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FEATURE ARTICLES

MISSOURI STUDENT ABSTRACTS

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The Relationship between Large Ensemble Sight–Reading Rating and the Individuals' Sight-Singing Success

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*The purpose of this study was to investigate the relationship between the music festival rating in ensemble sight-reading and the sight-singing success of individual singers. Singers (*N = *101) from 6 Missouri high schools with consistent festival ratings (3 with "I" ratings for 3 or more years; 3 with ratings of "II" or lower for 3 or more years) were asked to sight-sing individually a 16-measure melody extracted from 1 of the pieces used in the Missouri Music Festival sight-reading evaluation. Results of the audio taped sight-singing tests revealed an overall mean score of 50.12% correct pitches (*SD = *29.61), and 83.53% correct rhythms (*SD = *18.41). ANOVA comparisons of mean correct pitches and rhythms, by ensemble festival ratings received, indicated no significant difference in individual success between scores of students in choirs that received consistent "I" ratings (*$M_{pitches}$ = *50.34%,* SD = *31.76;* $M_{rhythms}$ = *84.52%,* SD = *18.30) and scores of students enrolled in choirs that received consistent ratings of "II" or lower (*$M_{pitches}$ = *49.78%,* SD = *26.23;* $M_{rhythms}$ = *81.95%,* SD = *18.72). Information was also collected on the students' backgrounds in keyboard, private instrumental and vocal instruction, and participation in band and/or orchestra. Results indicated a significant positive correlation between number of correct pitches and rhythms and piano experience.*

The ideal of developing independent individual musicians is often expressed as one of the fundamental goals of music educators. The ability to read new music quickly and accurately is a key element in developing this independence (Dettweiler, 1989; Fitchhorn, 1983; Gregory, 1972; Henry &

Demorest, 1994; Killian, 1991; Lynch, 1983; Martyn, 1985; McCoy, 1989; Wright, 1984). Sight-reading is one of the core skills addressed in the National Standards in music (MENC: The National Association for Music Education, 1994), with all students in or above grade 5 expected to "read at sight simple melodies in both the treble and bass clefs," (p. 44) and proficient students in secondary choral and instrumental ensembles expected to "sight-read, accurately and expressively, music with a difficulty level of 3, on a scale of 1 to 6" (p. 61). A skill of lasting benefit, teachers and singers have identified music-reading skill as an important factor in the ability and desire to continue musical activities throughout adult life (Fitchhorn, 1982; Hinkle, 1987; Regelski, 1969; Tipps, 1992).

Despite the often-acknowledged importance of sight-reading skills, surveys of choral music programs and methods indicate that directors devote relatively little time to sight-reading instruction. Johnson's (1987) investigation of the pitch reading methods and time devoted to sight-reading instruction in the North Central region of the American Choral Directors Association (ACDA) found that while the directors surveyed agreed on the importance of sight-reading, they devoted little rehearsal time to sight-reading instruction. May (1993) investigated the sight-reading instruction practices of Texas high schools involved in the University Interscholastic League (UIL) contest, in which sight singing is required and a sight-singing score is included as part of the choir's total rating. May and Johnson both speculated that the inclusion of sight-reading evaluation at contests might increase instructional time devoted to sight-reading. The Music Manual for Missouri State Large Ensemble Festival states that sight-reading is included to provide "...opportunities for students to exhibit an understanding of the basic fundamentals of music. The importance of teaching the fundamentals of music, the skills of accuracy in reading music, and overall musicality shall be reinforced by sight-reading at the evaluative festival" (Missouri State High School Activities Association, 1994).

This connection and transfer between music festival evaluation of the ensembles' sight-singing success and the building and reinforcement of music-reading skills in the individual student seems to be assumed by choral music educators. However, Bennett (1984) and Middleton (1984) both caution against assuming that the large ensemble experience is a reliable indicator of individual sight-reading ability. Bennett posited that in an ensemble sight-reading situation, as few as one student may actually be sight-reading. While researchers indicate that music reading instruction and evaluation of sight-reading most often occurs in the ensemble setting (Demorest & May, 1995; Flom, 1969; Hales, 1961; Szabo, 1992), the ensemble's success, as indicated by the festival rating, may not be a reliable indicator of the individual singer's ability. This view is supported by Henry & Demorest (1994), in a study of individual sight-reading achievement by students in ensembles with proven success in sight-reading, concluding that ensemble success was not a valid indicator of individual sight-reading skill.

Few studies have attempted to investigate the sight-reading achievement of individuals with relation to high school choral experience. Carey (1959) investigated the sight-reading ability of seniors in nine Kansas high schools. The individual students were evaluated on their pitch and rhythm performance of two songs found in fourth-grade music textbook. The mean score for the sample was 67.67 out of 125 possible points, or 54.14% correct, with the highest group mean obtained by students who had reported taking piano lessons.

A number of studies (e.g., Colwell, 1963; Daniels, 1986; Demorest & May, 1995; Hales, 1961; Tucker, 1969; Zimmerman, 1962) have attempted to identify factors that contribute to ensemble sight-reading success. Piano experience, a piano in the home, and other instrumental experience, have been shown consistently to be factors in predicting sight-singing success (Daniels, 1986). Zimmerman (1962) found formal music study and the use of a systematic method for sight-reading were significant factors. While the

number of years of choir participation and the particular instructional method used have been identified by researchers as "conspicuously lacking" as contributing factors (Zimmerman, 1962; Daniels, 1986), Demorest & May (1995) found years of choral experience as a significant factor in individual success. However, the researchers suggest that the finding requires scrutiny since all the predictor variables in the analysis accounted for only 27% of the total variance of sight-singing scores.

The purpose of the present study was to investigate the relationship between the large ensemble sight-reading rating at an evaluative festival and the individual singers' sight-singing success, using a testing procedure for the individual closely patterned after the ensemble evaluation experience. In addition, the contribution of a number of background factors to individual sight-singing ability was examined. The research questions posed by this study were as follows:

1. Is there a significant difference in individual sight-reading scores between students from choirs who receive "I" (superior) ratings for 3 or more years and students from choirs who receive "II" (excellent) or lower ratings for 3 or more years at Large Ensemble Festival?

2. Which of the musical background factors, if any, appear to be correlated to individual sight-singing success?

Method

Singers (N = 101) who had competed in sight-reading at Missouri Music Festival at least twice were randomly selected from six Missouri high school choirs with (a) similar instructional methods and (b) consistent sight-reading ratings for three or more years--three choirs with consistent "I" ratings and three choirs with consistent "II" ratings. Each director was interviewed informally prior to the study and asked to describe the sight-reading instruction method used.

Each director indicated use of (a) the movable–do system with solfege or numbers, (b) currently published sight-reading instructional text, and (c) additional octavos used specifically for sight-reading practice in rehearsal. All directors said they usually placed sight-reading instruction after a warm-up period at the beginning of rehearsal. Instructional times ranged from 5 to 10 minutes each session, with five of the six directors admitting that they were inconsistent and usually neglected systematic music-reading instruction until a few weeks before the music festival. The sixth director explained that sight-reading skills were an important component of the curriculum and that consistent practice was stressed. The practices described by each director were consistent with those presented in previous studies (Daniels, 1988). An interesting trend arose from the directors' informal descriptions of the instructional methods used. Each of the directors of choirs with consistent "I" ratings expressed confidence in their students' abilities, while each of the directors of choirs with consistent "II" ratings apologized for a lack of emphasis on sight-reading and remarked that sight-reading was a weakness for their ensemble.

The testing procedure used for this study, though for use with individual participants in isolation, was designed to closely follow the format used for ensemble sight-reading evaluation at the Missouri Large Ensemble Festival. In the festival session, a room monitor and the adjudicator read general procedural instructions to the ensemble and director, and then each director is allowed three minutes to guide the singers through the study of the selection to be read. The judges in the festival sessions allow each choir to establish the key and starting pitches by the playing and singing of the (a) tonic scale, (b) I, IV, V7 chord progression, and (c) starting pitch.

