THE ROLE OF SELF-EFFICACY AND MODELING IN IMPROVISATION: THE EFFECTS OF AURAL AND AURAL/NOTATED MODELING CONDITIONS ON INTERMEDIATE INSTRUMENTAL MUSIC STUDENTS' IMPROVISATION ACHIEVEMENT

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The first purpose of this study was to investigate whether different modeling conditions (Aural and Aural/Notated Transcription) produced significant differences for improvisation achievement. Another purpose was to investigate whether music learning theory-based improvisation instruction had an effect on students' self-efficacy for improvisation and for instrumental music. Participants (N = 76) from an accessible population of 6th through 8th grade instrumental music students were assigned to either an aural model group or an aural and notated transcription model group based on scores from Gordon's Harmonic and Rhythmic Readiness Records (1998). All students were administered two researcher-designed self-efficacy scales before and after a 10 treatment session music learning theory-based improvisation instruction. Following the treatment sessions, each participant was individually recorded and assessed by three experienced music educators.

The posttest improvisation scores were subjected to an ANOVA, while the pretest to posttest scores of the students' self-efficacies for music improvisation and instrumental music were subjected to two repeated measures ANOVAs. The Bonferroni technique was used to adjust the alpha level from .05 to .017. The statistical analysis showed that there was no significant difference in improvisation achievement for the modeling conditions of aural and aural/notated transcription. Further statistical analyses

showed there were significant increases in students' self-efficacy for improvising and for instrumental music following improvisation instruction.

This study's results suggest that music educators should consider using either modeling technique for improvisation learning experiences. Results also suggest that music educators may wish to consider using a music learning theory-based improvisation approach to facilitate greater confidence in improvising. Additionally, results suggest that classroom music educators may wish to consider improvisation instruction as a means for achieving greater student confidence in instrumental music. This study concludes with issues for further study.

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This research is dedicated to the hope that music students everywhere adopt the notion that their creative thoughts are meaningful and are worthy of being expressed.

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CHAPTER I

INTRODUCTION

Guiding music students in improvisatory music making experiences has become an educational pursuit with increasing support. For years, improvisation has been a key aspect of music teaching approaches such as Gordon, Orff, Kodály, and others (Mark, 1996). Publications from organizations such as the Music Educators National Conference (1996) and the National Association of Schools of Music (2003) have advocated the study of improvisation as an integral component of music instruction. Research findings also suggest that the study of improvisation may lead students to greater music achievement (Azzara, 1992; McDaniel, 1974; Montano,1983).

While many music educators have advocated the development of student improvisation skills in music classrooms (Azzara, 2002), there is a lack of consensus on how improvisation should be taught, or even how improvisation should be defined (Bitz, 1998). There is also a lack of research investigating the most effective and appropriate methods for improvisation instruction. Azzara (2002) acknowledged that "research on the topic of improvisation in music education is relatively young and in need of replication and expansion" (p. 182).

One specific technique that has been advocated to approach musical literacy through improvisation is audiation as a part of Gordon's music learning theory (2003b). In contrast to improvisation approaches which involve simple explorations with sustained harmonic accompaniments, an audiation-based approach involves improvising rhythmic, tonal, and melodic patterns with initial tonic/dominant harmonic progressions.

In order for music educators to reach the goal of students being musically fluent, Azzara (1992) mentioned that continued research needs to be done involving audiation-based improvisation, or improvisation relating to music learning theory.

Since various improvisation approaches contain learning experiences with a wide range of perceived difficulty, it is possible that a student's confidence for being successful at improvising may be contingent upon the student's perceived difficulty of the various approaches. Research has indicated that motivation in instrumental music is significantly correlated with confidence in instrumental music (Sandene, 1997). This finding aligns with research from the field of social cognitive theory, which has demonstrated the importance of one's self-perceived ability to accomplish a task successfully in decisions of participation, effort, and persistence (Bandura, 1986). It seems logical that long term exposure to improvisation instruction may increase a student's improvisation achievement. However, the same reasoning cannot be inferred for self-efficacy. Mere exposure to any one activity may not assure raised self-efficacy levels for that activity. Self-efficacy levels may increase or decrease depending on several factors (Bandura, 1986).

Research within the discipline of improvisation has indicated that advanced level musicians who experience jazz improvisation instruction had significant gains in their perceived ability to improvise (Watson, 2005). However, more inexperienced students may perceive advanced improvisation approaches as being less accessible than simple approaches. Thus, improvisation experiences which young or inexperienced instrumental students judged to be more complex in nature may or may not be

appropriate for developing the students' self-perceived abilities to improvise.

If young instrumentalists judge improvisation learning experiences to be too difficult, their confidence for achieving success may be diminished. Students with low confidence in their improvisation ability may withdraw participation, proceed reluctantly, or give up too easily. However, if the improvisation learning experiences result in the students' strengthened improvisation self-efficacy, greater effort and persistence for improvisation learning may be achieved.

While it may be important to investigate the appropriateness of music learning theory-based improvisation training with students of limited instrumental music experience, it may also be important to determine if improvisation training brings about important psychological benefits for musicians. While certain benefits of improvisation training on music achievement have been documented (Azzara, 2002), it is also possible that improvisation training may affect an instrumentalist's self-perceived ability for overall performance. Findings concerning students' self-efficacy for music may help teachers address student participation, motivation, and persistence. Both Sandene (1997) and Watson (2005) have called for studies that identify classroom practices that have positive influences on students' self-efficacy for instrumental music. Continued research using refined self-efficacy measurement instruments is needed in the field of music. Sufficient information is not yet known about the impact of self-efficacy on musicians.

One technique that may be important in the apprentice-based field of music, in relation to social cognitive theory and self efficacy, is modeling. It may be logical to

relate modeling to the process of language acquisition for children. A child cannot imitate the sounds of a particular language without first hearing, or observing, modeled performances. According to Gordon's music learning theory (1997), the same holds true for learning music. A child cannot be expected to produce music without ever having absorbed music from their environment. Thus, according to social cognitive theory and music learning theory, the musical models that children observe serve an important role in determining the extent to which children become musical. In the case of music improvisation, modeling may have an additional importance. In improvisation, a performer is expected to go beyond simple imitation of a musical model and create a novel response, or a spontaneous musical thought based on the underlying rules observed from the model. Abstract modeling, considered from a social cognitivist perspective, facilitates innovative and creative patterns of behavior.

Modeling has been investigated within the setting of improvisation research and music education research. Research results are generally supportive of the use of models for various music learning settings (Delzell, 1989; Dickey, 1991; Henley, 2001; Laughlin, 2001; Madura, 1996; Rosenthal, 1984; Rosenthal et al, 1988), yet there have been mixed findings even among some of these studies. Some research has found modeling to beneficial only for certain musical outcomes and certain conditions. The disparity among findings highlights the need for further modeling research.

Modeling in music education can take place under a number of conditions. To provide musical models, a teacher could present live performances of the desired musical behaviors, play recorded examples (both aural and aural/visual), provide

notated examples of modeled performances, and/or facilitate peer modeling. In improvisation pedagogy literature, modeling has been documented in the form of listening to recordings of model improvisers (Aebersold, 2000; Azzara & Grunow, 2005; Gendrich, 2003). Another common aspect of modeling in improvisation, evidenced by the pervasive amount of published transcriptions, concerns the use of notated transcriptions of the improvised solos. Gendrich (2003) remarked that transcriptions have been a method of learning to play jazz ever since recordings have been readily available. Gendrich noted, "Transcription should be used in order to show how to apply all the tools of creativity an effective solo stylistically, rhythmically, melodically, and theoretically" (p. 88). Additionally, Laughlin (2001) noted that recent jazz improvisation materials "…emphasize the use of notated examples rather than aural methods" (p. 2). Laughlin found that the use of a predominantly aural method for beginning improvisers was more desirable than the use of a method relying on notated examples. However, continued research comparing aural models with a combination of aural and notated models is needed to determine the role of notated models in improvisation learning experiences, and to better understand what types of improvisation training activities can be advocated.

Purposes

The first purpose of this study was to investigate whether different modeling conditions produced significant differences for improvisation achievement. Specifically, the modeling conditions for this study consisted of an aural-only and an aural/notated

transcription model combination. Another purpose of this study was to investigate whether music learning theory-related improvisation instruction had an effect on students' self-efficacy for improvisation. The final purpose was to investigate whether the improvisation treatment used in this study had an effect on students' overall self-efficacy for instrumental music.

Research Questions

The research questions for this study were:

1. Was there a significant difference between the modeling conditions of aural-only and aural/notated transcription combination on improvisation achievement?
2. Did the music learning theory-related improvisation treatment have a significant effect on the students' self-efficacies for music improvisation?
3. Did the music learning theory-related improvisation treatment have a significant effect on the students' self-efficacies for instrumental music?

Definitions

Audiation: Audiation is when one hears and comprehends music silently when the music is not physically present and is the foundation of musicianship (Gordon 1980, 1997). Gordon stated, "Without audiation as the source, at most, music can elicit only emotional response, much like eating and not digesting food" (2003a, p.11). There are eight types of audiation and six stages. Additional information on audiation can be found in Gordon's *Learning Sequences in Music: Skill, Content, and Patterns* (2003b). For the purposes of the present study, audiation-based improvisation was utilized, as it

was designed to facilitate an individual's comprehension of tonality and meter. Azzara (1992) explained:

> Improvisation means that an individual has internalized (can audiate) a music vocabulary and is able to understand and express intended musical ideas spontaneously. Improvisation is often associated with jazz; it should be considered essential to all musical styles. ….Individuals improvise daily with language when engaging in conversation. Like an individual's contribution to conversation, improvisation in music is generated from an internal source. (p. 6-7)

Gordon (2000) commented that students should be led to audiate simple cadential modulations to enhance harmonic improvisation skill. Gordon emphasized audiating temporally, and guiding learners with frequent chord changes rather than sustained chords. Gordon also distinguished between teaching and learning improvisation. Teaching was characterized by explaining to another, while learning was described as explaining to oneself. In this sense, Gordon (2003a) stated that "…only the readiness to learn to improvise can actually be taught, and improvisation, itself, has to be learned" (p.12). Gordon observed that relatively little attention has been allotted to how one learns to improvise in terms of music learning theory.

Improvisation: The term improvisation can embody a wide array of meanings and is highly dependent upon contextual surroundings. Definitions of improvisation are numerous, and performance practices are equally diverse. The disparity among definitions validates the premise that cognitive complexity and musical freedom involved in improvisation exist within a continuum. Some may use the term "improvisation" to encompass any spontaneous musical expression without restrictions, while others may limit the use of the term to spontaneous musical expressions within

the boundaries of syntactical restrictions. Because of the varied contexts for which musicians and non-musicians use the term "improvisation", there can be no single functioning definition that encapsulates its meaning.

Gordon (2003a) described improvisation as being "…the essence, the sum and substance, of music" (p. 1). In a literature review, Azzara (2002) identified several defining factors that were apparent in improvisation research, including "(1) spontaneously expressing musical thoughts and feelings, (2) making music within certain understood guidelines, and (3) engaging in musical conversation" (p. 172). Azzara (1993) described improvisation as "a manifestation of musical thought"…and the ability to "understand and express musical ideas spontaneously" (p. 330). Gordon (2003a) defined improvisation as "the spontaneous audiation and use of tonal patterns and rhythm patterns with restrictions" (p. 122). For the purpose of this study, improvisation shall be defined as the intended expression of spontaneous musical ideas.

Improvisation achievement: For the purpose of this study, improvisation achievement shall be defined as the student's skill attainment in improvisation performances as determined by Azzara's (2006) tonal, rhythmic, and expressive improvisation ratings scale.

Improvisation readiness: For the purpose of this study, improvisation readiness shall be defined as the student's ability to learn to improvise as determined by Gordon's 1998 Harmonic Improvisation Readiness Record and Rhythmic Improvisation Readiness Record.

Intermediate instrumentalists: For the purpose of this study, intermediate instrumentalists shall be defined as instrumental music students (wind and mallet percussion) with at least one year of instrumental music instruction and no greater than three years of instrumental music instruction.

Modeling: There is a lack of consensus on the definition of modeling in music research. Particularly for instances of providing improvisation learning opportunities, it may be important to consider a social cognitive perspective of modeling, where "modeling influences can convey rules for generative and innovative behavior..." (Bandura, 1989, p. 25). In contrast to simple imitative learning, the social cognitive perspective of modeling allows for the generation of novel behaviors and considers the interplay between the learner's personal, environmental, and behavioral influences. Rather than simply imitating a modeled performance, the learner must observe the underlying characteristics of the modeled performance and apply those characteristics to future similar situations. Wade and Tavris (1993) mentioned that observational learning, or modeling, is sometimes referred to as vicarious conditioning.

For the purpose of this study, modeling shall be defined as the process by which the novice observes the skilled performances of others and uses the underlying rules of the model to generate a desired performance. More specifically, modeling in this experiment consists of presenting model performances of improvised solos, studying the underlying characteristics of the improvised solos, and guiding students in the production of improvised solos that reflect the model performances. When reviewing related research, however, there may be contextual instances where the term

"modeling" may be used synonymously with observational learning, imitative learning, or similar constructs.

Music learning theory: For the purpose of this study, Edwin Gordon's music learning theory shall be defined as a comprehensive and sequential method designed to facilitate music comprehension through audiation. In music learning theory, two main categories (discrimination learning and inference learning) exist for the skill learning sequence. Discrimination learning is rote learning and takes place when the learner is conscious of what they are being taught. Inference learning is conceptual learning and takes place when the learner is unconscious of what is being learned because he or she is teaching themselves. There are five levels in discrimination learning: aural/oral, verbal association, partial synthesis, symbolic association, and composite synthesis. There are three levels in inference learning: generalization, creativity/improvisation, and theoretical understanding. Additional information on music learning theory can be found in Gordon's *Learning Sequences in Music: Skill, Content, and Patterns* (2003b).

Self-efficacy: Bandura (1986) defined self-efficacy as the judgments for one's capability to "…organize and execute courses of action required to attain designated types of performances" (p. 391). For the purpose of this study, self-efficacy for instrumental music shall be defined as a student's self-perceived capability to be successful at musical tasks that involve playing a musical instrument. Similarly, self-efficacy for music improvisation shall be defined as a student's self-perceived capability to be successful at musical tasks that involve improvising.

CHAPTER II

REVIEW OF THE LITERATURE

The review of the literature relevant to the effects of modeling, improvisation, and self-efficacy has been organized into three major headings: (1) research relating to observational learning/modeling (2) research relating to improvisation, and (3) research relating to self-efficacy. Modeling has been examined in relation to observational learning and social cognitive theory, modeling in music education research, and modeling in improvisation research. Improvisation literature has been discussed with an emphasis on the impact of improvisation instruction on other musical outcomes. There will also be a section regarding the theoretical foundations of self-efficacy in relation to social cognitive theory and music education.

Modeling

Social Cognitive Theory

There are several ways by which a student can attain a desired performance when participating in a new learning experience. The novice can work independently and achieve by learning from mistakes, or by trial and error experiences. Learning may also take place as a result of the reinforcement and shaping provided by a skilled teacher. That is, the teacher would use behaviorist principles to elicit the novices' actions that eventually would lead to the desired performance. Another way by which students attain skills is observing models. The meaning of modeling can range from simple mimicry to the complex creation of novel responses and deferred imitation.

Wade and Tavris (1993) noted that behavioral psychologists acknowledge the importance of observational learning, yet the behaviorists believe that the learning is due to a stimulus-response mechanism. In 1941, Miller and Dollard's book *Social Learning and Imitation* was an advancement of these behaviorist notions (Simon, 2001). Miller and Dollard recognized that imitative learning takes place in lower animals, such as rats, and that because of the fundamental nature of imitation, it can even be expected to take place early in a human's life. Herbert and Harsh (1944) subsequently studied observational learning among cats and found that cats benefited from observing the learning process of other cats as long as the original problem was within the normal range of ability. The researchers in this comparative study also found that observation of skilled performances was much less beneficial than observation of the specific steps of the learning process.

While this early research was essential in establishing the importance of the imitative learning process, several factors were absent from consideration. American Psychologist Albert Bandura advanced theories of observational learning by recognizing and explaining the creation of novel responses, deferred imitation, and the role of self-beliefs in imitation. Bandura's proposed theories are found in numerous texts such as *Social Learning Theory* (1977) and *Social Foundations of Though and Action: A Social Cognitive Theory* (1986). Pajares (2002) summarized the basic premises as follows:

> [Social cognitive theory] advanced a view of human functioning that accords a central role to cognitive, vicarious, self-regulatory, and self-reflexive processes in human adaptation and change. People are viewed as self-organizing, proactive, self-reflecting and self-regulating rather than as reactive organisms shaped and shepherded by environmental forces or driven by concealed inner impulses. From

> this theoretical perspective, human functioning is viewed as the product of a dynamic interplay of personal, behavioral, and environmental influences. (p. 1)

Bandura (1977) contended that the majority of human behavior is acquired observationally through modeling. When one observes a model, the observer gains symbolic representations of the activity, which are then coded to serve as a guide for action. In social cognitive theory, observational learning is governed by four component subfunctions. The first subfunction is the *attention process*. The observer will have potential to imitate the observed model depending to what degree the observer is motivated to pay attention. In the subfunction of *retention*, the observer must be able to process and store, in symbolic form, the observed behaviors of the model. Because most modeled activities contain too much irrelevant information, observers must discriminate and transform pertinent information into succinct symbols (Bandura, 1986). It is in the retention subfunction that rehearsal, both cognitive and physical, serves as an important memory aid. Bandura (1986) cited several studies that confirm the performance benefits of both cognitive rehearsals and a combination of cognitive and physical rehearsal. However, for skilled performances, Bandura mentioned that initial phases of learning should focus on gaining a clear conception of the model.

Symbolic conceptions are transformed into appropriate actions during the *behavioral production process*, which is the penultimate observational subfunction. "Behavioral reproduction is achieved by organizing one's response spatially and temporally in accordance with the modeled patterns" (Bandura, 1977, p. 27). Bandura further noted that when learning a complex skill, behavioral reproduction will sometimes be lacking because the requisite sub-skills need to be developed through

modeling and practice. To complete the observational learning process, the issue of *motivation* is of primary importance. Just because people acquire new information is no sign that the information will be acted upon. According to Bandura (1986), observationally learned behaviors are only performed depending upon direct, vicarious, or self-produced motivators.

