

THE EFFECT OF PERFORMANCE CONDITION ON SECOND-GRADE STUDENTS'
RHYTHMIC ACCURACY WHILE SIGHT-READING

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ABSTRACT

The purpose of this study was to examine rhythmic performance accuracy while sight-reading rhythms using either rhythmic speaking, body percussion, or instruments. A secondary purpose of this study was to study possible relationships between rhythmic error types (tempo or rhythmic accuracy) in each of these performance conditions. Sixty-two 2nd grade students participated in this study. Participants ranged in age from 7 to 8 years ($M = 7.63$, $sd = .49$). Forty-four percent of the students were male, and 56% of the students were female. Participating students sight-read 10 rhythmic patterns using 3 different performance conditions: speaking, clapping, and drumming. A repeated measures ANOVA was applied to examine rhythmic accuracy scores, and results indicated a significant difference in sight-reading accuracy scores as a function of performance condition, $F(2,122) = 65.82$, $p < .001$. Results indicated that students scored significantly higher when speaking rather than clapping ($p < .001$) or drumming ($p < .001$). A Chi-square test of independence was conducted to determine if there was a significant relationship between error type and performance condition (speaking, clapping, and drumming). Results revealed a significant relationship between error type and performance condition, $\chi^2(2) = 7.33$, $p < .05$, with tempo errors occurring more frequently amongst all three conditions. Fifty-seven percent of all performance errors were related to problems with correct tempo. These findings suggest that

students may begin to develop clapping and instrumental sight-reading skills in the primary grades, but they may not be able to master these skills until the child has had more time to master the gross motor movement and mental processing required for such tasks.

Implications for elementary music teachers and suggestions for future research are discussed.

APPROVAL PAGE

The faculty listed below, appointed by the Dean of the Conservatory of Music and Dance have examined a thesis titled “The Effect of Performance Condition on Second-Grade Student’s Rhythmic Accuracy While Sight-Reading”, presented by Michelle R. Schwinger, candidate for the Master of Music Education degree, and certify that in their opinion it is worthy of acceptance.

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CHAPTER 1 INTRODUCTION

Teaching complex musical concepts to children can be a difficult task for any music teacher. This wide range of concepts includes singing, playing instruments, performing choreographed dances, moving creatively, listening critically to music, and analyzing a varied repertoire. Elementary music students are asked to perform these activities and more on a regular basis (Cheyette & Cheyette, 1969; Kriske & DeLelles, 2007; MacMillan McGraw-Hill, 2008; Young, 1990). These are just a few of the many objectives that are outlined in state music curriculums across the United States. Elementary music education not only accesses student's concrete knowledge, it demands student's abstract reasoning and evaluation skills as well (Phillips, 2013). Young musicians access their concrete knowledge by reading, echoing, and analyzing music. Students access their abstract reasoning by improvising, performing, and speaking intelligently about music (McPherson, 2006; MENC [NAfME], 1996; Persellin, 1992; Young, 1990). In order for students to be successful across concrete and abstract reasoning tasks, these complex musical skills must be presented in a manner that is age appropriate and developmentally applicable. It should also be noted that the elementary music classroom is comprised of students with varied scholastic abilities and musical backgrounds. Some students may have been sung to as babies; some may have had years of piano instruction before their elementary years, and some may have never heard a folk song before entering the music classroom. One central responsibility of the music teacher is to accommodate all of these prior experiences, while pacing instruction so it is engaging for all students, and consistently developing melodic, rhythmic, and music literacy skills in these young musicians.

Rhythm is one of the most important skills that music teachers develop in their students (Bernhofs, Grauzdina, & Rudolfs, 2012; McPherson, 2006; Penttinen & Huovinen, 2011; Young, 1990). In order to effectively listen to, analyze, and perform music, people must have rhythmic understanding. If a musician lacks rhythmic abilities, their performance accuracy will diminish greatly. Rhythm can be learned in many ways, with some rhythmic understanding learned passively, and other understanding actively. According to Reifinger (2006), rhythmic skills are learned and developed in three ways: maturation, acculturation, and active learning. With maturity comes the ability to observe and process music at a deeper level, and also the ability to control muscle movements that are needed to move rhythmically (McPherson, 2006). Through natural growth and development, young children increase their ability to comprehend rhythms, and they increase their accuracy in identifying, reproducing, and creating rhythmic patterns. Acculturation also assists in the students understanding of rhythm. Young children are able to absorb some musical understanding through exposure, similar to how young children are also able to learn their spoken language through experience and repetition (McPherson, 2006; Phillips, 2013). Lastly, active learning plays an important role in the child's rhythmic understanding. Through practice, repetition, exposure, and guided instruction, students are able to develop musical skills in the same way that they are able to learn other subjects (Mason, 2012; McPherson, 2006; Phillips, 2013). Active learning can take on many forms in the music classroom. When teaching rhythmic concepts to students, elementary music teachers are able to utilize auditory, kinesthetic, and visual models to aid in their instruction (Dunn, 2008). All three models are important when developing the whole musician, and a musician who only listens well but cannot read music lacks important knowledge. Through active learning in these three models, the student

musician may be able to fully comprehend the concrete and abstract concepts of musical rhythm.

Student and teacher can be sure that active learning is taking place through the creation and implementation of quality assessment. Music teachers are charged with the responsibility to instill a deep understanding of rhythm in their students. In order for the teacher to evaluate their students learning, valid assessment is needed. With careful observation, teachers are able to monitor the learning that is taking place in their classroom and are able to adjust their teaching when necessary to meet the needs of their student population.

Sight-reading can be an appropriate way to assess one's performance abilities, as it is a multifaceted skill (Henry, 2011; Paul, 2010). Sight-reading requires the musician to translate their knowledge of melody, rhythm, and musical literacy into performance in the moment, without guidance from the teacher. Sight-reading is a skill that is required at state music contests in secondary schools across the United States; this suggests that music educators believe the ability to read and perform with speed and accuracy is an important indicator of musical achievement for music students (Henry, 2011).

Musicians may encounter difficulty with either pitch or rhythm when sight-reading, which makes overall sight-reading a difficult task to analyze and assess. In 2011, Henry conducted a study that examined the effect of rhythmic difficulty and pitch difficulty on high school singers' ability to sight-read a melody. Henry created three melodies which allowed the subjects to explore various levels of pitch and rhythmic difficulty; and considered whether participants struggled more with pitch or rhythm tasks. The researcher found that students who were able to perform rhythms accurately were also more likely to perform with

accurate pitch. She found that students who were unable to perform with rhythmic accuracy were still able to perform with pitch accuracy, and only 5% of students were found to perform the rhythms correctly without performing the correct pitches. Henry's study indicated that singers may prioritize pitch over rhythm when sight-reading. If students possibly view rhythm as a lesser priority when performing, teachers need to address the importance of rhythmic reading when working with students. Rhythm is one of the building blocks of musical understanding for all musicians, young and old. Rhythmic sensitivity is important for the development of motor activity skills, reading, the organization and recollection of information, and the ability to appreciate music (Gardner, 1971). A solid foundation of rhythmic concepts seems essential for any musician to perform successfully and accurately.

CHAPTER 2

REVIEW OF LITERATURE

Learning Rhythmic Concepts

One could argue that rhythm is a driving force in our world. Rhythm influences us from within and from the world around us. Our heartbeat, our breath, and our movements are all affected by our own personal response to rhythm. Rhythmic reactions are very natural for all human beings, regardless of age. According to Sehon and O'Brien (1951), every child has an innate sense of rhythm. Music education helps students develop and nurture their natural rhythmic tendencies, which improves their understanding of themselves and the world around them.

Rhythmic skills can be learned and developed in three ways: maturation, acculturation, and active learning (Reifinger, 2006). Through maturation, students gain control of their bodies and minds, which naturally increases their abilities to hear, understand, and reproduce musical rhythms. For example, through maturation comes the ability to observe and process music at a deeper level, and also comes the ability to control muscle movements that are needed to move rhythmically (McPherson, 2006). As the brain develops, so does rhythmic understanding and knowledge. Through natural growth and development, young children increase their ability to comprehend rhythms, and they increase their accuracy in identifying, reproducing, and creating rhythmic patterns.