In an attempt to retain the components of the festival format and facilitate director-guided study, the (a) procedural instructions to the singer, (b) director's suggestions, (c) tonic scale, (d) I, IV, V7 chord progression, (e) starting pitch, and (f) taps to indicate the tempo were recorded prior to the

beginning of the rehearsal period on the day of testing and played for each subject immediately prior to sight-singing. To prepare the director's suggestions for the singers, the researcher read aloud for each director the music festival instructions stating that there was to be no singing, counting or tapping of rhythms during the study period or performance suggestions. Each director was then given one minute to study the musical example. After the study period, the director's spoken suggestions were recorded for one minute. The time for instructions from the director was shortened from three minutes to one minute to correspond with the brevity of the musical example.

Participants were asked to accompany the researcher, in turn, to another room where they would sight-read a short melody. Before entering the testing room, students were asked to complete a short questionnaire that asked, (a) What is your year in school? (b) How many years have you participated in high school choir? (c) Is there a piano in your home? (d) Do you play piano? (e) Do you take or have you taken piano lessons? (f) Do you play any other instruments? (g) Do you take, or have you taken private instrumental lessons? (h) How many years have you participated in high school band or orchestra?

Upon entering the testing room, the participant was asked to stand in front of the music stand provided, listen carefully to the tape, and follow the instructions. The taped instructions outlined the procedure, giving the order of events, and asked the subject to remove the music from the envelope, and then listen to their director's instructions while studying the musical example. Each session was recorded on a GE model 3–5264A cassette recorder that was started before the subject entered the testing room. To lessen the possible negative effects of recording anxiety, one recorder was used to play the instruction tape and the machine actually recording was placed out of direct view and not touched while the participant was in the room.

The selection read by the participants was a sixteen-bar melody extracted from a four-part choral arrangement chosen

by the Missouri State High School Activities Association (MSHSAA) Music Advisory Committee for use by choirs from schools with 3A (375–926 students) and 4A (927 students and above) enrollment and used for the 1993 Music Festival season. The melody was transposed from the original key to D-major to facilitate comfortable singing by all voice parts, and the male students had the choice of reading either treble or bass clef.

All scoring was done from the tape-recorded performances using the following system. One point was deducted for each pitch error and one point for each rhythm error. Participants were penalized one point for starting the exercise over, and one point for extremely slow tempo. The melody consisted of 41 notes. To calculate evaluator reliability, the researcher and a trained evaluator scored a random subset of 20 subjects or approximately 20% of the total sample, yielding an r value of .98. This score was consistent with previous studies using a similar scoring method (e.g., Henry & Demorest, 1994; Demorest & May, 1995), and considered sufficient to ensure reliability of the scoring method. The researcher scored the balance of the tests. For calculation and analysis, scores were converted to mean percentage correct for pitches and rhythms.

Results

Table 1 includes the mean percentages of correct pitches and rhythms for each of the six schools individually, and grouped by rating. ANOVA comparisons of mean percentage correct pitches and rhythms by School, *Fs* (5, 95) = .049 and 1.443, respectively, and mean percentage pitches and rhythms by Festival Rating, *Fs* (1, 99) = .009 and .465, respectively, indicated no significant differences $p > .05$. Therefore, results indicate no significant difference in individual success between scores of students enrolled in choirs that received consistent "I" ratings and scores of students enrolled in choirs that received consistent ratings of "II" or lower.

A Pearson product-moment correlation analysis of factors from the background surveys (see Table 2) indicated signi-

ficant positive correlations between sight-singing both correct pitches and correct rhythms with each of the three categories of piano experience. Significant positive correlations were also indicated between (a) correct rhythms and private voice

Table 1
Mean Percentage Correct Pitches and Rhythms by School and Rating

		Pitches		Rhythms	
	n	*M*	*SD*	*M*	*SD*
School A	31	50.64	34.97	78.95	22.93
School B	15	50.24	29.57	92.60	8.21
School C	16	49.85	29.01	87.75	10.36
"I" Rating	62	50.34	31.76	84.52	18.30
School D	16	50.92	30.33	80.13	25.80
School E	12	46.33	25.59	82.00	12.88
School F	11	51.88	22.20	84.55	11.72
"II" Rating	39	49.78	26.23	81.95	18.72
Total		50.12	29.62	83.53	18.41

Table 2
Correlations between Correct Pitches, Rhythms and Background Factors

	Pitches	Rhythms
Years in choir	.0551	.0707
Piano in the home	.3417**	.3352**
Piano lessons	.2327*	.3440**
Play piano	.4030**	.2671**
Private voice	.1403	.2088*
Play another instrument	.3095**	.1591
Private instrument	.1824	.1255

*$p < .05$ **$p < .01$

lessons, and (b) correct pitches and playing other instruments. Private instrumental instruction and years of choir participation were not found to be significantly correlated with sight-singing correct pitches or rhythms.

Discussion

The initial calculations revealed an average of 50.12% of the pitches and 83.53% of the rhythms were correct across the sample. This finding is consistent with Carey's (1959) study of seniors in nine Kansas high school choirs. This fact should be of some concern to choral music educators, since it indicates little progress in the building of music literacy skills for high school choirs over the last 45 years. Consistent with previously mentioned studies, these findings indicate that group sight-reading achievement is not a valid indicator of individual sight-singing success. Considering the directors' predictions of individual success, based on music festival ratings, the ensemble sight-reading score cannot serve as an indicator for the director of the individual singer's sight-singing ability.

The findings relating to the background variables were consistent with most of the previous studies. Like Carey (1959) and Daniels (1986), piano experience was found to correlate with sight-reading success. In addition to the categories of "piano in the home" and "have had piano lessons" used in a number of previous studies, the students were asked if they played the piano. This item was added to allow for a difference in perceived confidence between those who have studied piano, and those that consider themselves actually able to play the piano. The highest positive correlation corresponded to those who answered "yes" to this question. Unlike Demorest & May (1995), but consistent with all other earlier studies, years of choir participation did not significantly correlate with sight-singing success. However, it must be noted that the sample included only junior and seniors, due to the specified minimum number of times participating in music festival.

The ensembles participating were from rural, rural city, and large suburban areas and ranged in size from total enrollment of approximately 400 students to over 2000 *No. 43,* students, representing widely varied school settings. However, the small number of schools, and systematic selection of the participating schools may limit the generalizability of the results. In the present study, ensembles were selected for consistent festival ratings and similarity of method in sight-singing instruction. Smaller high schools, *No.* designated by the MSHSAA as 1A (171 and under) and 2A (172–374 students) sight-read different, less difficult music at music festival than the larger 3A/4A schools, therefore the difference in festival materials made it impossible to include them in the present study.

The results of this study indicate that ensemble scores in sight-reading are not valid indicators of individual success, and therefore, the activity at music festival should not be interpreted as representing the music literacy skills of the individual members of participating ensembles. This fact points to a need to investigate what is actually being judged in the evaluation of ensemble sight-reading, and to compare that to the stated purpose of including it as a component in the festival experience. While it is necessary to acknowledge that, for many reasons, the majority of high school music instruction will continue to take place in the large ensemble setting, there is a need to investigate the differences between individual and group music reading and instruction in an attempt to identify group activities that benefit the individual reader. Through these efforts, we will assist in providing the skills and experiences that will encourage each ensemble member to continue growing toward an independent musical life.

