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The Influence Of Mindful Movement On Elementary Students' Music Listening Enjoyment And Comprehension

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THE INFLUENCE OF MINDFUL MOVEMENT ON ELEMENTARY STUDENTS' MUSIC LISTENING ENJOYMENT AND COMPREHENSION

by

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DEDICATION

Thank you, Dr. Springer and Dr. Valerio for inspiring me to combine my love of music education and yoga into my education at the University of South Carolina. I extend my heartfelt thanks to Dr. Springer for guiding and encouraging me throughout this process, and for taking on a graduate student that also worked full time!

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ABSTRACT

The purpose of this study was to examine the effects of mindful movement on elementary students' listening comprehension and enjoyment. Participants ($N = 40$) were third-grade music students who participated in an ABAB within-subjects research design. During baseline phases, participants listened to one of four musical selections. During treatment phases, participants completed a mindful movement activity while listening to the musical selections. After each baseline or treatment experience, participants rated how much they enjoyed the musical recording, answered a free-response question justifying why they chose that enjoyment rating, and completed a listening comprehension test. Although there was a slight increase in comprehension scores after each of the first three phases, there was a sharp decrease in comprehension scores between the third phase and the fourth phase. Each mindful movement phase had lower enjoyment ratings than the preceding listening only phases. Implications of these results for music educators are discussed.

Keywords: mindfulness, elementary music, listening comprehension, enjoyment, movement.

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CHAPTER 1

INTRODUCTION

All musical behaviors begin with listening. Elementary music students need guidance as their music listening skills develop. Gordon's (1981, 1999, 2012, 2103) extensive research on human music learning through audiation, details the development of audiation skills through adulthood. The progression of audiation skills happens through the development of five music vocabularies, which comprise listening, performing, audiating/improvising, reading, and writing (Gordon, 2012). All five musical vocabularies develop from listening, which is a foundational music behavior. Gordon (2013) emphasized the importance of participating in active listening to various styles of live and recorded music. Gordon also explained that children learn both music and language through listening. Numerous connections between language acquisition, literacy acquisition, and music literacy acquisition exist (Reynolds, Long, & Valerio, 2007). The processes of learning listening vocabularies and music listening skills are similar (Gordon, 2013). According to Gordon (2012), elementary music curricula should develop students' music listening vocabularies by engaging them in movement, rhythm, singing, and instrument activities. Those activities may help elementary students progress toward meaningful music reading and writing (Valerio, n.d.).

To develop perceptive music skills, elementary music students need a sequential curriculum as part of their musical development (Anderson, 2012). The four fundamental artistic processes of the National Core Arts Standards include creating, performing,

responding, and connecting to music. Anchor Standard Seven (Perceiving and Analyzing Music) for third grade indicates that students should be able to discuss how the structure and elements of music inform their musical perceptions (National Association for Music Education, 2014). Music educators need a variety of instructional strategies to address this important standard with their students.

Background

Given the importance of and need for quality listening experiences in music classrooms (Gordon, 2013; National Association for Music Education, 2014), music educators should provide differentiated strategies to focus students' attention to music listening, which would make listening an active process. Listening to music actively requires "engaged listening" with students' mind and body activated, thereby inviting more significant participation in the music (Campbell, 2005). Eliciting a physical response to music may be one way to help children have a deeper response to music (Todd & Mishra, 2013). Perceiving and analyzing music may also be enhanced through the addition of visual art. In one study, participants listened to music while viewing images of art, and their listening skills improved when viewing images of paintings compared to a listening-only condition (Shank, 2003). In another study, participants viewed recorded dance performances while listening to music to determine whether viewing movement while listening to music would enhance musicians and non-musicians' perception of artistic tension (Frego, 1999). Frego found no significant difference between musicians' and non-musicians' responses and reported that the combination of visual stimuli and aural stimuli while recording responses simultaneously could have had a confusing influence on participants. Sims (1990) suggested that music

listening with prescribed movement may enable children to better attend to the music and demonstrate an understanding of musical concepts. Encouraging children to move to music with their eyes closed might help teachers evaluate students' understanding of musical concepts (Sims, 1990).

Mindfulness has become increasingly popular as a pedagogical strategy for music listening because it provides an aid for music understanding (Falter, 2016). Noticing differences and focusing attention on the present moment (practicing mindfulness) while listening to music may attune the listener to subtle changes in the music (Anderson, 2012). Langer, Russel, and Eisenkraft (2009) studied the effects of mindfulness on adult orchestra musicians while they performed. They suggested that *mindfulness induction*—receiving instructions to perform the music in novel ways—improved both performers' and listeners' music enjoyment.

E. Langer (1989) described mindfulness as the ability to notice distinctions and similarities among a variety of contexts. Mindfulness helps one to notice how things differ, make distinctions, and form new categories among these disparate entities. Noticing similarities between things, or making analogies, can change context. Langer proposed several characteristics of mindfulness, such as contextual sensitivity, awareness of perspectives, and present moment awareness. Prior pedagogical study of movement in response to music has not examined the concept of mindful movement. Anderson (2012) suggested that the lack of music and movement activities may not be due to a lack of movement-sensitivity activities like Dalcroze eurhythmics, but rather teacher knowledge limitations of the Dalcroze-style approaches.

Need for the Study

When discussing the role of mindfulness during music listening, Anderson (2015) stated:

> An important difference between most traditional methods of music listening instruction and mindful listening instruction is that most traditional methods rely on an *external* activity, such as movement or marking the number of times a theme is heard, whereas mindful listening instruction relies primarily on an *internal*, or cognitive activity for focusing student attention (p. 54).

As Anderson (2015) suggested, combining external activity, such as movement, with internal cognitive activity ("mindful listening") may enhance the environment in which children experience music. Body movement may impact musical comprehension, and purposeful, mindful movement may engage students in processing musical information. Seitz (2005) claimed that all key elements of music (such as melodic contour, rhythm, and melody) rely on bodily processes. The process of engaging students through activities such as movement may allow them to organize and synthesize musical information meaningfully (Shank, 2003). Establishing an additional method of engaging young listeners and increasing comprehension in an enjoyable way may be of value to music educators. In particular, using different strategies to enhance music listening would be of benefit to music educators and students, since music listening may be an inherently enjoyable activity (Diaz, 2011). Having children move mindfully while listening to music could be one such activity, and it may have profound effects on their listening comprehension and enjoyment.

Purpose and Research Questions

The purpose of this study was to examine the effects of mindful movement on elementary students' music listening enjoyment and comprehension. The study comprised two research questions:

1. What are the effects of mindful movement while listening to recorded music on elementary students' music listening enjoyment?
2. What are the effects of mindful movement while listening to recorded music on elementary students' music listening comprehension?

Operational Definitions

The following operational definitions below clarify variables and important terms in this study.

1. *Active Listening*–the mental process of engaged music listening. Engagement may come from a variety of forms, including movement, visual stimuli, or some combination of the two (Campbell, 2005).

2. *Mindful Movement*–a display of intentional, improvisational bodily movement in response to what the listener perceives while listening to music. This definition incorporates Langer's (1989) characteristics of mindfulness, which include the following characteristics: openness to novelty; alertness to distinction; sensitivity to different contexts; implicit, if not explicit, awareness of multiple perspectives; and orientation in the present.

3. *Music Listening Comprehension*–the ability to discriminate among musical elements with accuracy while listening to music (Lewis, 1988).

4. *Music Listening Enjoyment*–the degree to which one takes pleasure in musical listening (Anderson, 2012, 2015).

CHAPTER 2

REVIEW OF LITERATURE

Mindful music listening instruction increases listening sensitivity and enjoyment

Anderson (2012, 2015)

In two studies, Anderson examined the effects a mindful listening prompt would have on children's (2015) and undergraduate non-music majors' (2012) listening sensitivity and enjoyment. For this purpose, Anderson created a test called the *Anderson Test of Music Listening Sensitivity* (ATMLS) to measure the listening sensitivity dependent variable. Anderson used a music listening questionnaire (MLQ) to measure the listening enjoyment dependent variable. Anderson (2012) hypothesized that:

> (a) Inclusion of mindful listening instruction produces greater music listening sensitivity in students, and (b) inclusion of mindful listening instruction produces greater music listening enjoyment in students (p. 50).