Acculturation also assists in the students understanding of rhythm. Young children are able to absorb some musical understanding through exposure, similar to how young children are also able to learn their spoken language through experience and repetition (McPherson, 2006; Phillips, 2013; Putkinen, Saarikivi, & Tervaniemi, 2013). Music is a

regular part of life, whether a child has music education as a part of their school experience or not. Humans are able to assimilate some musical understanding simply by being exposed to music, whether it is on the radio, on the television, or playing in the store where a person is shopping (Putkinen et al., 2013). Rhythms surround us, and a basic sense of rhythmic understanding may be absorbed through repeated exposure to music separate from a music classroom.

Lastly, active learning plays an important role in the child's rhythmic understanding. Through practice, repetition, exposure, and guided instruction, students are able to develop musical skills in the same way that they are able to learn their other school subjects (McPherson, 2006; Phillips, 2013). Researchers have found that students are unable to continue to develop their musical skills past childhood without the intervention that comes with active learning in the music classroom (Dunn, 2010; Phillips, 2013; Reifinger, 2006). Active learning can take on many forms for the young musician. When teaching rhythmic concepts to students, elementary music teachers are able to utilize auditory, kinesthetic, and visual models to aid in their instruction. All three models are important when developing the whole musician. By providing instruction in auditory, kinesthetic, and visual models of music, the child musician can be taught to understand rhythmic concepts more deeply and fully (Dunn, 2010).

The Process of Teaching Rhythm to Elementary Aged Students

The beat is the foundation of rhythmic understanding for musicians of any age; it is an essential concept that must be taught and reinforced many times in the early years of a student's music education. The steady beat serves as a framework for students to organize musical rhythms (Drake & Gerard, 1989). While knowledge of the beat is essential to

rhythmic understanding, the beat is somewhat of an abstract concept to children in the early years of music education. Miller (2012) discusses multiple ways of reinforcing the beat, such as moving kinesthetically to the beat of the music, watching the metronome while audiating rhythmic patterns, and using blocks to visually represent the beat. Miller also discussed that a deep understanding of the beat is incredibly important for beginning student's later understanding of rhythmic patterns, even though the beat is an abstract concept.

Because rhythm is a complicated task for students, effective rhythm teaching is essential for active learning to take place in the music classroom. At the elementary level, students are exposed to rhythm in many different ways. Students are able to sing, speak, explore body percussion, play instruments, and move to rhythmic patterns. Because rhythm is a difficult task, teachers may need to explain rhythmic concepts in multiple ways for students to fully grasp the concepts being presented. There are many popular auditory, kinesthetic, and visual methodologies that teachers use for rhythmic instruction (Dell, 2010; Dunn, 2008; Ester, Scheib, & Inks, 2006; Persellin, 1992; Reifinger, 2006). Auditory methodologies use rote before note presentations of rhythmic learning. A common auditory learning activity is rhythmic call and response, where students are asked to repeat rhythmic patterns that they hear. Another common auditory activity is aural discrimination where students are asked to identify if two rhythmic patterns are the same or different. Kinesthetic methodologies allow students to experience rhythm through body movement. A common kinesthetic activity is moving to the beat, where students are asked to demonstrate their understanding of the beat through gross motor movement. Also, a kinesthetic activity could be moving fast or slow to match the tempo of the music. Lastly, visual methodologies involve seeing and/or reading symbols to understand rhythmic concepts. The notation used

for visual instruction can vary from standard musical notation to other symbolic notation, both of which are used to demonstrate musical concepts to the student through sight (Mason, 2012). A common visual activity is students reading prepared rhythm cards. Another common visual activity is rhythmic reading where students generate the rhythmic examples themselves, and then read their compositions out loud for the class.

A wide variety of experiences may help the student develop a deeper understanding of rhythm. By providing experiences in aural, kinesthetic, and visual methodologies, students have an opportunity to learn about rhythm in a well-rounded way. Students can listen, move, speak, sing, or play an instrument rhythmically. The below mentioned material discusses age appropriate instruction for the early elementary years. It is important to note that each child is a growing, changing individual with needs and abilities that are theirs alone. Students are not only constantly growing physically, mentally, emotionally, socially, and spiritually, they are also all developing at unique rates. When discussing developmentally appropriate processing, it is important to remember that all students learn and grow at slightly different rates and times.

Auditory approaches to teaching rhythm. Auditory approaches to rhythmic teaching involve sound before sight. Auditory instruction is one way that music teachers can communicate with students about rhythmic concepts without reading notation and recreating it in performance (Phillips, 2013). Auditory approaches to teaching rhythm are fundamental to the theories of famous pedagogues such as Pestalozzi, Mursell, Bruner, Gagne, and Hoffman (Cheyette & Cheyette, 1969; Ester et al., 2006; Mason, 2012). These scholars believed that educators should not introduce musical notation of rhythmic patterns too early in musical learning because it can make rhythm very complicated for young students who are

developing their musical vocabulary. Many researchers have examined the use of auditory approaches (Bebeau, 1982; Cheyette & Cheyette, 1969; Garner, 2009; Phillips, 2013; Reifinger, 2006). Allowing young children to develop a musical vocabulary separate of notation will later make the transition to reading from printed music a seamless shift.

Many researchers have suggested that auditory exploration in music is necessary before students begin to read musical notation (Cheyette & Cheyette, 1969; Garner, 2009; Petzold, 1963; Phillips, 2013; Reifinger, 2006; Shehan, 1987; Whitley, 2015). Persellin (1992) conducted an early study pertaining to age, rhythmic accuracy, and instruction. The researcher examined the effect of instruction on first, third, and fifth-grade elementary-aged children's rhythmic accuracy. Instruction was provided through auditory, visual, and rhythmic models. Results revealed that first and third-grade students performed with the greatest rhythmic accuracy when they were asked to repeat a sequence of rhythmic patterns that were presented to them aurally on a resonator bell. The first-grade group who performed rhythms that were presented to them visually scored significantly lower than the first-grade auditory group. It was also found that visual methods of instruction did not surpass the auditory scores until the fifth-grade, which suggests that auditory learning is a good place to begin rhythmic instruction for early elementary-aged students. Based on these data, it appears visual models are important for rhythmic understanding, but perhaps are more effective if introduced in the upper elementary grades.

Kinesthetic approaches to teaching rhythm. Moving rhythmically is something that is natural for human beings. We breathe, walk, and dance rhythmically every day of our lives. This is a good thing for the music teacher who is able to plan activities that harness and encourage movement as a natural part of the rhythmic learning process. Generally,

children desire to move and this movement is an essential part of their growth and understanding (Sehon & O'Brien, 1951; Stewart, 2015). According to Cheyette and Cheyette (1969), children should have movement and instrumental experiences in rhythm before they are introduced to musical notation. Kinesthetic training in music helps young students feel the beat, and it helps train the muscles to move rhythmically, which will aid in later performance on instruments (Stewart, 2015). Knowing that movement enhances musical understanding and that it is an effective way to teach children makes kinesthetic learning a valuable tool in the music classroom.

Many researchers agree that student's ability to kinesthetically maintain a steady beat is a necessary step prior to learning musical notation (Bebeau, 1982; Conway, Marshall, & Hartz, 2014; Dell, 2010; Miller, 2012; Phillips, 2013; Stewart, 2015). Dell (2010) suggested that movement education should be used early in the process of teaching rhythm to children, as it helps individual students feel the beat. Dell says that students will not be able to keep an accurate, steady beat without having a kinesthetic understanding of rhythm. This suggests that students who are not able to kinesthetically keep the beat by themselves may not be able to perform rhythms accurately in a given tempo by themselves.

Many music educators use various kinesthetic activities to teach rhythm (Cheyette & Cheyette, 1969; Conway et al., 2014; Dell, 2010; Garner, 2009; Kriske & DeLelles, 2007; MacMillian-McGraw Hill, 2008). Some of the activities used by Kriske and DeLelles (2007) involve moving creatively to the music they hear, some activities involve choreographed movement to enhance student understanding, and other activities allow students to reproduce rhythms using different body percussion, such as clapping, patting, or snapping. Similarly, Miller (2012) described some activities that she uses in her classroom that help students

develop a kinesthetic awareness of rhythm. Miller asked students to perform the beat of the music in many ways, such as marching, clapping, and playing instruments.