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Performance and Perception in Middle School Band Rehearsal

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Student perception in rehearsal is a central concern for music educators because it is linked to students' musical learning. This study of middle school band students used the SCRIBE *computer program to record students' focus of attention during rehearsals. The subjects focused on their own part between 33% and 44% of the time, indicating that students were not attending to their own part to the exclusion of other parts. The balance of attention between their own and other parts did not change significantly as students became more familiar with the piece.*

One of the primary outcomes of a comprehensive performance-based music program should be to deepen students' ability to perceive music with understanding and responsiveness. Students' musical perception is a central component in creating, listening to, and performing music and should therefore be a consideration for bands, orchestras and choirs alike. Bamberger (1995) stated "...the goal of music development is to have access to multiple dimensions of musical structure, to be able to co-ordinate these dimensions, and most important, to be able to choose selectively among them, to change focus at will" (p. 4). For instrumental music educators, Bamberger's statement raises the question of how the act of listening interacts with the act of playing an instrument. Does performing help focus students' listening on important features of a piece of music, or do the technical demands of physical performance draw the students' cognitive resources away from attending to the expressive and formal qualities of a piece?

Attending to musical works as a whole is an essential

foundation for music students' formal knowledge, performance skills, and aesthetic experience. If students are not attending to multiple aspects of the music they are playing, performance instruction is reduced to the timed production of tones that is disconnected from the expressiveness of the work. Dodson (1989) concurred, arguing that "merely displaying accurate psychomotor skill" is not solid evidence of musical understanding and does not necessarily lead to a lifelong engagement with music. (26-27). Assuring that their students are not only accurately pushing the buttons but are also perceiving the interrelated elements of a given piece should be a primary concern of ensemble directors. Measuring perception, however, is much more difficult than measuring performance. The purpose of this study is to measure the extent to which young instrumental students attend to their own part to the exclusion of other parts of the musical work.

Performance and Perception

Sloboda (1985) stated that performing "requires the allocation of attention from a limited pool of attentional resources" (pp. 93-94). Sloboda also likened aural focus to visual focus in that listeners can only actively attend to one musical line as the foreground while all other musical lines become background (p. 169). Keller (2000) discussed three modes of allocating attentional resources. These approaches are integrative attending, where the performer actively balances the primary and secondary parts; non-prioritized, where all parts receive equal amounts of attention; and selective, where some parts receive attention to the exclusion of others. Repp (1999) found that depriving piano players of audio feedback made only minor differences in the expressiveness of the players' performances. He speculated that audio feedback is only used for small adjustments in performance, and that a major portion of the performance is based on internal representations of the music. These ideas raise some troublesome questions for performance-based music educators. Given limited attentional resources, do stud-

ents attend to other parts in the ensemble, or are their internal representations based on the physical execution of their own part? Do the performance demands of playing an instrument (especially for inexperienced musicians) drain their attentional resources to the point where they develop an incomplete internal representation of a piece as a whole?

While performing may drain attentional resources, it may also play a positive role in music listening. As Madsen and Geringer (2000/2001) noted, participating in an active task related to a piece of music allows students to actively listen longer. In light of Madsen, Brittin, and Capperella-Sheldon's (1993) speculation that "one must spend several minutes in highly concentrated focus of attention, especially the 30-45 seconds immediately preceding the peak experience" (p. 66), the interaction of performance tasks with listening becomes an issue of concern for music educators. The nature of the interaction between performing and listening is an area in need of further research and clarification. In a CSEME (Center for Study of Education and the Musical Experience) study, Kjelland and Kerchner (1998) found that "the essential question of this review of the literature, 'What are the effects of music performance participation on music listening experiences?' must remain provocatively unanswered in a conclusive way" (p. 47). This conclusion highlights the need for this current study.

Method

This study examines how students allocate their attention in the band rehearsal setting, specifically their allocation of attention to instrument parts. I specifically sought to explore my assumption that young instrumental students attend to the performance of their own part more than the musical work as a whole. Two specific questions were posed:

1. To what extent do students attend to their own part?

2. Are students more likely to attend to instrument lines other than their own at the end of an instructional unit than at the beginning?

In order to address these questions, 20 students were randomly selected from a sixth grade band (N = 60) in a suburban middle school in the Midwest. This sample was stratified by instrumentation in order to insure that the proportion of instrument types in the band was accurately represented in the sample. The subjects received laptops equipped with **SCRIBE** data collection software. **SCRIBE** is a software program developed by Duke and Farra (1996) that records the timing of a user's cursor clicks in a user-designed interface. **SCRIBE** (Simple Computer Recording Interface for Behavioral Evaluation) was originally designed to be used by researchers to observe the aspects of a learning environment (Duke, Buckner, Cavitt, & Colprit, 1997). In this study, the subjects, rather than the researcher, utilized the program to describe their own listening.

The program was configured to present students with a screen that generally approximated the seating arrangement of their band. At the beginning of each session (typically between 30 seconds and two minutes in length), the students were given a signal to start the timer. Following this, the students were asked to click on the chart of the band to indicate their primary area of listening. Additional buttons were included for "not listening" or "everything" in order to address the possibility of not focusing on listening or non-prioritized listening. **SCRIBE** recorded the timing of each button click (indicating a change in student focus), as well as the percentage of time each student focused in each instrument line. Data were collected on three separate occasions during a three-month period in the spring semester (see Figure 1).

In the initial session, the 20 subjects recorded their focus of attention using **SCRIBE** instead of playing their instruments, while the remaining 40 members of the band played *The Tempest*, a Grade 2 composition (Smith, 1995).

During the second session, the subjects recorded their listening while the rest of the band performed measures 25-33 of *Contredanse*, also a grade two band piece. (Clark, 1998). During the third session, data were collected twice from the same section of *Contredanse*. Data were also collected from a complete performance of *Contredanse* and a complete performance of *Stormchasers*, a piece composed specifically

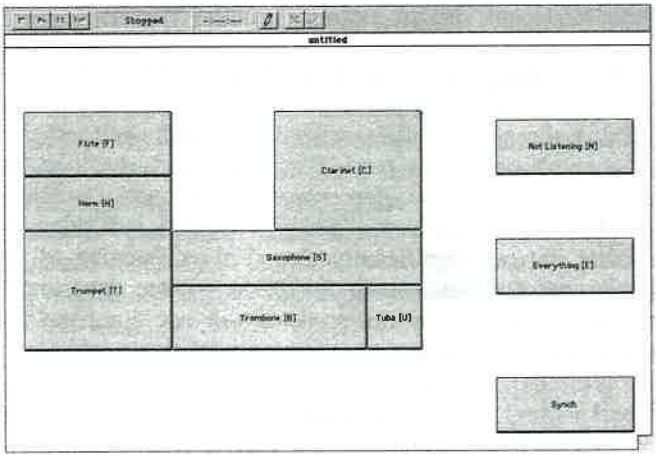

FIGURE 1.
Screen that generally approximated band seating arrangement.

for this band (Stein, in press). This piece is currently in press, so its difficulty has not been officially assessed, but I would consider it a Grade 2 piece. All sessions were video taped to provide a record of the performances and timings for later reference.

Results

To what extent do students attend to instrument parts other than their own?

For each of the three full data collections (in which the band played the entire piece) students listened to their own parts between 33% and 44% of the time. Standard deviations ranging from 18% to 25% indicate, however, a wide variation in the amount of time individual subjects attended to their own lines.

Are students more likely to attend to parts other than their own at the end of an instructional unit than at the beginning?

A Wilcoxon signed-rank test was used to compare the mean percentage of time subjects spent attending to their own part in *Contredanse* early and late in the instructional unit. The first and second short data collections, which occurred about two months apart, were used. While the means declined from 49% to 44%, these percentages were not statistically significant ($n = 14$, $z = -.533$, $p = .5937$), indicating that students did not significantly change their listening as they became more familiar with the piece. Some experimental mortality occurred, as six students did not complete both measurements, either due to absence or technical problems.