Regarding motivation and modeling, Bandura (1977) noted that an observer's creative efforts may be self-devalued when an observer with limited skill compares their own performance to a model whose product is thought to be too advanced. Unfavorable comparisons may therefore dissuade the efforts of a novice when compared to a prolific creative model.

Modeling Research in Music Education

While the use of modeling in music education has been well documented (Dickey 1992; Dunn, 2000; Sink, 2002), a consensus regarding a theoretical foundation or a functional definition might be lacking. In social cognitive theory, the term *modeling* has specific meaning, conditions, and boundaries. Other concepts of modeling may include broader meanings, such as simple mimicry or imitative learning. While some research is supportive of the use of models in various music learning settings (Delzell, 1989; Dickey, 1991; Henley, 2001; Rosenthal, 1984; Rosenthal et al, 1988), other studies have had differing results (Anderson, 1981; Hodges, 1974; Linklater 1997; Morrison, 2002). It may be important to note that there have been mixed findings even in studies that have supported the use of modeling, highlighting the need for further research.

Modeling research in music education has also been done in reference to performance preferences (Baker, 1980), teacher modeling skill (Sang, 1987), practice attitudes (Tollefson, 2000; Hewitt, 2001), and self-evaluation (Hewitt, 2002).

One study in support of the use of modeling was Delzell (1989). The researcher studied the effects of musical discrimination training and, for purposes of control, tape-recorded the discrimination and modeling and imitation exercises. Delzell found that "…systematic training that incorporates models and discriminator foils and modeling and imitation…" can help develop musical discrimination skills of beginning instrumental music students (p. 29). Another study that found support for the use of modeling for various settings was Dickey (1991), who compared the effectiveness of verbal instruction and nonverbal modeling in instrumental ensembles. In this study, the researcher wanted to ascertain whether students taught with nonverbal modeling strategies would significantly improve kinesthetic response, ear-to-hand skills, and general music discrimination skills. The design used by the author was a pretest-posttest one-factor control-treatment group with concurrent replication. Middle school students (N =128) were divided into control groups and treatment groups. The control groups consisted of verbal teaching strategies while the treatment groups consisted of modeling teaching strategies. Results indicated that students in the treatment groups did not differ significantly from the control group regarding general music discrimination skills. However, those students in the modeling group did achieve significantly higher on ear-to-hand skills tests (F = 11.41, p < .01 for the author's groups and F = 3.94, p =

.05 for the replicator's groups) and kinesthetic skills tests ($F = 34.73$, $p < .05$ for the author's groups and $F = 11.90$, $p < .05$ for the replicator's groups).

These findings are congruent with Henley (2001), whose study focused on the effects of modeling and tempo pattern practice techniques on high school wind instrumentalists' performances. Participants in this study (N =60) were high school wind instrumentalists who individually practiced and performed the same etude. These students were assigned into groups with half of the students receiving a recorded aural model and the remaining students not receiving a model. Results indicated that rhythm percentage gain and tempo percentage gain were superior favoring the with-model condition and yet there were no significant differences between groups on the third dependent measure, tempo patterns. Rosenthal's 1984 study, however, found significant differences between groups on the dependent variable, tempo. The study explored the effectiveness of four modeling conditions on the performances of advanced instrumentalists. The researcher used a verbal and aural mixture for one of the modeling conditions, solely verbal explanation for the second modeling condition, and an aural model for the third modeling condition. The fourth and final modeling condition consisted solely of student practice. Upper level college musicians (N=44) were divided into one of the four groups. These musicians performed an etude after receiving 10 minutes of preparation. Judges analyzed the performances in terms of notes, rhythms, dynamics, tempo, and phrasing/articulation. Results indicated significant differences among the four groups for notes ($p < .02$), rhythm ($p < .05$), dynamics ($p < .05$), and tempo ($p < .05$), yet no significant differences were found

among groups concerning phrasing/articulation ($p < .09$). The highest scores among groups were consistently found in the aural-only group, followed by the verbal/aural model combination. The remaining two groups, solely verbal explanation and practice only, were found to have considerably lower scores.

After the publication of this research, a study was conducted (Rosenthal, Wilson, Evans, & Greenwalt, 1988) to compare the effects of a recorded aural-only model practice condition with four other practice conditions. In addition to the modeling only practice condition, Rosenthal et al. (1988) compared a group that used their practice time to sing the musical exercise (singing), a group that used their time to silently study the musical exercise (silent analysis), a group that continuously played their instruments as they practiced the musical exercise (free practice), and a control group where students practiced an unrelated musical composition. The authors commented that this control group was used to compare the effectiveness of the various practice conditions with sightreading. Rosenthal et al. found no significant differences between practicing conditions and student performances regarding correct notes ($p < .40$) and articulation ($p < .25$), but did find significant differences among practice conditions regarding correct rhythms ($p < .10$), phrasing or dynamics ($p < .001$), and tempo ($p < .02$) favoring modeling and free practice conditions. Rosenthal et al. pointed out that "…listening to a model alone (without the opportunity for practice) seems to be about as effective as practicing with the instrument in hand" (p. 254), and also concluded that this study may "…lend credence to the use of teaching methods that make considerable use of modeling…" (p. 254).

Research in music concerning modeling, however, does not always demonstrate consistent findings. While the previous research findings favor the use of modeling in music for certain outcomes, several studies have not reached the same conclusion (Anderson, 1981; Hodges, 1974; Linklater 1997; Morrison, 2002). Anderson (1981) examined the effects of a recorded aural model for home practice on students' sight-reading skill and performance skill and found no significant differences between a control group and an experimental group. Hodges (1974) reported similar findings in an experiment investigating the effects of recorded aural models on beginning instrumental student achievement. Linklater (1997) also found that audiotape models were not as beneficial as they were expected to be, yet the students with higher aptitudes used the models more frequently than students with lower aptitudes.

Morrison (2002) investigated the effect of recorded models on 7th-grade instrumental ensemble group achievement. There were no significant achievement differences reported between recorded model and no model groups. However, Morrison reported that the model group achieved at a faster rate in terms of pitch, tone, and phrasing. During the course of the five-week instructional period, the recorded model group demonstrated the greatest improvement following only two weeks of instruction, while the no model group demonstrated a gradual improvement across the five week experiment. Between the two groups, Morrison mentioned the existence of a heightened and longer-lasting enthusiasm for the study of a particular piece, favoring the with model group.

Research has also shown that students' performance preferences, when presented with a musical model, can be affected by the appropriateness or inappropriateness of the model (Baker, 1980). The students' concept of a "correct" performance was determined by the model presented to them. The effect of teachers' modeling skills on student performances was studied by Sang (1987). It may be important to note that Sang acknowledged a more sophisticated concept of modeling than is common in much of the music literature. Rather than consider modeling as a single behavior, Sang recognized the concept of modeling as a composite group of related skills. Teachers ($N = 19$) of beginning instrumental music classes participated in this study. The researcher noted, "…a large portion of the variables in pupil performance behaviors can be accounted for by teacher modeling skills…" (p. 157). Sang noted that a positive relationship ($r = .74$, $p < .05$) was found between teachers' modeling abilities and the frequency by which teachers model. The researcher acknowledged the lack of studies that utilize direct interaction modeling, or live modeling, which is a phenomenon that Delzell (1989) attributed to the possible lack of control in an experimental setting.

While most studies have focused on the musical outcomes of modeling, other researchers have reported on non-musical issues as well. Tollefson (2000) found that aural models improved student practice attitudes. In an investigation into the effectiveness of unilateral, coordinated, and aural model practice procedures, Tollefson found that 72% of the participants perceived the aural model to be helpful and enjoyable, yet the aural model did not make a significant difference on actual

performances. However, these results do not align with the findings of Hewitt (2001), who studied the effects of modeling, self-evaluation, and self-listening on the performances and practice attitudes of 7th-, 8th, and 9th-grade instrumentalists (N = 82). This study examined the differences between modeling conditions (model/no model), self-listening conditions (self-listen/no self-listen), self-evaluation conditions (self-evaluation/no self-evaluation), on seven sub-areas of a performance measure (tone, intonation, technique/articulation, melodic accuracy, tempo, interpretation). In the areas of tone, melodic accuracy, rhythmic accuracy, interpretation, and overall performance, students who listened to a model during self-evaluation improved more than those who did not receive a model. For all groups, practice attitude means were reported to have remained constant for the duration of the study, with no significant differences between treatment groups. Hewitt (2002) subsequently investigated the effect of models on the self-evaluation tendencies of junior high instrumentalists and found that the use of a model did not assist students in their self-evaluation accuracy. Furthermore, the continued use of models actually hindered intonation accuracy.

With mixed findings concerning the use of modeling in music education, a debate regarding the effectiveness of modeling does exist. This debate may even be convoluted due to the lack of consistency among modeling definitions used in music education research. It may be important to recognize the disparity among modeling definitions when deciphering research results.

Modeling Research in Improvisation

Whether it is referred to as modeling, observational learning, or imitative learning, the process of learning by the example of another has been documented in improvisation pedagogy literature (Aebersold, 2002; Steinel, 1995; Azzara & Grunow, 2005), and improvisation research literature (Bitz, 1998; Laughlin, 2001; Madura, 1996; May, 2003; Parchey, 1973). Research has indicated that the better one's imitative ability, the better potential there will be for improvisation achievement (Madura, 1986; May, 2003). Although results have varied to some degree, there has been a general trend in support of the use of models in improvisation (Bitz, 1998), with an emphasis on aural musical examples as opposed to notated musical examples (Laughlin, 2001).

Miller and Dollard (1941) identified the act of imitation as an aspect of social learning that takes place early in the life of humans. The ability for one to imitate has been studied as it relates to improvisation learning by Madura (1996). The researcher found that students' imitative ability was the best predictor of vocal jazz improvisation achievement in a ii-V7-I improvisation task. Collegiate vocal jazz students (N= 101) improvised melodies with recorded accompaniment of blues and ii-V7-I progressions. Three judges evaluated the improvisation performances using a researcher-constructed measurement instrument that examined tonal, rhythmic, and expressive aspects of improvisation. Predictor variables of imitative ability, jazz theory knowledge, jazz experience, instrumental lessons, voice lessons, gender, and general creativity were used as independent variables. Results indicated that imitative ability followed jazz theory knowledge and jazz experience as the best improvisation achievement predictors

for the blues task. For the ii-V7-I task, imitative ability was the best predictor accounting for 26% of the variance, followed by jazz theory knowledge (14%) and jazz experience (7%). Madura did not find instrumental lessons, vocal lessons, general creativity, or gender to be significant predictors of vocal jazz improvisation achievement.

Factors influencing achievement among instrumental jazz improvisers have been studied (May, 2003) with similar results. Collegiate jazz instrumentalists ($N = 85$) were measured in terms of improvisation achievement, jazz theory achievement, aural skills, and aural imitation. All of the measurement instruments were designed by the researcher. Additional variables, including piano background, self-evaluation of improvisation skills, and jazz listening, were also investigated. Results indicated that self-evaluation of improvisation skill was the best predictor of instrumental jazz improvisation achievement, followed by aural imitative ability. Self-evaluation of improvisation skill was determined by a 3-point scale which asked students to rate their improvisation ability as (1) beginner, (2) moderate ability, or (3) advanced. May suggested a need to further study the relationships between self-evaluation and the development of jazz improvisers.

There has also been improvisation research that has investigated the effect of modeling on improvisation achievement. Bitz (1998) studied the effects of musical modeling and direct instruction sequencing on the improvisation performances of middle school and high school double bassists ($N = 24$). For the musical modeling portion of the experiment, participants were divided into a musical model group and a

no model group. A two-tailed T-test revealed a significant difference ($p < .05$) between means, favoring the musical model group. Results indicated non-significant effects on the scores for audition score, years of instrumental study, and age. Partchey's study (1973) on improvisation modeling used 86 sixth-grade students who met for three improvisation practice sessions. Treatment conditions were an instantaneous feedback sequence, a model sequence, and a control group receiving no instruction. No statistically significant differences were reported among the treatments, yet Partchey noted that "evidence of learning was present in all groups" (p. 86).

While there has been modeling research in improvisation, little attention has been given to determine what types of musical examples and methods may be the most beneficial for improvisation achievement. In a study conducted by Laughlin (2001), the comparative effectiveness of aural and notated methods of improvisation was investigated. Beginning jazz improvisation instrumentalists (N=20, grades 9-12) were assigned to either the aural or notation treatment method. Both treatment methods shared the same curriculum and learning objective (student demonstration of harmonic accuracy in improvisation). For the notation group, lesson materials were presented with written musical examples. The aural group received lesson materials as recorded CD examples. In addition, students in the aural group listened to a recorded improvisation model, while the notated group practiced the solo from a notated transcription. Participants underwent one treatment session per week for a total of four weeks. Regarding the measurement of harmonic accuracy, both treatment groups significantly improved ($p < .05$). Furthermore, the aural group produced significantly

higher scores than the notation group ($p < .05$). Laughlin suggested the use of a predominantly aural jazz pedagogy method for harmonic skill acquisition.

Additional research concerning the imitative aspects of improvisation has been provided by Bash (1984), Aitken (1976), and Paulson (1985). The effectiveness of three instructional methods on the acquisition of jazz improvisation skills was studied by Bash (1984). The methods utilized in this study were a chord/scale approach, a chord/scale approach supplemented with an aural perceptive approach, and an historical/analytical approach. Participants (N= 60) were assigned to one of the three treatment groups, or to a control group which received no improvisation instruction. The results of this study indicated the feasibility of using an aural/perceptive approach as a supplement to the chord/scale approach.

Although Aitken (1976) and Paulson (1985) were not experimental studies, they both contributed information that may be pertinent to imitative learning in improvisation. Aitken (1976) designed a self-instructional audio-imitational teaching method that utilized a sequential imitative model. Paulson (1985) constructed a method to teach students to improvise effective melodic statements in jazz solos based upon an imitative instructional approach. The systematic imitative instructional approach designed by Paulson addressed the requisite conditions for imitation, as described by social cognitive psychologist Albert Bandura (1977). Paulson acknowledged the need for empirical research concerning the effects of a systematic imitative instructional approach on playing effective melodic jazz solos.

Improvisation

Foundations of Empirical Investigation

In 2000, Hagberg summed descriptions of what improvisation means to various authors when he stated that improvisation is:

> …an art form that intrinsically encourages originality; music that constitutes-in a positively valued sense of the phrase-an imperfect art; music that is not formulaic and yet is governed by regulative ideals;…an art form that demands a distinctive ontology; a form of music making that invites a reassessment of the nature of artistic rule following… (p. 95)

In music research, experimental studies that have focused on improvisation did not appear until the early 1970s. Since these early studies, improvisation research has been conducted in a variety of settings. These settings include, but are not limited to, the effectiveness of pedagogical methods, the construction of improvisation ratings scales, the use of modeling in improvisation, improvisation readiness, and the effect of improvisation on other musical outcomes.

In one of the first doctoral dissertations that focused on the empirical study of improvisation, Briscuso (1972) researched the extent to which students of differing music aptitude levels differed in their ability to improvise in a jazz style. High school jazz band students ($N = 48$) in grades 8-12 were administered Gordon's Music Aptitude Profile (MAP) (1965). The investigator provided instruction for approximately 60 hours over a 30 week period. Instruction consisted of teaching theoretical principles used in jazz, developing improvisation facility, teaching jazz style and interpretation, and playing jazz band arrangements. Students' improvisation ability, as demonstrated by tape-recorded performances of a pop song and a blues song, was measured

independently by three judges, using a five-point rating scale. Judges' reliability coefficients were pooled and reported as ranging from .74 to .85. From the results of this study, Briscuso reported that:

> …it cannot be concluded that, after [a thirty week period], instrumental music students who score at approximately the 90th percentile on the MAP battery are necessarily more capable of developing, on their own, insights pertaining to ability in jazz improvisation than are students who possess somewhat lower levels of musical aptitudes. (p. 51)

Briscuso also concluded that students who scored above *MAP* norms medians could profit from jazz improvisation instruction, yet students scoring above the 80th percentile on the MAP Musical Sensitivity tests should be particularly encouraged to undergo improvisation instruction.

Another early study in improvisation was done by Damron (1974). Damron investigated the effectiveness of a self-instructional method of jazz improvisation instruction for secondary students ($N = 40$). Of this sample, 20 students were members of a concert band only, while 20 were in a stage band. Members of the experimental group, who received the improvisation instruction, were selected from both the concert band and stage band groups. Results of this study indicated a significant difference ($p < .05$) between the students receiving this improvisation instruction and those who did not. Both of the Briscusco (1972) and Damron (1974) studies contained aspects relating to the evaluation of improvisation achievement. Other improvisation research studies focusing on the measurement of improvisation performances have included Partchey (1973) Bash (1983), Burnsed and Price (1984), Schilling (1989), Pfenninger (1991), and Horowitz (1995).

Improvisation readiness is an aspect of improvisation research that has been studied by Gordon (2000). Among the research in Gordon's *Studies in Harmonic and Rhythmic Improvisation Readiness* (2000) is a report on the nature of music aptitudes and the relevance of music aptitudes to improvisation. Gordon stated that the primary purpose of the report was to "…1) outline the distinct functions of music aptitude that give rise to the potential to improvise harmonically and 2) to explain how these unique functions of audiation could actually alter our traditional ways of thinking about music aptitude itself" (p. 5). Gordon concluded that:

> …it is highly probable that the HIRR [Harmonic Improvisation Readiness Record] and RIRR [Rhythmic Improvisation Readiness Record] represent theretofore unidentified generic music aptitude tests. What might make HIRR and RIRR unique is a matter of comprehensive audiation. That is, HIRR and RIRR may more completely fulfill the need pertaining to the construct validity of a music aptitude test to embed basic music content, such a harmonic and temporal patterns, in a functional music context, such at the syntax that tonalities and meters provide. (p. 17)

Additional research reported by Gordon (2000) included "an investigation of the background necessary for learning to improvise: The relation among questions constituting the rhythm improvisation readiness record, the harmonic improvisation readiness record, and the advanced measures of music audiation" (p. 21) and "a comparison of music tests and students' improvisation readiness based on longitudinal case studies" (p. 35).