Anderson (2015) described the statement of the problem as follows: "the present study investigates 'mindful listening' as an instructional strategy to promote aural sensitivity and enjoyment in music" (p. 10).

Method

Fourth-grade students ($N = 42$) from a school in the northeastern United States participated in one study (2015), and undergraduate non-music majors from a university in the southeastern United States participated in the other study (2012). Fourth-grade students, randomly divided into two groups, attended regular music classes for the

duration of 10 experiment sessions; the undergraduate students attended five sessions. The independent variable was the type of listening instruction (mindful versus traditional), which Anderson delivered just prior to each listening experience. Mindful listening instruction consisted of a "listening story"—a personally-created story corresponding to the music heard—prior to the musical stimuli being played. Listening experiences consisted of pre-selected music stimuli to be played twice. The second musical stimulus played during each session consisted of either the same piece played again exactly, or the same piece played again with a different ensemble. Anderson used the enjoyment rating on a Likert scale and a score on the ATMLS to measure the two dependent variables, music listening sensitivity and music listening enjoyment.

Data collection. Anderson conducted a pre-test by administering the Intermediate Measures of Music Audiation (IMMA; Gordon, 1982), which verified similarities in musical aptitude between the two groups. Anderson used a music experience questionnaire (MEQ) to gather demographic information. Participants completed the Music Aptitude Profile-Phrasing subsection (MAP-P Gordon, 1965) and the ATMLS as post-tests, which Anderson used to assess music listening sensitivity.

Findings and Discussion

Anderson found that mindful listening instruction resulted in increased music listening sensitivity and enjoyment in both fourth-grade students and college students. Anderson suggested that music listening sensitivity and music listening enjoyment could be modified based on a teacher's choice of instructional strategy. Anderson also suggested that the effect of mindful listening instruction on music listening enjoyment could be "large enough to be of practical significance for music educators" (p. 53).

Relevance to Current Study

Anderson explained that the instructional strategy used demonstrated only one way to enhance mindful listening instruction and suggested that mindful listening instruction research could be broadened to study "mindfulness and long-standing techniques for directed music listening" (p. 53). The mindful listening group instructions encouraged students to imagine their own narratives or "listening stories" to the music, which synthesized emotional and associative cognitions. Anderson (2015) stated, "studies of the effect of various eurhythmics activities on mindfulness, as well as studies of the intersection of mindfulness and eurhythmics, would be valuable" (p. 129). To examine music listening enjoyment and comprehension, the present study incorporated mindful movement and the creation of individual narratives to accompany music.

Mindfulness, attention, and flow during music listening: An empirical investigation

Diaz (2011)

Diaz studied the effects a fifteen-minute guided meditation would have on the perceived attention, aesthetic response, and flow while listening to an excerpt from Puccini's *La Bohème*. Diaz used a Continuous Response Digital Interface (CRDI) and questionnaire to measure participants' responses. Diaz stated, "it appears that attention might be modified through the use of mindfulness-based techniques and thus may be isolated as an experimental variable for further research" (p. 45). Diaz specifically focused the study on examining the following items:

> (1) whether participants had experienced the attendant construct (flow/aesthetic response) during the experiment, (2) whether the CRDI had accurately registered variations in their response, (3) what was the temporal length and location of the

response (during arias, other sections, etc.), and (4) what was the overall magnitude of the response (p. 47)?

Method

College music students ($N = 132$) from a university in the southeastern United States participated in the study. Diaz divided participants into one of four groups: (1) the mindfulness induction plus aesthetic response group, (2) the mindfulness induction plus flow response group, (3) the aesthetic response group, or the (4) flow response group. The mindfulness induction groups listened to a 15-minute guided mindfulness meditation recording, then listened to an excerpt of Puccini's *La Bohème.* During the listening sequence, participants self-reported their attention and aesthetic/flow responses on the CRDI. The aesthetic-response-only and flow-response-only groups listened to the same musical stimulus and self-reported their attention and aesthetic/flow responses while using the CRDI. All groups completed a Likert-type questionnaire at the conclusion of the experiment.

Findings and Discussion

Diaz explained that "these results suggest different ways of engaging in music for the purposes of enjoyment" (p. 54). Diaz found evidence of flow response from the post-experiment questionnaire and the CRDI magnitude responses. Diaz also found that an unusually high number of participants reported either an aesthetic or flow response for the entire duration of the music stimuli. The mindfulness induction plus flow response group reported lower CRDI magnitude levels overall.

Relevance to Current Study

The author studied perceived attention, aesthetic response, and flow during music listening and how each could be affected by a fifteen-minute guided meditation. Diaz reported that a high number of participants in the mindfulness and aesthetic response group had experienced an aesthetic or flow experience of significant duration during the music stimuli. Diaz suggested that "mindfulness may produce unique effects in relationship to music listening," and that "an enjoyable 'attentional' or cognitive response to music would seem an area worthy of future research" (p. 54). The present study examined the effects a series of suggested mindful movements may have on elementary students' music listening enjoyment and music listening comprehension.

Creative thinking and music listening

Dunn (1997)

Dunn studied whether music listening could be considered an act of creative thinking. Dunn stated, "creative thinking has been associated with what a composer does, and often with what a performer does," and asked, "what about what the listener does when experiencing music? Can listening to music be considered an act involving creative thinking?" (p. 42). Dunn used the following four guiding processes to evaluate these questions:

> (1) sample what has been written on the subject of creativity and listening to music, (2) seek to articulate generalities regarding creative listening, (3) examine research in creative listening, and (4) describe an exploratory study undertaken with a college level non-majors course in music listening asking students with

varying levels of musical experience to visually represent the results of their creative listening process and comment on their experience (p. 42).

Method

Dunn completed an exploratory study on music listening with twenty-nine non-music major undergraduate students taking an Introduction to Music Listening class for non-music majors. After a brief introduction of figural mapping (i.e., "doodling"), participants created their own figural maps while listening to a classical music excerpt. The students completed written comments about the mapping experience, presented their individual figural maps, and provided comments on other participants' maps. Analysis of the figural maps and written responses indicated signs of creative listening, which Dunn defined as creative thinking during music listening.

Findings and Discussion

Dunn stated about the conclusion of the study, "the figural maps the subjects generated were each unique, shown by their own words to be the result of active, cognitive interactions with the music" (p. 54). The "thinking outside of the box" figural maps activity allowed students to feel "more open and accepting of their own abilities to creatively listen" (p. 54). Dunn found that problem-solving listening tasks could help researchers study the creative listening process in the future. The individuality expressed in the figural maps and in the verbal responses resulted in "active, cognitive interactions with the music" (p. 54). "Thinking outside of the box" encouraged creative listening, and participants reported that the experiment changed how they listened to music outside of class.

Relevance to Current Study

Dunn found investigating creative listening to be a difficult task, but not one so unwieldy that it should not be studied more in depth. Dunn suggested that in addition to figural mapping, "visual representations, movement, verbal reports, and computer-assisted approaches should be employed" to further investigate creative thinking (p. 54). The current study employed students' creative choices of mindful movement in response to a music stimulus to determine whether mindful movement influences students' listening enjoyment and comprehension.

Orchestral performance and the footprint of mindfulness

Langer, E., Russel, T., & Eisenkraft, N. (2009)

Langer, Russel, and Eisenkraft studied audience preferences of two recordings of an orchestra performance. In one recording session, the researchers asked the orchestra members to introduce "novel distinctions" and to "mindfully incorporate subtle nuances into their performance" (p. 125). The orchestra did not receive a mindful state induction prior to recording in another recording session (of the same piece). The authors tested the general hypothesis "can instructing participants to find subtle ways to make their musical performance new spur the creation of musical products that both the musicians and other listeners would prefer over music created in a mindless state?" (p. 127). To accomplish this task, they compared audience listening preferences between two orchestral performances, one with a mindful state induction prior to recording and one without a mindful state induction prior to recording.