Some researchers have investigated the effect of a kinesthetic response on rhythmic accuracy (Boyle, 1970; Dell, 2010; Garner, 2009; Persellin, 1992). In Boyle's (1970) study, junior high band students were tested on their rhythmic sight-reading abilities. The subjects were divided into two groups; one group underwent fourteen weeks of rhythmic instruction where they were discouraged to tap their foot to the beat while performing. This group was not allowed to use a kinesthetic response to reinforce the beat of the music they were performing. The second group was given the same rhythmic instruction, but they were encouraged to tap their foot to the beat while practicing rhythmic exercises. This group was encouraged to use a kinesthetic response to reinforce the beat of the music while they were performing. After the fourteen weeks of rhythmic instruction were completed, subjects were given the Watkins-Farnum Performance Scale in order to test their rhythmic sight-reading ability. Results revealed that students in the experimental group significantly increased their sight-reading accuracy by tapping their foot to the beat. A kinesthetic response increased students sight-reading accuracy in this study, which supports the idea that movement is an important part of rhythmic literacy and accurate rhythmic performance.

Student's kinesthetic experience of rhythm is affected by the development of their gross and fine motor skills. Gross motor skills are the abilities required in order to control the large muscles of the body that are needed for walking, running, sitting, crawling, and other activities (Encyclopedia of Children's Health, 2014). Children follow a natural progression of gross motor control as they mature; gross motor skills develop rapidly during childhood. This natural process begins first with young children developing control of their

arms and legs. Next, they begin sitting up on their own, later they master locomotor movements such as crawling and walking. Fine motor skills also develop through early childhood. According to the Encyclopedia of Children's Health (2014), hand-eye coordination and quick reaction times are not fully developed until middle childhood. While the music teacher needs to be conscious of their student's abilities to control large muscle movements, they also must have an understanding of student's abilities to control small movements. The ability of the student to control these movements will have a direct impact on that student's ability to perform rhythmically with precision and accuracy.

When utilizing movement based instructional practices, it is important for a teacher to understand developmentally appropriate movements for the age group that they are working with. This includes gross motor skills and fine motor skills. Kinesthetic instruction can be a powerful tool, but it must always be used in a way that sets up the student for success. If a teacher is asking a child to perform a task that they are unable to complete because their motor skills are lacking, the student and the teacher will easily become frustrated and disappointed when the task cannot be completed satisfactorily. In a study conducted by Pike and Carter in 2010, beginning piano students were asked to sight-read examples on the grand staff. At the conclusion of the study, it was noted that many of the students said their failure to perform well on the given assessment was not because of their lack of understanding. The subjects said their failure to perform well while sight-reading was due to their inability to control the muscle movements required to perform with both hands moving independently at the same time.

When working with children, it is important to be aware of age-appropriate gross and fine motor control. This knowledge will help the teacher create meaningful experiences that

will benefit the students overall understanding of music. In an early study conducted by Rainbow (1981), three year olds were significantly better at keeping a steady beat vocally rather than clapping, tapping rhythm sticks, or marching in time. The students demonstrated understanding of the beat, but their kinesthetic response was not an accurate measure of that understanding. Similarly, in an early study by Schleuter and Schleuter (1985), students in grades kindergarten through third-grade were more accurate at echoing rhythms when chanting or clapping versus stepping. The researchers attribute these results to the type of muscle movement involved; large muscle movements are more difficult for children to execute accurately than small muscle movements. From these examples, one can see that performance condition has a direct impact on student's abilities to perform music accurately. Teachers must be aware of how they are asking students to demonstrate their musical understanding, keeping in mind the limitations of gross motor and fine motor skill development.

Visual approaches to teaching rhythm. While teachers are encouraged to broaden students understanding through a wide range of experiences, musical literacy should be a goal of any elementary music curriculum (Mason, 2012). In order for children to read music, it is important to learn basic rhythmic skills in a logical, sequential fashion (Mason, 2012; Phillips, 2013). After much time and experience has been provided for young children to explore and fully experience music, teachers should begin a gradual inclusion of printed music to help students fully understand musical concepts (Miller, 2012). Shehan (1987) suggested that beginning musicians might learn rhythmic patterns easiest when they are presented with rhythmic concepts both visually and aurally. Aural and movement based activities are essential to the young musician foundational understanding of rhythm, but the

printed art should not be entirely neglected in the elementary music classroom. Learning to read music is like reading a new language; students need a systematic approach that will smoothly lead from one concept to the next for them to gain mastery of the literacy goals of the curriculum.

There are many steps involved in order for a student to perform rhythmically using visual models. Saxon (2009) says that an important first step in note reading is for students to be trained to keep their eyes on the music while they are performing. Saxon says that many young musicians take their eyes off of the music in order to look at their hands or to visually check their posture; he encourages teachers to address this very early in visual music education. When reading music, the performer concentrates on the notes that they are currently executing, but also they must mentally prepare for the upcoming notes on the page. First, the student must identify the symbol presented, and then process how to create that sound, all while keeping their response in the provided tempo. The processing speeds required to complete these steps successfully can be a challenge for children, especially if those children have reading disabilities. Findings from brain research indicate that rhythm is possibly processed by the same hemisphere used for language, which means that students who struggle to process words will likely also struggle to process music (Atterbury, 1983; Khan & McGuire, 2014; Taub & Lazarus, 2012). This is important to keep in mind when teachers are instructing their class and when they are assessing students' rhythmic reading abilities, because the elementary music classroom is comprised of students from a wide variety of backgrounds and reading levels.

Note reading systems. There are many popular note-reading systems used across the world that were designed by well-known musical pedagogues (Colley, 1987). The most

famous methodologies used in the United States are Kodaly, Orff, counting, and *takadimi* approaches to rhythmic reading. The Kodaly system involves memorizing a pre-determined set of words for rhythmic subdivisions, such as ta for quarter-notes and ti-ti for eighth-note pairs (Ester et al., 2006). The Orff approach assigns common words with speech patterns to teach rhythm (Ester et al., 2006; Southcott & Cosaitis, 2012). Students are able to connect musical sounds with syllables of words that are discussed in their regular classroom reading and writing studies. The traditional counting system of numbers (e.g. 1 2 & 3 & 4) allows for subdivision of the beat to be performed with ease, and it is consistent among all rhythmic symbols. The final system for reading music is the *takadimi* approach, which was proposed by music theorists Richard Hoffman, William Pelto, and John White. The *takadimi* system labels the beat “ta”, and then divides the beat with alternate syllables (e.g. ta-di for eighth-note pairs). This methodology is symbol specific, meaning there is one way to read each type of note. Also, this system applies to any musical meter, making it versatile with the varied repertoire available to young musicians. *Takadimi* can readily be used with elementary learners because it allows students to have an understanding of the beats placement in the music. By labeling the beginning of each beat with the word ta, students are able to lock into the underlying beat of the music. Subdivision of the beat is labeled with syllables other than ta, which leads students to naturally emphasize the pulse in their performance. For further clarification, a summary of these four systems can be found in Table 2.1.

Each system has strengths and weaknesses. Ester, Scheib, and Inks (2006) point out that in the Kodaly system, once quarter-notes, eighth-note pairs, and sixteenth-notes have been learned, the system becomes very complex. The Orff approach is often criticized as

being inconsistent, because it does not assign specific terms to specific rhythmic patterns (e.g.: ap-ple can represent two quarter-notes or two eighth-notes depending on the rhythm being read). Without designated specific speech cues to each symbol, students may get confused as to what to say when they are asked to perform rhythms alone or in groups without the teacher's guidance. The problem with using the counting system to teach young musicians is that it requires the student to have a knowledge base of musical meter, placing certain numbers in context to the overall measure. This system may be too advanced for primary-aged students, and should be reserved for use in secondary musical ensembles such as middle school and high school band, orchestra, and choir. Students at the high school level have a more concrete understanding of time signatures and their function. Persellin (1992) suggested that too much variety/too many methods can be detrimental to student understanding. Teachers must choose one system to present to students, and then it is essential that they remain consistent within the system they choose to pursue (Phillips, 2013). Whichever system is adapted for use in the classroom, the act of counting of rhythm aloud will provide students with a good rhythmic foundation to the music they are performing (Micallef, 2013).

Curriculum resources for teaching rhythm. "Reading and notating music" is number five on the list of National Standards for Music Education published by MENC [NAfME], making it one of the essential goals that music teachers strive to teach their students (MENC [NAfME], 1996). The three steps involved in reading notation are: 1. Identify the symbol 2. Speak the word/execute the motion to perform the rhythm identified 3. Maintain a steady beat (Bebeau, 1982). Students must have a high level of processing speed to be able to successfully accomplish these three tasks; DeLelles and Kriske (2007)

suggested that teachers should wait until first-grade to begin the process of learning to read music from standard notation.