Discussion

The primary finding of this study is that these second year band students did not appear to attend to their own parts to the exclusion of other parts. Students seem to be striking a good balance between attending to their own part and other parts in the ensemble by attending to their own part 33-44% of the time. While these findings are of particular interest to me, both as the researcher and as a teacher in the district where the study took place, they are limited in their ability to be broadly generalized. As a pilot study, the number of subjects was limited both in number and limited to one population influenced by specific instructors and a specific curricular program. Additionally, while this study gains a degree of relevance through its ecological validity, the results are presumed to be closely intertwined with the musical pieces

that formed the context for this study. Pieces with a different level of complexity, scoring, and technical difficultly may have yielded different results.

A final limitation of this study is that the students were not actually playing when they were responding through the **SCRIBE** program. At best, this measurement is removed by one degree of separation from examining the interaction between performance demands and student perception. However, it is reasonable to assume that listening alone in the rehearsal context reflects to some extent student listening while playing. Additionally, it does provide a measurement of the effect performance has on students when they transition back to the role of a listener, which is of interest in itself.

Beyond the suggestion that beginning instrumentalists are not too focused on their own parts, this study raises a number of questions for further study. The rather large standard deviations, particularly in the short measurements, may indicate a tendency to attend to parts with melodic interest. This would account for the high standard deviations, since students would primarily attend to their own part if it had the melody, or primarily to other parts if their own part was not melodic. Informal comparison of the subjects' responses and the score supports this possible melodic focus. Further studies could explore this possibility, as well as the impact of the complexity of scoring, technical difficulty, and seating placement within the ensemble. The ability to use real-time computer based measurements of student listening within the ensemble setting opens numerous directions for future research.

The findings of this study are highly dependent on the instructional context, which raises a number of considerations for practicing teachers. The manner in which directors guide and encourage student listening in rehearsal is likely to significantly influence how much students attend to parts other than their own. We should be habitually guiding and directing our students' ears around the entire ensemble. Another important factor is the relationship between student skill and the technical difficulties of the work being performed. Given a

limited pool of cognitive resources, students who do not have to worry as much about playing the correct notes may be more likely to shift their focus of attention to different musical aspects of a piece. Students should be challenged to develop a full musical understanding of the music they perform. This type of understanding cannot be accomplished if the technical challenges of a piece overwhelm their ability to perceive and understand the work as whole.

As we guide our students' listening, we must also help them place what they are listening to into larger contexts. By connecting student perceptions into larger ideas (for example melody and accompaniment roles, tonal centers and keys, and formal structure), we increase our students' ability to transfer their understanding to other music in the future. Considering student perception is not only a topic requiring future research, but also central and daily concern for practicing music educators.

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The Effect of Movement-Based Instruction on the Beginning Instrumentalist's Ability to Sight-Read Rhythm Patterns

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The purpose of this study was to investigate variations in ability to sight-read rhythm patterns between beginning middle school instrumentalists who participated in movement-based instruction and those who participated in traditional rhythm instruction. The study used a pretest, posttest control group design in which 81 subjects participated in rhythm training for 15 minutes per day for 18 weeks. Control groups were not allowed to use bodily movement to mark the beat or clap rhythm patterns during training. Experimental groups were asked to use foot tapping, clapping, and conducting gestures in their rhythm training. Results showed that both groups' mean gains from pretest to posttest were significant. However, the experimental group's gains on the criterion measures were significantly greater than those of the control group.

Sight-reading is a skill that can create difficulties even for some accomplished musicians. The ability of students to sight-read accurately is a growing concern for music educators today. According to the National Standards for Music Education, adopted in 1994, students in Grades 5-8 who participate in a choral or instrumental ensemble class should be able to sight-read, accurately and expressively, music with a level of difficulty of 2, on a scale of 1-6 (MENC, 1994). It is commonly accepted that good sight-reading ability is essential for all musicians, especially for young students who participate in ensembles with frequent performances, for which large amounts of new music must be perfected during the school year. The inability to read music at sight has the

potential to limit a student's musical experiences. The reasons for difficulties encountered by students while sight-reading music are not always clear. Many music educators have expressed the belief that sight-reading deficiencies are in large part due to difficulties with rhythm patterns (Boyle, 1970; Elliot, 1982; Gregory, 1972; Mursell, 1956; Waters, Underwood, & Findlay, 1997).

Review of Literature

Today's typical public school music curriculum allows students to experience music through singing, moving, listening, playing instruments, and composing. However, until the 1930s, music instruction's primary focus was singing in tune. Rhythm was considered a less significant component of music and was to be learned through singing. The cautious acceptance of rhythmic movement as a pedagogical tool was a process that evolved and blossomed through the first third of the twentieth century (Campbell, 1991).

Many teachers enjoy movement-based instruction because it is rewarding and self-gratifying to teach classes in which students are outwardly participating and having fun. Students look forward to music class because they are able to get out of their seats and move around. Educators do however, stop and consider whether or not valuable class time should be devoted to what may appear to be frivolous activity. Does movement-based instruction serve as a serious pedagogical tool? Is movement-based activity consistent with the goals and objectives contained in today's curriculum?

Many general music methodologies, such as those of Orff, Kodaly, and Dalcroze, have advocated movement instruction as a primary step in the process of learning music (Choksy, Abramson, Gillespie, & Woods, 1986). The instrumental music program, however, has not ordinarily stressed this form of basic kinesthetic learning. Instrumental music instructors often assume that students have developed elementary rhythmic ability before the age of instrumental ensemble participation (Rohwer, 1998). Yet, the use of foot tapping as

an approach to rhythmic counting has been widely used by band and orchestra teachers for many years (Hoffer, 1973; Kohut, 1973; Pierce, 1990; Pizer, 1969). However, foot tapping as a tool for rhythmic counting is not presented in a formal way in today's most popular method books (Lautzenheiser, Higgins, Menghini, Lavender, Rhodes, & Bierschenk, 2000; O'Reilly & Williams, 1997; Pearson, 1993).

At the intermediate level, the use of movement for teaching rhythm was less prominent but evident in experiences designed for understanding rhythm and its notation. Many music educators have proposed the utilization of movement-based instruction in the teaching of musical concepts (e.g., Jaques-Dalcroze, 1921; Keetman, 1974; Mursell, 1951; Nash, 1974). Jackson (1963) summarizes the techniques commonly used in rhythm training as: (a) counting aloud, (b) tapping the underlying beat, (c) using a metronome, (d) tapping or clapping the phrase rhythm, (e) use of mnemonics, (f) ensemble experience, and (g) conducting. Magnell (1968) advocates rhythm instruction that includes the student marking the beat with hand or foot movements and counting the number of time units in each note. Radocy and Boyle (1997) offer a comprehensive summary of teaching practices designed to aid in the development of rhythm skills: counting aloud, tapping or clapping the phrase rhythm, conducting, eurhythmics, use of rhythm syllables or words, and rote performance.

Although movement-based instruction has been documented as a useful learning strategy, in experimental situations, it has had mixed results. Boyle (1970) found that the use of physical movements in an instructional program in rhythm reading significantly affected the rhythm sight-reading abilities of junior high instrumental students. Skornika (1958) compared two approaches to teaching instrumental music reading to beginners. At the conclusion of the study, the group using movement achieved significantly higher sight-reading scores on the Watkins-Farnum Performance Scale than did the control group.

However, Salzberg and Wang (1989) suggested that less experienced subjects were more successful when counting out loud and more experienced subjects showed no ability differences. Certain studies have noted a lack of effectiveness, citing movements as more difficult than counting with younger musicians (Salzberg & Wang, 1989) and a distraction to rhythmic learning, in that students concentrate on the movements more than the music (Persellin, 1992). Furthermore, many researchers studying mixed-age groups postulate that maturation rather than training may have the greatest effect on improvement (Groves, 1969; Jersild & Bienstock, 1935; Smoll, 1974).