Method

Participants and setting. Two accomplished orchestras participated in two separate studies. Sixty university-level symphony orchestra volunteers participated in the performances. One hundred and forty-three community chorus members volunteered to participate in the listening portion of the study.

Performance stage

Performers played the finale from Brahms's *Symphony No. 1* two times. During one performance recording, the researchers asked the orchestra to "think about the finest performance of this piece that you can remember, play it that way" (p. 128). During the second performance recording, the researchers asked the orchestra to "play this piece in the finest manner you can, offering subtle new nuances to your performance" (p. 128). Performers answered a Likert-type rating indicating how much they enjoyed the performance after each recording. After the experimental performance, performers wrote about how they played differently to add subtle differences, to describe their success at adding these differences. They also completed a second enjoyment rating.

Listening stage

After being split into two groups, the community chorus member volunteers listened to the two recordings in a local auditorium in different orders. Listening participants answered a questionnaire after the two performance recordings. The questionnaire asked participants if they could detect a difference between the two recordings. They also indicated which performance recording they preferred and explained why.

Findings and Discussion

During the *performance stage*, the researchers found that the musicians reported much higher enjoyment during the experimental performance (the mindful performance) than the control performance (the mindless performance). During the *listening stage*, the researchers found that more than half of the audience members preferred the experimental performance over the control performance. Notably, the second study tested for practice and order effects, and the same significant result occurred. The authors explained that "both the performers and an educated audience preferred music that was created in a mindful state over music that was created by musicians who tried to mindlessly recreate a past performance" (p. 132).

Relevance to Current Study

The researchers studied how introducing novel distinctions (mindfully) into a performance could affect performer's enjoyment and enjoyment on the part of the listener. They found that the addition of this mindfulness task increased enjoyment of both performers and listeners. The authors explained that "by engaging in a constant process of regular discovery, individual musicians and the collective ensemble may be able to create a more enjoyable musical experience for themselves and for their audience" (p. 133). In this study, I investigated the introduction of a mindfulness task (mindful movement) into music listening activities in an effort to increase music listening enjoyment and comprehension.

Mindfulness Trends from Previous Studies

Taken together, results of these related studies suggest the following trends:

1. For both children and adults, mindfulness may be induced successfully with verbal prompts or instructions (Anderson, 2012, 2015).
2. Mindfulness may produce unique effects such as aesthetic response, flow, and increased attention in relationship to music listening (Diaz, 2011).
3. Different methods for creative listening could enhance creative responses in students (Dunn, 1997).
4. Mindfulness prompts may increase enjoyment on both the part of the performer and the listener (Langer, Russel, & Eisenkraft, 2009).

CHAPTER 3

METHOD

Overview and Research Design

In this experimental study, I examined the effects that mindful movement experiences had on third-grade students' listening comprehension and enjoyment. Anderson reported that mindful music listening instruction had a positive effect on the listening enjoyment and listening sensitivity of fourth-grade children (2015) and preservice elementary music teachers (2012). For that reason, mindful movement experiences may also have an effect on third-grade students' listening comprehension and enjoyment.

I used an ABAB within-subjects research design (Mills & Gay, 2014), also termed a complete-reversal design (Madsen & Madsen, 2016). The primary strengths of this design include the ability to identify cause-and-effect relationships due to changes in behavior that occur with the introduction and removal of an intervention (Madsen & Madsen, 2016) and the ability of participants to serve as their own controls (Mills & Gay, 2014). To control the internal validity threats of maturation and history, I collected baseline measures prior to each treatment. Participants completed a baseline (listening-only) phase, followed by a treatment (mindful movement) phase, another baseline (listening-only) phase, and a final treatment (mindful movement) phase.

I obtained IRB approval (Appendix A) prior to conducting this experiment, and according to IRB guidelines at the University of South Carolina, all parents of third-grade

students received an explanatory letter. In combination with all required paperwork and media release forms, the explanatory letter was distributed. Although I recorded some portions of the experiment, no students were identified individually. I requested parental consent through the school media release and consent form for the use of any video.

Participants and Setting

The participants in the study ($N = 40$) were 7-, 8-, and 9-year-old third-grade students attending music classes at a Mandarin-language immersion charter school in the southeastern United States. At the time of this study, the school offered 4-year-old kindergarten through eighth grade to approximately 500 students. A language immersion school was fitting for this study because students learning a second language—especially a tonal one—likely demonstrate greater aural sensitivity when compared to their monolingual peers (Deutsch, Henthorn, & Dolson, 2004). The third-grade participants received 45 minutes of music instruction weekly under the supervision of a Mandarin language-speaking music teacher. I conducted all experimental procedures in English during the students' regular music-class time with 20 participants, and one additional 25-minute session on consecutive Tuesdays and Thursdays.

Demographics

Of the 40 participants, 20 were female and 20 were male. Their mean age was 8.23 years ($SD = 0.48$). Participants had an average Mandarin experience level of 2.93 years ($SD = 1.12$). Results from the demographic questionnaire indicated that 40% of participants took weekly private or group music lessons during the data collection period, and 10% had formerly taken weekly private or group music lessons. Students taking private music lessons at the time of data collection reported playing either piano, violin,

or guitar. Eight participants reported taking a weekly piano lesson, and three participants formerly participated in a weekly piano lesson. Two participants reported engaging in weekly group music lessons, such as choir rehearsals. Most participants reported beginning their weekly music lessons in first grade.

Procedures for Experiment and Control Treatments

Phase A1 (Control). Figure 3.1 shows a summary of the experimental procedures. Each phase took approximately 25 minutes to complete, and each phase occurred on consecutive Tuesdays and Thursdays. During the first 25-minute phase (Tuesday), participants completed the first baseline (A1) by listening to recorded music without the experimental treatment. Then, participants completed the Enjoyment Rating and Free-response Question and completed Music Listening Comprehension Test 1.

Phase B1 (Experimental). During the second 25-minute phase (Thursday), participants completed experimental treatment (B1) by listening to a different musical stimulus of recorded music while engaging in the mindful movement experimental treatment. Then, participants completed the Enjoyment Rating and Free-response Question and completed Music Listening Comprehension Test 2.

During the third 25-minute phase (the following Tuesday), participants completed the second baseline (A2) by listening to a different musical stimulus of recorded music without the experimental treatment. Then, participants completed the Enjoyment Rating and Free-response Question and completed Music Listening Comprehension Test 3.

During the final phase (Thursday), participants engaged in a second and final experimental treatment (B2) by listening to a final music stimulus and engaging in the mindful movement experimental treatment. Then, participants completed the Enjoyment

Rating and Free-response Question and completed Music Listening Comprehension Test 4. Table 3.1 summarizes the experimental procedure schedule.

For each of the four phases, I read the verbal instructions presented in Table 3.2 aloud to the participants prior to each listening experience. During the first phase (A1), participants heard instructions to listen to the music while seated and to be prepared to complete a questionnaire at the end of the listening selection. After listening to the recorded music, participants completed an enjoyment rating, responded to the free-response question, and answered the music comprehension questions. The same instructions and procedures followed the second baseline listening measurement phase (A2).

Table 3.2 also contains the instructions for the mindful movement treatment phases. On the first experimental treatment phase (B1), participants heard verbal instructions prior to the listening selection regarding how to move mindfully. These verbal instructions were based on Langer's (1989) characteristics of mindfulness, including (1) changing movements to reflect hearing novel distinctions within the listening selections, (2) being aware of and present with the music, and (3) moving in a way that reflects the individuality of the listener's perspective. Participants heard reminders to breathe and move safely during the listening selections. After the mindful movement treatment, participants completed the Enjoyment Rating and Free-response Question and completed the Music Listening Comprehension Test. I used the same instructions and procedures for the second mindful movement treatment phase (B2).

Music Stimuli

In this study, participants listened to four selections of recorded music of the Romantic period performed by orchestras. Each selection had a similar tempo and is considered to be program music. Furthermore, all musical selections were sedative in style (Smith & Morris, 1977), which I believed would be most conducive to mindful movement among children. Table 3.3 provides title, composer, duration, and source of each piece. Below are the four listening selections.

