good thing! The age level of your students is perfect for using this scale. You might also consider reading my article Development and Validation of the Music Performance Self-Efficacy Scale that was published in *Music Education Research International* (2010) volume 4. Although it precedes the 2015 article, it evaluated the self-efficacy beliefs of only middle schoolers. Both articles have information relevant to your study.
3. It sounds as though you are going to use the composite score from the MPSES as your dependent variable in RQ1. That is fine. The composite score (aggregate from all 24 items) will give you a valid and reliable self-efficacy score.

4. Be aware that music performance anxiety may be a substantial component of the fourth source of self-efficacy (physiological and affective states). Other researchers have brought this to my attention. Be careful how you approach this issue. In your investigation, you might consider adding a third research question that examines the relationship between physiological and affective states and music performance anxiety. There are specific items on the MPSES that reflect this source of self-efficacy. It would be easy to do and possibly make an important contribution to self-efficacy literature. (Just a thought.)

Best wishes on your project. Feel free to contact me at any time.

MZ

APPENDIX F: SCHOOL DISTRICT APPROVAL TO CONDUCT RESEARCH

Planning & Evaluation

September 26, 2019

Brian Bersh

Dear Mr. Bersh:

Our research committee has completed its review of your application to conduct the research study entitled "The Relationship Between Music Performance Anxiety and Self-Efficacy in 6th – 8th Grade Instrumental Students" in [REDACTED]. The committee has approved your research contingent on the following requirements:

1. The participation of any [REDACTED] staff member, student, or family who might be involved is completely voluntary at all times. Each participant (or parent of participating students) must be informed in writing of the scope and potential impact of their participation. You should be prepared to provide proof of their informed consent, if requested.
2. You must maintain the total anonymity of all students, staff, and schools associated with [REDACTED] in any discussions or reports. Any disclosure that may reveal the participation of an [REDACTED] student, staff member, school, or the school system must be approved in advance by the [REDACTED] Office of Planning and Evaluation.
3. Any change to the proposed research must be submitted to and approved by the [REDACTED] Office of Planning and Evaluation in advance of implementation.
4. Liberty University must approve this study. When it is available, please provide approval documentation, such as a letter from a university professor, by emailing [REDACTED].
5. Teacher consent is required before attempts are made to contact parents of students instructed by the teacher.
6. An updated Introduction Script for students that includes the following question, followed by an answer, is to be emailed to [REDACTED]: "What if you are nervous or worried about participating?"

We wish you success as you carry out this study.

Sincerely,

Assistant Director for Evaluation

Email correspondence with Assistant Director of the [REDACTED] Schools Department of Planning & Evaluation:

On Apr 1, 2020, at 6:13 PM, [REDACTED] wrote:

Brian,

Attached is your approval letter from September. This is normally all that [REDACTED] provides. You should keep a file with the letter and any other documentation in case you are asked for it at a future date. I can confirm that you have provided documentation for #4 and #6 in the approval letter. #1, #2, #3, and #5 are ongoing requirements for your research.

If you're specifically being asked for something else from [REDACTED] let me know. That wouldn't be typical but we can do our best to accommodate you.

Thanks,

[REDACTED]

Assistant Director

[REDACTED]

Department of Planning & Evaluation

[REDACTED]

APPENDIX G: DEPARTMENTAL APPROVAL TO CONDUCT RESEARCH **Arts Education**

To: [Redacted]
Liberty University School of Education

From: [Redacted] Supervisor Arts Education

Date: June 3, 2019

The office of arts education supports the research application of Mr. Brian Bersh, Band Director at [Redacted] school and doctoral candidate with Liberty University. Mr. Bersh's research is on exploring the relationship of music performance self-efficacy (MPSE) to music performance anxiety (MPA) among 6th-8th grade instrumental music students enrolled in middle school band and orchestra programs. The participants for the study will be drawn from a convenience sample of middle school students located within [Redacted] Schools [Redacted] during the fall semester of the 2019-2020 school year. This research will be conducted through surveys and will be completed on students' iPads during class time.