Related Musical Outcomes

While the practice of improvisation is valuable in its own right (Azzara, 2002), several researchers have found that guiding students in improvisation learning

experiences may actually be linked with the development of other musical outcomes. McDaniel (1974) was one of the first to research the possible benefits of studying improvisation. This study examined the differences in music achievement between improvising and non-improvising college-level music students ($N = 296$). Results of this study indicated a significant difference ($p < .05$) in music achievement favoring the improvising musicians. Another study that linked the study of improvisation with other musical outcomes was Montano (1983). The purpose of this research was to examine the effect of improvisation of given rhythms on rhythmic sight reading accuracy. Thirty-two undergraduate students from elementary group piano classes participated in this experiment. The results of this study showed that students participating in the improvisation treatment achieved significantly greater in terms of rhythmic accuracy in sight reading than the students who did not receive the treatment.

Azzara (1992) studied the effect of audiation-based improvisation techniques on the music achievement of elementary instrumentalists ($N = 66$), and also investigated the differential effects of elementary instrumentalists' aptitude levels on musical achievement. The Music Aptitude Profile (MAP) (Gordon, 1965) was administered to measure student aptitudes. Following the treatment period, students performed three researcher-composed etudes (self-prepared, teacher-prepared, and sight-read) that were recorded and evaluated independently by four expert judges. Judges used hierarchical tonal and rhythm rating scales to evaluate student performances. Each performance was evaluated on three separate occasions for specific aspects of performance achievement (tonal, rhythmic, and expressive). Azzara noted that "…each

etude contained tonic, dominant, and subdominant tonal pattern functions and macro, micro, division, elongation, and rest pattern functions" (*p*. 43). Results indicated that mean achievement scores for the improvisation study group were significantly greater ($p < .05$) than the control group. Azzara stated, "…it may be said, for this sample, the students with improvisation study, as a group, demonstrated higher achievement" (p. 68).

The correlation between five aspects of musical performance, including improvisation, was investigated by McPherson (1996). The purpose of this study was to examine the correlation and developmental differences between sightreading, performing rehearsed music, playing from memory, playing by ear, and improvising. Of the total number of participants ($N = 101$), group 1 consisted of students in grades three and four, while group 2 consisted of students in grades five and six. For both groups, the strongest correlations existed between the ability to play by ear and improvise. A significant moderate relationship was also found between an ability to sight-read and improvise (Group 1: .42; Group 2: .68). The researcher noted that an ability to sight-read correlated higher with an ability to improvise than with an ability to perform rehearsed music. As a part of this ongoing project, McPherson, Bailey, and Sinclair (1997) conducted a path analysis of a theoretical model to describe the relationship among the same five types of musical performance. The researchers found that the direct path between the abilities of sightreading and improvising were relatively stable for both groups.

Improvisation is an artistic endeavor that is linked to personal creativity. Maslow

(1968) described a psychological process by which personal creativity goes through the stages of primary, secondary, and integrated creativity. Primary creativity was characterized by the innocent ability to express ideas and impulses without strangulation and without fear of ridicule. Secondary creativity was characterized by consolidating the rules, syntax, idiosyncrasies, and boundaries by which any creative field adheres. Integrated creativity made use of both primary and secondary creativity "easily and well, in good fusion or in good succession" (p. 144).

In improvisation, students may undergo either confirming or debilitating experiences as they attempt to navigate these stages. Such experiences may have an effect on a learner's self-concept regarding their ability to improvise. Self-confidence for improvising, or lack thereof, could be determinate to whether or not students continue improvisation practice. As noted previously, self-efficacy for music improvisation refers to a student's self-perceived capability to be successful at improvising.

Self-Efficacy

Social Cognitive Theory

Bandura and Locke (2003) noted that perceived self-efficacy is the most central and pervasive mechanism of human agency. Perceived self-efficacy, as defined by Bandura (1986), refers to the judgments for one's capability to "…organize and execute courses of action required to attain designated types of performances" (p. 391). Rather than focus on the particular skills people have when performing a certain action, self-

efficacy is concerned with the personal judgments people make concerning what they can do with their skills. To further delineate this construct, Bandura (2006) distinguished self-efficacy from self-esteem, locus of control, and outcome expectancies:

> Perceived efficacy is a judgment of capability; self-esteem is a judgment of self-worth. These are entirely different phenomena. Locus of control is concerned, not with perceived capability, but with belief about outcome contingencies-whether outcomes are determined by one's actions or by forces outside one's control….
>
> Perceived self-efficacy is a judgment of capability to execute given types of performances, outcome expectation is a judgment of the likely consequences such performances will produce. (p. 2)

Human behaviors, thoughts, emotions, and anxieties are affected by self-efficacy in a number of ways. Bandura (2006) provided a succinct explanation of the role of self-efficacy in human functioning:

> Efficacy beliefs influence whether people think self-enhancingly or self-debilitatingly, optimistically or pessimistically; what courses of action they choose to pursue; the challenges and goals they set for themselves and their commitment to them; how much effort they put forth In given endeavors; the outcomes they expect their efforts to produce; how long they persevere in the face of obstacles; their resilience to adversity; how much stress and depression they experience in coping with taxing environmental demands; and the accomplishments they realize. (p. 2)

The role of self-efficacy in psychosocial functioning. According to social cognitive theory, people will chose to pursue or avoid a task based partially on how they perceive their personal efficacy. A task will be avoided if people perceive it to be beyond their capabilities; whereas they will embark on activities for which they feel competent (Bandura, 1986, 1989; Simon 2001, Pajares, 1996). According to this theory, if the

perceived difficulty of a task does not align with the student's perceived ability to perform the task, the student will likely avoid participation or proceed reluctantly. This concept could account for students avoiding activities in general, and especially situations where they are called upon to be creative.

Bandura (1986) also cited a vast amount of research that supports the connotations that perceived self-efficacy also determines, once people choose to undergo a certain activity, the effort they expend as well as the diligence with which they persevere. That is to say, a person with high self-efficacy will put forth greater effort and persist longer than one with low self-efficacy. Bandura further noted that students who view others as possessing a similar amount of skill will usually exude a similar amount of effort and perseverance for as long as it takes to fail or achieve a goal. However, a student will be quick to slacken efforts or give up completely if they observe someone fail who is of a greater perceived talent or skill level. Bandura and Locke (2003) noted that a "Resilient belief that one has what it takes to succeed provides the necessary staying power in the face of repeated failures, setbacks, and skeptical or even critical social reactions that are inherently discouraging" (p. 92). Bandura and Locke also remarked that little attention has been given in research to the costs of relenting behaviors because "…unrealized futures are neither observable nor easily visualized" (p. 97). The researchers added that there is a need for research that assesses the costs of underconfidence in areas such as innovativeness and creativity.

Fluidity and sources of self-efficacy beliefs. Judgments for one's capability to

execute specific courses of action are not predestined, nor are they unchanging over time. According to the model of triadic reciprocal determinism, self-efficacy beliefs are determined by an interdependence of performance behaviors, personal factors (cognitive and biological events), and environmental factors (Bandura, 1986). This interdependence suggests that when one factor changes, there are subsequent changes to the others, thereby creating a fluidity for each factor. As noted by Ozer and Bandura (1990), a heightened perception of self-efficacy can be gained through experiences that facilitate a sense of personal control and skill acquisition. Bandura (1986) also noted that self-efficacy improvement also results from people visualizing themselves executing tasks successfully and rehearsing cognitively. If such positive changes are possible, self-efficacy is acquired, improved, or diminished through any one or a combination of sources. One strategy for increasing students' self-efficacy focuses on the setting of proximal goals, and is summarized by Zimmerman (1995). "When students adopt or personally set a learning goal, they experience an increase in efficacy for attaining it that is further strengthened by progress in learning" (p. 209).

Bandura (1986) outlined the four components that make up sources of self-efficacy information: performance attainment; vicarious experience; verbal persuasion; and physiological states. Of these four sources, Pajares (2002) commented the most influential is "…the interpreted result of one's previous performance, or mastery experience" (p. 7). Successful performances tend to raise efficacy expectancies while failures tend to lower them. Bandura (1986) stated, "Failures that are overcome by

determined effort can instill robust percepts of self-efficacy through experience that one can eventually master even the most difficult obstacles" (p. 399).

Self-efficacy appraisals are also influenced by observing the successes and failures of others, particularly for those who have limited experience with a certain task or are uncertain about their abilities (Bandura, 1986; Pajares, 2002). Concerning vicarious experience, Bandura stated that "[People] persuade themselves that if others can do [a task], they should be able to achieve at least some improvement in performance" (p. 399). Also of primary importance to vicarious experience are the aspects of peer modeling (Pajares, 2002). Pajares and Schunk (2001) explained,

> …when peer models make errors, engage in coping behaviors in front of students, and verbalize emotive statements reflecting low confidence and achievement, low-achieving students perceive the models as more similar to themselves and experience greater achievement and self-efficacy. Social cognitive theorists recommend that teachers engage in effective modeling practices and that they select peers for classroom models judiciously so as to ensure that students view themselves as comparable in learning ability to the models. (p. 255)

A third source of self-efficacy beliefs is verbal persuasion, which can have a positive or negative effect. Pajares (2002) noted that it is often easier to weaken one's perceived self-efficacy beliefs with negative persuasions than to strengthen them with positive persuasions. Additionally, Pajares mentioned that effective persuaders, rather than being empty praise and encouragement, must nurture one's belief concerning capability while congruently guaranteeing that success is attainable. Bandura (1986) stated that those who are persuaded to believe they have the potential to master a given task are likely to sustain their effort greater than if they "…harbor self-doubts and dwell on personal deficiencies when difficulties arise" (p. 400).

Especially relevant to music performance, the role of physiological states (anxiety, stress, arousal, mood) is another source of perceived self-efficacy beliefs. In a stressful performance situation, people may translate various physiological states to mean that they are less competent to successfully complete the task. Bandura noted, "They read their somatic arousal in stressful or taxing situations as ominous signs of vulnerability to dysfunction" (p. 401). As mentioned by Pajares (2002), self-efficacy beliefs may be raised by reducing negative emotional states and improving one's well-being, both physical and emotional.

Self-Efficacy Research in Related Fields

Self-efficacy research has extended into numerous fields of inquiry. Pajares (1997) noted that examples include, but are not limited to the fields of phobias, addictions, depression, stress, health, and athletic performance. There has also been extensive documentation confirming the role of self-efficacy in education (Pajares, 2002; Pajares & Schunk, 2001; Schunk & Pajares, 2001; Zimmerman, 1995). While the relationships between self-efficacy and education achievement are generally accepted, continuing research that focuses on subject specificity is ongoing.

It may be important to note that Pajares and Schunk (2001) recognized that self-efficacy research has moved away from a globalized measurement of self-efficacy to subject-specific measurement of self-efficacy. Since doing so, Pajares and Schunk commented that results have yielded relationships that are generally positive and strong.

Self-Efficacy in Music Education

Maehr, Pintrich, and Linnenbrink (2002) as well as McPherson and Zimmerman (2002) have recently included self-efficacy as a noteworthy construct in music education. Self-efficacy has been applied to aspects of music education research in a number of ways, including scale development (Pearson, 2003), achievement prediction (McCormick and McPherson, 2005), performance anxiety (Mansberger,1989; Petrovich, 1990; & Sinden, 1999), teacher efficacy (Barnes, 1999; Bergee & Grashel, 2002; Quesada,1993), student retention (Klinedinst, 1991; Stewart, 2002; Sandene, 1997), improvisation (Aebersold, 1992; Watson, 2005), and other areas as well.

Pearson (2003) noted that materials designed to measure self-efficacy among musicians were scarce, and mentioned that "self-efficacy, so tightly related to self-regulation and motivation, is an obvious but often neglected concern for music instructors" (p. 4). In this study, the researcher designed and tested a self-efficacy scale for musicians ages 14-18, with at least two years of music experience. Researchers (McPherson & McCormick, 1999) have recognized an interest in research concerning the types of cognitive mediational processes that affect academic learning, and have also commented how this literature has not been applied to music research.

In one study, (McPherson & McCormick, 1999) pianists ($N = 190$) were asked to complete a 17 item questionnaire that included constructs of cognitive strategy use, self-regulation of practice, intrinsic value, and anxiety/confidence. Approximately 60% of the pianists participated by filling out the document prior to undergoing a performance examination. The anxiety/confidence portion of the questionnaire asked

questions regarding the forthcoming exam (e.g., "I have an uneasy, upset feeling when I perform in front of people," "I don't feel very confident about my ability to perform well today," "I'm scared I might freeze up when the examiner asks my scales") (p. 100). McPherson and Zimmerman (2002) subsequently reported that self-efficacy was also measured by how well each student thought they would perform on the examination.

Results indicated that the best predictors of average weekly practice were the amount of technical work done within a daily practice routine and the level of anxiety the students felt prior to the examination. Participants who reported higher levels of practice in the month leading to the examination were more inclined to feel anxiety before the performance than participants who reported lower levels of practice. Additional findings showed that aspects of practice such as learning scales/arpeggios, etudes, and technical exercises were included more by students who reported a high confidence in their ability to perform. The authors concluded by acknowledging the need for research with components such as self-efficacy in music.

In a similar study, McCormick and McPherson (2003) examined the role of self-efficacy in a musical performance examination. The researchers noted that prior to this study there was no specific research in music that focused on self-efficacy from a social cognitivist perspective. In this study, instrumentalists (N =332) were asked to complete a 16 item questionnaire that included constructs of cognitive strategy use, self-regulation, intrinsic value, anxiety, and self-efficacy. Approximately 65% of the instrumentalists participated by filling out the document immediately before undergoing

a performance examination. Questions under the construct of self-efficacy were "How good a musician do you think you are, in comparison with other students your own age?" "Would you say that you are poor, below average, average, above average, or outstanding in comparison with other students of your same age?" "What results do you think you will get for your exam today?" (p. 42). In a later study (2005) however, the researchers refined these questions according to more specific guidelines for self-efficacy measurement.

McCormick and McPherson noted, "The principal result is the strong association between self-efficacy and actual performance and the former's clear superiority as a predictor of actual performance in a graded external music examination" (p. 45). Further research using refined instruments was suggested to explore the relationships of self-efficacy and instrumental practice.

In McPherson and McCormick's 2006 study, the 2003 study was replicated and expanded using a refined self-efficacy scale for measurement and a different performance measure. The researchers noted that "…Given the enormous body of evidence showing the power of self-efficacy's influence on academic achievement, it is surprising how few studies have applied this theoretical framework in music, an area of learning that places great physical, mental and emotional demands on musicians" (p. 332). Self-efficacy was once again found to be the most important predictor of achievement on the young musicians' performance examination.

Self-efficacy research in music has extended to the area of performance anxiety (Mansberger,1989; Petrovich, 1990; Sinden, 1999) and teacher efficacy. Bergee and

Grashel (2002) examined the relationship of generalized self-efficacy, career decisiveness, and general teacher efficacy to preparatory music teachers' professional efficacy. The researchers used separate self-efficacy scales to measure each of the four variables. Results showed that generalized self-efficacy, career decisiveness, and general teacher efficacy served as significant predictors of music teacher efficacy and that all four variables were modestly intercorrelated. Bergee and Grashel mentioned that among Bandura's (1989) four means of self-efficacy cultivation (performance accomplishment, vicarious experience, verbal persuasion, and emotional arousal), performance accomplishment and vicarious experience may be particularly amenable for pedagogical situations within the contexts of music teaching. Bergee and Grashel also documented the ability for self-efficacy beliefs to be strengthened over time. Additional self-efficacy studies concerning teacher efficacy have been conducted by Barnes (1999), who studied self-efficacy and teaching effectiveness in pre-service string teachers, and Quesada (1993), who studied the effects of providing teaching materials and an in-service workshop concerning Puerto Rican music on music teachers' self-efficacy and willingness to teach Puerto Rican music. A possible reason for research interest in professional self-efficacy is teacher retention and motivation.

Bandura (1986) noted that self-efficacy is a major determinant in whether or not people choose to undergo an activity, and whether or not people continue to participate in an activity. Ebie (2005) studied the reasons students chose to participate in extracurricular activities, specifically music and sports, and found that students chose to participate in these activates due partially to their perceived talents, skills, and abilities.

Stewart (2002) also included self-efficacy as a factor to study in relation to 8th grade students' decisions to continue participation in band. Other factors studied included gender, starting grade, private lesson experience, academic achievement, interest in band and performance contexts, and home music background. An additional purpose of this research was to investigate the relationships between self-efficacy and the accuracy and quality of a sight-reading performance. Participants (N = 114) completed a written survey and underwent a sight-reading performance evaluation. The researcher noted that 83% of the students surveyed remarked that they would continue in band, while 8% were not sure, and 9% responded that they would not continue.

Stewart used two questions on the survey to ascertain the students' complete levels of self-efficacy for playing in band and sight-reading. The questions were "On a scale from 1-10, how well do you play?" and "On a scale from 1-10, how well do you sight-read?" (p. 33). For this study's sample, the relationships between student retention and gender, starting grade, academic achievement, interest in performing alone, playing for peers and family, teachers' perceptions of students' performance skills, and self-efficacy were non-significant. The author noted that the non-significant finding for self-efficacy differed "…from the extant psychological literature, which states that self-efficacy may influence students' and adults' thoughts, behaviors, emotional reactions, and choice of activities" (p. 100). Stewart's findings did not align with those of Klinedinst (1991) or Sandene (1997). Klinedinst used the phrase "self concept in music" to describe the students' self-perceived abilities to be successful in music, and found self concept in music played a prominent role in student retention in instrumental

music classes. Sandene (1997) reported that motivation among music students in grades 5-8 was significantly correlated to self-efficacy. The disparity among self-efficacy findings regarding student retention may be attributed to research methodology.