Many curriculum resources are available to music teachers, which outline age-appropriate activities for each grade level. In the *Game Plan* series, teachers are given a curriculum to follow that leads students through age-appropriate activities from kindergarten to fifth-grade (Kriske & DeLelles, 2007). This series outlines activities for each week of the school year, August through May. Standard musical notation is not introduced until late September of the first-grade year; this is when students are introduced to quarter-notes. A few weeks later in this series, first-grade students notate quarter rests alongside quarter-notes, and they begin to develop an understanding that silence is notated in music along with sound. First-grade students learn to recognize eighth-note pairs by late October, and then the *Game Plan* series does not introduce new notes or rests until the second-grade year. Second-graders are introduced to half-notes early in the school year, and half-rests follow later in the sequence. The transition from a note lasting for more than one beat is a challenge for some students, so it is suggested that teachers allow for many experiences in reading, writing, singing, and moving with a half-note pulse to ensure students fully understand this concept before moving on to reading other musical symbols (Kriske & DeLelles, 2007).

A similar progression of introducing note values is followed in the popular textbook series *Spotlight on Music*. Many music educators created this textbook, and it outlines a sequential teaching sequence for kindergarten through eighth grade music students. In this textbook series, students have many auditory and kinesthetic experiences in music before they begin reading standard notation (MacMillan McGraw-Hill, 2008). The *Spotlight on Music* series utilizes a “big book” for instruction in kindergarten and first-grade, where

activities are largely whole group instruction led by the music teacher. Students are introduced to the beat audibly and kinesthetically in the primary grades. In the second-grade, student textbooks are made available for individual music students to begin their study of standard musical notation through the use of varied repertoire.

In order for students to effectively read rhythmic patterns, they must be able to comprehend the time values of different notes and rests, and they must be able to combine these values into patterns, phrases, and/or measures (Van Nuys & Weaver, 1943). Both the *Game Plan* series and the *Spotlight on Music* series focus their literacy building exercises on repertoire where quarter-notes are equal to one beat. While students may be exposed to different meters, they are not discussed in great detail in the elementary grades. Students have much reading experience in common time, but the mathematical concepts required to convert common time into other meters is beyond a second-graders grasp. This does not mean that these students should not experience music in compound meters, it simply implies that young musicians are not equipped to read music where a quarter-note does not equal one beat of sound—music meter is beyond the capabilities of their processing at seven or eight years old (Bebeau, 1982).

In an early study conducted by Gardner (1971), the same progression of introducing new rhythmic concepts slowly when working with young children is utilized. He indicated that music teachers must have a great amount of knowledge regarding age-appropriate musical notation in order to create successful, meaningful experiences for their students. If students are to successfully learn to read and understand musical notation, the concepts must be taught slowly to allow for processing time. After all, student's study of their primary

language is spread out over years of instruction; it makes sense for instruction in music literacy to follow the same timeline.

Assessing Rhythmic Accuracy

Assessment is necessary for teachers and students to ensure that active learning is taking place in the classroom. In order for classroom assessments to be valid, the students must be evaluated in a fair and age-appropriate manner. Assessment in the elementary music classroom is often more focused on behavior and participation than on actual content knowledge (Lange, 1999). This trend cannot continue; valid assessment is necessary for music to be considered part of the required core curriculum in the elementary grades. According to MENC [NAfME] (1996), musical assessments should provide students with an opportunity to demonstrate their knowledge and musical abilities in a fair and accurate manner. Fair and consistent assessment will allow a teacher to reflect on their work, and will also help a teacher evaluate best practices for teaching their students now and in the future.

One of the biggest assessment challenges facing music teachers is the teacher's ability to test their students consistently (Brophy, 2008; MENC [NAfME], 1996). When assessing student performance, teachers have a lot of flexibility in interpreting results, especially when assigning grades to performance based tasks. Teachers can affect student outcomes considerably through their own judgment, or with the repertoire they choose to assess. Before administering an assessment, the evaluator must establish clear expectations for judging success. If students are to be assigned a letter or number grade to reflect their work, the teacher must clearly define what responses warrant a particular grade assignment (MENC [NAfME], 1996).

Assessment can take on many forms in the music classroom. Written tests are one option. Written tests are objective to grade, and teachers can assess content knowledge as either incorrect or correct, assigning a letter grade by following pre-determined grading standards. These types of assessments are valid, but they ignore one core aspect of music education—performance. According to MENC [NAfME] (1996), when creating an assessment of music learning, teachers must test not only the ability to perform and create music, they must also test students' ability to perceive and analyze music also. Performance based assessment allows the teacher to provide feedback to the student on their demonstration of skills presented in class. Rhythmic and melodic assessments provide important information to students and their parents, preparing them for quality life-long music making.

Performance-based assessment can take on many forms. Teachers have the ability to test students on musical skills that are easy, difficult, familiar, or unfamiliar (MENC [NAfME], 1996). Depending on what type of skills the teacher wants to observe, students can prepare a musical example for assessment, or the teacher can provide sight-reading examples for students to perform in the moment. No matter how the teacher chooses to assess performance, it is best for the teacher to video record or audio record student work for later review. This allows the assessor to better control the testing while it is happening, and also allows the assessor to review a student's performance more than once if necessary to provide accurate feedback (MENC [NAfME], 1996).

Assessing sight-reading. The ability to sight-read well is an invaluable skill to musicians of all ages (Kopiez & Ji In, 2008). Sight-reading is necessary for working adult musicians who are presented with a large body of repertoire that they are expected to master

in a short period of time (Kopiez & Ji In, 2008; Olson, 2010; Saxon, 2009). Sight-reading is also a valuable skill for student musicians; Olson says that if high school choir students are not able to sight-read, they will not be able to progress as a choir without individual rote teaching, which is laborious and tedious for both the students and the teacher. Sight-reading is a skill that tests musician's ability to read, process, and perform music in the moment, without preparation.

Sight-reading assessments are one way that the music teacher can evaluate their student's understanding of musical concepts (Lehmann, 2007; Mishra, 2014). The inability to read rhythms accurately from staff notation is often assumed to be the cause of difficulty in music reading for both young and experienced musicians according to Van Nuys and Weaver (1943). In an early study conducted by Bebeau (1982), results indicated that many rhythmic reading errors occurred because of the participant's inability to process the information quickly enough to perform in the given tempo. Recently, Taylor's (2006) research showed that errors relating to rhythmic precision and accuracy accounted for the most prominent difficulties in performance when observing elementary aged students in an instrumental ensemble.

It may be that some sight-reading errors that are occurring in student performances are due to the unrealistic expectations of the music teacher. If students are taught in a sequential manner, than the expectations for their assessment should match that same timeline (Phillips, 2013). If a student is unable to vocally match pitch, it is unrealistic for a teacher to expect them to be able to sight-sing a piece of music. Likewise, if a student is unable to identify note values, they will not be able to sight-read rhythms. Sight-reading is

an important skill for musicians of all age levels, but the specific tasks that are being asked of the students will vary greatly depending on age level and musical maturity.

A wide variety of sight-reading experiences and assessments are available to students. In Boyle's (1970) study, junior high band students were tested on their rhythmic sight-reading abilities by taking the Watkins-Farnum Performance Scale (a rhythmic sight-reading standardized test). In 2007, Lehmann conducted a study where subjects sight-read a piano accompaniment to a prerecorded solo voice. These performances were later scored using computer software. Pike and Carter (2010) assessed the sight-reading abilities of undergraduate piano students using examples printed in Alfred's Adult Piano Course, a popular method book for beginning piano students. The researchers assessed the student's right hand rhythmic accuracy, right hand pitch accuracy, left hand rhythmic accuracy, left hand pitch accuracy, and continuity. Henry (2011) assessed high school singers sight-reading ability by creating three sight-reading examples. The examples had varying levels of melodic and rhythmic difficulty. The participants were scored using a grading rubric designed by Henry for use in this experiment. Snedeker (2014) discussed following a sight-reading method book for use in the private studio as a means for teachers to have a set repertoire that is strictly devoted to developing sight-reading skills. By utilizing a resource like this, teachers could develop sight-reading skills from the early stages of musical development, similar to the sequence that is used to develop other musical skills such as rhythmic and melodic accuracy.