APPENDIX H: IRB APPROVAL TO CONDUCT RESEARCH

4/10/2020

Mail - Bersh, Brian - Outlook

IRB-FY19-20-80 - Initial: Initial - Expedited

irb@liberty.edu <irb@liberty.edu>

Wed 4/1/2020 4:25 PM

To:

April 1, 2020

Brian Bersh
Vivian Jones

Re: IRB Approval - IRB-FY19-20-80 THE RELATIONSHIP BETWEEN MUSIC PERFORMANCE ANXIETY AND SELF-EFFICACY IN 6th – 8th GRADE INSTRUMENTAL STUDENTS

Dear Brian Bersh, Vivian Jones:

We are pleased to inform you that your study has been approved by the Liberty University Institutional Review Board (IRB). This approval is extended to you for one year from the date of the IRB meeting at which the protocol was approved: April 1, 2020. If data collection proceeds past one year, or if you make modifications in the methodology as it pertains to human subjects, you must submit an appropriate update submission to the IRB. These submissions can be completed through your Cayuse IRB account.

Your study falls under the expedited review category (45 CFR 46.110), which is applicable to specific, minimal risk studies and minor changes to approved studies for the following reason(s):

Your study involves surveying or interviewing minors, or it involves observing the public behavior of minors, and you will participate in the activities being observed.

Your stamped consent and assent forms can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. These forms should be copied and used to gain the consent/assent of your research participants. If you plan to provide your consent/assent information electronically, the contents of the attached consent and assent document should be made available without alteration.

Thank you for your cooperation with the IRB, and we wish you well with your research project.

Sincerely,

G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
Research Ethics Office

APPENDIX I: RECRUITMENT LETTER

Dear Parents and Guardians:

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for an Ed.D. degree in Educational Leadership. The purpose of my research is to explore: (a) whether there is a relationship between music performance self-efficacy (MPSE) and music performance anxiety (MPA); (b) whether sources of self-efficacy, (e.g., mastery experience and verbal/social persuasion), can predict MPSE; and (c) whether there is a difference between MPA and MPSE for secondary instrumental musicians based on gender and grade level. I am interested in these questions because the more that music teachers understand about MPA, the better prepared they can be to support our aspiring young musicians. Therefore, I am writing to invite eligible participants to join my study.

Participants must be [REDACTED] students in Grades 6, 7, or 8, and must be enrolled in their school band or orchestra class. Participants, if willing, will be asked to complete three short surveys using Google Forms. Student names will not be collected, but other general information that will be collected includes their age, gender, ethnicity, grade level, music ensemble, and music teacher's name. Students will be asked about their beliefs in their music abilities and how they feel about music and performing. Students will complete these online questionnaires using their iPads at school during their regularly scheduled music class period. We expect the surveys will take no more than 10 minutes. Participation will be completely anonymous, and no personal, identifying information will be collected.

Students may be nervous or worried about participating in a research project. Participation in this study is completely voluntary at all times. I am going to coordinate with

students' teachers so that, during survey completion, if a student chooses not to participate in the study, they will be academically engaged in a manner consistent with their typical classroom expectations. That could mean they practice their instrument, review their music, or use their iPad for a music activity.

No further action is necessary on your part for your student to participate. The surveys will be completed by students during their normal band or orchestra class period.

A Parental Opt-Out Form is attached to this letter. The Opt-Out document contains additional information about my research. If you do not wish your child to participate, please fill out and sign the form and return it to your child's band or orchestra teacher. Alternatively, you can send an email to the researcher ([REDACTED]) with the subject line "Opt-Out", and include your name, your child's name, and their school and music teacher in the message. If you wish to "Opt-Out," please return the signed Opt-Out form or reply via email by [DATE].

Sincerely,

Brian Bersh

Principal Investigator

[REDACTED]

[REDACTED]

APPENDIX J: PARENTAL OPT-OUT FORM

Parental Opt-Out Form

Title of the Project: The Relationship Between Music Performance Anxiety and Self-Efficacy among 6th-8th Grade Instrumental Students

Principal Investigator: Brian Bersh, Ed.D candidate, Liberty University

Invitation to be Part of a Research Study

Your student is invited to participate in a research study. Participants must be [REDACTED] School students in Grades 6, 7 or 8 and enrolled in their school band or orchestra. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to allow your student to take part in this research project.

What is the study about and why are we doing it?

The purpose of the study is to explore the relationship between music performance self-efficacy beliefs and music performance anxiety. Musicians of all ages and abilities experience music performance anxiety. In an effort to help music teachers better understand music performance anxiety, music performance anxiety will be studied in relation to music performance self-efficacy, grade level, gender, and sources of self-efficacy, such as mastery experience and verbal/social persuasion.