1. *The Carnival of the Animals*, *Movement VII Aquarium*, Camille Saint-Saëns
2. *The Carnival of the Animals, Movement XIII Le cygne* (The Swan), Camille Saint-Saëns
3. *Peer Gynt Suite No.1 Morning Mood*, Edvard Grieg
4. *Pictures at an Exhibition, The Old Castle*, Modest Mussorgsky

Participants listened to the above selections in a randomly-determined order to prevent systematic order influences. Each listening selection played in its entirety, or as an excerpt of no longer than two min 47 s. Each listening selection contained instrumental music performed by an orchestra to allow participants to listen without the potential distraction of lyrics. Although all of these selections contained extra-musical narratives, participants did not hear the narrative. Based on anecdotal evidence, I have found that children respond well to program music without words. I chose program music in a sedative style (Smith & Morris, 1977) to promote mindfulness, specifically alertness, sensitivity to contexts, and orientation in the present (Langer, 1989).

Measures

Enjoyment rating and free-response question. After each listening experience, participants completed the researcher-created Enjoyment Rating and Free-response Question presented in Appendix B. For the enjoyment rating, participants answered the question, "How much did you like the music?" by responding on a 5-point Likert-type scale. Rating anchors were 1 (*"I REALLY did not like this music"*) and 5 (*"I REALLY liked this music"*). The anchors included a sad-face and happy-face emoji to make the scale more idiomatic for children. Participants provided a short explanation of their selection by answering a free-response question ("In as many words as you can, explain why you chose the answer above"). I transcribed all participants' free responses for subsequent analysis.

Music comprehension tests. After each baseline or treatment phase, participants completed one of the music listening comprehension tests presented in Appendix C. I developed the music comprehension tests based on the NAfME Model Cornerstone Assessment *Artistic Process: Responding Second Grade General Music* (National Association for Music Education, 2017). The music comprehension tests were designed to assess participants' comprehension of instrument timbres, instrument families, tempi and dynamics. I designed one music comprehension test for each of the four recorded music selections.

Data Analyses

Music Listening Enjoyment

Participants indicated their level of enjoyment of each listening selection on a 5-point Likert-type scale anchored by 1 (*I REALLY did not like this music*) and 5 (*I REALLY like this music*). I conducted a descriptive analysis to examine means and

standard deviations of listening enjoyment ratings across each of the four listening experiences.

I also conducted a repeated-measures ANOVA on listening enjoyment ratings to address Research Question #2. The independent variable was experiment phase (A1, B1, A2, B2), and the dependent variable was the listening enjoyment rating. Following this ANOVA test, I conducted a *post hoc* examination of paired comparisons with a Bonferroni correction.

To gain further insight into why participants liked or did not like the musical selection, participants answered a free-response question ("In as many words as you can, explain why you chose the answer above"). I examined free-response data using a coding procedure recommended by Fraenkel, Wallen, and Hyun (2015). Coding participant responses consisted of transcribing and printing all written responses to the free-response question. I read all responses, then read again to annotate (pencil notes in the margins), then continued analysis by listing categories of relevance from the free-responses. During the fourth reading, I classified the responses into themes and categories. A reliability observer, who was a graduate student in music education with elementary school teaching experience, coded the free-responses into the themes and categories that I designated (Fraenkel, Wallen, & Hyun, 2015). I tallied the number of agreements and disagreements with the reliability observer, and I calculated interobserver reliability as the number of agreements divided by the number of agreements plus disagreements (Madsen & Madsen, 2016). Our interobserver reliability was 80.63%.

Music Listening Comprehension

For music comprehension, I scored all four music comprehension tests for each participant, and the number of correct answers constituted the comprehension score. Because each test comprised five questions, music comprehension scores ranged from zero to five for each test, with higher scores representing higher achievement. I entered raw quantitative data into a spreadsheet and conducted a descriptive analysis to investigate the means and standard deviations of listening comprehension scores across each of the four listening experiences.

To examine differences in comprehension scores across the four experimental phases (Research Question #1), I conducted a repeated-measures analysis of variance (ANOVA) using IBM SPSS, version 24. For this analysis, the independent variable was the experiment phase (A1, B1, A2, B2), and the dependent variable was the listening comprehension score. For follow-up significance testing, I conducted a *post hoc* examination of paired comparisons with a Bonferroni correction to control for inflated Type I error. To examine the quality and effectiveness of the music listening comprehension tests, I also conducted an item analysis on all the comprehension tests to examine the item difficulty and discrimination values.

Table 3.1

Experiment Schedule

Phase	Procedures
Baseline Phase A1	Listening Instruction Listening Selection A *(The Carnival of the Animals, Movement VII, Aquarium)* Enjoyment Rating Free-response Question Music Listening Comprehension Test 1
Treatment Phase B1	Mindful Movement Treatment Instruction Listening Selection B (with Mindful Movement) *(The Carnival of the Animals, Movement XIII, Le cygne)* Enjoyment Rating Free-response Question Music Listening Comprehension Test 2
Baseline Phase A2	Listening Instruction Listening Selection C *(Peer Gynt Suite No.1, Morning Mood)* Enjoyment Rating Free-response Question Music Listening Comprehension Test 3
Treatment Phase B2	Mindful Movement Treatment Instruction Listening Selection D (with Mindful Movement) *(Pictures at an Exhibition, The Old Castle)* Enjoyment Rating Free-response Question Music Listening Comprehension Test 4

Table 3.2

Listening Instruction Prompts

Type	Before Activity	During Activity
Listening Instructions	Please listen quietly to this selection of music. You will answer a few questions about the melody, tempo, dynamics, and instruments when the music ends. You will also be asked how much you like the music and why.	
Mindful Movement Treatment Instruction	Today, you will move mindfully to a piece of music. Please find personal space and lie down on your back. When the music begins, please move to the music safely in your own space. You may move in any of these ways: Any spine, arm, and leg movements in response to the music. Listen and breathe and notice any changes in the music; change your movements when the music changes. Stay safe and in your personal space. Lying on your back, listen and breathe; roll side-to-side like slow waves of water, with your spine, arms, and legs being very heavy. Be aware of any changes in the music and move with the changes. Lying on your back, listen and breathe; lift one arm and the opposite leg and move them like they don't weigh anything at all. Be aware of any changes in the music and move with the changes. Curling into and out of a ball; listen and breathe; roll onto one side, and then the other. Be aware of any changes in the music and move with the changes. Rocking side-to-side and moving your spine; listen and breathe; bring your knees to your chest and rock. Be aware of any changes in the music and move with the changes. Please move the entire time without stopping. When the music ends, sit up. You will answer a few questions about the melody, tempo, dynamics, and instruments when the music ends. You will also be asked how much you like the music and why.	Continue breathing Be aware of changes Move how you feel

Table 3.3

Listening Selections, Composers, Durations, and Sources

Selection	Recording
Listening Selection A	*The Carnival of the Animals*, *Movement VII Aquarium* Camille Saint-Saëns 2:41 Nash Ensemble Retrieved from https://youtu.be/AsD0FDLOKGA
Listening Selection B	*The Carnival of the Animals, Movement XIII Le cygne* (The Swan), Camille Saint-Saëns 2:47 Philharmonia Orchestra Retrieved from https://youtu.be/u_niWfQEGvk
Listening Selection C	*Peer Gynt Suite No.1, Morning Mood* Edvard Grieg, Excerpt, fade at 2:45 National Philharmonic Orchestra Prague Retrieved from https://youtu.be/bihp6gwTdeg
Listening Selection D	*Pictures at an Exhibition, The Old Castle* Modest Mussorgsky, Excerpt, fade at 2:45 Ukrainian National Symphony Orchestra Retrieved from https://youtu.be/QSomvC6rwgU