Mishra (2014) conducted an extensive review of the available literature concerning sight-reading. She found that most research studies that were investigating sight-reading abilities of students used researcher-constructed measures to test sight-reading ability. It is

important to note that there was little research found that tested the sight-reading ability of students at the elementary level. In her meta-analysis of sight-reading research, Mishra (2014) said, “It should be noted that the elementary populations particularly were underrepresented” (p. 459).

Rationale

Music students are asked to sight-read music often, a complicated task that requires a combination of rhythmic, melodic, and music literacy skills. While sight-reading is a skill often required of students, there is currently a gap in the research investigating elementary student’s sight-reading ability (Mishra, 2014). Much of the previous research found that addresses elementary students ability to sight-read is outdated. Also, little research has been found that addresses rhythmic sight-reading separate from melodic sight-reading. This may be due to the fact that there are not many sight-reading resources available to teachers that separate tonal and rhythmic exercises effectively (Phillips, 2013). This study seeks to provide information about elementary student’s rhythmic sight-reading abilities. By focusing on rhythm only, this study is designed to target one of the many skills necessary to successfully sight-read a complete piece of music. By removing the pitch component of the figures, this study will examine the challenge that rhythm brings to sight-reading for elementary-aged students.

Purpose Statement

The purpose of this study was to examine second-grade students’ rhythmic accuracy when sight-reading rhythms in each of three conditions: rhythmic speaking, body percussion, or playing instruments.

Research Questions

1. Will there be an effect of performance condition (rhythmic speaking, body percussion, or playing instruments) on second-grade students' rhythmic accuracy while sight-reading?
2. Will there be a relationship between sight-reading error type and performance condition?

CHAPTER 3

METHODOLOGY

The purpose of this study was to examine second-grade students' rhythmic accuracy when sight-reading rhythms in each of three conditions: rhythmic speaking, body percussion, or playing instruments. This study employed a repeated measures design with one population of second-grade students.

Participants

A convenience sample of 62 second-grade students from a large suburban elementary school in the Midwest volunteered to participate in this study. All students participated in weekly, 50-minute classroom music lessons. Classroom lessons contained singing, rhythmic reading, movement to music, and playing instruments. The participants ages ranged from 7 to 8 years of age ($M = 7.629$, $sd = .487$). Forty-four percent of the students were male, and 56% of the students were female, and participants had received three years of public school music education. Fifteen percent of the participants had received some kind of music instruction outside of school, such as piano, guitar, violin, or voice lessons.

Explanation of Variables

The independent variable was performance condition, and each participant experienced all three levels of the independent variable: speaking rhythm, clapping rhythm, and drumming rhythm. The dependent variable was rhythmic accuracy.

Rhythmic speaking. In this condition, students spoke a series of rhythms using the *takadimi* notation system. The *takadimi* notation system uses “ta” to represent the first sound on the beat, and then subdivides with different syllables. For example, a quarter-note followed by an eighth-note pair would read “ta, ta-di”. Students demonstrated quarter-rests

with no vocal sound and hands on shoulders to signify that they read the rest and performed it in the given tempo.

Clapping. In this condition, students clapped the series of ten rhythmic patterns. Students clapped rhythmic patterns without speaking them. Students demonstrated quarter-rests with no clapping sound, and hands on shoulders similar to the expectations for rhythmic speaking. Half-notes were shown by clapping one time and then extending arms to visualize a duration of two beats of sound.

Drumming. In this condition, students performed a series of rhythms on a hand drum. Participants played the drums without simultaneous speaking. Students demonstrated quarter-rests with no sound on the drum and hands on shoulders. Half-notes were shown by striking the drum and then keeping the hand on the drum head for the duration of two beats.

The dependent variable was rhythmic accuracy, which was assessed from each student's performance while sight-reading rhythmic patterns. Each participant received three rhythmic accuracy scores: one for rhythmic speaking, one for clapping, and one for drumming.

Instrumentation

The researcher designed a set of 10 rhythms for students to perform individually. These rhythms were similar to those used in the grade two rhythm cards found *Game Plan Grade 2* curriculum guide, which the participants routinely used in music class. All examples are four beats long and written in simple meter, with each beat divisible into two notes. Reading in simple meter is the standard practice for rhythmic reading and improvisation in the participants' regular classroom setting. The rhythmic examples are composed of quarter- notes, quarter-rests, eighth-note pairs, and half-notes; these are the

music symbols that second-graders have been taught in music class prior to data collection. The rhythmic examples used are available for viewing in Appendix A.

The dependent variable was rhythmic accuracy, which was assessed from each student's performance while sight-reading rhythmic patterns. Rhythmic accuracy was judged dichotomously as either correct or incorrect. To be correct, the entire rhythmic example needed to have consistent tempo according to a metronome, with notes correctly proportioned to each other in relation to the beat provided. For each correctly performed rhythmic pattern, the participant received one point. No points were awarded for rhythmic patterns that were performed incorrectly. A maximum of ten points was possible for each performance condition, and if a student performed all ten speaking rhythms correctly, they received a score of ten in that category. There was a minimum of zero points possible for each performance; if a student performed all ten speaking rhythms incorrectly, they received a score of zero in that category. Each participant earned three rhythmic accuracy scores: one for rhythmic speaking, one for clapping, and one for drumming.

Incorrect rhythmic performances were evaluated to determine what types of errors were made (rhythmic errors or tempo errors). Rhythmic errors were any error in the actual sound created, such as performing one sound (a quarter-note) when two sounds (eighth-note pairs) were written. Tempo errors were any error in the processing speed of the performance, where the notes performed are not consistent with the tempo provided on the metronome. Tempo errors were heard when a participant performed notes too slowly, too quickly, or if the performance did not show an understanding of the underlying beat.

Materials

Materials used for this study were pre-printed rhythmic examples, a music stand, a Qwik Time metronome, a hand drum, and a video camera. Each rhythmic example was pre-

printed on a single, 8.5” by 11.5” piece of white copy paper and placed into a notebook for ease of use. A black, Manhasset music stand was used to hold the rhythmic examples for each participant. A Qwik Time metronome was placed on the music stand alongside the rhythmic examples to keep the beat steady for each participant. This metronome kept the beat aurally and also visually; a red light flashes at the same time that the beat is played so the student could hear and see the beat provided. When drumming, an 8” Remo hand drum was used to perform rhythmic examples. Lastly, a digital video camera and tripod were required to record student performances for later viewing and assessment.

Procedure

Each participant experienced all three levels of the independent variable; they had one unique experience with each level on three separate days. Each participant was asked to read 10 rhythmic patterns: one day speaking, one day clapping, and another day drumming. The order in which students performed these rhythmic patterns was counter-balanced in an attempt to control for possible order effect. Also, the order of the performance condition was counter-balanced in an attempt to control for possible order effect. The participants were exposed to rhythms similar to the presented patterns before data collection, but they had viewed the examples used in this experiment prior to testing. Each rhythm was computer generated on an 8.5” x 11” piece of white paper and placed on a music stand at the student’s eye level. A metronome was used to increase the evaluator’s ability to assess rhythmic accuracy; the metronome was set at quarter-note equals 80. This tempo was selected as the standardized tempo of this experiment based on findings from other researchers suggesting this as an acceptable tempo for the processing speed of young musicians (Persellin, 1992; Shehan, 1987).

Before performing, each student was given the assessment expectations for their performance. They were told that they were being asked to keep a steady beat, accurately relate each note to the others in the example, and that their rhythms would be scored as correct or incorrect. The researcher counted off each rhythmic example so the student would be prompted when to begin performing. Students were video recorded for later evaluation and scoring. Participants were not given verbal feedback from the researcher as to whether their performance was correct or incorrect during data collection.

At the end of three rounds of data collection for each participant, the performance videos were gathered and randomly divided evenly amongst the two raters. Ten percent of the performance videos were used to test for inter-rater reliability; eighteen videos total (six speaking, six clapping, and six drumming) were randomly selected for this task. After each rater scored these eighteen videos, it was found that the raters scored with 94% accuracy to each other in identifying correct and incorrect rhythmic performances. Further testing was done to determine whether the raters were accurate in identifying incorrect rhythm or tempo in addition to the correct and incorrect score. The raters scored with 87% accuracy when including the incorrect rhythms or incorrect tempo portion of the incorrect answers as part of the inter-rater reliability score.

CHAPTER 4

RESULTS

Research Question 1: Will there be an effect of performance condition (rhythmic speaking, body percussion, or playing instruments) on second-grade students' rhythmic accuracy while sight-reading?