It is apparent from the foregoing discussion that movement-based rhythm instruction is advocated by various researchers and learning theorists as being able to provide a foundation for satisfying musical experiences throughout a child's life. Studies have been presented that support the interdependence of music and movement. However, when movement-based instruction has been subjected to examination by researchers, the findings do not uniformly support these theories concerning the efficacy of movement-based instruction (Lewis, 1988). Furthermore, these differing results indicate a further need to investigate the effect of movement-based rhythm instruction in a classroom setting under controlled conditions.

The present study dealt with the problem of the use of movement-based rhythm instruction on the beginning instrumentalist's ability to sight-read rhythm patterns accurately. Much of the previous research associated with kinesthetic activities relating to the teaching of rhythm centered on subjects pre-school through fourth grade and usually took place in a typical general music classroom. It was important for the researcher in this study to focus on instrumental music students in Grades 6-8 in order to gain some perspective on how the technical demands placed upon a beginning instrumentalist affect their ability to learn and perform rhythms at sight on their instrument. This study presents the following research questions:

1. Will a system of movement-based instruction of rhythm training have an effect on scores of a rhythm sight-reading test?

2. Will the change in scores from pretest to posttest on the rhythm sight-reading test for both the experimental group and control group be significant?

3. Will the amount of time a student is exposed to movement-based rhythm instruction have an effect on scores of a rhythm sight-reading test?

Research questions were formed as a result of observation in school music settings and a pilot study (McCabe, 2001) on the effect of movement-based rhythm training on the ability to sight-read rhythm patterns. The purpose of this study was to investigate the difference between beginning middle school instrumentalists who participated in movement-based rhythm instruction and those who participated in traditional rhythm instruction on their ability to sight-read rhythm patterns accurately.

Methodology

This study investigated variations in ability to sight-read rhythm patterns between beginning middle school instrumentalists who participated in movement-based instruction and those who participated in traditional rhythm instruction. The population of the study ($N = 81$) was sixth-grade, seventh-grade, and eighth-grade beginning instrumental music students from a large inner city school district. All subjects were enrolled in a beginning instrumental music class and were in their third week of instrumental music instruction. Each music class met for 40 minutes a day, 5 days a week.

This experimental study used the pretest, posttest control group design. The study consisted of two groups: experimental (movement-based instruction) and control. There was an instructional period of 18 weeks between the

administration of the pre and post tests.

Two classes, Experimental Group A (n = 20) and Experimental Group B (n = 20) were assigned to the experimental (movement-based instruction) group, and the remaining two classes, Control Group C (n=20) and Control Group D (n = 21) were assigned to the control (traditional instruction) group. The 18-week instructional period consisted of five, 15-minute rhythmic instructional treatments per week for each of the individual music classes. Thus, all classes spent 75 minutes per week for 18 weeks in rhythm training. The researcher presented treatments to both the experimental and control groups.

During the 18 weeks, the researcher spent 15 minutes of each rehearsal using specified materials and techniques in the teaching of rhythm reading. All classes used the same method book during the rhythm training sessions- *A Rhythm a Day* by Igor Hudadoff (1963) and *101 Rhythmic Rest Patterns* by Grover C. Yaus (1953). There was no set number of units to master during the 18 weeks. All students used a variety of rhythm syllables and vocalization techniques to reach the goal of rhythmic fluency. Kodaly syllables, numerical syllable system, sizzling (using the syllable "s" and air pressure, create the rhythm with breath pulses), and a note name association system were used by all of the students in each group.

Students of the control group were not allowed to use bodily movements to mark the beat or to clap rhythm patterns during the rhythm-training portion of the rehearsal. Students were asked to imitate rhythm patterns using a designated vocalization technique. Students were then asked to play these rhythms on a single pitch on their instruments. Control group students were also encouraged to mentally envision the steady beat and experienced techniques working to develop an internal pulse without the use of movement.

Students of the experimental group were given the same instructions regarding vocalization techniques and the number of units to be accomplished but were instructed to incorporate all of the following activities into their rhythm training: (a) listen to recordings of music and mark the underlying beat

with foot tapping or marching, (b) clap rhythm patterns while tapping/marching the underlying beat with the foot, (c) play rhythm patterns on a single pitch while marking the beat with the foot, (d) conduct the beat pattern while speaking the rhythm, (e) conduct the beat pattern while tapping the rhythm with the feet, (f) use designated body movements to represent different beat values. During the time spent working in the rhythm book, rehearsal time, and home practice sessions, students were instructed to mark the beat by tapping the foot.

The Watkins-Farnum (1954) *Performance Scale Rhythm Test* was administered by the researcher to the students individually in a sound proof practice room. All individual test performances were tape-recorded, so that scoring could be done by a panel of three qualified music teachers. This panel consisted of three certified middle school band directors who had taught beginning band for a period of 5 years or more and had prior experience in grading the Watkins-Farnum (1954) test. Students were given an identification code to maintain anonymity.

Each student performed the sight-reading assessment on his/her respective instrument. Each student was given the same instructions. "You will be given eight taps by the metronome to indicate the steady beat at the start of each example. Play each example to the best of your ability. We are looking for how well you can read rhythms at sight. Good luck."

The rhythm patterns in The Watkins-Farnum Performance Scale were used to determine rhythm sight-reading performance ability. The patterns are notated on a single pitch, and are free of melodic complications, and all dynamic and expression markings. Snare drum exercises were notated in the usual percussion notation but did not include rudimental markings.

Performance tapes were placed in random order and given to the panel of three judges. This enabled the judges to score the tests without knowing whether a given performance was a pretest, or a posttest, or whether the student was in the experimental group or control group. Specific objective

criteria for scoring tests were given. The individual measure was the unit by which the test was scored. Errors were classified under the headings of time, change of tempo, rests, and pauses.

Results

An independent *t*-test was conducted to compare Control Group C and Control Group D pretest and posttest scores. A *t*-ratio of $t\ (40) = -1.37$ indicated that the difference in pretest mean scores between the two control groups was not significant and a *t*-ratio of $t\ (40) = .74$ indicated that the difference in posttest mean scores between the two control groups were also not significant. An independent *t*-test was conducted to compare Experimental Group A and Experimental Group B pretest scores and posttest scores. A *t*-ratio of $t\ (39) = 1.7$ indicated that the difference in pretest mean scores between the two experimental groups were not significant and a *t*-ratio of $t\ (39) = 1.39$ concluded that the difference in posttest mean scores between the two experimental groups was also not significant. The results of the independent *t*-tests led the researcher to combine the data from the two separate control groups together and the two separate experimental groups together to form one control group and one experimental group for the purpose of reporting outcomes of this study.

Pretest scores ranged from 0 to 32 for the experimental group and from 0 to 38 for the control group. The mean (5.4) for the experimental group was slightly lower than the control group mean (5.7). Scores were compared statistically for group differences. A *t*-test for mean difference indicated that the groups did not differ significantly, $t\ (79) = -.16$, $p < .05$, thus the groups' mean pretest scores were approximately the same, differing by only three-tenths of a point.

Posttest scores ranged from 0 to 77 for the experimental group ($M = 50.85$) and from 0 to 56 for the control group ($M = 25.54$). The posttest scores of both groups on the Watkins-Farnum Performance Scale represented gains over the pretest

scores. The mean gain between the experimental group's pretest and posttest was 45.45, and the control group's mean gain was 19.84. The *t* test for mean difference was used to determine whether or not these gains were statistically significant. The obtained *t* values were t (39) = 18.78 for the experimental group and t (40) = 8.32 for the control group, and it was concluded that the difference between each group's mean pretest and posttest score on the sight-reading test was statistically significant at the .05 level (see Table 1).

Table 1
Comparison of Pretest and Posttest Mean Scores: Watkins-Farnum Performance Scale

Group	*n*	Pretest	Posttest	D	*T*	*p*
Control	41	5.70	25.54	19.84	*8.32	< .05
Experimental	40	5.40	50.85	45.45	*18.78	< .05

*$p < .05$.