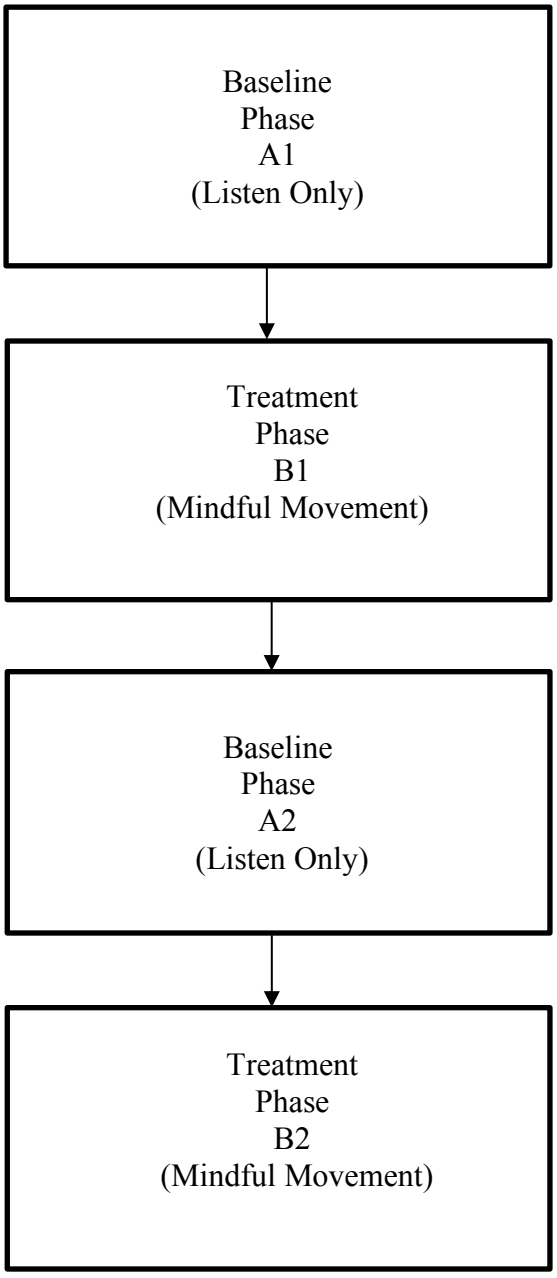

Figure 3.1. Research Design

CHAPTER 4

RESULTS

Item Analysis

After the completion of data collection, I conducted an item analysis to determine the item quality of the music listening comprehension tests. I also wanted to determine whether the comprehension tests were comparable in difficulty. By calculating item difficulty—the percentage of students answering each item correctly—using the following formula recommended by Miller, Linn, and Gronlund (2013):

$$P = 100 * R/T$$

In the formula, R equals the number of students who answered the item correctly, and T equals the number of students who answered the item.

I also calculated the item discrimination values for each item of the 4 music comprehension tests. I compared the number of participants with high scores (upper 10 group) who answered each item correctly to the number of participants with low scores (lower 10 group) who answered the same items correctly. Item discrimination values were used to assess the proper function and item quality of each of the four music comprehension tests. I used the following formula recommended by Miller, Linn, and Gronlund (2013):

$$D = (RU - RL)/(T/2)$$

In the above formula, D equals the discriminating power, RU equals the number of students in the upper 10 group who answered the item correctly, RL equals the number of

students in the lower 10 group who answered the item correctly, and *T* equals the total number of students in both groups.

Tables 4.1 through 4.4 provide summary data from the item analyses. Table 4.1 contains the item analysis results for baseline phase A1 (music listening comprehension test 1 for the recorded music *The Carnival of the Animals, Movement VII Aquarium* by Camille Saint-Saëns). Item 1 had the lowest difficulty value (30% responding correctly) and a high discrimination (0.60). Item 1 discriminated positively because more participants from the upper group answered correctly than the lower group. Item 3 had the highest difficulty value (75% responding correctly). Item 1 and 4 both discriminated positively (0.60).

Table 4.2 contains the item analysis results for treatment phase B1 (music listening comprehension test 2 for the recorded music *The Carnival of the Animals, Movement XIII Le cygne* [The Swan] by Camille Saint-Saëns). Item 1 similarly had the lowest difficulty value (30% responding correctly). Item 4 had the highest discrimination (0.80) across all tests with the majority of the lower 10 choosing one of the distractors. Item 5 had similar difficulty to other items on the test (65% responding correctly); however, the lower 10 group answered the question correctly more than the upper 10, resulting in a negative discrimination (-0.10).

Table 4.3 contains the item analysis results for baseline phase A2 (music listening comprehension test 3 for the recorded music *Peer Gynt Suite No.1 Morning Mood* by Edvard Grieg). Baseline phase A2 results had increasingly higher percentages of both difficulty and discrimination values than A1 and B1. Item 4 had the highest difficulty percentage (80% responding correctly). Item 1 had the highest discrimination (0.70). Item

1 discriminated positively because more students from the upper 10 group answered correctly, and all distractors were chosen at least once by the lower 10 group.

Treatment phase B2 (music listening comprehension test 4 for the recorded music *Pictures at an Exhibition, The Old Castle* by Modest Mussorgsky) is displayed in Table 4.4. Item 3 had the highest difficulty percentage across all tests (90% responding correctly).

Item 5 had the lowest difficulty percentage across all tests (25% responding correctly). Item 5 discriminated positively (0.50) despite the low difficulty percentage, with a range of students from the upper 10 and lower 10 selecting the other distractors.

Item difficulties varied within each test, with some items being more difficult than others. Across the tests, item difficulties were relatively similar, indicating that the comprehension tests had comparable difficulty. All items discriminated positively, with the exception of one item (item 5 on test B1), which had a negative discrimination value of (-.10). Aside from that instance, all items discriminated positively, which is one indicator of item quality (Miller, Linn, & Gronlund, 2013).

Research Question One

I examined the effects of mindful movement while listening to music on elementary students' enjoyment of each listening selection. After each phase (A1, B1, A2, and B2), participants rated their enjoyment on a 5-point Likert-type scale anchored by 1 (*I REALLY did not like this music*) and 5 (*I REALLY like this music*). Mean enjoyment ratings (notated as enjoyment rating) decreased between each control and treatment phase. Treatment phase B2 had the lowest enjoyment rating of all phases.

Descriptive statistics for mean enjoyment ratings across the four phases are presented in Table 4.5.

I conducted a repeated-measures analysis of variance (ANOVA) to examine the differences in enjoyment ratings among the four phases. Results of the ANOVA test indicated a significant difference in enjoyment among the four phases, $F(3,105) = 4.938$, $p = .003$, $\eta^2_p = .124$. Pairwise comparisons with Bonferroni correction indicated a statistically significant difference between phases A1 and B2 ($p < .001$). Figure 4.1 shows the differences in participants' enjoyment ratings across each of the four phases.

Research Question Two

I also examined the effects of mindful movement while listening to music on elementary students' music listening comprehension. After each phase (A1, B1, A2, and B2), participants completed a researcher-created music listening comprehension test based on the music heard during each phase. Mean comprehension scores increased between the A1 and B1 phases. Mean comprehension scores also increased between the B1 and A2 phases. Mean comprehension scores decreased between the third phase (A2) and the fourth phase (B2). Descriptive statistics for mean comprehension scores across the four phases are displayed in Table 4.6.

I conducted a repeated-measures analysis of variance (ANOVA) to examine the differences in comprehension test scores among the four phases. Results of the ANOVA test indicated a significant difference in comprehension among the four phases, $F(3, 102) = 7.972$, $p < .001$, $\eta^2_p = .190$. Pairwise comparisons with a Bonferroni correction indicated significant differences among the phases ($p < .001$). The changes in mean comprehension scores between A1 and A2, B1 and A2, and A2 and B2 were significantly

different ($p < .001$). Figure 4.2 shows the differences in participants' comprehension scores across each of the four phases.

Free-Response Data

To gain insight into the reasons why participants provided their enjoyment rating, I asked participants to respond to the following prompt: "In as many words as you can, explain why you chose the answer above." I coded the answers to the free-response question into four categories: (a) feelingful/imaginative response [the participant used narrative, metaphor, simile, or described feelings], (b) analytical response [the participant used analytical language or musical terms], (c) simple response [the participant used only adjectives or simple descriptors], (d) other [the participant gave another response that did not fit the former categories].

As shown in Table 4.7, feelingful/imaginative responses occurred most frequently across all phases. The number of feelingful/imaginative responses occurred with a higher percentage in both treatment phases B1 (65%) and B2 (63.9%). Analytical Responses increased notably between baseline phases A1 (20%) and A2 (39.5%).