First, a repeated measures ANOVA test was used to determine if there was an order effect on the participants' rhythmic accuracy scores. Results indicated that there was not a significant difference between the sight-reading accuracy scores based on the performance order, $F(2,122) = 1.6, p > .05$.

Because there was no order effect, the intervallic data from the participants' rhythmic sight-reading performances was analyzed with a repeated measures ANOVA test to determine which performance condition resulted in the most rhythmic accuracy while sight-reading. Results indicated that there was a significant difference between the sight-reading accuracy scores based on the performance condition, $F(2,122) = 65.82, p < .001$. Post-hoc dependent samples t tests were conducted to determine which performance condition affected rhythmic accuracy. Results indicated that students were more accurate when speaking than clapping ($p < .001$) or drumming ($p < .001$). There was no significant difference in participants' rhythmic accuracy between the clapping and drumming conditions ($p > .05$). An analysis of the correctly performed rhythmic patterns for each performance condition is shown in Table 4.1. An analysis of the post-hoc correlated samples t tests can be found in Table 4.2.

Research question 2: Will there be a relationship between sight-reading error type and performance condition?

In order to answer this question, nominal data from the participants' rhythmic sight-reading performances was analyzed with a Chi-square test of independence to determine if there was a relationship between error type (tempo or rhythmic) and performance condition. Results revealed that there was a significant relationship between error type and performance condition, $\chi^2(2) = 7.33, p < .05$. Tempo errors occurred more frequently than rhythmic errors amongst all three performance conditions; 57% of the total number of the performance errors across all performance conditions were due to problems with correct tempo.

The drumming condition had the highest number of tempo and rhythmic performance errors with 58% of the total rhythmic examples being performed incorrectly. The clapping condition had very similar results, with 57% of the total number of performance examples being performed with incorrect tempo or rhythm. Students performed with the most rhythmic accuracy while speaking; 30% of the total number of rhythmic examples was performed incorrectly while the students were speaking. An analysis of incorrect performances can be seen in Figure 4.3.

CHAPTER 5

DISCUSSION

The purpose of this study was to determine if performance condition (speaking, clapping, or drumming) affected second-grade students' rhythmic accuracy while sight-reading. The results of this study indicated that second-grade students' rhythmic accuracy was affected by performance condition. Nearly all of the participants in this study (98%) performed the rhythmic examples more accurately while speaking than clapping or drumming; the students performed similarly across drumming and clapping conditions. A secondary purpose of this study was to investigate the relationship between rhythmic error type and performance condition. Results indicated that students performed with more tempo errors than rhythmic errors.

These findings are similar to the results of Schleuter and Schleuter (1985), where students were tested on their ability to read rhythmic patterns while speaking, clapping, and stepping. The students in that study performed more accurately when speaking than clapping or stepping. McPherson (2006) commented that children may have difficulty controlling the large muscle movements necessary to effectively move with rhythmic accuracy. Clapping and instrumental rhythmic performances require more muscle movement than speaking, which may have impacted the students' abilities to perform. Clapping and instrumental rhythmic skills may be developed in the primary grades, but they may not be mastered until the child has had more time to master the gross motor movement and mental processing required for such tasks.

The second-grade students were able to perform with more rhythmic accuracy when speaking than clapping or drumming; students were more accurate at the verbal sight-reading

on every rhythmic example except the first. Rhythm example one contained four quarter-notes, the equivalent of keeping a steady beat for the duration of four beats. Clapping was performed more accurately than speaking on this rhythmic example, possibly because students were frequently asked to “keep the beat” by clapping in music class. The number of incorrect drumming performances for question one was much higher than clapping or drumming; students had a tendency to rush the beat when they were drumming example one. Miller (2012) commented that an understanding of the beat is essential for rhythmic understanding, and an internalization of the beat is essential for rhythmic precision. The nominal data collected for research question two showed that the students had a much more accurate sense of the pulse being played on the metronome while they were speaking versus clapping or drumming. It is possible that speaking, as the least complex skill, allowed students to focus and internalize the beat with more ease. Many of the second-grade students who participated in this study were unable to perform basic rhythmic patterns with a steady tempo when they were clapping or drumming. When a sense of pulse was lost, the students were unable to perform the rhythmic examples in the correct tempo with precision and accuracy.

It should also be noted that many students could identify their performance as incorrect immediately after executing the four beat rhythmic pattern presented to them. Multiple second-grade students commented that they “did that one wrong,” and asked for a second chance at the performance. While second chance performances were not assessed, the participants were given opportunity to repeat a rhythmic example if they requested it. The researcher felt that this would ease any anxiety that would come from a student knowing their performance was incorrect. This observation suggests that young musicians may have

the skills necessary to sight-read with accuracy, but they may require more processing time than is sometimes allotted to them when they are asked to sight-read in the moment. This is similar to the findings of Bebeau (1982), where it was noted that many of the subjects' rhythmic reading errors were due to the participants' inability to process the information quickly enough to execute the rhythmic examples in tempo.

The incorrect performances in this study were assessed to determine whether they were primarily rhythmic errors or tempo errors. The rhythmic examples that included half-notes were the most frequently missed questions. A very common mistake for the participants was the execution of two sounds when visually presented with a half-note. This implies that the students understood the half-note receives a value of two beats, but they did not connect that the two beats are sustained with one sound on their instrument. Perhaps the subjects would have performed half-notes with more rhythmic accuracy if they utilized an instrument that had a more sustaining sound. The hand drum used in this study did not resonate for a full two beats of sound when struck; this may have confused the participants and caused them to make two sounds to sustain the full two beat value needed to perform a half-note. Another common mistake was an even performance of eighth-note pairs while clapping or drumming. The participants had a tendency to rush eighth-notes, compressing the space between the notes. This caused rhythmic errors in many of the student performances, especially in rhythmic example numbers two, seven, and nine where there were two sets of eighth note pairs written. The rushing of eighth notes was not an issue for the speaking section of the student performances, possibly because the internalization of the beat was more accurate while speaking.

Penttinen and Huovinen (2011) reported that their subjects got flustered when they were presented with a more difficult passage, and the mere sight of a difficult passage caused the performers difficulty. The authors said that the ability to stay calm while sight-reading is a very important skill that needs to be nurtured and developed. This observation, paired with the second-grade students' inaccuracy while clapping and drumming, could lead to future discussions about how students can handle the stress they feel when presented with complex musical tasks, whether they be difficult rhythms or difficult performance conditions.

The subjects were generally more relaxed when they were asked to speak their rhythmic patterns; the students were more stressed when they were required to clap or drum. One student even made the comment that she was excited to do her rhythmic speaking as her third performance in this study because she wanted to "save the easiest for last." This could be because rhythmic speaking was a more familiar skill, or it could be that students view rhythmic reading without speaking to be a more difficult task.

Limitations of Results

One of the limitations of this study is a small sample size. A larger number of participants could help in making the results of this study more generalized to the population. A second limitation of this study is that the sample was a sample of convenience. All of the subjects were from one suburban elementary school in the Midwest; a larger sample size drawn from multiple elementary schools under the instruction of multiple music teachers would have made this study more easily generalized to a larger population. Music education in the Midwest may vary from the educational opportunities that are presented to second-grade students in other parts of the country and the world. A population drawn from various

geographical regions would remove any bias that is present from having all subjects from the same location.

Suggestions for Future Research

Rhythmic sight-reading skills can and should be explored more in the future to help elementary music educators learn how to best serve their students and prepare them for musical experiences in the secondary schools. Future research on this topic could include replicating the study with a more resonant instrument (such as a triangle or a recorder) in place of the drum to investigate students' understanding of the half-note and how it is applied to an instrument. Also, the study could easily be replicated with older students to see if the results remain similar even though the participants' mental and physical capacities mature with age. Also, instrumental rhythmic sight-reading could be further explored; a study could be designed that investigated elementary-aged students' instrumental sight-reading abilities before and after a period of focused, instrumental music instruction. Familiarity may have played a part in the results of this study; therefore a study focused on familiarity would be beneficial to help analyze the results of this research.