As Pajares (1996) remarked, mismeasurement sometimes accounts for non-significant findings in self-efficacy research. He stated, "…self-efficacy beliefs should be assessed at the optimal level of specificity that corresponds to the criterial task being assessed and the domain of functioning being analyzed" (p. 547). Bandura (2006) authored a guide for constructing scales that outlines the procedures needed to optimize the measurement of self-efficacy, and suggested that valid self-efficacy measurement scales should include domain specification and gradations of challenge.

Self-efficacy research in music has also been studied in a variety of other settings. In a qualitative study, Nelson (1997) researched self-efficacy and choral performance among high-risk adolescent males. Nelson reported that students overcame fearful and avoidance behaviors through mastery experiences, modeling, persuasion, and judgments of bodily state. In 2001, Hall investigated the effects of a computer-assisted piano instruction method on the musical self-efficacy of adults. No significant difference was found concerning musical self-efficacy, yet participants reported a heightened sense of overall confidence. Neilson (2004) studied strategies and self-efficacy beliefs of advanced instrumental and vocal music students' individual practice. The findings of this research indicated that students who are cognitively and meta-cognitively involved in music practice were more likely to be high in self-efficacy rather than low in self-efficacy. Neilson noted, "…students who perceived themselves as

able to learn or perform a task by their instrumental practice also reported using more learning and study strategies" (p. 424). Significant differences were reported in self-efficacy between males and females, yet not in regards to the students' instrument groups of degree programs. Smith (2002) studied the role of selected motivational beliefs in the process of instrumental music practice, and found that self-efficacy judgments, among other constructs, appeared to play a role in self-regulation of instrumental music practice.

Watson (2005) studied the relationships among aural imitation pedagogy, self-efficacy, and jazz improvisation achievement among college music majors ($N = 20$). For this study, Watson designed a Jazz Improvisation Attitude Survey (JIAS), which was used to measure the students' self-efficacy for jazz improvisation. Each participant met individually with the researcher for one 75 minute instructional session, during which time the students were guided through rhythm pattern and melodic pattern imitation, as well as the imitation of an exemplary jazz solo using a chord progression on the tune "Perdido."

Results showed that the post-instruction JIAS scores were significantly higher than pre-instruction scores ($p < .05$). This finding suggested that an improvisation instruction method utilizing melodic and harmonic pattern imitation, modeled solo imitation, and songs with chord progressions assisted in the raising of improvisation self-efficacy scores of college-level music students.

While not an empirical research study, one of the most cited sources of improvisation pedagogy (Aebersold, 1992) has documented the importance of self-

perception while explaining why some students choose not to improvise. Aebersold said, "I find a strong corollary between low self-esteem and those wanting to improvise but are afraid" (p.103). Although Aebersold used the term "self-esteem" in a general sense, the meaning of this message is clear. Low self-perception of efficacy in music improvisation has been intuitively identified as a positive indicator of task avoidance.

Research in the area of self-efficacy continues to expand across many disciplines. It is possible that the findings from this body of work will have tremendous impact on the sustained development of each discipline. Regarding the relationship between self-efficacy and music education, ongoing research will help identify the variables that determine the effects of self-efficacy and how music educators can be cognizant of these effects.

CHAPTER III

DESIGN AND ANALYSIS

Sample

The accessible population from which this study's experimental treatment site was chosen was a large middle school in the Memphis City School District. There were approximately 890 students enrolled in this sixth through eighth grade school at the time of this study. The ethnic composition of the school was predominantly African-American (89%), with a range of other ethnic backgrounds represented, including Hispanic (9%) and Caucasian (2%). The school's socio-economic level fell under the Title 1 status of the No Child Left Behind program. The investigation took place in April of the 2005-2006 academic school year.

Originally, there were 78 participants who agreed to undergo the experimental treatments, yet one student was absent for more than half of the treatment sessions and another student withdrew participation without explanation. Thus, there remained 76 participants for the main study. Participants for this study consisted of instrumental music students (winds and mallet percussion) at the end of their first, second, or third year of experience. There were 22 participants in their first year of study, 27 participants in their second year of study, and 27 at the end of their third year of study. All students in their third year of study and an additional seven students in their first year of study participated from 9:35-10:30, while the remaining 20 students in their second year of study participated from 1:05-2:00. Students in their first year of study participated from 10:35-11:30. Instrumentation for this study was as follows: 6 flutes;

15 clarinets; 2 bass clarinets; 8 alto saxophones; 4 tenor saxophones; 1 baritone saxophone; 13 trumpets; 8 trombones; 3 euphoniums; 1 tuba; 15 mallet percussion. Attendance rate for this study was 96 percent.

Description of Experimental Design

Research Question 1 sought to ascertain whether or not there was a significant difference between the modeling conditions of aural-only and aural/notated transcription combination on improvisation achievement. For Research Question 1, this investigation employed a posttest-only comparison group design.

Research Questions 2 and 3 sought to ascertain whether or not the improvisation treatment had a significant effect on music students' self-efficacies for improvising and for playing in an instrumental ensemble. These questions employed a one-group pretest-posttest design. All instrumental music students in this study underwent improvisation instruction and were administered self-efficacy measurements at various intervals during the course of this study. The Self-efficacy Scale for Music Improvisation (SESMI) was administered at the halfway point of the experimental treatment and at the end of the experimental treatment because improvisation experience was requisite for taking the SESMI. The Self-efficacy Scale for Instrumental Music (SESIM) was administered before and after completion of the experimental treatments sessions. The sample size for this study may not have been sufficient to ensure that total random assignment into experimental and comparison groups would result in groups with equal initial differences. Therefore, students were equally blocked

into experimental and comparison groups based on their improvisation readiness, as determined by the Harmonic Improvisation Readiness Record and Rhythmic (HIRR) Improvisation Readiness Record (RIRR) (Gordon, 1998). After taking the HIRR and RIRR, students' summed scores were ordered from high to low. Pairs of students were then assigned into experimental groups, making sure that each experimental group received members of equal improvisation readiness. Students' HIRR and RIRR scores were used for the sole purpose of purposeful assignment. There were no additional analyses computed with the HIRR and RIRR data in this study.

Description of Treatment Groups

For the purpose of this study, the audiation-based improvisation method book *Creativity in Improvisation* was chosen (Azzara, 1997). While there are many improvisation method books available, *Creativity in Improvisation* was chosen because it was designed for students in any instrumental ensemble; previous or simultaneous experience in a jazz ensemble was not required. Murphy (2004) suggested that improvisation experiences should not necessarily begin with jazz due to the complex nature of jazz chords, scales, and harmonic progressions. Rather than being a text designed for jazz improvisation, *Creativity in Improvisation* (1997) stressed the importance for improvisation for all music students by incorporating songs with a variety of musical styles, meters, and tonalities. The author of *Creativity in Improvisation* provided digital audio recordings of modeled improvisation performances that corresponded with the text.

Each student was blocked into treatment groups of either aural-only or aural/notated transcription combination. While both groups underwent the same improvisation instruction procedures, they were provided with examples of modeled improvisation solos in differing ways. The aural-only group was presented with the model improvisation performances by listening only, while the aural/notated transcription modeling group was presented with the model improvisation performances by a combination of listening and viewing notated model transcriptions. The students in each experimental condition were physically separated in the music classroom. The amount of instruction time was equal for both groups. Each time the model improvisation performances were presented to the students, numbered solo transcriptions were distributed and collected for the aural/notated transcription combination group to ensure that the aural-only group did not inadvertently receive any of the notated modeling condition.

The researcher provided all of the instruction for both treatment groups, in part to control for implementation, which can also present the possibility of an experimenter effect to a study's external validity. However, it may be important to note that all improvisation models were provided by recorded aural models and notated transcriptions.

According to each group's modeling condition, all students were presented with model improvisation performances that were used as a guide for making up their own melodies during each step of the improvisation instruction. Students learned to sing the modeled improvisation performances, and the students also participated in an analysis

of the modeled improvisation performances, in terms of melodic and rhythmic patterns, motivic developments, note embellishments, dynamics, articulations, phrasing, and uses of silence. The majority of participants had never received any vocal music training. However, all participants had at least one year of instrumental music classes that included singing was a part of the daily lesson plans. The melodic range of the tune used in this study was concert b natural (ti) to concert g natural (so). Students were instructed to sing in the octave in which they were the most comfortable.

Students in both experimental conditions underwent instruction sequenced as follows: (1) Students learn to sing the song on a neutral syllable, first without notation, then with notation. (2) Students learn to sing the bass line on a neutral syllable, first without notation, then with notation. (3) Students learn to play the song, first without notation, then with notation. (4) Students learn to play the bass line, first without notation, then with notation. (5) Students learn to perform tonal and rhythmic patterns that corresponded with the song's harmonic progression, first without notation, then with notation. Students improvise with tonal and rhythmic patterns only (in groups of no smaller than two). (6) Students have opportunities to improvise using the background accompaniment of the songs.

Improvisation treatment sessions occurred over a period of approximately two calendar weeks. Students received improvisation instruction during 10 of their normal band class periods, which were 55 minutes each. Actual improvisation instruction time was 45 minutes of each class period. Based on previous improvisation research, two calendar weeks has been determined to be a sufficient amount of time to detect

possible differences among treatment groups and also limits a maturation threat to the study's internal validity (Laughlin, 2002; Watson, 2005). Additional improvisation practice time (up to three class sessions) was allowed at the conclusion of the treatment sessions to help students feel more at ease with the recording/evaluation process.

Improvisation Readiness Records

Prior to the treatment sessions, Gordon's HIRR (1989a) and RIRR (1989b) were used to determine the students' individual improvisation readiness for the purpose of forming groups with little initial differences. After taking the HIRR and RIRR, students' summed scores were ordered from high to low. Students were then assigned into experimental groups, making sure that each experimental group received members of equal improvisation readiness. Gordon (2000) noted the HIRR and the RIRR are "…valid predictors of success in harmonic improvisation, but used together, the two tests predict such success at a higher level" (p. 22). Gordon stated that HIRR and RIRR scores are affected only minimally by music instruction, and also reported that HIRR and RIRR scores remain stable without regard to the chronological age of test participants. When Gordon compared the HIRR and the RIRR to the Advanced Measures of Music Audiation (AMMA) (1989a), no significant correlations were discovered. Concerning the HIRR and RIRR, Gordon stated that the tests are not only music aptitude tests, "but that they may be the most fundamental types of music aptitude tests thus far uncovered" (p. 59).

Reliability coefficients for the HIRR and RIRR have been recorded for middle school grades (7-8) as being .86 and .79 respectively (Gordon, 1998). The HIRR required 25 minutes to be administered, while the RIRR required 30 minutes to be administered. The digital audio musical examples were played for the students using a Superscope PAC770 professional sound system with Sony SS-MB 300 speakers, ensuring each student heard the musical examples with a high degree of clarity. The tests contained 43 nominal level items for the HIRR and 40 nominal level items for the RIRR. Each item consisted of a musical example that was either repeated exactly or with a slight variation. For each example, students answered same, not same, or do not know. Improvisation readiness scores for the HIRR and RIRR were summed to produce a number representing the students' total improvisation readiness.

The individual results of the readiness records were kept completely confidential. The students and their teachers were not informed of the results unless the information was requested individually by the parents after the study was completed.

Self-Efficacy Scales

To determine the extent to which each participant felt confident in their abilities to play a musical instrument and improvise on their instrument, self-efficacy scales were developed by the researcher. The Self-Efficacy Scale for Instrumental Music (SESIM) contained 15 statements that pertained to the musical tasks that face instrumental music students having one to three years of experience. Students rated

their level of confidence on each task on a confidence scale of 0 (*I cannot do at all*) to 5 (*I am moderately certain I can do*) to 10 (*I am certain I can do*).

Student confidence levels for each question were summed to produce a total self-efficacy rating for playing in an instrumental music ensemble. The SESIM was administered before and after completion of the experimental treatment sessions. In accordance with guidelines for administering self-efficacy scales (Bandura, 2006), students took the SESIM directly before their participation in an instrumental music class.

The SESMI contained 14 statements that pertained to the tasks that face music students who improvise. Students rated their level of confidence on each task from a scale of 0% confident to 100% confident. Student confidence levels for each question were summed to produce a total self-efficacy rating for improvising. Because improvisation experience was requisite for taking the SESMI, the SESMI was administered at the halfway point of the experimental treatment and at the end of the experimental treatment. In accordance with guidelines for administering self-efficacy scales (Bandura, 2006), both times the students were administered the SESMI, they took the measurement directly before their participation in improvisation experiences.

Improvisation Achievement Rating Scale

After the treatment sessions, the effect of the modeling conditions was measured by an evaluation of the participants' individual improvisation performances. This was achieved through participants performing an improvisation over the background

accompaniment of the song "Mary Ann." The improvisations were recorded on a Sony portable midi-disk recorder (model MZ-R30) and evaluated by a panel of three expert judges using an improvisation ratings scale (Azzara, 2006). Judges were deemed experts based upon their credentials as professional musicians, specifically in the area of improvisation. Each judge had extensive experience performing, teaching, and evaluating improvised music. One judge has been active in the Aebersold improvisation camps while another composed and published improvisation material used for the Arkansas State Band and Orchestra Association All-State jazz band auditions. Another judge also conducts a university ensemble that uses improvisation extensively. Immediately preceding the improvisation measurement, students filled out the SESIM and the SESMI.

The Improvisation Rating Scale (Azzara, 2006) consisted of two additive dimensions and two continuous dimensions. The two additive dimensions included five points for overall constructs related to improvisation and five points for expressive elements. The overall constructs related to the improvisation dimension contained a group of five statements, including statements like "the improviser performs a variety of related ideas in the context of the overall form (thus the performance contains elements of unity and variety)", "the improviser demonstrates effective use of silence", and "embellishes notes and performs variations of themes". The expressive elements dimension included statements such as, "the improviser demonstrates a sense of appropriate articulation" and "the improviser demonstrates an understanding dynamics and their use in this context."

The two continuous dimensions contained ordered, hierarchical statements for rhythmic (five points) and harmonic (five points) performances. For example, the rhythmic dimension consisted of a range of statements, beginning with "the improviser performs individual beats without a sense of the meter" (one point) and ending with "the improviser establishes a cohesive solo rhythmically" (five points.) The harmonic dimension consisted of a similar range of statements by which the judges awarded points for harmonic accuracy. Azzara (1992) used a similar scale without the addition of the five-point overall constructs related to the improvisation additive dimension. Reliability coefficients for the 1992 rating scale were reported as being .937 (Azzara, 1992). Pearson inter-rater reliability correlations for Azzara's complete improvisation scale, based on pilot data from the present study, were .79, .78, and .62 for the three judges. To increase inter-rater reliability for the full study, judges underwent an in-depth training session before student improvisation performances were rated. The training session included a detailed explanation of the rating scale. Additionally, judges analyzed a representative sample of pilot study improvisation performances to facilitate a concurrence of performance standards.

Statistical Analyses

The posttest improvisation scores were subjected to an analysis of variance to determine the effect of the modeling conditions on the improvisation achievement of intermediate instrumentalists. The pretest to posttest scores of the students' self-efficacies for music improvisation and instrumental music (SESMI and SESIM) were

subjected to two repeated measures ANOVAs to determine if the improvisation treatment resulted in significant self-efficacy effects across all participants for instrumental music and music improvisation. Due to the repeated use of a single data set, a Bonferroni adjustment lowered the significance level of .05 to .017 (.05 divided by 3) to reduce the risk of a Type 1 error.

Self-Efficacy Scale Development

Self-efficacy scales must be constructed to the specific domains of functioning that are the object of interest (Bandura, 2006). Without a careful consideration regarding self-efficacy belief structure, belief function, domain specification, and gradations of challenge, self-efficacy measurements would not produce valid findings. Self-efficacy scales for this study were developed according to the procedures outlined in Bandura's *Guide for Constructing Self-Efficacy Scales* (2006). Published self-efficacy scales used in other areas of social psychology were also consulted as the music self-efficacy scales were being developed. A literature review for instrumental music and music improvisation was conducted in order to construct self-efficacy scales that would ascertain the students' self-perceived capability to be successful at the musical tasks. The final version of the SESIM contained 15 items, while the SESMI contained 14 items. The original SESIM contained 19 items, while the original SESMI contained 24 items. After the initial self-efficacy scales were constructed, a panel of five experts was asked to review the document to establish content validity.

Each expert was asked to review both self-efficacy scales for clarity, however

specific tasks were asked of each, according to his or her area of expertise. One expert was a professor of music education at a mid-south university and was specifically chosen because of his knowledge in the field of instrumental music education and improvisation instruction. This expert was asked to review both scales to ensure representative content for instrumental music and improvisation. For the SESIM, two questions were discarded because of redundancy and two items were discarded because of their subjectivity. For the SISMI there were four items discarded because of redundancy and six items were discarded because of subjectivity. Discarded items due to redundancy included statements describing how confident the students could perceive intonation accuracy in various settings. Items discarded due to subjectivity included statements such as "I can develop musical skills when I am given new musical challenges." Minor changes were also made for consistency regarding the way statements were phrased. After two revisions with this expert, appropriate changes were made to the documents. The SESIM then contained 15 items and the SESMI contained 14 items.

Two public school instrumental music specialists were then consulted to review the documents for instrumental music and improvisation content, and were also asked to pay special attention to ensure that the language used in the self-efficacy scales was comparable to the language and vocabularies of instrumental music students who had one to three years of experience. One of the public school music specialists had six years of experience with intermediate instrumentalists, while the other had 25 years of

experience. Both of these experts were regarded as respected authorities of teaching instrumental music to intermediate band students.

Changes were made at this point, one being the addition of a question to the SESMI regarding the students' perceived ability to read rhythms correctly. Another change was the rewording of items to include specific scenarios that the students had faced. For example, one item was formerly worded, "I can overcome most problems I encounter when learning a hard piece of music." The new item gave the student a more accurate situation for which "a piece of hard music" could be perceived by being rephrased: "I can overcome most problems I encounter when learning a hard piece of music that my teacher has given me for band class." Regarding the use of language and vocabulary, an item using the word "embellish" was rephrased to read, "I can add my own musical variation to a melody." Another concern was raised about the use of the term "sight-read," but the item was left unchanged pending the outcome of a field test. After the appropriate changes were made to the SESIM and the SESMI, the SESIM increased from 15 to 16 items and the SESMI remained at 14 items.