The Analysis of Variance *F* test for the significance of the difference between the criterion means on the Watkins-Farnum Performance Scale posttest yielded an F (1, 79)= 43.05, which is significant at the .05 level (see Table 2).

Table 2
Summary of the ANOVA of the Watkins-Farnum Performance Scale Posttest

Source of variance	Sum of Squares	*df*	*MS*	*F*
Between groups	12973.59	1	12973.59	* 43.05
Within groups	23809.30	79	301.38	
Total	36782.89	80		

*$p < .05$.

With the pretest scores held constant, the Newman Keuls Multiple Comparison Procedure yielded that the experimental group mean sight-reading scores were significantly higher than that of the control group (see Table 3).

Table 3
Newman Keuls Multiple Comparison Procedure Posttest ANOVA

	Group C	Group D	Group B	Group A
Mean	22	28.9	46.8	54.9

6.9 17.9 8.1

24.8 26

32.9

Note. Underlines indicate no significant difference ($p > .05$) between means.

Discussion

The purpose of this study was to determine if a movement-based approach to rhythm training would significantly aid the beginning instrumentalist in the ability to read rhythms at sight. The primary objective was to provide music educators with information regarding beginning instrumental student responses to rhythm training through movement-based activities. It is the hope of this researcher that the data provided will contribute to teaching techniques that develop rhythm reading skills and musical abilities of beginning instrumentalists. Salzberg and Wang (1989) consider rhythmic sight-reading as the main contributing factor in overall sight-reading ability. However, when sight-reading music, it is often difficult to find the exact cause of the errors. Employing a system of rhythm training to daily rehearsals appears to be one effective way of overcoming difficulties in sight-reading music.

The statistically significant gains made by the subjects of both the experimental and control groups and the extant literature on this subject, suggest that middle school instrumental music instructors should spend a portion of their rehearsal time systematically teaching the reading of rhythms. Furthermore, the statistically significant gains between the experimental and control groups suggests that a system using

movement-based instruction in rhythm training appears to be more effective than a system without the use of movement-based activities. It is recommended that bodily movements such as those used by the experimental groups in this study, be incorporated into rhythm training.

During the 18 weeks of rhythm training, both the experimental and control groups appeared to be more focused during the rhythm training portion of the rehearsal. This could be due to the structure of the program. Rhythm training became a daily routine, a habit, so students became comfortable with it. Even though the project was designed with no set number of units to be covered in the method books over the course of 18 weeks, the experimental group made more progress in the *A Rhythm a Day* books than did the control group. The experimental group successfully completed Units 1 through 39 whereas the control group successfully completed Units 1 through 29. These successes could be attributed to the movements used by the experimental group.

Specifically, having students clap the rhythm, march to or tap the foot to the steady pulse, and verbalize the rhythm pattern simultaneously, is particularly effective in establishing a steady pulse and successfully performing independent parts together. Furthermore, results achieved by the experimental groups in this study indicate that students who are exposed to conducting activities during rhythm instruction may attain improved achievement in rhythm-reading abilities. In the present study, students of the experimental groups experienced success with conducting activities. Conducting may have aided the students in understanding differences in time signatures. It is suggested that conducting activities be a regular part of the instrumental music rehearsal to reinforce the concepts introduced in rhythm training.

Although, further research is needed in order to resolve issues concerning the effectiveness of using movement-based instruction for the teaching of rhythm, there are some conclusions that can be drawn from the existing study. First, music instructors need to be patient when incorporating

movement-based activities into their curricula. Results from the previous study (McCabe, 2001) indicated that after four weeks the mean gains were 3.39 for the control group and 6.27 for the experimental group. This is a difference of 2.88 between the two groups. Statistically, the experimental group's mean was 1.85 times greater than the control group's mean.

Results from the current study indicated that after 18 weeks the mean gains were 19.84 for the control group and 45.45 for the experimental group. This is a difference of 25.61 between the two groups. Statistically, the experimental group's mean was 2.29 times greater than the control group's mean. This shows that the gap between mean scores increased from the four-week treatment to the 18-week treatment, thus, indicating that the longer a student is exposed to movement-based instruction, the greater the potential achievement on a rhythm sight-reading test. It could take a period of years in order to realize maximum results. It appears that the longer the period of time a student is exposed to a teaching method, the larger the potential gains in achievement.

Secondly, instructors need to be attentive to the implementation of an appropriate teaching sequence when introducing the use of movement-based activities. Rather than being haphazard, movement-based instruction should be carefully planned to move from the simple to the complex (Weikart, 1982).

Additionally, although rhythm training that includes movement-based activities may produce significant gains in student rhythm sight-reading abilities, students will improve over time regardless of the method being used. Both the experimental and control groups in this study experienced statistically significant gains from pretest to posttest. This indicates that a system of rhythm training regardless of the method will result in student achievement.

Finally, not all students will benefit equally from movement-based instruction. Students learn in different ways. Some students learn better visually, others are auditory learners, yet others learn better kinesthetically. However,

most students learn through a mixture of these styles.

It is apparent from the results of this study that a system of rhythm training that includes movement-based activities can be effective in the teaching of reading rhythms. Movement-based rhythm instruction is advocated by various researchers and learning theorists as being able to provide a foundation for satisfying musical experiences throughout a child's life. Studies have been presented that support the interdependence of music and movement. It is now up to the music educator to employ some type of systematic approach to rhythm training into the classroom in order to increase student achievement in sight-reading abilities.

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The Impact of a Focusing Experience on the Aesthetic Experience of Music Majors and Nonmajors

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Following a line of research in aesthetic response, the present study investigates the impact of a focusing experience on the aesthetic response of music majors and nonmajors. Participants listened to a music stimulus and manipulated a Continuous Response Digital Interface dial corresponding to their aesthetic response to the music. One group of music major and nonmajor participants heard a guided imagery prior to listening to the music. Music majors who heard the guided imagery responded distinctly lower than other music majors, and nonmajors who heard the guided imagery responded distinctly higher than other nonmajors.

Musicians, including psychologists and philosophers, educators and performers often espouse the importance of focused listening (Copland, 1939; Elliot, 1995; Madsen, 1997; Small, 1998). A common practice for engaging student listening is to have the student listen for something (e.g., melody, bass line, dynamic contrasts). This provides a focal point for the listening session and a point of entry into the larger, more complex work. It also focuses attention on what aesthetic education proponents call the aesthetic qualities of the music (Reimer, 1989).

Aesthetic education has been a major focus in college and university discussions of American music education (Schwadron, 1967). Drawing largely from the work of Langer

(1953) and Reimer (1989), it encourages the student to engage the art of the music – to interact with the form of feeling symbolized in the work. Reimer (1989) defines the aesthetic experience as an "experience of the vitality of life, through perceiving and reacting to qualities which are expressive of the vitality of life" (p. 102). The aesthetic experience of the student is an interactive process of aesthetic perception and aesthetic response. That is, one perceives the aesthetic qualities of the work (melody, harmony, form, texture, etc.) but does not judge or evaluate these qualities. Rather, one takes in the entire work, and becomes absorbed in it. Through aesthetic education the student deepens his/her aesthetic sensibilities and experiences more fully the potentials of human subjectivity (Reimer, 1989). The whole notion of peak experience draws the discussion into a psychological realm. In his discussion of the aesthetic experience, Joseph Campbell cites Maslow's definition as "moments in your life when you experience your relationship to the harmony of being" and James Joyce's definition as "simply beholding the object" (Campbell & Moyers, 1988, p. 220). Campbell concludes that aesthetic experience transcends the need to posses an object and the desire to critique it. It leaves one beholding the radiance of the work.

While the aesthetic experience itself may be difficult to define in words, several have done so (Lychner, 1998; Madsen, Brittin, & Capperella-Sheldon, 1993; Reimer, 1989). Music educators are challenged to determine the most effective ways to provide students with aesthetic experiences and opportunities for peak experiences, and subsequently to encourage them to seek out such experiences. In addition, preparing them to experience the aesthetic more deeply and richly may make it possible for them to draw on those experiences in their own self expression, leading to a richer life experience for everyone.