Conclusion

Sight-reading is a complex skill regardless of age. Elementary-aged musicians are rapidly developing their melodic, rhythmic, and musical literacy skills through maturation, acculturation, and quality instruction in a music classroom. It is possible for young musicians to master some of the foundational skills necessary for sight-reading, yet still not be able to connect the many complex skills that are needed to sight-read effectively in the moment when it is time to perform. When sight-reading, students must identify the music symbols they are presented, assess the beat values of the symbols needed for accurate

execution, and apply those symbols according to a steady beat. The break-down of any of one of these three steps can result in inaccurate performance, even if the other two steps are mastered. When providing assessments for students, it is important for the teacher to be aware of the complexity of the task that they are asking of their students in order to ensure that the students are being asked to perform skills that are achievable.

APPENDIX A
CONSENT, ASSENT, AND TEST FORMS

Consent for Participation in a Research Study

THE EFFECT OF PERFORMANCE MEDIUM ON SECOND-GRADE STUDENTS' RHYTHMIC ACCURACY WHILE SIGHT-READING

Michelle Schwinger, Masters of Music Education student at UMKC

Request to Participate

Your child is being asked to take part in a research study. This study is being conducted at Lillian Schumacher Elementary School. The researcher in charge of this study is Michelle Schwinger, the school music teacher. Melita Belgrave, professor at UMKC, is the faculty advisor who is supervising this project.

The researchers are asking your child to take part in this study because they are a second-grade music student. Research studies only include people who choose to take part. This document is called a consent form. Please read this consent form carefully and take your time making your decision. Think about it and talk it over with your family and friends before you decide if you want your child to take part in this research study. This consent form explains what to expect: the risks, discomforts, and benefits, if any, if you consent for your child to be a participant in this study.

Background

This study is investigating second-grade students' abilities to read music using three different performance mediums. Subjects will perform by speaking, clapping, and performing on a hand drum. Your child is being asked to participate because they are of the age level being investigated, and because they have participated in music instruction during the current school year taught by the investigator.

Your child will be one of about 100 subjects in the study at Lillian Schumacher Elementary School.

Purpose

The purpose of this study is to examine second-grade students' rhythmic accuracy when performing with instruments or without instruments. The research question is: Does the use of body percussion or instruments impact second-grade students' ability to accurately perform rhythms?

UMKC IRB Approved from: 02/04/2013 to: 02/03/2014 IRB #14-447 Version: 1/28/2014

Procedures

If you choose for your child to participate, they will be individually asked to read ten rhythmic patterns. The total time needed to perform these rhythm examples will be less than thirty minutes. Your child will be asked to perform these examples three times on three different days. Each individual performance will last less than ten minutes, for a total of thirty minutes of rhythmic reading. Participating in this study will not require any time outside of the normal school day.

Students will be removed from their regular classroom instruction in order to participate in this study. Students will miss a very small part of their regular classroom instruction; they will be out of class for a maximum of ten minutes on three separate days. Students will only be removed from their second grade classroom at times that have been pre-arranged and pre-approved by their classroom teacher.

Subject's performance will be video recorded for later scoring. Only the researcher and one other music teacher in the district will have access to these tapes. All of the footage recorded for this study will be destroyed in May 2015 when the experiment is completed.

If you agree for your child to take part in this study, they will be involved in this study for three days of testing for ten minutes or less. The total time required to participate in this study is a maximum of thirty minutes. There will be no follow up required after they have performed the provided rhythm examples for the researcher.

Participation in this study is voluntary, and you or your child may refuse to participate in any part of this study if you wish. If you or your child would like to withdraw from this study at any time, they may do so without penalty by notifying the researcher by phone or email.

Risks and Inconveniences

There are no known risks to participating in this study. Your child will be asked to perform in a manner very similar to what is done regularly in the music classroom during regular instruction.

This research is considered to be minimal risk. That means that the risks of taking part in this research study are not expected to be more than the risks in your daily life.

Benefits

This study is taking place so the researcher can examine if students' ability to perform music is impacted by the way they perform. Participants will be helping their music teacher investigate possible pitfalls in their rhythmic education. This could benefit them in future years, as the findings of this study may better inform the teachers' classroom practice. The information gained from this study will allow the researcher to evaluate students in the classroom more effectively in. In the future, other students may also benefit in from information that comes from this study.

UMKC IRB Approved from: 02/04/2015 to: 02/03/2016 IRB #14-447 Version: 1/28/2014

Fees and Expenses

There are no fees required for participating in this research study.

Compensation

There is no payment for taking part in the study.

Confidentiality

While we will do our best to keep the information you share with us confidential, it cannot be absolutely guaranteed. Individuals from the University of Missouri-Kansas City Institutional Review Board (a committee that reviews and approves research studies), Research Protections Program, and Federal regulatory agencies may look at records related to this study to make sure we are doing proper, safe research and protecting human subjects. The results of this research may be published or presented to others. You or your child will not be named in any reports of the results.

No names or other personal information will be used in this research study.

Contacts for Questions about the Study

You should contact the Office of UMKC's Social Sciences Institutional Review Board at 816-235-5927 if you have any questions, concerns or complaints about your rights as a research subject. You may call the researcher Michelle Schwinger at (816)736-5400 if you have any questions about this study. You may also call her if any problems come up.

Voluntary Participation

Taking part in this research study is voluntary. If your child chooses to be in the study, they are free to stop participating at any time and for any reason. The researcher may stop the study or take your child out of the study at any time if they decide that it is in your child's best interest to do so. They may do this for medical or administrative reasons or if your child no longer meets the study criteria. You will be told of any important findings developed during the course of this research.

You have read this Consent Form or it has been read to you. You have been told why this research is being done and what will happen if you take part in the study, including the risks and benefits. You have had the chance to ask questions, and you may ask questions at anytime in the future by calling Michelle Schwinger at (816)736-5400. By signing this consent form, you agree for your child to take part in this research study. You will be given a copy of this consent form for your personal records if requested.

UMKC IRB Approved from: 02/04/2013 to: 02/03/2014 IRB #14-47 Version: 1.28/2014
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Consent for Participation in a Research Study

THE EFFECT OF PERFORMANCE MEDIUM
ON SECOND-GRADE STUDENTS RHYTHMIC ACCURACY
WHILE SIGHT-READING

Michelle Schwinger, Masters of Music Education student at UMKC

I agree for my child _____ to participate in the above outlined research study. I understand that their contribution will be video recorded for later assessment by a music teacher.

Participating Student's Printed Name

Parent/Guardian Signature

Date

Parent/Guardian Printed Name

UMKC IRB Approved from: 02/04/2015 to: 02/03/2016 IRB #14447 Version: 1/28/2014
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Assent for Participation in a Research Study

THE EFFECT OF PERFORMANCE MEDIUM
ON SECOND GRADE STUDENTS' RHYTHMIC ACCURACY
WHILE SIGHT-READING

Michelle Schwinger, Masters of Music Education student at UMKC

You are being asked to be in a research study. This study is happening at Schumacher Elementary School. Mrs. Schwinger, your music teacher, is in charge of the study. This study is about rhythm. Mrs. Schwinger wants to test your ability to read rhythms in three different ways. If you want to do this, you will be one of about 100 people who take part in this study.

If you choose to be in this study, you will read ten rhythm cards on three different days. Each day, you will only have to spend ten minutes outside of your classroom with Mrs. Schwinger. Your performance will be video recorded so it can be graded at a later time. You will not need to do anything other than read the rhythm cards for Mrs. Schwinger. You don't have to be in this study if you don't want to. If you decide later than you don't want to be in the study, you can quit without any problems.

Assent for Participation in a Research Study

THE EFFECT OF PERFORMANCE MEDIUM
ON SECOND GRADE STUDENTS' RHYTHMIC ACCURACY
WHILE SIGHT-READING

Michelle Schwinger, Masters of Music Education student at UMKC

I agree to participate in Mrs. Schwinger's research study. I understand that my performance will be video recorded for later grading by a music teacher.

Participating Student's Signature

Date

Participating Student's Printed Name

UMKC IRB Approved from: 02/04/2013 to: 02/03/2014 IRB #14-447 Version: 1/28/2013

Student # _____

Total Score _____

Performance condition: speak clap drum

1.		CORRECT	INCORRECT	(Rhythm or Tempo?)
2.		CORRECT	INCORRECT	(Rhythm or Tempo?)
3.		CORRECT	INCORRECT	(Rhythm or Tempo?)
4.		CORRECT	INCORRECT	(Rhythm or Tempo?)
5.		CORRECT	INCORRECT	(Rhythm or Tempo?)
6.		CORRECT	INCORRECT	(Rhythm or Tempo?)
7.		CORRECT	INCORRECT	(Rhythm or Tempo?)
8.		CORRECT	INCORRECT	(Rhythm or Tempo?)
9.		CORRECT	INCORRECT	(Rhythm or Tempo?)
10		CORRECT	INCORRECT	(Rhythm or Tempo?)