Table 4.1

Item Analysis Results for Baseline Phase A1

		Frequencies						Indices	
Item	Students	Alternatives						Difficulty	Discrimination
		A	B	C	D	E	Omits		
1	Upper 10	3	1	6*	0	0	0	30%	0.60
	Lower 10	8	2	0*	0	0	0		
2	Upper 10	0	3	7*	0	0	0	60%	0.20
	Lower 10	0	3	5*	0	0	2		
3	Upper 10	10*	0	0	0	0	0	75%	0.50
	Lower 10	5*	4	0	0	0	1		
4	Upper 10	0	10*	0	0	0	0	70%	0.60
	Lower 10	6	4*	0	0	0	0		
5	Upper 10	6*	4	0	0	0	0	40%	0.40
	Lower 10	2*	3	4	0	0	0		

Note. This item analysis summarizes results of the comprehension test completed after listening selection A1 *The Carnival of the Animals, Movement VII Aquarium*, by Camille Saint-Saëns.

Table 4.2

Item Analysis Results for Treatment Phase B1

		Frequencies						Indices	
Item	Students	Alternatives						Difficulty	Discrimination
		A	B	C	D	E	Omits		
1	Upper 10	3	5*	0	2	0	0	30%	0.40
	Lower 10	6	1*	0	3	0	0		
2	Upper 10	0	0	0	0	10*	0	65%	0.70
	Lower 10	2	0	3	2	3*	0		
3	Upper 10	10*	0	0	0	0	0	65%	0.70
	Lower 10	3*	7	0	0	0	0		
4	Upper 10	1	9*	0	0	0	0	50%	0.80
	Lower 10	9	1*	0	0	0	0		
5	Upper 10	6*	3	1	0	0	0	65%	-0.10
	Lower 10	7*	3	0	0	0	0		

Note. This item analysis summarizes results of the comprehension test completed after listening selection B1 *The Carnival of the Animals, Movement XIII Le cygne* (The Swan), by Camille Saint-Saëns.

Table 4.3

Item Analysis Results for Baseline Phase A2

		Frequencies						Indices	
Item	Students	Alternatives						Difficulty	Discrimination
		A	B	C	D	E	Omits		
1	Upper 10	9*	1	0	0	0	0	55%	0.70
	Lower 10	2*	4	3	1	0	0		
2	Upper 10	0	0	9*	1	0	0	65%	0.50
	Lower 10	1	2	4*	1	2	0		
3	Upper 10	10*	0	0	0	0	0	70%	0.60
	Lower 10	4*	6	0	0	0	0		
4	Upper 10	10*	0	0	0	0	0	80%	0.40
	Lower 10	6*	3	1	0	0	0		
5	Upper 10	2	8*	0	0	0	0	60%	0.40
	Lower 10	6	4*	0	0	0	0		

Note. This item analysis summarizes results of the comprehension test completed after listening selection A2 *Peer Gynt Suite No.1 Morning Mood* by Edvard Grieg.

Table 4.4

Item Analysis Results for Treatment Phase B2

		Frequencies						Indices	
Item	Students	Alternatives						Difficulty	Discrimination
		A	B	C	D	E	Omits		
1	Upper 10	2	2	0	6*	0	0	35%	0.50
	Lower 10	3	3	3	1*	0	0		
2	Upper 10	6*	2	2	0	0	0	30%	0.60
	Lower 10	0*	5	5	0	0	0		
3	Upper 10	0	10*	0	0	0	0	90%	0.20
	Lower 10	2	8*	0	0	0	0		
4	Upper 10	2	8*	0	0	0	0	45%	0.70
	Lower 10	9	1*	0	0	0	0		
5	Upper 10	5	5*	0	0	0	0	25%	0.50
	Lower 10	7	0*	3	0	0	0		

Note. This item analysis summarizes results of the comprehension test completed after listening selection B2 *Pictures at an Exhibition, The Old Castle* by Modest Mussorgsky.

Table 4.5

Descriptive Statistics of Enjoyment Ratings Across All Phases

Phase	*M*	*SD*
A1	4.42	0.73
B1	3.97	1.03
A2	4.28	1.00
B2	3.67	1.35

Table 4.6

Descriptive Statistics of Comprehension Test Scores Across All Phases

Phase	*M*	*SD*
A1	2.69	0.99
B1	2.77	1.00
A2	3.34	1.14
B2	2.29	1.10

Table 4.7

Summary of Responses Across Categories

Theme	A1		B1		A2		B2	
	n	%	*n*	%	*n*	%	*n*	%
Feelingful/Imaginative Response	24	60	26	65	15	39.5	23	63.9
Analytical Response	8	20	6	15	15	39.5	9	25
Simple Response	5	12.5	8	20	7	18.4	3	8.3
Other	3	7.5	1	2.5	3	7.9	5	13.8

Note. Listening baseline phase A1 music stimulus was *The Carnival of the Animals*, *Movement VII Aquarium* by Camille Saint-Saëns. The treatment phase B1 music stimulus was *The Carnival of the Animals, Movement XIII Le cygne* (The Swan) by Camille Saint-Saëns. The listening baseline phase A2 music stimulus was *Peer Gynt Suite No.1 Morning Mood* by Edvard Grieg. The treatment phase B2 music stimulus was an excerpt from *Pictures at an Exhibition, The Old Castle* by Modest Mussorgsky.