Next, two music researchers familiar with self-efficacy research methodology were asked to review the SESIM and the SESMI to ensure that each item reflected the construct of self-efficacy as opposed to related constructs such as global self-esteem or locus of control. Also, these experts were asked to specifically check the documents to ensure that they were at an appropriate length to provide an accurate measurement of self-efficacy. Both of these experts had published self-efficacy research in music education literature. One of these experts was a music education professor and

assistant director of a school of music at a large mid-western university, and the other was an endowed chair professor of music at a large mid-western university. Because the item "I have enough talent and skill to play almost any piece of music" was too general, one self-efficacy researcher felt this would measure the global construct of self-esteem. Therefore, this item was discarded, leaving the SESIM with 15 items.

The appropriate changes were made to the scales, and then the scales were field tested by a group of 7th grade instrumental music students with one full year of experience (n = 14). The field test group was comprised of predominantly middle-class Caucasian instrumental music students with one year of experience. These students were asked to review the documents for clarity, wording, and item difficulty. Based on the comments made by the field test participants, several changes were made. For example, the levels of difficulty of the practice items on both scales were increased to avoid a ceiling effect. Bandura (2006) suggested that scale items represent gradations of challenges, and some field test participants commented that some items were too easy. Therefore, three items were re-worded slightly to increase the difficulty. The item previously worded "I can overcome most problems I encounter when learning a hard piece of music that my teacher has given me for band class" was changed to " I can always overcome the problems I encounter when learning a hard piece of music that my teacher has given me for band class." The item previously worded "I can keep a steady beat when I am playing alone" was changed to "I can keep a very steady beat when I am playing alone." Similarly, the item previously worded "I can keep a steady

beat when I am playing with others" was changed to "I can keep a very steady beat when I am playing with others."

Pilot Study

The site chosen for this study's pilot study was a suburban public school located in Northeastern Arkansas. At the time of this study, there were 1184 students enrolled in the school district (Kindergarten through Twelfth) and the ethnic composition was 97% Caucasian, 2% Hispanic, and 1% African-American. The socio-economic level of this district was lower-middle class. The investigation took place in March of the 2004-2005 academic school year. Originally, 33 students assented to participate in this study; however, one student chose to withdraw participation without explanation while another experienced a non-study related physical injury, thus hindering participation. Consequently, there were 31 students who participated in the pilot study. Of these students, 6 were at the end of their first year of instrumental study (seventh grade), 18 were at the end of their second year of study (eight grade), and 7 were at the end of their third year of study (ninth grade). First year band students rehearsed daily from 1:15 pm -2:10 pm, while second year band students rehearsed daily from 2:15 pm-3:10 pm. Third year band students rehearsed daily from 9:05 am- 10:00 am. Overall, there were 12 woodwind instrumentalists, 9 brass instrumentalists, and 10 mallet percussionists. After taking the HIRR and RIRR, students' summed scores were ordered from high to low. Students were then assigned into experimental groups, making sure that each experimental group received members of equal improvisation readiness. The

aural-only experimental group had 9 woodwind, 3 brass, and 4 mallet percussion instrumentalists. The aural-only experimental group also had 10 males and 6 females. In the aural/notated transcription modeling experimental group, there were 3 woodwinds, 6 brass, and 6 mallet percussion instrumentalists. The aural/notated transcription modeling experimental group had 8 males and 7 females.

Participants for the pilot study underwent similar procedures to that of the main study with the exception of the duration of the treatment sessions. There were only five treatment sessions, lasting approximately 55 minutes each, for the pilot study. Improvisation instruction occurred during the normal band period. Administration of the HIRR, RIRR, SESIM, and improvisation achievement measurement occurred in class prior to or following the completion of the five treatment sessions. Because improvisation experience is requisite for taking the SESMI, this test was administered midway through the treatment sessions and then again following the treatment sessions.

The pilot study results for the SESIM and SESMI underwent an analysis to help determine which items were not differentiating among respondents and to help determine which items lacked sufficient difficulty to distinguish between students' self-efficacy levels. For the pre- and post-tests, none of the items on the SESIM or SESMI factor loaded under .6. Internal consistency reliabilities were computed using Cronbach's alpha. For the SESIM pre-test, the reliability was found to be .94, while the SESMI pre-test reliability was found to be .96. For the SESIM post-test, reliability was found to be .96, while the SESMI post-test reliability was found to be .97.

Due to the repeated use of a single data set, a Bonferroni adjustment lowered the significance level of .05 to .017 (.05 divided by 3) to reduce the risk of a Type 1 error. Both eta squared and partial eta squared strength of association measurements were calculated for each research question to estimate practical significance. For each research question in this study, both eta squared and partial eta squared calculations were found to be similar. Partial eta squared is commonly reported in music education research and therefore only partial eta squared values were documented when reporting results. Cohen (1988) suggested small, medium, and large strength of association values to be .01, .06, and .14 respectively.

The first research question sought to ascertain whether there would be a significant difference between the modeling conditions of aural-only and aural/notated transcription combination on improvisation achievement. Descriptive pilot study data revealed that the skewness (.5) and kurtosis (-.8) of the improvisation achievement ratings were between + or – 1.0. George and Mallery (2003) stated that a kurtosis and skewness value "between plus or minus one is considered excellent for most psychometric purposes, but a value between plus or minus two is in many cases also acceptable" (p. 99). Additionally, a Levene's test for homogeneity of variance was not significant ($p = .16$), thus the underlying assumptions for an ANOVA were met.

Students who received the aural/notated transcription modeling condition had a mean of 22.1 ($SD = 11.3$) and students who received the aural-only modeling condition had a mean of 19.3 ($SD = 9.0$). Pilot data indicated that there was no statistically significant difference in improvisation achievement between students receiving an aural-

only modeling treatment and students receiving a combination of aural and notated transcription modeling treatment, $F(1, 29) = .6$, $p = .44$, $n^2_p = .2$.

Using partial eta squared as an effect size estimate, the modeling conditions accounted for 2% of the variability in the improvisation ratings. Cohen (1988) suggested small, medium, and large strength of association values to be .01, .06, and .14 respectively.

The second question involved the researcher-developed SESMI. The SESMI was administered halfway through the improvisation treatment sessions and after the improvisation treatment sessions. Descriptive information pertaining to the SESMI pre-test showed a range of 2 to 139 with a mean of 83.0 ($SD = 33.8$), while the SISMI post-test showed a range of 6 to 140 with a mean of 94.1 ($SD = 35.8$). Skewness for the SESMI pre-test was -.7 and the kurtosis was .5. Skewness for the SESMI post-test was -1.0 and the kurtosis was .8. George and Mallery (2003) stated that a kurtosis and skewness value "between plus or minus one is considered excellent for most psychometric purposes, but a value between plus or minus two is in many cases also acceptable." (p. 99). For a repeated measures ANOVA, sphericity must be examined as an underlying assumption; however, three or more occasions must be measured before this assumption applies. Therefore, it was determined that the underlying assumptions for a repeated measures ANOVA were met for this research question.

The second research question sought to ascertain whether or not the improvisation treatment had a significant effect on music students' self-efficacies for improvising. The pilot study data indicated that students receiving improvisation

instruction had overall increases in their self-efficacy for improvising from the SESMI pre-test mean of 83.0(*SD* = 33.8) to the SESMI post-test mean of 94.1 (*SD* = 35.8). Results from the pilot study indicated there was a statistically significant increase in the students' self-efficacy for improvising, $F(1, 30) = 10.74$, $p = .003$, $n^2_p = .26$. Using partial eta squared as an effect size estimate, improvisation instruction accounted for 26% of the variability in the SESMI. Cohen (1988) suggested small, medium, and large strength of association values to be .01, .06, and .14 respectively.

The third research question involved the researcher-developed SESIM. The SESIM was administered at the beginning and the end of the improvisation treatment sessions. Descriptive information pertaining to the SESIM pre-test showed a range of 34 to 148, with a mean of 107.2 (*SD* =29.6), while the SESIM post-test showed a range of 36 to 148 with a mean of 111.4 (*SD* =29.8). Skewness for the SESIM pre-test was -.73 and the kurtosis was .08. Skewness for the SESIM post-test was -.81 and the kurtosis was -.05. The skewness and kurtosis for each SESMI was within the plus or minus 1.0 range. George and Mallery (2003) stated that a kurtosis and skewness value "between plus or minus one is considered excellent for most psychometric purposes, but a value between plus or minus two is in many cases also acceptable." (p. 99). For a repeated measures ANOVA, sphericity must be examined as an underlying assumption; however, three or more occasions must be measured before this assumption applies. Therefore, it was determined that the underlying assumptions for a repeated measures ANOVA were met for this research question.

The third research question sought to ascertain whether or not the improvisation

treatment had a significant effect on music students' self-efficacies for playing in an instrumental ensemble. The pilot study data indicated that students receiving improvisation instruction had overall increases in their self-efficacy for playing in an instrumental ensemble from the pre-test mean of 107 (SD = 29) to the post-test mean of 111 (SD = 29). However, a repeated measures ANOVA revealed that the differences were not statistically significant at the .02 level, $F(1, 30) = 2.01$, $p = .17$, $n^2_p = .06$. Cohen (1988) suggested small, medium, and large strength of association values to be .01, .06, and .14 respectively. Using partial eta squared as an effect size estimate, improvisation instruction accounted for 6% of the variability in the SESIM.

CHAPTER IV

RESULTS

The results have been organized into four sections: (1) Improvisation Readiness (2) Self-Efficacy Scales (3) Inter-Rater Reliability, and (4) Research Questions.

Improvisation Readiness

Prior to the treatment sessions, Gordon's Harmonic Improvisation Readiness Record (1989a) and Rhythmic Improvisation Readiness Record (1989b) were used to determine the students' individual improvisation readiness for the purpose of forming groups with little initial differences. After taking the HIRR and RIRR, students' summed scores were ordered from high to low. Students were then assigned into experimental groups, making sure that each experimental group received members of equal improvisation readiness.

The mean raw score for the HIRR was 31.0 (*SD* = 6.3) and the normality was within acceptable limits (skewness = -.7; kurtosis = .2). The participants' mean raw HIRR score was at the 64th percentile rank. The mean raw score for the RIRR was 27.3 (*SD* = 6.4) and the normality was within acceptable limits (skewness = -.2; kurtosis = -.2). The participants' mean raw RIRR score was at the 50th percentile rank.

The summed raw score mean for the HIRR and the RIRR was 58.3 (*SD* = 10.3) and the normality was also within acceptable limits (skewness = -.5; kurtosis = .2). Students in the aural-only modeling group had a summed mean of 57.1 (*SD* = 10.3) while students in the aural/notated transcription modeling group had a summed mean of 59.1 (*SD* =10.2).

Self-Efficacy Scales

Before the main study, the pilot study results for the Self-Efficacy Scale for Instrumental Music (SESIM) and the Self-Efficacy Scale for Music Improvisation (SESMI) were analyzed to help determine which items were not differentiating among respondents (n= 31) and to help determine which items lacked sufficient difficulty to distinguish between students' self-efficacy levels. Pilot study participants (grades 7-9) were from a predominantly Causation suburban public school and had 1 to 3 years of instrumental music experience.

For the pilot pre- and post-tests, none of the items on the SESIM or SESMI factor loaded under .6. Internal consistency reliabilities were computed using Cronbach's alpha. For the pilot SESIM pre-test, the reliability was found to be .94, and the pilot SESMI pre-test reliability was found to be .96. For the pilot SESIM post-test, reliability was found to be .96, and the pilot SESMI post-test reliability was found to be .97.

Using the participants' data from the full study (N = 76), internal consistency reliabilities for the SESIM and SESMI were also computed using Cronbach's alpha. For the SESIM pre-test, the reliability was found to be .80, and the SESMI pre-test reliability was found to be .92. For the SESIM post-test, reliability was found to be .88, and the SESMI post-test reliability was found to be .93.

Inter-Rater Reliability

Pearson inter-rater reliability correlations for Azzara's complete improvisation scale, based on pilot data from the present study, were .79, .78, and .62 for the three

judges. To increase inter-rater reliability for the full study, judges underwent an in-depth training session before main study student improvisation performances were rated. The training session included a detailed explanation of the rating scale. As a group, judges analyzed a sample of three pilot study improvisation performances to facilitate an agreement of performance standards.

Following the improvisation treatment sessions for the main study, all students improvised to an accompaniment of the tune "Mary Ann". The song was in the key of concert C, 64 bars long, and consisted of tonic and dominant harmonic progressions. Performances were digitally recorded using a Superscope model PSD340 with Shure KSM109 microphones in a Wenger V-Room ensemble room.

For the main study, three judges rated the performances using Azzara's improvisation ratings scale (2006), which consists of two 5-point continuous tonal and rhythmic dimensions and two 5-point additive improvisation and expressive dimensions, for a total of 20 possible points. Judge one produced ratings with a mean of 9.9 (*SD* = 4.7). Judge two produced ratings with a mean of 9.8 (*SD* = 4.9). Finally, judge three produced ratings with a mean of 8.8 (*SD* = 4.4). For the main study, improved inter-rater reliabilities are documented in Table 1.

Table 1

Interrater Reliabilities for the Main Study

		Judge1	Judge2	Judge3
Judge1	Pearson Correlation	1		
	N	76		
Judge2	Pearson Correlation	.849	1	
	N	76	76	
Judge3	Pearson Correlation	.889	.906	1
	N	76	76	76

Research Questions

Due to the repeated use of a single data set, a Bonferroni adjustment was used to change the significance level of .05 to .017 (.05 divided by 3) to reduce the risk of a Type 1 error. Both eta squared and partial eta squared effect size measurements were calculated for each research question to estimate practical significance. For each research question in this study, both eta squared and partial eta squared calculations were found to be similar. Because partial eta squared is the default strength of association index reported on SPSS, partial eta squared was the only strength of association reported in this study. Cohen (1988) suggested small, medium, and large strength of association values to be .01, .06, and .14 respectively.

Research Question 1

The first research question sought to ascertain whether there would be a significant difference between the modeling conditions of aural-only and aural/notated

transcription combination on improvisation achievement. Descriptive data revealed that the skewness (.3) and kurtosis (-.7) of the improvisation achievement ratings were between + or – 1.0. George and Mallery (2003) stated that a kurtosis and skewness value "between plus or minus one is considered excellent for most psychometric purposes, but a value between plus or minus two is in many cases also acceptable" (p. 99). Additionally, a Levene's test for homogeneity of variance was not significant (p = .69), thus the underlying assumptions for an ANOVA were met. The possible range of improvisation achievement scores was 0 to 60. The actual range of improvisation achievement scores was 6 to 56. The mean for improvisation achievement was 28.5 (SD = 13.8).

Students who received the aural/transcription modeling condition had a mean of 30.7 (SD = 12.5) and students who received the aural-only modeling condition had a mean of 26.3 (SD = 14.4). There was no statistically significant difference in improvisation achievement between students receiving an aural-only modeling treatment and students receiving a combination of aural and notated transcription modeling treatment, $F(1, 74) = 2.1$, $p = .16$, $n^2_p = .03$. Using partial eta squared as an effect size estimate, the modeling conditions accounted for 3% of the variability in the improvisation ratings. Cohen (1988) suggested small, medium, and large strength of association values to be .01, .06, and .14 respectively.

Research Question 2

The second research question sought to ascertain whether or not the

improvisation treatment had a significant effect on music students' self-efficacies for improvising. Self-efficacy for music improvisation was measured using the researcher-developed SESMI. The SESMI was administered halfway through the improvisation treatment sessions and after the improvisation treatment sessions. Descriptive information pertaining to the SESMI pre-test showed a scoring range of 15 to 135 with a mean of 96.5 (*SD* =25.5), while the SISMI post-test showed a scoring range of 22 to 140 with a mean of 104.5 (*SD* =24.6).

The SESMI items with the largest mean gains were: (7) *I can make up good sounding music when I am playing by myself*, which increased from a mean of 7.2 to 7.8; (9) *I would feel comfortable teaching others what I know about improvisation*, which increased from a mean of 5.7 to 6.6; and (11) *I can make up good sounding music when I am playing in front of others*, which increased from a mean of 6.3 to 7.0.

Skewness for the SESMI pre-test was -1.0 and the kurtosis was 1.3. Skewness for the SESMI post-test was -.8 and the kurtosis was .7. The skewness and kurtosis for each SESMI was within the plus or minus 1.0 range. George and Mallery (2003) stated that a kurtosis and skewness value "between plus or minus one is considered excellent for most psychometric purposes, but a value between plus or minus two is in many cases also acceptable" (p. 99). For a repeated measures ANOVA, sphericity must be examined as an underlying assumption; however, three or more occasions must be measured before this assumption applies. Therefore, it was determined that the underlying assumptions for a repeated measures ANOVA were met for this research question.

The SESMI pre-test mean was 96.5 (*SD* = 25.5), and the SESMI post-test mean was 104.5 (*SD* = 24.6). Results from this study indicated there was a statistically significant increase in the student' self-efficacy for improvising, $F(1, 75) = 14.57$, $p = .0003$, $n^2_p = .16$. Using partial eta squared as an effect size estimate, improvisation instruction accounted for 16% of the variability in the SESMI. Cohen (1988) suggested small, medium, and large strength of association values to be .01, .06, and .14 respectively.

Research Question 3

The third research question sought to ascertain whether or not the improvisation treatment had a significant effect on music students' self-efficacies for playing in an instrumental ensemble. Self-efficacy for instrumental music was measured using the researcher-developed SESIM. The SESIM was administered at the beginning and the end of the improvisation treatment sessions. Descriptive information pertaining to the SESIM pre-test showed a scoring range of 52 to 150 with a mean of 112.4 (*SD* =20.3), while the SESIM post-test showed a scoring range of 62 to 150 with a mean of 118.1 (*SD* =20.7).

The SESIM items with the largest mean gains were: (8) *It would be easy for me to learn to play a new instrument*, which increased from a mean of 6.2 to 7.2; (13) *I can sight-read hard music without stopping*, which increased from a mean of 5.3 to 6.9; and (14) *When I am reading music, I can play most rhythms correctly*, which increased from a mean of 7.4 to 8.1.