So, as we encourage students to listen for something in music, we run the danger of engaging the student's analytical-critical thinking at the expense of his/her aesthetic sensibilities. The student may exercise abilities to analyze the elements of a

piece but may not be engaging the whole of the work. So, how do we encourage students to listen attentively and to open themselves to the aesthetic experience of the whole?

One key may lie in how the student is prepared for the experience. Some studies of aesthetic response suggest that peak experiences require a period of focused concentration prior to the peak (Madsen, 1997; Madsen et al., 1993). In these studies, participants had peak experiences following periods of focused concentration that lasted a few minutes. The 30-45 seconds prior to the peak experience was deemed especially critical to achieving the peak experience.

Studies also have speculated on the impact of the quality of a focusing experience prior to realizing its effect. Madsen et al. (1993) discussed the need for the focusing time to be several minutes in highly concentrated and uninterrupted attention. Brittin and Duke (1997) compared listener's post hoc overall perceptions (summative responses) with arithmetic means of their moment-to-moment perceptions (continuous responses). They found that summative responses were consistently and noticeably higher than were their continuous response means suggesting "that one's overall perception is the result of a complex interaction of qualitative, temporal, and dimensional variables" (p. 255).

The studies and discussions surrounding the Mozart effect also relate to the quality of a focusing experience. Rauscher, Shaw, and Ky (1993) reported that 36 undergraduates increased their mean spatial-reasoning scores the equivalent of 8 to 9 IQ points on portions of the Stanford-Binet Intelligence Scale, Fourth Edition, after listening to 10 minutes of Mozart's Sonata for Two Pianos in D Major, K 448. This has come to be known as the Mozart effect. The Mozart effect was temporary, disappearing within 10 to 15 minutes. The effect was replicated (Rauscher, Shaw, & Ky, 1995) using elaborations of the Stanford-Binet Paper Folding and Cutting task as a dependent measure. However, several attempts by others to replicate the Mozart effect have been unsuccessful (Carstens, Huskins, & Hounshell, 1995; Dalla Bella, Dunlop, Dawe, Humphrey, & Peretz, 1999; Kenealy & Monsef, 1994;

Newman et al., 1995; Steele, Ball, & Runk, 1997; Stough, Kerkin, Bates, & Mangan, 1994; Weeks, 1996). Steele, Bass, and Crook (1999) attempted to replicate Rauscher et al. (1995) using the Mozart Sonata, silence, and Philip Glass's "Music with Changing Parts" as the stimuli. Results showed no significant effect on cognitive task performance. However, there was a significant effect on mood scores. Tension and Anger scores were higher for those who heard the Glass stimulus, intermediate for the silence group, and lowest for the Mozart group. It has been strongly suggested that the Mozart effect could be produced indirectly through differences in mood or arousal among treatments (Steele, 2000; Steele et al., 1999).

Guided Imagery (GI) as a focusing experience also has been used as a mood inducer; GI and focused breathing exercises are often paired to induce a calm, reflective mood. Several studies have used mood induction techniques to measure the impact of mood on learning (Albersnagel, 1988), attention (Bower, 1981), and recall (Bower, 1981; Thaut & de L'Etoile 1993). It may be useful for educators to use a focusing experience that serves to garner the participants' concentration and to set a mood that is conducive to a greater aesthetic experience.

The purpose of this study was to investigate the impact of a focusing experience upon the aesthetic response to a musical stimulus by music majors and nonmajors. Previous studies have used various labels or directions to describe the aesthetic experience: aesthetic response (Madsen et al., 1993); music intensity (Brittin & Duke, 1997); felt emotion (Adams, 1994); aesthetic experience, felt emotion, free response (Lychner, 1998). Each of these labels may carry a variety of definitions, some specific and many less specific. Leaving such terms open to the definition of the participant has elicited a frustration among some study participants (Lychner, 1998). However, analysis shows that the outcomes are virtually the same whether they are asked to track their aesthetic response, their felt emotional response, or to indicate their response freely as they listen (Lychner, 1998). Therefore, in this study

participants were asked to track their aesthetic response to the music, but were told that they could substitute felt emotional response if they struggled with the definition of aesthetic.

A focusing experience, for the purposes of this study, was a stimulus that a group of participants received prior to the musical stimulus. One group heard a guided imagery including deep breathing and suggestions to clear one's mind, relax, and focus on a safe, comfortable place. Various writers and practitioners of meditation and guided imagery agree that activities such as the focusing experience described above are effective ways to focus the attention of persons not accustomed to meditative or imagery practices (Frawley, 2000; Gawain, 1978; Henricks & Roberts, 1977; Lodro, 1998; Naparstek, 1995; Pearson, 1998).

Participants responded to the musical stimulus using a Continuous Response Digital Interface (CRDI) dial. The CRDI is a potentiometer (in dial format) whose readings are recorded by a computer as a string of numbers that can then be graphed or statistically analyzed. The CRDI is specifically designed to record ongoing responses to music without necessitating a verbal response during the listening process (Madsen et al., 1993).

The CRDI has been used in over 70 published studies and it has been shown to be both reliable and valid as a tool for collecting responses to various stimuli over time (Geringer, Madsen, & Gregory, 2005). Questions regarding the adequacy of using the CRDI to investigate aesthetic response have been raised. For this reason, aesthetic response studies that used the CRDI also used an exit questionnaire that asked participants, "Did you have what you consider to be an aesthetic experience while listening to the music?" and "Did you feel that your movement of the dial roughly corresponded to variations of the above aesthetic experience?" (Geringer et al., 2005).

Method

Participants (N = 94) were undergraduate and graduate students from two state universities. Each university included

a large comprehensive school of music with a population in the highest National Association of Schools of Music head-count category (400+). Music major participants (n = 47) were those students pursuing a degree granted through their university's School of Music; nonmajor participants (n = 47) were those students pursuing any degree program outside the School of Music.

Participants, music majors and nonmajors, were divided into five groups A, B, C, D, and E. Data for Groups A, B, C, and D (each n = 16: 8 music majors & 8 nonmajors) were from an earlier study in which participants listened and responded to four musical stimuli: "Nessun dorma" from *Turandot* by Giacomo Puccini; "Fugue" from Toccata and Fugue in D minor by J. S. Bach; "Scherzo" from Symphony No. 3 ("Eroica") by Ludwig van Beethoven; and "The Stars and Stripes Forever" by John Phillip Sousa (Lychner, 1998). In the present study, Group E listened and responded to "Nessun dorma," and analysis was concerned with all participants' responses to this stimulus. "Nessun dorma" was chosen because of its use in previous research and its general though not widespread familiarity.

In the earlier study, participants heard "Nessun dorma" and three other pieces. In an attempt to control for possible order effect, the examples for Groups A, B, C, and D were presented in four different orders: Group A heard "Nessun dorma" as the first of four pieces. Group B heard "Nessun dorma" as the second of four pieces. Group C heard "Nessun dorma" as the third of four pieces. Group D heard "Nessun dorma" as the fourth of four pieces. In the current study, participants in Group E (n = 30: 15 music majors and 15 nonmajors) heard a guided imagery followed only by "Nessun dorma."

To control for subject fatigue in Groups A, B, C, and D, the stimulus was provided for no more than a total of 20 minutes including any silent response time between examples. In addition, it was decided that each example should be a somewhat complete entity, rather than a smaller excerpt from a movement or a work, so as to give the feeling of completeness to the music.

All participants were given instructions to listen to the music and manipulate the CRDI dial corresponding to their aesthetic response to the music. In the current study, the researcher led Group E in a guided imagery titled "Favorite Place Imagery" by Belleruth Naparstek (Naparstek, 1995). It was chosen because it is a basic feeling-state imagery that does not require sophisticated practice to engage. It simply relaxes using a focus on breathing and an imagined journey to a favorite place.