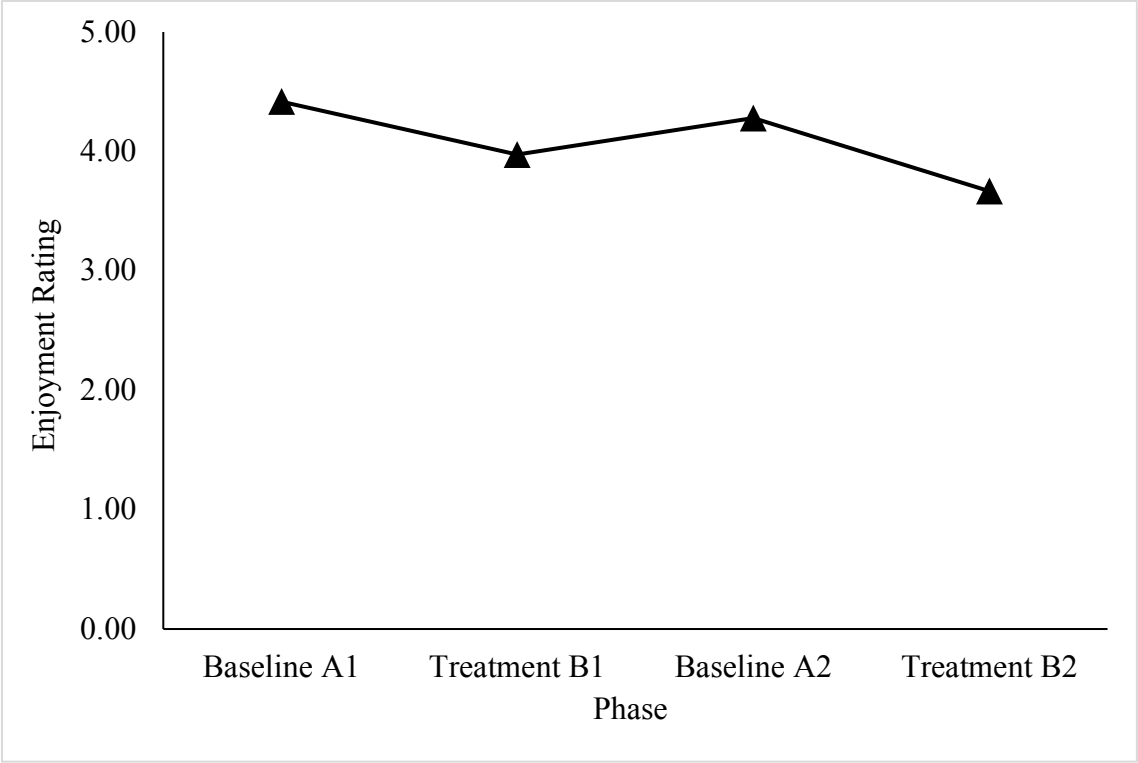

Figure 4.1. Mean Enjoyment Ratings Across All Phases

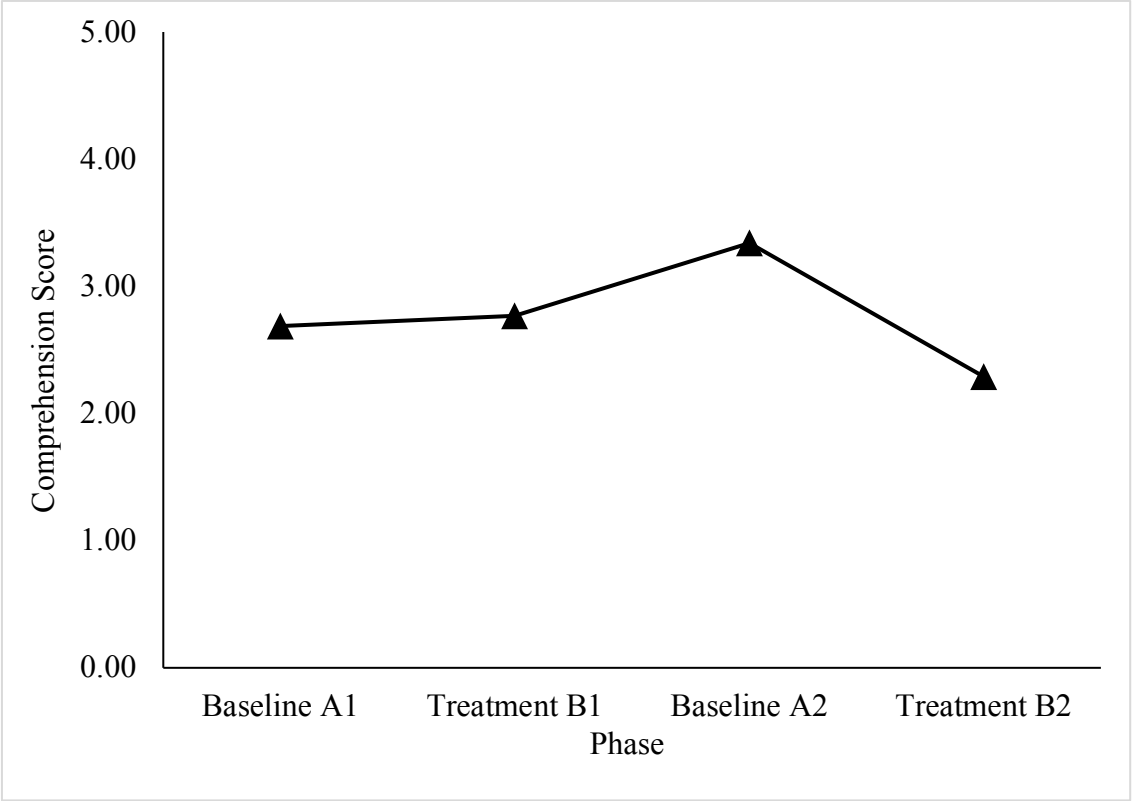

Figure 4.2. Mean Comprehension Scores Across All Phases

CHAPTER 5

DISCUSSION

Summary and Conclusions

The purpose of this study was to examine the influence of mindful movement on elementary students' music listening enjoyment and comprehension. The study comprised two research questions:

1. What are the effects of mindful movement while listening to recorded music on elementary students' music listening enjoyment?
2. What are the effects of mindful movement while listening to recorded music on elementary students' music listening comprehension?

Results indicated that although there was a slight increase in comprehension scores after each of the first three phases, there was also a sharp decrease in comprehension scores between the third phase (A2) and the fourth phase (B2). This result could have been due to the nature of the mindful movement activity. Students may not have been able to adequately attend to the music while moving. The movements may have been distracting, given that students had to simultaneously listen to the music, process what they heard, decide how the music changed, and choose how to demonstrate movement.

I also examined the effects of mindful movement while listening to music on elementary student's enjoyment. After each of the four phases, participants completed a

Likert-type rating to indicate how much they did or did not enjoy the music heard during each phase. Enjoyment ratings were lower during each movement phase than the listening-only phases. The enjoyment ratings may have been lower due to several reasons. First, participants may not have liked the movement activity itself. In fact, one participant indicated "because I did not like the sound and moving on the floor" in the free-response question. Second, participants may not have been able to appropriately attend to the music listening while also concentrating on individual movement choices. Third, participants may have simply not enjoyed the particular music selections used in this study. Finally, movement noise may have been a distraction for some.

I also analyzed the responses from the free-response questions and classified them into four categories. The feelingful/imaginative response category received the most responses across all phases. Both movement phases elicited more feelingful/imaginative responses than the listen-only phases. Both listen-only phases had more analytical response category answers than the movement phases.

A higher percentage of feelingful/imaginative responses after each of the movement phases may indicate an increase in creative thinking inspired by the mindful movement activity, similar to Dunn's (1997) study in which figural mapping resulted in more creative listening. Participants demonstrated more divergent responses and imaginative inward focus in the free-response question post-movement. A few examples of participants' feelingful/imaginative responses from the mindful movement phases are displayed below:

"I REALLY liked the music because it was like a swan swimming in the water."

"I liked this music because it was calm & peaceful, I also liked it because it's something that reminds me of the cool ocean breeze and I love the ocean!"

"It feels like you're floating in a peaceful wonderland galaxy the melody was very peaceful."

Below are selected examples of analytical responses:

"The melody was soft and slow"

"I liked the music because it had flute in it."

"It was very unique using not just high notes but low notes too with a wide variety of instruments."

Below are selected examples of simple responses:

"Because it was OK"

"I never heard this song. And I like"

Below are selected examples of "other" responses:

"Because I like country and rock'n roll music"

As Dunn (1997) suggested, "visual representations, movement, verbal reports, and computer-assisted approaches should be employed" to further investigate creative thinking (p. 54). Due to the higher number of feelingful/imaginative responses on the free-response questionnaire during treatment phases B1 and B2 (and the increase in analytical responses during the baseline listen-only phases A1 and A2), mindful movement while listening to music may increase creative thinking in participants.

Recommendations for Music Educators

The results of this research may help teachers reaffirm the need to purposefully vary listening strategies in the music classroom. Students will likely respond differently to music while viewing a listening map, looking at visual art, demonstrating mindful movement, or engaging in other varied listening strategies. Giving students open-ended tasks after a movement or a mindfulness-induction activity could increase opportunities for creative thinking in the music classroom. Examples of open-ended tasks could include creating a visual map, artwork, graphic design, theatrical representation, or movement that represents what one hears. Another task for post-mindfulness activities could be improvisation. These activities could include improvisational "dialogue" between students (or between student and teacher), improvising patterns along with musical stimuli, improvising on pitched or non-pitched classroom percussion instruments, or creating a pattern that represents what one hears or heard.

Limitations of the Study

There were several limitations to the study that limit its generalizability. The student participants in the study were recruited from one school in the southeastern United States, and students attending a Chinese-immersion elementary school may differ from students attending other public schools. Recruiting from a more geographically diverse population of third-grade students could have produced slightly different results and could provide more generalizable results.

An additional limitation of the study was the differences among the four music stimuli. Differences between the pieces themselves could have confounded the results. For example, certain characteristics of each piece could have influenced participants

enjoyment, such as differing meters, modes, and solo instruments. It could be useful to establish a baseline group of musical stimuli that receive similar enjoyment ratings from another group of children who are similar in age to the student participants. It would also be helpful in the future to have outside evaluators confirm the suitability of each musical selection, which will help to ensure more equivalent stimuli. Establishing a baseline group of music likeability prior to conducting the experiment may, in turn, provide different results.