APPENDIX B
TABLES AND FIGURES

Table 2.1 Rhythmic Counting Systems

Symbol				
Kodaly	Ta	Ti-Ti	Ta-ah	Ti-Ri-Ti-Ri
Orff	Maine	Kan-sas	Ma-ine	Miss-iss-ip-pi
Counting	One	One and	One-Two	One E and A
Takadimi	Ta	Ta-Di	Ta-ah	Ta-Ka-Di-Mi

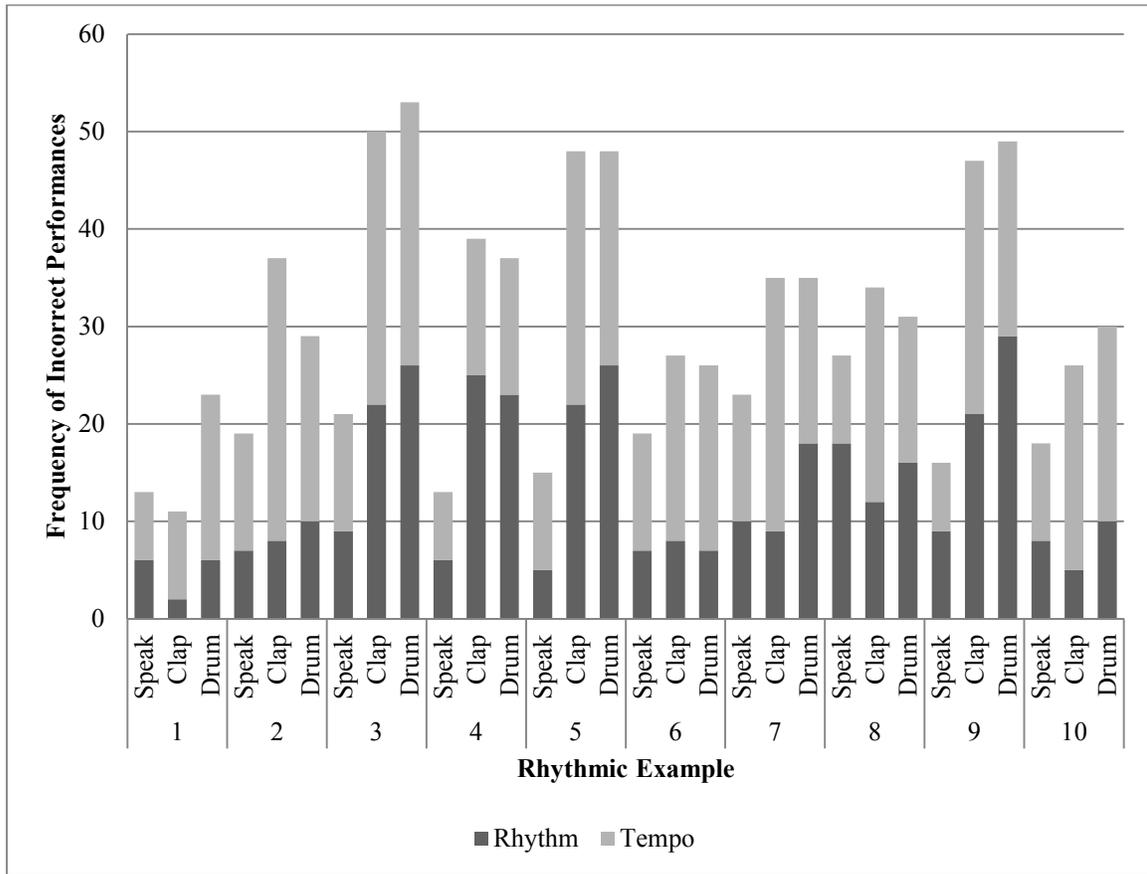
Table 4.1 Overview of Correct Scores by Performance Condition

<i>Performance Condition</i>	<i>M</i>	<i>SD</i>
Speaking	7.15	2.25
Clapping	4.11	2.58
Drumming	4.23	2.41

Table 4.2 Post-Hoc Correlated Sample t test results

<i>Performance Conditions</i>	<i>t</i>	<i>p value</i>
Speaking and Clapping	11.52	< .001
Speaking and Drumming	9.53	< .001
Clapping and Drumming	-.35	> .05

Figure 4.3 Analysis of Incorrect Performances



APPENDIX C
APPROVAL FORMS

NOTICE OF NEW APPROVAL

Principal Investigator: Melissa Balgova
320 Grant Hall
Kansas City, MO 64110

Protocol Number: 14-447

Protocol Title: THE EFFECT OF PERFORMANCE MEDIUM ON SECOND GRADE STUDENTS' RHYTHMIC ACCURACY WHILE SIGHT-READING

Type of Review: Designated Review

Date of Approval: 02/04/2015

Date of Expiration: 01/31/2016

Dear Dr. Balgova,

The above mentioned study, and your participation as a principal investigator, was reviewed and approved by the UMKC IRB. You are granted permission to conduct your study as described in your application.

This approval includes the following documents:

Attachments

14-447 - Consent form - Stamped 2.4.2014

14-447 - Assent form - Stamped 2.4.2014

principal letter

IRB approval

Schwinger methodology

Schwinger Review of Literature

Student Score Sheet

Schwinger subpart-d

The ability to conduct this study will expire on or before 01/31/2016 unless a request for continuing review is received and approved. If you intend to continue conduct of this study, it is your responsibility to provide a Continuing Review form prior to the expiration of approval.

This approval is issued under the University of Missouri - Kansas City's Federal Wide Assurance FWA00005427 with the Office for Human Research Protections (OHRP). If you have any questions regarding your obligations under the Board's Assurance, please do not hesitate to contact us.

There are 5 stipulations of approval:

- 1) No subjects may be involved in any study procedure prior to the IRB approval date or after the expiration date. (PI and sponsor are responsible for initiating Continuing Review proceedings).
- 2) All unanticipated or serious adverse events must be reported to the IRB.
- 3) All protocol modifications must be IRB approved prior to implementation unless they are intended to reduce risk. This includes any change of investigator.
- 4) All protocol deviations must be reported to the IRB.
- 5) All recruitment materials and methods must be approved by the IRB prior to being used.

Please contact the Research Compliance Office (e-mail: umkcirb@umkc.edu; phone: (816) 235-5927) if you have questions or require further information.

Thank you



Research Checklist and Approval

Date: 11-22-14

Submitted to: Christopher B. Hand - Director of Assessment, Evaluation, and Testing

Submitted by: Michelle Schwinger

Research Proposal Title: The effect of performance medium on second-grade students' rhythmic accuracy while sight-reading

Principal Investigator(s): Michelle Schwinger

Checklist

- Completed "Application to Conduct Research in Liberty Public Schools"
- Copy of "Informed consent" letter to study population/parents
- Copies of measurement instruments
- Approval from university human subjects committee (IRB) if applicable
- Three (3) copies of your complete application package

Approval of this research is contingent on adherence to district procedures as outlined in the document entitled "Application to Conduct Research" and the information provided with the application. The district must be notified of any substantive changes to the information contained in the application. The district reserves the right to withdraw approval of research if the research is deemed to no longer be in the best interests of the Liberty Public Schools students, staff, or the district.

Research Application: Approved Denied Date: 1-25-15

Signatures

Christopher B. Hand
Director of Assessment, Evaluation, and Testing

Principal

Principal



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VITA

Michelle Renee Schwinger was born on April 23, 1985 in Florissant, Missouri. She graduated as the salutatorian of the Hazelwood Central High School class of 2003. She received a Presidential Scholarship to attend Missouri State University in Springfield, Missouri, from which she graduated *summa cum laude* with a Bachelor of Music Education in 2007.

Mrs. Schwinger has taught elementary classroom music for seven years in Liberty, Missouri. She began a master's program in music education at the University of Missouri-Kansas City in 2011. Mrs. Schwinger completed her Orff level one certification in the summer of 2013. Also in the summer of 2013, Mrs. Schwinger had a research study published in *The Orff Echo*, the national publication of The American Orff-Schulwerk Association.

Mrs. Schwinger is a member of the American Orff-Schulwerk Association Heart of America Chapter, and the Missouri State Teachers Association.