Skewness for the SESIM pre-test was -.7 and the kurtosis was .5. Skewness for the SESIM post-test was -.6 and the kurtosis was -.6. The skewness and kurtosis for the pretest and posttest SESIM data were within the plus or minus 1.0 range. George and Mallery (2003) stated that a kurtosis and skewness value "between plus or minus one is considered excellent for most psychometric purposes, but a value between plus or minus two is in many cases also acceptable" (p. 99). For a repeated measures ANOVA, sphericity must be examined as an underlying assumption; however, three or more occasions must be measured before this assumption applies. Therefore, it was determined that the underlying assumptions for a repeated measures ANOVA were met for this research question.

The SESIM pre-test mean was 112.4 (SD =20.3), while the SESIM post-test mean was 118.0 (SD =20.7). Results from this study indicated there was a statistically significant increase in the students' self-efficacy for instrumental music, $F(1, 75) = 11.98$, $p = .001$, $n^2_p = .14$. Using partial eta squared as an effect size estimate, improvisation instruction accounted for 14% of the variability in the SESIM. Cohen (1988) suggested small, medium, and large strength of association values to be .01, .06, and .14 respectively.

CHAPTER V

CONCLUSIONS AND RECCOMENDATIONS

Purposes

In improvisation instruction, aural models and notated transcription models are widely accessible to students and commonly used by improvisation teachers. Little is known, however, about which types of models are best suited for musicians with little improvisation experience. The first purpose of this study was to investigate whether the modeling conditions of aural-only and aural/notated transcription produced differences on improvisation achievement.

The field of psychology has produced a wide array of findings concerning the effects of self-efficacy on human thought and behavior. In social cognitive theory, the role of self-efficacy has been said to be central to one's decisions of participation, effort, and persistence (Bandura, 1986). In the field of music, however, there has been little previous research concerning the role of self-efficacy in improvisation or instrumental music. Therefore, another purpose of this study was to investigate whether music learning theory-related improvisation instruction had an effect on students' self-efficacy for improvisation and instrumental music.

Design and Analyses

For Research Question 1, this investigation employed a posttest-only comparison group design. Students were blocked into experimental groups based on their improvisation readiness scores, as determined by the Harmonic and rhythmic

Improvisation Readiness Records (Gordon, 1988). The posttest improvisation scores were subjected to an Analysis of Variance to determine the effect of the modeling conditions on the improvisation achievement of intermediate instrumentalists.

Research Questions 2 and 3 employed a one-group pretest-posttest design. The pretest to posttest scores of the students' self-efficacies for music improvisation and instrumental music were subjected to two repeated measures ANOVAs to determine if the improvisation treatment resulted in significant self-efficacy effects across all participants for instrumental music and music improvisation.

Research Questions

1. Was there a significant difference between the modeling conditions of aural-only and aural/notated transcription combination on improvisation achievement?

For instrumentalists in the current study with one to three years of experience, it was found that there were no significant differences on improvisation achievement between the modeling conditions of aural-only and aural/notated transcription combination. The finding from the present study aligns with the conclusions of Gendrich (2003). Gendrich surveyed trombone professors and improvisation teachers and found that providing a) aural models and b) notated transcriptions were both valued by those surveyed for the acquisition of improvisation skills. This result did not support the findings of Laughlin (2001) who compared the effectiveness of aural and notated methods of improvisation instruction and found the aural group produced significantly higher performance scores than did the notated group. Laughlin suggested the use of a

predominantly aural jazz pedagogy method for harmonic skill acquisition. As part of Laughlin's study, students in the aural group listened to a recorded improvisation model, while the notated group practiced the solo from a notated transcription. It is possible that for the current study, the combination of aural and notated models did not produce the extreme differences between groups that were found in Laughlin's study.

Modeling has been an educational tool used in improvisation learning for as long as musicians have improvised. Both aural and notated uses of modeling have been advocated for improvisation learning. The current study's research finding suggests that either the condition of aural-only or aural/notated transcription could be used with intermediate level instrumentalists, with possibly equal results.

Presenting notated transcription models does present possible pragmatic obstacles. It may be difficult for teachers to acquire notated transcriptions that are appropriate for the music reading level of intermediate level students. Model notated improvisation transcriptions are readily available for advanced improvisers with high level reading abilities, especially in the area of jazz solo transcriptions. For beginning or intermediate improvisers with lesser reading ability, however, notated improvisation models are not as accessible. Once notated transcription models are acquired, an additional challenge for classroom instrumental music teachers may possibly include having to transpose the transcription for the instruments' respective keys, ranges, and clefs.

Based on observations during this study, teachers who want to present notated improvisation models but who are concerned with pragmatic obstacles may wish to

consider limiting the scope of the notated model. Teachers might want to consider presenting notated models in segments. By isolating particularly beneficial modeling segments, pragmatic difficulties of notated modeling, such as transposition and range issues, may be reduced and students' attention may be more focused on the teacher's specific learning objective. Hodges (1974) commented that presenting aural models to students without active directed listening may be ineffective. Presenting notated transcription models to students in addition to aural models may assist in engaging improvisation learners.

2. Did the music learning theory-related improvisation treatment have a significant effect on the students' self-efficacies for music improvisation?

In the current study, there was a significant increase in self-efficacy scores for improvisation following the music learning theory-based improvisation instruction for students with one, two, and three years of instrumental music experience. Bandura (1986) noted that positive self-efficacy can influence the amount of effort and resiliency people display while undergoing activities. According to social cognitive theory (Bandura, 1986), a student with confidence for improvisation may be influenced to set higher goals, expend greater effort, and be more resilient when experiencing difficulties. For this study, students' self-efficacy for improvising was raised following the improvisation instruction.

This finding aligns with Watson (2005) who found that an improvisation method utilizing melodic and harmonic pattern imitation, modeled solo imitation, and songs with chord progressions assisted in the raising of improvisation self-efficacy scores of

college-level music students. Additionally, this finding aligns with Ozer and Bandura's theory (1990) that self-efficacy can be gained through experiences that facilitate a sense of personal control and skill acquisition. This finding also aligns with Bergee and Grashel (2002), who concluded that self-efficacy beliefs could be strengthened under favorable conditions. The increase in self-efficacy found in the current study was not, however, in alignment with Hall (2001), who found no significant difference in the musical self-efficacy of adults following computer-assisted piano instruction.

In descriptively looking at the individual questions on the self-efficacy for improvisation measurement tool, it was noted that participants reported the greatest amount of gained confidence for improvisation in the area of peer tutoring. The specific Self-Efficacy Scale for Music Improvisation (SESMI) item with the largest individual mean gain was: *I would feel comfortable teaching others what I know about improvisation*. Genrich (2003) concluded that improvisers learning from peers can "often be more effective and motivational than instruction coming from an authority figure" (p. 89). This finding seems to confirm the intuitive thought that if students are guided through improvisation learning activities, they may be more likely to have the confidence to model for other students.

Because self-efficacy has been found to be an important predictor of achievement (McCormick & McPherson; 2003, 2005), it may be important to ascertain what type of improvisation instruction activities can assist in the development of self-efficacy. The music learning theory-based improvisation approach used in this study involved improvising rhythmic, tonal, and melodic patterns with harmonic progressions.

For young or inexperienced instrumentalists, this approach may be viewed as more difficult than improvisation approaches which involve simple explorations with sustained harmonic accompaniments. However, for the participants in this study, music learning theory-based improvisation instruction assisted in developing, not hindering, the students' confidence for improvising.

3. Did the music learning theory-related improvisation treatment have a significant effect on the students' self-efficacies for instrumental music?

There was a significant increase in self-efficacy scores for instrumental music following improvisation instruction. Researchers have called for studies that identify classroom practices that have positive influences on students' self-efficacy for instrumental music (Sandene, 1997; Watson, 2005). Bandura (2006) outlined the importance of self-efficacy by commenting that positive self-efficacy beliefs can influence people to think self-enhancingly and optimistically.

For the participants in this study, improvisation instruction had a positive influence on the students' self-efficacy for instrumental music. In line with social cognitive theory, a student with confidence in band may be influenced to set higher goals, expend greater effort, and be more resilient when experiencing difficulties. Additionally, band students with positive self-efficacy beliefs may be influenced to think self-enhancingly and optimistically.

While there have been no highly related investigations for which comparisons can be made, this finding supports research that connects improvisation instruction to advances in non-improvisation musical tasks (Azzara, 2002; McDaniel, 1974; Montano,

1983; McPherson, Bailey, & Sinclair, 1997). While the study of improvisation may be valuable in its own right, it may be concluded based on the results of this study that improvisation instruction may raise intermediate students' self-efficacy for instrumental music and improvisation as well.

In descriptively looking at the individual questions on the self-efficacy for instrumental music measurement tool, it was noted that participants reported the greatest amount of gained confidence for instrumental music in the area of sight-reading. The specific Self-Efficacy Scale for Instrumental Music (SESIM) item with the largest individual mean gain was: *I can sight-read hard music without stopping*. Improvisation instruction and sight-reading have been previously linked by Montano (1983), who found that students participating in an improvisation treatment demonstrated greater achievement in terms of rhythmic accuracy in sight-reading than the students who did not receive the treatment. The present study's findings produced self-efficacy gains for sight-reading opposed to achievement gains for sight-reading, yet the link between improvisation and sight-reading still may have been highlighted.

In the present study, improvisation instruction was presented to intermediate instrumental music students (wind and mallet percussion) in a classroom setting. Many music educators associate improvisation as a jazz ensemble-only phenomenon. Publications from the Music Educators National Conference (1996) and the National Association of Schools of Music (2003) have advocated the study of improvisation as an integral component of music instruction, and not just for students of jazz. The National Standards for Music Education include improvising melodies, variations, and

accompaniments, yet a single stylistic reference is absent (Consortium of National Arts Education Associations, 1994). The findings of this study may lend support to the feasibility of using improvisation instruction for instrumental classroom use, as opposed to improvisation instruction for jazz settings only. While the instruction used in this study was predominantly comprised of improvisation activities, it may also be beneficial to utilize classroom improvisation activities as an integral part of traditional classroom instruction rather than as a separate unit of study.

Another issue of possible interest concerned the informally observed success of two percussion students. These particular participants had expressed little interest in any music learning activities throughout the course of the calendar school year and were frequently the source of behavioral problems. Although the students were in their third years of music instruction, little music achievement was evident. However, during improvisation instruction, these students excelled and their improvisation scores were among the highest rated of all participants. It is possible that 'traditional' instrumental music instruction could not keep the attention of these participants, and improvisation activities allowed the students to experience music in a way that was more engaging and more meaningful. Clearly, there is much research still needed in the area of improvisation in order for music educators to fully comprehend this complicated issue.

Limitations and Concerns

The SESMI and SESIM were developed according to guidelines set forth by Bandura (2006) and were deemed to be valid instruments for determining students'

confidence for improvisation and instrumental music. While these scales were developed for students with one to three years of instrumental music experience, revisions could be made to adapt the scales for other levels of musical experience. The SESMI and SESIM were designed for instrumental music settings that are typically associated with a traditional concert band (wind and mallet percussion). Revisions could also be made to each self-efficacy measurement instrument to adapt the scales to string, keyboard, or vocal settings.

Concerning the non-significant findings between the modeling conditions of aural-only model and aural/notated transcription model, one may need to consider the reading level of the musicians. It is possible that the potential benefit of the notated model may be diminished if the reading level of the student is lower than the difficulty level of the music. For the students in the present study, it may be possible that the difficulty level of the notated transcription (Appendix J) was more advanced than the reading level of some of the players, thereby reducing possible differences that would have occurred if the transcribed model were within the reading level of all students.

A possible limitation to this study involves the key chosen for the song used in the improvisation instruction. The key of concert C was partially chosen because string instrumentalists were originally going to be included in the study, and concert C would have been a compromise suitable for both string and wind instrumentalists. Scheduling conflicts prohibited the use of string instrumentalists, yet concert C was retained as the key for instruction. It is possible that intermediate students, particularly students at the

end of their first year of experience, may have experienced unintended challenges in relation to the key signature of the song.

Another possible limitation to this study involves the length of the experiment. The 10 treatment session design may not have been a sufficient amount of time to detect possible differences between treatment groups. Although significant gains in self-efficacy were found in this study, there are possible threats to validity posed by a one-group pretest-posttest design that should be noted. Due to sample size limitations, no control group was used in this study to determine if self-efficacy gains would have become evident as a result of normal instruction.

Internal validity threats that are possible in this study include history, maturation, testing, location, implementation, and attitude. It is possible, regarding a history threat, that students experienced events unrelated to the experimental treatment that positively influenced their self-efficacy for improvising and/or instrumental music. Also possible was that the gains in self-efficacy would have happened naturally as the children matured during a 10 treatment session experiment. According to social cognitive theory however, mere exposure to any one activity may not assure raised self-efficacy levels for that activity. Self-efficacy levels may increase or decrease depending on an interdependence of several factors (Bandura, 1986).

Regarding testing, it is possible that the self-efficacy pre-test made students aware of their confidence levels during the treatment sessions, and therefore affected their responses on the posttest. Regarding the implementation threat to internal validity, it may have been possible that the results of the study were due to the

researcher's implementation of the study as opposed to the actual experimental treatment itself. Regarding location, it may also be possible that the research setting caused the study's results instead of the content of the instruction. Another possible validity threat concerns the participants' attitude toward being involved in a research study. It is possible that the participants were especially excited about being a part of a research study thereby causing an increase in self-efficacy.

Recommendations for Future Research

The value of differing modeling conditions may be dependent upon a variety of factors. While this study found that there were no significant differences on improvisation achievement between the modeling conditions of aural-only and aural/notated transcription combination, still more research is needed to determine which types of modeling conditions may be most beneficial for students learning to improvise. It may be possible that students with low confidence in their ability to improvise may benefit from multiple modeling conditions. Additionally, more improvisation modeling research may be needed to include musicians of both less advanced and more advanced achievement levels. It could be possible that students of varied achievement levels would benefit differently as a result of varied modeling conditions. The scope of this study was pragmatically limited to three research questions. Therefore, factors such as learning styles, self-efficacy levels, learning environments, and achievement levels need to be studied in future research.

The current study focused on a music learning theory-based improvisation approach with intermediate wind and mallet instrumentalists. Future research that examines differing modeling conditions could be expanded to include different concepts of improvisation, such as improvisation in general music or jazz improvisation. Conceptual definitions of improvisation are diverse, and research findings for any one concept may not be easily generalized to other concepts.

Regarding the results of this study, a possible explanation for the increased confidence for improvising and instrumental music may be attributed to the students undergoing music learning theory-related activities, such as the use of singing tonal and rhythmic patters and learning songs and bass lines by rote. Future researchers may wish to consider replicating the self-efficacy portion of this study with different improvisation approaches to investigate whether similar self-efficacy gains would follow.

Also of importance for future modeling research in music education may be the concept of abstract modeling. An abstract approach to modeling can encourage generative and innovative behaviors in contrast to the simple recreation of modeled behaviors. Whether or not students use imitation or abstract modeling may be important in the development of improvisation skills. Research comparing abstract modeling to model imitation is needed to determine the most effective approach to modeling.

As self-efficacy research in music education expands, validation of domain specific self-efficacy measurements is needed. The SESMI, SESIM, and other self-

efficacy measurements may need to be examined in relation to differences between the self-efficacy beliefs of differing ethnicities and school settings.

Following improvisation instruction, students in the current study reported heightened confidence levels for sightreading. Future researchers may wish to consider measuring students' actual sightreading achievement before and after improvisation instruction to investigate whether heightened confidence for sightreading actually resulted in sightreading achievement gains. Little is currently known about the long lasting effects of improvisation on instrumental music students' self-efficacy. To determine the lasting effects of improvisation instruction on students' self-efficacy, similar studies would need to consider a repeated measures design that tests intervals immediately before and after instruction, as well as staggered time periods following instruction. Continued research into the lasting effects of self-efficacy may need to be investigated in terms of motivation and student retention. Student retention in music organizations is a topic of concern for many educators. Research examining effects of self-efficacy on music student retention has produced mixed results. The link between student retention and self-efficacy may need further examination.

In closing, it should be noted that experimental improvisation research is still relatively young and in need of expansion. Conceptual definitions of improvisation are diverse, and teaching approaches are equally varied. Many students, even when presented the opportunity to improvise, will refuse to participate in such a personal musical undertaking. For self-doubting students, a lack of self-efficacy for improvising may prove to be a hurdle too large to overcome without careful instruction. Self-efficacy

in music education research, compared to many other fields of inquiry, is also young and in need of expansion. Continued self-efficacy research may lead to teaching approaches that facilitate meaningful participation for a greater number of music learners.

APPENDIX A

SELF-EFFICACY SCALES

SELF-EFFICACY GUIDE AND INSTRUCTIONS
FOR INSTRUMENTAL MUSIC AND IMPROVISATION

This questionnaire contains questions designed to gauge how confident you are at doing tasks at the present time. There is no right or wrong response to these questions. How you respond depends on how confident you feel you are at doing these tasks.

How to answer:

For each item there is a space for you to write your response in a space after each question. Rate how **confident** you are that you can do them **as of now**. Rate your degree of confidence by writing a number from 0 to 10 using the scale given below:

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately certain can do					Certain can do

Answer every item and do not spend too long on each item.

Your answers are CONFIDENTIAL.

Thank you for your cooperation.

Practice Items

If you were asked to lift objects of different weights right now, how confident are you that you can lift each of the weights described below?