It is also important to consider that these results are provisional because no formal reliability tests were conducted on the enjoyment ratings and music listening comprehension tests. There were no reliability tests conducted on the enjoyment rating due to it being a single item. Future work in this area would benefit from the use of a more well-developed enjoyment scale composed of more items, which would allow for examination of internal consistency. Because I examined the quality of the comprehension tests using item analysis procedures recommended by Miller, Linn, and Gronlund (2013), I did not conduct additional reliability tests. Furthermore, because each item on the test measured a different aspect of music comprehension (e.g., timbre and dynamics), a measure of internal consistency would not be appropriate. Therefore, it is important to consider the results of this study with this limitation in mind.

Suggestions for Future Research

One suggestion for future research would be to replicate this study with more participants and with a wider range of ages. Adding a wider age group could increase the generalizability of the results. There may also be age groups that will benefit from mindful movement activities more than other age groups.

As mentioned previously, choosing music stimuli with homogeneous likeability could help eliminate speculation whether enjoyment may have an effect on comprehension. Prior to conducting the study, it may be beneficial to select pieces of music with similar likeability ratings from students within the age group who will participate in the study. Future research could also include music other than Romantic period music. Since evidence of feelingful/imaginative response increased during each of the mindful movement phases, future research could include additional post-tests, such as tests of creative thinking. Future research could involve evaluating changes in students' performance on an improvisation-based task or other creative performance tasks.

Results of this study could provide insight for future research on the influence of listening to music in various ways. Future studies with a larger group of participants and age-ranges could increase the generalizability of results. Additionally, future studies may incorporate more verbal prompts while moving to music, helping to guide the listener to notice subtle changes in the music. Further studies of mindful movement may provide researchers with more valuable data on creative thinking and creative response while listening to music.

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APPENDIX A – IRB LETTER

UNIVERSITY OF SOUTH CAROLINA

OFFICE OF RESEARCH COMPLIANCE

INSTITUTIONAL REVIEW BOARD FOR HUMAN RESEARCH
APPROVAL LETTER for EXEMPT REVIEW

Jean Boiteau
School of Music
813 Assembly Street
Columbia, SC 29208

Re: **Pro00072165**

This is to certify that the research study, "***The Effect of Mindful Movement on Elementary Students' Listening Comprehension and Enjoyment***," was reviewed in accordance with 45 CFR 46.101(b)(**1**), the study received an exemption from Human Research Subject Regulations on **10/10/2017.** No further action or Institutional Review Board (IRB) oversight is required, as long as the study remains the same. However, the Principal Investigator must inform the Office of Research Compliance of any changes in procedures involving human subjects. Changes to the current research study could result in a reclassification of the study and further review by the IRB.

Because this study was determined to be exempt from further IRB oversight, consent document(s), if applicable, are not stamped with an expiration date.

All research related records are to be retained for at least three (3) years after termination of the study.

The Office of Research Compliance is an administrative office that supports the University of South Carolina Institutional Review Board (USC IRB). If you have questions, contact Arlene McWhorter at arlenem@sc.edu or (803) 777-7095.

Sincerely,

Lisa M. Johnson
ORC Assistant Director
and IRB Manager

APPENDIX B – ENJOYMENT RATING AND FREE-RESPONSE QUESTION

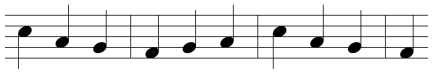
How much did you like the music? Place a check mark below your answer.				
I REALLY like this music  _____	I liked this music _____	This music is just OK _____	I did not like this music _____	I REALLY did not like this music  _____

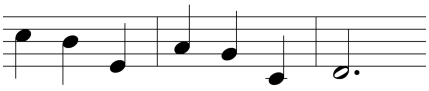
In as many words as you can, explain why you chose the answer above.

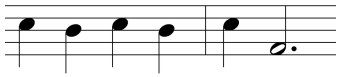
APPENDIX C – MUSIC LISTENING COMPREHENSION TESTS

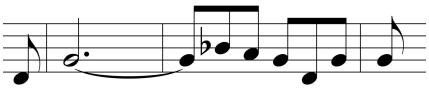
Music Listening Comprehension Test 1 - Saint-Saëns, *Le carnaval des animaux, Aquarium*

1. Which of these matches the melodic shape that you hear?
(Listen to the first 20 seconds)

_____a. 

_____b. 

_____c. 

_____d. 

2. What type of ensemble do you hear?

A Band	A Chorus	An Orchestra
_____	_____	_____

3. Do you hear a steady beat?

Yes

_____

No

_____

4. Was the tempo fast or slow?

Fast

_____

Slow

_____

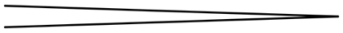
5. Did the music get louder, stay the same, or get quieter?

Get louder

_____

Stay the same

_____

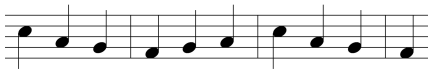


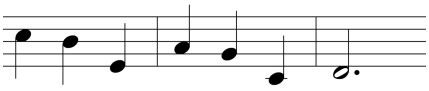
Get quieter

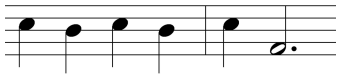
_____

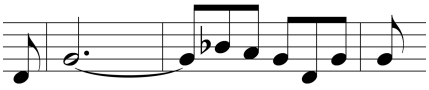
Music Listening Comprehension Test 2 - Saint-Saëns, *Le carnaval des animaux, Le cygne* (The Swan)

1. Which of these matches the melodic shape that you hear?
(Listen to the first 20 seconds)

_____a. 

_____b. 

_____c. 

_____d. 

2. What instrument is noticeably playing at the beginning?

Saxophone _____

Bassoon _____

Flute _____

French horn _____

Cello _____

3. Was the tempo fast or slow?

Fast _____

Slow _____

4. Was the music loud or quiet?

Loud

Quiet

_____ _____

5. Did the music get louder, stay the same, or get quieter?

Get louder

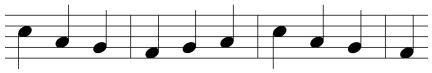
Stay the same

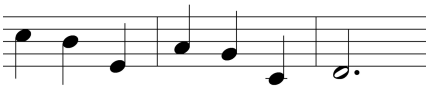
Get quieter

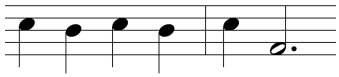
_____ _____ _____

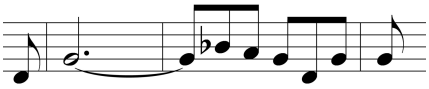
Music Listening Comprehension Test 3 - Edvard Grieg, *Peer Gynt Suite* No. 1, *Morning Mood*

1. Which of these matches the melodic shape that you hear?
(Listen to the first 20 seconds)

_____a. 

_____b. 

_____c. 

_____d. 

2. What instrument is playing a solo at the beginning?

Piano _____

Bassoon _____

Flute _____

French horn _____

Cello _____

3. Was there a steady beat?

Yes _____

No _____

4. Did the music get louder, stay the same, or get quieter?

Get louder _____

Stay the same _____

Get quieter _____

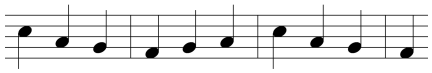
5. Was the tempo fast or slow?

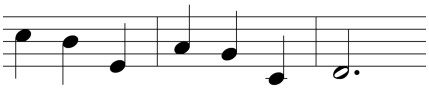
Fast _____

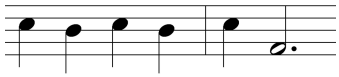
Slow _____

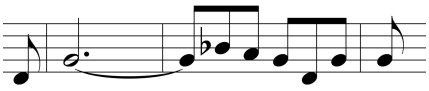
Music Listening Comprehension Test 4 - Mussorgsky, *Pictures at an Exhibition, The Old Castle*

1. Which of these matches the melodic shape that you hear?
(Listen to the first 20 seconds)

_____a. 

_____b. 

_____c. 

_____d. 

2. What instrument family is most noticeably playing at the beginning?

Woodwind Family _____

Brass Family _____

Strings Family _____

3. Was the tempo fast or slow?

Fast
_____

Slow
_____

4. Was the music loud or quiet?

Loud

Quiet

_____ _____

5. Did the music get louder, stay the same, or get quieter?

Get louder

Stay the same

Get quieter

_____ _____ _____