What will participants be asked to do in this study?

If you agree to allow your student to be in this study, I would ask them to do the following:

Complete three short surveys using Google Forms. Student names will not be collected, but other general information that will be collected includes their age, gender, ethnicity, grade level, music ensemble, and music teacher's name. Students will be asked about their beliefs in their music abilities and how they feel about music and performing. Students will complete these online surveys as a single Google Form using their iPads at school during their regularly scheduled band or orchestra class period, or in the case of a distance learning context, from their home during the time they normally schedule for their band or orchestra class. We expect the surveys will take no more than 15 minutes, and students will not miss any instruction time in order to participate.

How could participants or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include contributing to educators' understanding of music performance anxiety and informing the development of future instructional materials and processes designed to support student musicians.

What risks might participants experience from being in this study?

The risks involved in this study are minimal, which means they are equal to the risks your student would encounter in everyday life.

Liberty University
IRB-FY19-20-80
Approved on 4-1-2020

How will personal information be protected?

The records of this study will be kept private. Research records will be stored securely, and only the researcher will have access to the records.

- Participant responses will be anonymous.
- Data will be stored on a password-locked computer and may be used in future presentations. After three years, all electronic records will be deleted.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether or not to allow your student to participate will not affect your or their current or future relations with Liberty University or [REDACTED]. If you decide to allow your student to participate, they are free to not answer any question or withdraw at any time prior to submitting the survey without affecting those relationships.

What should be done if a participant wishes to withdraw from the study?

If you choose to withdraw your student from the study, inform the researcher that your student wishes not to participate and return this Parental Opt-Out Form following the instructions in this document. If the Parental Opt-Out Form is returned to the researcher, your student's responses will not be recorded or included in the study (your student will not take the survey).

If your student chooses to withdraw from the study during survey completion, please have them exit the survey and close their internet browser and the student's responses will not be recorded or included in the study.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Brian Bersh. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at [REDACTED] and/or [REDACTED]. You may also contact the researcher's faculty sponsor, Vivian O. Jones, at [REDACTED].

Whom do you contact if you have questions about rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at irb@liberty.edu

Your Consent

No further action is necessary on your part for your student to participate.

If you do not wish for your student to take part in the study, email [REDACTED] with the subject line "Opt-Out", and include your name, your student's name, and their school and music teacher in the message.

By signing this document, your student is opting out of this study. If you have any questions about the study, you can contact the researcher using the information provided above.

I have read and understood the above information. I have asked questions and have received answers. By signing below, I do not allow my student to participate in the study and opt out of the survey completion.

Printed Student's Name

Parent's Signature

Date

APPENDIX K: STUDENT ASSENT PAGE

Child Assent to Participate in a Research Study

What is the name of the study and who is doing the study?

The name of the study is: The Relationship Between Music Performance Anxiety and Self-Efficacy among 6th-8th Grade Instrumental Students. The person doing the study is Brian Bersh.

Why is Brian Bersh doing this study?

Brian Bersh wants to know what the relationship is between self-efficacy beliefs and music performance anxiety. Self-efficacy is a term that refers to our judgments of capability.

Why am I being asked to be in this study?

You are being asked to be in this study because you are in either 6th, 7th, or 8th grade, and you are enrolled in the band or orchestra at your school in [REDACTED]

If I decide to be in the study, what will happen and how long will it take?

If you decide to be in this study, you take three surveys, which will take approximately 15 minutes to complete.

Do I have to be in this study?

No, you do not have to be in this study. If you want to be in this study, then tell the researcher. If you don't want to, it's OK to say no. The researcher will not be angry. You can say yes now and change your mind later. It's up to you.

What if I have a question?

You can ask questions any time. You can ask now. You can ask later. You can talk to the researcher. If you do not understand something, please ask the researcher to explain it to you again.

By clicking "Next" to start the survey you (the student) are agreeing to participate.

Brian Bersh, Principal Investigator
[REDACTED]

Vivian O. Jones, Ph.D., Dissertation Committee Chair
[REDACTED]

Liberty University Institutional Review Board
1971 University Blvd, Green Hall 2845, Lynchburg, VA 24515
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