PHYSICAL STRENGTH	CONFIDENCE (0-10)
I can lift a **5** pounds brick.	_____
I can lift a **10** pound brick.	_____
I can lift a **50** pound brick.	_____
I can lift a **100** pound brick.	_____
I can lift a **200** pound brick.	_____

SELF-EFFICACY SCALE FOR INSTRUMENTAL MUSIC

0 1 2 3 4 5 6 7 8 9 10

Cannot do at all — Moderately certain can do — Certain can do

Please rate your confidence regarding the following statements:

	Confidence Rating (0-10)
1. I can overcome most problems I encounter when learning a hard piece of music that my teacher has given me for band class.	_____
2. I can keep a steady beat when I am playing alone.	_____
3. I can sing or play in tune when performing with a small group.	_____
4. I am good at most things we do in band.	_____
5. Even when a musical task is very hard, I can stick to the problem until I succeed.	_____
6. It is easy for me to tell when other students are playing out of tune.	_____
7. I can keep a steady beat even when I am playing with others.	_____
8. It would be easy for me to learn to play a new instrument.	_____
9. Overall, I can play my instrument with a good sound.	_____
10. I would feel comfortable teaching others what I know about playing my musical instrument.	_____
11. If I start sounding bad, I can keep on trying until I get it right.	_____
12. Even when playing very softly or loudly, I can play a instrument with a good sound.	_____
13. I can sight-read hard music without stopping.	_____
14. When I am reading music, I can play most rhythms correctly.	_____
15. When I am performing with a group, I can tell when other students are having trouble playing with good musical style (getting loud and soft, tonguing and slurring, phrasing).	____

SELF-EFFICACY SCALE FOR MUSIC IMPROVISATION

0 1 2 3 4 5 6 7 8 9 10

Cannot do at all — Moderately certain can do — Certain can do

Please rate your confidence regarding the following statements:

	Confidence Rating (0-10)
1. When I am being taught how to improvise, I am a quick learner.	_____
2. I can improvise melodies that sound good to me.	_____
3. My improvised melodies show what I have learned about music.	_____
4. When I improvise, I can keep a steady beat while listening to the rhythm of the music.	_____
5. When I improvise, I can use notes that blend together with the music.	_____
6. Even when my improvisation starts sounding bad, I can keep playing and end up sounding good.	_____
7. I can make up good sounding music when I am playing by myself.	_____
8. When I improvise, I can forget about how others think that I sound.	_____
9. I would feel comfortable teaching others what I know about improvisation.	_____
10. If I think of how a song goes in my head, I can learn to play it without having to read the music.	_____
11. I can make up good sounding music when I am playing in front of others.	_____
12. I can add my own musical variation to a melody.	_____
13. I can tell when the chords change in the music.	_____
14. When improvising, I can come up with a variety of musical ideas.	_____

APPENDIX B

INSTITUTIONAL REVIEW BOARD PERMISSION MATERIAL

UNT
UNIVERSITY OF
NORTH·TEXAS

Office of Research Services

February 27, 2006

Dru Davison
Department of Music
University of North Texas

Institutional Review Board for the Protection of Human Subjects in Research (IRB)
RE: Human Subject Application #05-078

Dear Mr. Davison:

The UNT IRB has received your request to modify your study titled "The Role of Self-Efficacy and Modeling in Improvisation: The Effects of Aural and Aural/Notated Modeling Conditions on Intermediate Instrumental Music Students' Improvisation Achievement." As required by federal law and regulations governing the use of human subjects in research projects, the UNT IRB has examined the requested modifications. The modifications to this study are hereby approved for the use of human subjects. **Approval for this project is March 23, 2005 through March 22, 2006.**

Enclosed is the consent document with stamped IRB approval. Please copy and **use this form only** for your study subjects.

It is your responsibility according to U.S. Department of Health and Human Services regulations to submit annual and terminal progress reports to the IRB for this project. Please mark your calendar accordingly. The IRB must also review this project prior to any other modifications made. **Federal policy 21 CFR 56.109(e) stipulates that IRB approval is for one year only.**

Please contact Shelia Bourns, Research Compliance Administrator, at (940) 565-3940, or Boyd Herndon, Director of Research Compliance, at (940) 565-3941, if you wish to mak changes or need additional information.

Sincerely,

Scott Simpkins, Ph.D.
Chair
Institutional Review Board

Parental Consent Form (Full Study)

University of North Texas
Institutional Review Board
Research Consent Form

Title of Study
The Role of Self-Efficacy and Modeling in Improvisation: The Effects of Aural and Aural/Notated Modeling Conditions on Intermediate Instrumental Music Students' Improvisation Achievement.

Principal Investigator: Dru Davison

I am the band director at Hickory Ridge Middle School, and I am also a student at the University of North Texas working on my doctoral degree in music education. I am particularly interested in investigating the ways music students learn to improvise and also the self-perceptions that students have about their ability to play a musical instrument. Improvisation is a musical skill that has been identified as being an important aspect of music learning. A teaching technique often used to help students learn to improvise is modeling, or providing examples of desirable performances. There are several ways that teachers use modeling, but little is know about which ways represent the most effective means of learning. I will be conducting a research study that investigates the effectiveness of different modeling conditions. Also, I will investigate the students' self-perceptions regarding their ability to play an instrument and improvisation and how these feelings relate to music learning. I am seeking your permission to enroll your child as a participant in this study.

If you decide to allow your child to participate in this study, this is what will happen:

1. Students will fill out brief questionnaires that measure their perceived ability to achieve at musical tasks. Students will fill this out before and after undergoing improvisation instruction.
2. Students' readiness for improvisation instruction will be measured using a published test that takes no more than 55 minutes to administer. Students will be assigned to equal groups based on the results of this test. The students' test results are completely confidential. The students and their teachers will not be informed of the results unless the information is requested individually by the parents after the study is completed.
3. The students will receive improvisation instruction during their normal band period. This instruction will last for approximately two weeks. During this time, students will learn to play songs by ear, and then learn to play them by reading the music. Next, they will learn to play tonal and rhythmic patters that correspond with the songs. Finally, students will improvise their own melodies. During each step, the students will be presented with model improvisation performances that will be used as a guide for making up their own melodies.

4. At the end of the study, individual student improvisation performances will be recorded and later evaluated by a panel of judges. Again, each performance will be anonymous and results will be strictly confidential.

Participation in this study is voluntary. Your decision whether or not to allow your child to participate will not affect your child's grade or their relationship with the band director or other school officials. If you decide to allow your child to participate, you are free to withdraw your consent and discontinue participation at any time without penalty. This study will be conducted during regular school hours and will be conducted without any financial cost to the students, parents, or school district. Memphis City Schools and Hickory Ridge Middle School administrators have agreed to the terms of this study and are willing to be flexible regarding the instruction time required by this study.

All data collected for this study become the property of the researchers. Any information that is obtained in connection with this study and that can be identified with your child will remain confidential. Data will be handled according to the guidelines of the American Psychological Association and the University of North Texas.

By allowing your child to participate in this study, you are contributing to primary research on the nature of music learning. If schools are to adequately teach music students according to the national music standards, the skill of improvisation must be investigated systematically. This study may provide music educators with a better understanding of how to teach improvisation, and perhaps provide further reasons for why improvisation should even be taught to all music students. I would like to stress that your child will never be put into harm during the course of this study.

Due to the statistical procedures that will be used in this study, it is important that as many students as possible participate. If you have any question, please feel free to contact me (Dru Davison,) or the UNT music education department chair (Dr. Debbie Rohwer,). If you have question regarding your child's rights as a research participant, you may contact the UNT IRB office at or . You will be offered a copy of this letter for your personal records.

Your signature indicates that you have read and understand the information provided above, that you willingly agree to allow your child to participate, that you may withdraw your consent at any time and discontinue participation without penalty, that you will receive a copy of this form, that you are not waiving any legal claims, rights or remedies. I would personally like to thank you for considering letting your child participate in this study.

_____ _____

Signature of Parent or Legal Guardian **Date**

_____

Name of Student

Student Assent Form (Full Study)

University of North Texas
Institutional Review Board
Research Assent Form

Title of Study
The Role of Self-Efficacy and Modeling in Improvisation: The Effects of Aural and Aural/Notated Modeling Conditions on Intermediate Instrumental Music Students' Improvisation Achievement.

Principal Investigator: Dru Davison

I am doing a study to find out what kinds of modeling are best for learning to improvise music. During the study, you and your classmates will learn different ways of improvising. You will also be presented with recorded examples of how experts improvise. You will also be asked to give your opinions on several music related topics. Thanks for your help with this study.

Assent of Child
The Child named has agreed to participate in the study mentioned above.

_____ _____

Signature of Participant **Date**

Parental Consent Form (Pilot Study)

University of North Texas
Institutional Review Board
Research Consent Form

Title of Study
The Role of Self-Efficacy and Observational Learning in Improvisation: The Effects Aural and Aural/Notated Modeling Conditions on Intermediate Instrumental Music Students' Improvisation Achievement.

Principal Investigator: Dru Davison

I am a student at the University of North Texas working on my doctoral degree in music education. I am particularly interested in investigating the ways music students learn to improvise and also the self-perceptions that students have about their ability to play a musical instrument. Improvisation is a musical skill that has been identified as being an important aspect of music learning, and modeling is often used to help students learn to improvise. There are several ways that teachers use modeling, but little is known about which ways represent the most effective means of learning. I will be conducting a research study that investigates the effectiveness of different modeling conditions. Also, I will investigate the students' self-perceptions regarding their ability to play an instrument and improvisation and how these feelings relate to music learning. I am seeking your permission to enroll your child as a participant in this study.

If you decide to allow your child to participate in this study, this is what will happen:

5. Students will fill out brief questionnaires that measure their perceived ability to achieve at musical tasks. Students will fill this out before and after undergoing improvisation instruction.
6. Students' readiness for improvisation instruction will be measured using a published test that takes no more than 55 minutes to administer. Students will be assigned to equal groups based on the results of this test. The students' test results are completely confidential. The students and their teachers will not be informed of the results unless the information is requested individually by the parents after the study is completed.
7. The students will receive improvisation instruction during their normal band period. This instruction will last for approximately one week. During this time, students will learn to play songs by ear, and then learn to play them by reading the music. Next, they will learn to play tonal and rhythmic patters that correspond with the songs. Finally, students will improvise their own melodies. During each step, the students will be presented with model improvisation performances that will be used as a guide for making up their own melodies.
8. At the end of the study, individual student improvisation performances will be recorded and later evaluated by a panel of judges. Again, each performance will be anonymous and results will be strictly confidential.

Participation in this study is voluntary. Your decision whether or not to allow your child to participate will not affect your child's grade or their relationship with the band director. If you decide to allow your child to participate, you are free to withdraw your consent and discontinue participation at any time without penalty. This study will be conducted during regular school hours and will be conducted without any financial cost to the students, parents, or school district. The band director and school administration have agreed to the terms of this study and are willing to be flexible regarding the instruction time required by this study.

All data collected for this study become the property of the researchers. Any information that is obtained in connection with this study and that can be identified with your child will remain confidential. Data will be handled according to the guidelines of the American Psychological Association and the University of North Texas.

By allowing your child to participate in this study, you are contributing to primary research on the nature of music learning. If schools are to teach music students adequately according to the national music standards, the skill of improvisation must be investigated systematically. This study may provide music educators with a better understanding of how to teach improvisation, and perhaps provide further reasons for why improvisation should be taught to all music students. I would like to stress that your child will never be put into harm during the course of this study.

Due to the statistical procedures that will be used in this study, it is important that as many students as possible participate. If you have any question, please feel free to contact me (Dru Davison,) or the UNT music education department chair (Dr. Debbie Rohwer,). If you have question regarding your child's rights as a research participant, you may contact the UNT IRB office at or . You will be offered a copy of this letter for your personal records.

Your signature indicates that you have read and understand the information provided above, that you willingly agree to allow your child to participate, that you may withdraw your consent at any time and discontinue participation without penalty, that you will receive a copy of this form, and that you are not waiving any legal claims, rights or remedies. I would personally like to thank you for considering letting your child participate in this study.

_____ _____

Signature of Parent or Legal Guardian **Date**

_____

Name of Student

Student Assent Form (Pilot Study)

University of North Texas
Institutional Review Board
Research Assent Form

Title of Study
The Role of Self-Efficacy and Observational Learning in Improvisation: The Effects Aural and Aural/Notated Modeling Conditions on Intermediate Instrumental Music Students' Improvisation Achievement.

Principal Investigator: Dru Davison

I am doing a study to find out what kinds of modeling are best for learning to improvise music. During the study, you and your classmates will learn ways of improvising. You will also be presented with recorded examples of how experts improvise. You will also be asked to give your opinions on several music related topics. Thanks for your help with this study.

Assent of Child
The Child named has agreed to participate in the study mentioned above.

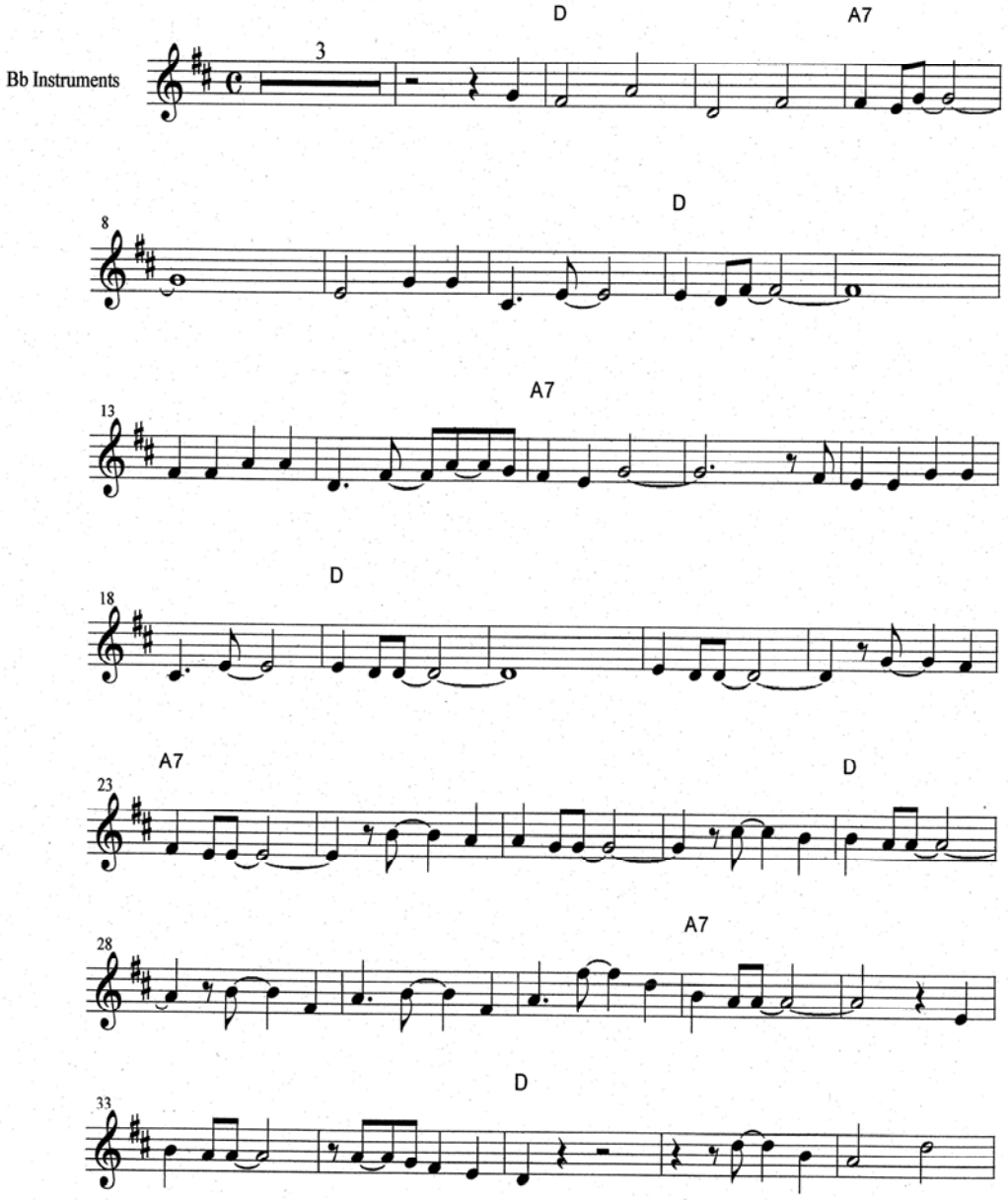
_____ _____

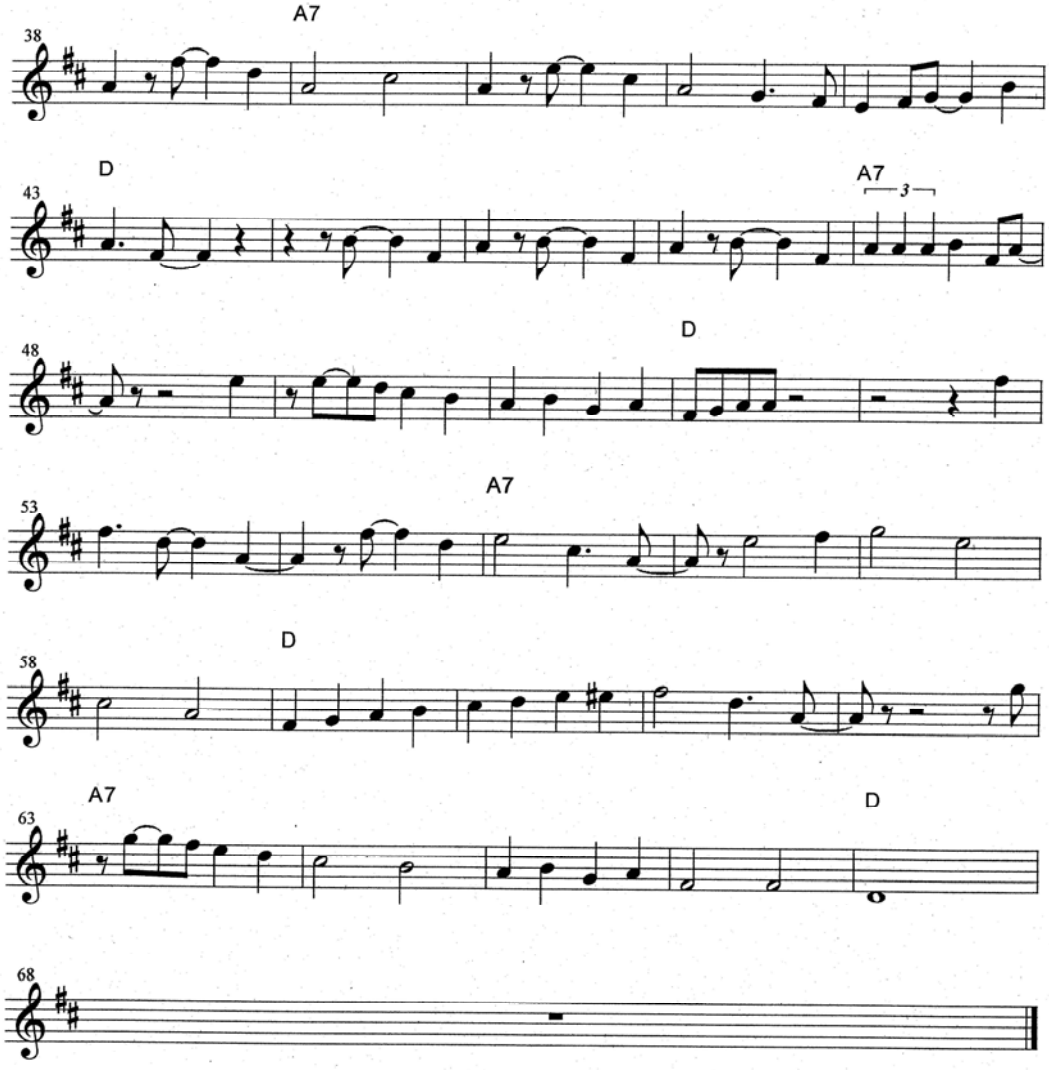
Signature of Participant **Date**

APPENDIX C

TRANCRIBED SOLO FOR Bb INSTRUMENTS

Transcribed Improvisation Solo Transposed For Bb Instruments




A7
38
D
43
A7
3
D
48
A7
53
D
58
A7
63
D
68

REFERENCES

Aitken, A. E. (1976). A self-instructional audio-imitation method designed to teach trumpet students jazz improvisation in the major mode (Doctoral dissertation, University of Oregon, 1975). *Dissertation Abstracts International, 37,* 18.

Aebersold, J. (1992). *How to play jazz and improvise* (6th ed.). New Albany, IN: Aebersold Publications.

Anderson, J. N. (1981) Effects of tape-recorded aural models on sight-reading and performance skills. *Journal of Research in Music Education, 29*, 23-30.

Azzara, C. D. (1992). The effect of audiation-based improvisation techniques on the music achievement of elementary instrumental music students. (Doctoral dissertation, Eastman School of Music, University of Rochester, 1992). *Dissertation Abstracts International, 53,* 1088.

Azzara, C. D. (1993). Audiation-based improvisation techniques and elementary instrumental students' music achievement. *Journal of Research in Music Education, 41*, 328-342.

Azzara, C. D., Gordon, E. E., Grunow, R. F. (1997) *Creativity in improvisation*. Chicago: GIA Publications.

Azzara, C. D. (2002). Improvisation. In R. Colwell & C. Richardson (Eds.), *The new handbook of research on music teaching and learning: A project of the Music Educators National Conference* (pp. 171-187). Oxford; New York: Oxford University Press.

Azzara, C. D. (2006). *Assessing improvisation achievement*. Manuscript in preparation, Eastman School of Music, University of Rochester, NY.

Azzara, C. D., & Grunow, R. F. (2005). *Developing musicianship through improvisation.* Chicago: GIA.

Baker, D. S. (1980). The effect of appropriate and inappropriate in-class song performance models on performance preference of third- and fourth-grade students. *Journal of Research in Music Education, 28*, 3-17.

Bandura, A. (1977). *Social learning theory.* Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1989). Social cognitive theory [Electronic version]. In R. Vasta (Ed.), *Annals of child development. Vol. 6. Six theories of child development* (pp. 1-60). Greenwich, CT: JAI Press.

Bandura, A. (2006). Guide for constructing self-efficacy scales (Revised). In F. Pajares, & T. Urdan (Eds.), *Self-efficacy beliefs of adolescences* (Ch. 14). Charlotte, NC: IAP,Inc.

Bandura, A., & Locke, E. (2003). Negative self-efficacy and goal effects revisited. *Journal of Applied Psychology, 88*, 87-99.

Barnes, G. L., (1999). A comparison of self-efficacy and teaching effectiveness in pre-service string teachers. (Doctoral dissertation, Ohio State University, 1998). *Dissertation Abstracts International, 59,* 3767.

Bash, L. (1984). The effectiveness of three instructional methods on the acquisition of jazz improvisation skills (Doctoral dissertation, State University of New York at Buffalo, 1983). *Dissertation Abstracts International, 44*, 2079.

Bash, L., & Kuzmich, J. (1985). A survey of jazz education research: Recommendations for future researchers. *Bulletin of the Council for Research in Music Education, 82*, 14-28.

Bergee, M. J., & Grashel, J. W. (2002). Relationship of generalized self-efficacy, career decisiveness, and general teacher efficacy to preparatory music teachers' professional self-efficacy. *Missouri Journal of Research in Music Education, 39*, 4-20.

Bitz, M. (1999). A description and investigation of strategies for teaching classroom music improvisation. (Doctoral dissertation, Columbia University Teachers College, 1998). *Dissertation Abstracts International, 59*, 3767.

Briscuso, J. J. (1972). A study of ability in spontaneous and prepared jazz improvisation among students who possess different levels of musical aptitude. (Doctoral dissertation, University of Iowa, 1972). *Dissertation Abstracts International, 33,* 1761.

Burnsed, V. & Price, H. (1984). Improvisation & evaluation. *Jazz Research Proceedings Yearbooks, Volume 4, NAJE*: Manhattan, KS, 1984.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum.

Consortium of National Arts Education Associations. (1994). *National standards for arts education.* Reston, VA: MENC: The National Association for Music Education.

Damron, B. L., Jr. (1974). The development and evaluation of a self-instructional sequence in jazz improvisation. (Doctoral dissertation, Florida State University,1973). *Dissertation Abstracts International, 35*, 1141.

Delzell, J. K. (1989). The effects of musical discrimination training in beginning instrumental music classes. *Journal of Research in Music Education, 37*, 21-31.

Dickey, M. R. (1991). A comparison of verbal instruction and nonverbal teacher-student modeling in instrumental ensembles. *Journal of Research in Music Education, 39*, 132-142.

Dickey, M. R. (1992). A review of research on modeling in music teaching and learning. *Bulletin of the Council for Research in Music Education, 113*. 27-40.

Dunn, D. E. (2000). Male modeling with young singers: A review of research. *Choral Journal, 40,* 53-55.

Ebie, B. D. (2005). An investigation of secondary school students' self-reported reasons for participation in extracurricular musical and athletic activates. *Research and Issues in Music Education, 3*, Article 4. Retrieved January 29, 2006, from http://www.stthomas.edu/rimeonline/

Gendrich, J. M. (2003). Teaching and learning jazz trombone. (Doctoral dissertation, Ohio State University, 2003). *Dissertation Abstracts International, 64,* 2017.

George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference* (4th ed.). Boston: Allyn and Bacon.

Gordon, E. E. (1965). *Musical aptitude profile*. Chicago: GIA.

Gordon, E. E. (1997*). A music learning theory for newborn and young children.* Chicago: GIA.

Gordon, E. E. (1998). *Harmonic and rhythmic improvisation readiness records*. Chicago: GIA.

Gordon, E. E. (2000). *Studies in harmonic and rhythmic improvisation readiness*. Chicago: GIA.

Gordon, E. E. (2003a).*Improvisation in the music classroom: Sequential learning.* Chicago: GIA.

Gordon, E. E. (2003b). *Learning sequences in music: Skill, content, and patterns* (7th ed.). Chicago: GIA.

Hagberg, G. (2000). Forward: Improvisation and the arts. *The Journal of Aesthetics and Art Criticism, 58* (2), 95-97.

Hall, K. K. (2001). Adults and computer-instruction in beginning piano: Influences on musical self-efficacy and music education attitudes. *Missouri Journal of Research in Music Education, 38*, 4-29.

Henley, P. T. (2001). Effects of modeling and tempo patterns as practice techniques of high school instrumentalists. *Journal of Research in Music Education, 49*, 169-80.

Herbert, M. J. & Harsh, C. M. (1944). Observational learning in cats. *Journal of Comparative Psychology*, *37*, 81-95.

Hewitt, M. P. (2001). The effects of modeling, self-evaluation, and self-listening on junior high instrumentalists' music performance and practice attitude. *Journal of Research in Music Education, 49*, 307-23.

Hewitt, M. P. (2002). Self-evaluation tendencies of junior high instrumentalists. *Journal of Research in Music Education, 50*, 215-27.

Hodges, D. A. (1974). The effects of recorded aural models on the performance achievement of students in beginning band classes. *Journal of Band Research, 12* (1), 30-34.

Horowitz, R. (1995). The development of a ratings scale for jazz guitar improvisation performance (Doctoral dissertation, Columbia University Teachers College). *Dissertation Abstracts International, 55*, 3443.

Klinedinst, R. E. (1991). Predicting performance achievement and retention of fifth-grade instrumental students. *Journal of Research in Music Education, 39*, 225-238.

Laughlin, J. E. (2002). The use of notated and aural exercises as pedagogical procedures intended to develop harmonic accuracy among beginning jazz improvisers. (Doctoral dissertation, University of North Texas, 2001). *Dissertation Abstracts International, 63,* 534.

Linklater, F. (1997). Effects of audio- and videotape models on performance achievement of beginning clarinetists. *Journal of Research in Music Education, 45*, 402-414.

Madura, P. D. (1996). Relationships among vocal jazz improvisation achievement, jazz theory knowledge, imitative ability, musical experience, creativity, and gender. *Journal of Research in Music Education, 44*, 252-67.

Maehr, M. L., Pintrich, P. R., & Linnenbrink, E. A. (2002). Motivation and achievement. In R. Colwell & C. Richardson (Eds.), *The new handbook of research on music teaching and learning: A project of the Music Educators National Conference* (pp. 348-372). Oxford; New York: Oxford University Press.

Mansberger, N. B., (1989). The effects of performance anxiety management training on musicians' self-efficacy, state anxiety and musical performance quality. (Master's dissertation, Western Michigan University, 1988). *Dissertation Abstracts International, 27,* 326.

Mark, M. L. (1996). *Contemporary music education.* New York: Schrimer Books.

Maslow, A. H. (1968). *Toward a psychology of being* (2nd ed.) New York: D. Van Nostrand Company.

May, L. F. (2003). Factors and abilities influencing achievement in instrumental jazz improvisation. *Journal of Research in Music Education, 51,* 245-59.

McPherson, G. E. (1996). Five aspects of musical performance and their correlates. *Bulletin of the Council for Research in Music Education, 127*, 115-121.

McPherson, G. E., Bailey, M., & Sinclair, K. E. (1997). Path analysis of a theoretical model to describe the relationship among five types of musical performance. *Journal of Research in Music Education, 45,* 103-129.

McPherson, G. E., & McCormick, J., (1999). Motivational and self-regulated learning components of musical practice. *Bulletin of the Council for Research in Music Education, 141*, 98-102.

McPherson, G. E., & McCormick, J., (2006). Self-efficacy and music performance. *Psychology of Music, 34* (3), 322-336.

McPherson, G. E., & Zimmerman, B. J. (2002). Self-regulation of musical learning: A social cognitive perspective. In R. Colwell & C. Richardson (Eds.), *The new handbook of research on music teaching and learning: A project of the Music Educators National Conference* (pp. 327-347). Oxford; New York: Oxford University Press.

McCormick, J., & McPherson, G. E. (2003). The role of self-efficacy in a musical performance examination: an exploratory structural equation analysis. *Psychology of Music, 31* (1), 37-51.

Miller, N. E., & Dollard, J. (1941). *Social learning and imitation.* New Haven: Yale University Press.

Montano, D. R. (1983). The effect of improvising in given rhythms on piano students' sight reading rhythmic accuracy achievement (Doctoral dissertation, University of Missouri-Kansas City, 1983*). Dissertation Abstracts International, 44*, 1720.

Morrison, S. J. (2002). The use of recorded models in the instrumental rehearsal: Effects on ensemble achievement. *UPDATE: Application of Research in Music Education, 20* (2), 21-26.

Murphy, J. (2004). *Music as a second language: Improvisation in the university music curriculum.* Revised version of "Common practice improvisation: its importance in the music curriculum, and suggestions for teaching it," paper presented at the Great Lakes Chapter meeting of the College Music Society, March 2000.

Music Educators National Conference, Committee on Performance Standards. (1996). *Performance standards for music: Strategies and benchmarks for assessing progress toward the national standards, grades preK-12.* Reston, VA: Music Educators National Conference.

National Association of Schools of Music. (2003). *National Association of Schools of Music 2003-2004 handbook.* Reston, VA: National Association of Schools of Music.

Neilson, S. G. (2004). Strategies and self-efficacy beliefs of instrumental and vocal individual practice: A study of students in higher music education. *Psychology of Music, 32* (4), 418-431.

Nelson, D. L. (1997). High-risk adolescent males, self-efficacy, and choral performance: An investigation of affective intervention. (Doctoral dissertation, Arizona State University, 1997)*. Dissertation Abstracts International, 58*, 791.

Ozer, E. M., & Bandura, A. (1990). Mechanisms governing empowerment effects: A self-efficacy analysis. *Journal of Personality and Social Psychology, 58,* 472-486.

Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research, 66*, 543-578.

Pajares, F. (1997). Current directions in self-efficacy research [Electronic version]. In M. Maehr & P. R. Pintrich (Eds.), *Advances in motivation and achievement* (Vol. 10, pp. 1-49). Greenwich, CT: JAI Press.

Pajares, F., & Schunk, D. H. (2001). Self-beliefs and school success: Self-efficacy, self-concept, and school achievement. In R. Riding & S. Rayner (Eds.), *International perspectives on individual differences, Volume 2, Self perception* (pp. 239-266). London: Ablex.

Pajares, F. (2002). *Overview of social cognitive theory and of self-efficacy.* Retrieved April, 15, 2004, from http://www.emory.edu/EDUCATION/mfp/eff.html

Partchey, K. C. (1973). The effects of feedback, models, and repetition on the ability to improvise melodies. (Doctoral dissertation, Pennsylvania State University, 1973). *Dissertation Abstracts International, 35*, 149.

Paulson, J. C. (1985). *The development of an imitative instructional approach to improvising effective melodic statements in jazz solos*. (Doctoral dissertation, University of Washington, 1985). *Dissertation Abstracts International, 46*, 244.

Pearson, K. R. (2003). Design and development of the self-efficacy for musical studies scale. (Master's thesis, Brigham Young University). Retrieved May 16, 2005, from http://contentdm.lib.byu.edu/ETD/image/etd305.pdf

Pfenninger, R. C. (1991). The development and validation of three rating scales for the objective measurement of jazz improvisation achievement (Doctoral dissertation, Temple University, 1990). *Dissertation Abstracts International, 51*, 2674.

Petrovich, A. S., (1990). Stage fright in performing musicians: Dimensions of teacher behavior and sources of self-efficacy. (Doctoral dissertation, California School of Professional Psychology – Fresno, 1989). *Dissertation Abstracts International, 50,* 4232.

Quesada, M. A. (1993). The effects of providing teaching materials and an in-service workshop concerning Puerto Rican music on music teachers' self-efficacy and willingness to teach Puerto Rican music. (Doctoral dissertation, Kent State University, 1992). *Dissertation Abstracts International, 54,* 455.

Rosenthal, K. R. (1984). The relative effects of guided model, model only, guide only, and practice only treatments on the accuracy of advanced instrumentalists' musical performance. *Journal of Research in Music Education*, *32*, 265-273.

Rosenthal, R. K., Wilson, M., Evans, M., & Greenwalt, L. (1988). Effects of different practice conditions on advanced instrumentalists' performance accuracy. *Journal of Research in Music Education, 36*, 250-257.

Sandene, B. A. (1997). An investigation of variables related to student motivation in instrumental music (Doctoral dissertation, University of Michigan, 1997). *Dissertation Abstracts International, 58*, 3870.

Sang, R C. (1987). A study of the relationship between instrumental music teachers' modeling skills and pupil performance behaviors. *Bulletin of the Council for Research in Music Education, 91*, 155-9.

Schilling, R. (1989). The construction and validation of rating scales for the objective measurement of jazz improvisation achievement. *Pennsylvania Music Educators Association News*, 38-40.

Schunk, D. H., & Pajares, F. (2002). Development of academic self-efficacy [Electronic version]. In A. Wigfield & J. Eccles (Eds.), *Development of achievement motivation.* San Diego: Academic Press.

Simon, S. D. (2001). *From neo-behaviorism to social constructivism?: The paradigmatic non-evolution of Albert Bandura.* Unpublished manuscript, Emory University.

Sinden, L. M., (1999). Music performance anxiety: Contributions of perfectionism, coping style, self-efficacy, and self-esteem. (Doctoral dissertation, Arizona State University, 1999). *Dissertation Abstracts International, 60,* 590.

Sink, P. E. (2002). Behavioral research on direct music instruction. In R. Colwell & C. Richardson (Eds.), *The new handbook of research on music teaching and learning: A project of the Music Educators National Conference* (pp. 315-326). Oxford; New York: Oxford University Press.

Steinel, M. (1995). *Building a jazz vocabulary: A resource for learning jazz improvisation*. Milwaukee, WI: Hal Leonard.

Stewart, J. L., (2002). Factors related to students' decisions to continue in band. (Doctoral dissertation, University of Texas at Austin, 2002). *Dissertation Abstracts International, 64,* 3989.

Tollefson, M. J. (2000). A comparison of unilateral, coordinated, and aural model practice procedures in learning piano music. *Missouri Journal of Research in Music Education, 37*, 3-18.

Wade, C., & Tavris, C. (1993). *Psychology*, New York: HarperCollins College Publishers.

Watson, K. (2005, November). *An investigation of the relationships among aural imitation pedagogy, self-efficacy, and jazz improvisation achievement*. Paper presented at the New Directions in Music Education: Second Conference on Teaching Composition and Improvisation, East Lansing, MI.

Zimmerman, B. J. (1995). Self-efficacy and educational development. In A. Bandura (Ed.), *Self-efficacy in changing societies* (pp. 201-227). New York: Cambridge University Press.