Previous studies indicate that the standard face of the CRDI dial with both positive and negative segments would be inappropriate for this study because the negative side of the dial was employed sparingly, if at all. Therefore, an overlay designed to give the visual appearance of a rounded Osgood scale with the word "less" at the far left anchor and the word "more" at the far right anchor was used.

A small studio (approximately 11' x 12') with four CRDI stations, two on either side of a computer station, served as the laboratory for this project. Each station was visually separated from the next by wooden partitions and included a CRDI dial, a set of headphones, a pencil, and a questionnaire that provided instructions and space for written responses.

The audio equipment used to reproduce the audio stimulus included an AIWA 120-watt Shelf System with 5 Minidisc Changer, Model XR-H66MD, and KOSS Portable Stereophone Headphones, Model TD/61. The shelf system was located in a carrel next to the computer station. A 486 IBM compatible computer was used to collect and reduce data from the CRDI dials, in concert with an 8-bit analog to digital converter (Acqutek PA-CP12) which transformed voltage (0-5 volts) from the CRDI dial potentiometer into digital format with a range of 0-256. The computer was programmed to collect two samples per second during each listening example. Prior to starting the project, the CRDI overlays for this project were laminated and affixed to the face of each dial.

All participants listened and responded to the stimulus in groups of one-to-four. Before the beginning of each session, participants were asked to place the pointer at the far left by

the word "less." This practice is based upon the premise "that one cannot decrease response until one is responding," (Adams, pp. 45-46, 1994). Following the stimulus, the participants were instructed to complete a brief questionnaire (see Appendix). Upon completion, the materials were collected and the participants were thanked and dismissed.

Results

This was an experimental study with a post-test only design. The survey data were analyzed by comparing frequency and percentages of responses. The data obtained from the CRDI were analyzed graphically. A graph was created for each group by plotting a mean of the dial readings for each second of the music stimulus (see Figures 1-4). The resulting graphs were compared for overall contour, and specific comparisons were made on and around peak readings.

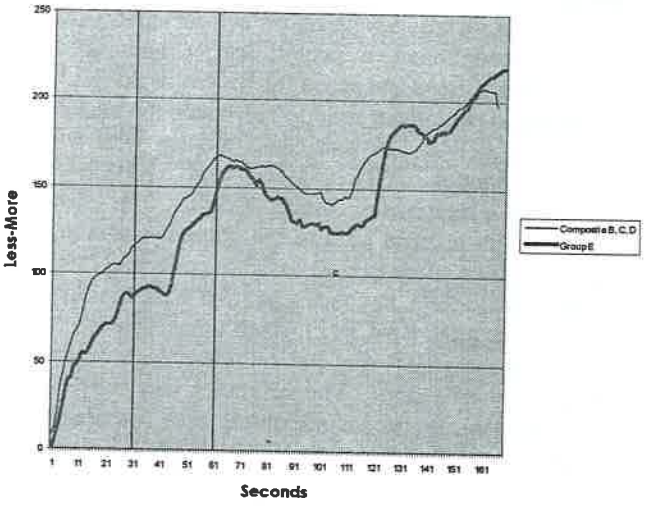

FIGURE 1.
Comparison of composite group and Group E, musicians.

Twenty-four of the participants (12 music majors & 12 non-music majors) were asked to repeat the process for test-retest reliability.

Reliability was established using an immediate test/retest format. Twenty-four participants (12 music majors & 12 nonmajors) of the total of 94 agreed to participate in the test/retest reliability. A Pearson correlation was calculated to compare the data. Results indicate a relatively high reliability of .82.

Graphic analysis was conducted comparing Group E (the group hearing the guided imagery) to each of the other four groups (Groups A, B, C, and D), then comparing Group E to a composite of Groups B, C, and D. Particular attention was given to comparisons with Group A (the group hearing "Nessun dorma" first) and the Composite of Groups B, C, and D (all of whom heard musical selection(s) prior to "Nessun dorma"). Comparisons were made for music majors and nonmajors (see graphs). Particular focus was given to the first

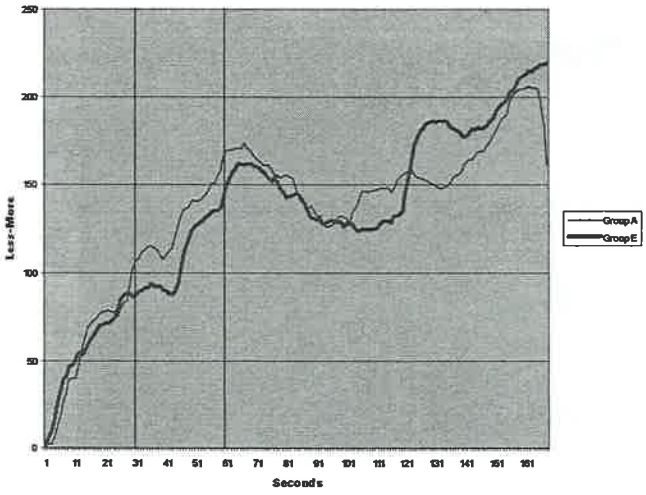

FIGURE 2.
Comparison of Groups A and E, musicians.

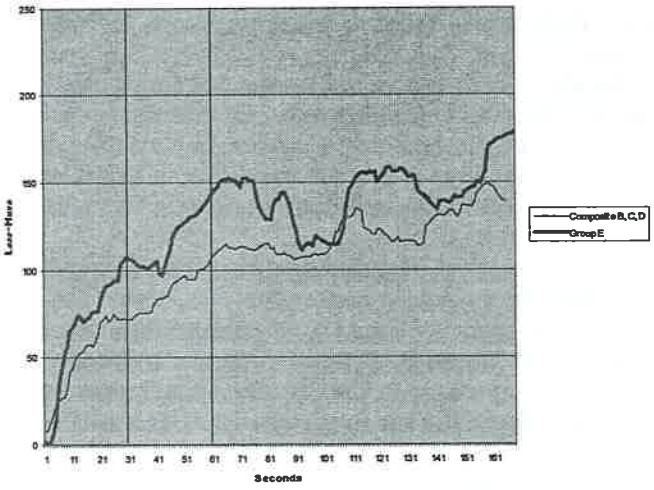

FIGURE 3.
Comparison of composite group and Group E, nonmusicians.

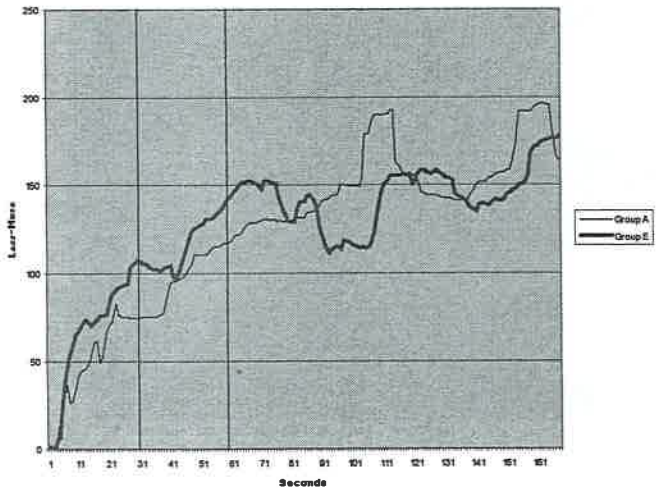

FIGURE 4.
Comparison of Groups A and E, nonmusicians.

60 seconds of data since this data would be the most affected by the Focusing Experience.

The first 60 seconds of the music stimulus consisted of an introduction (0:00 – 0:14), the first verse, section A (0:14 – 0:40) and the first verse, section B (0:44 – 1:21). The A section reached a small peak at 0:30, and the B section reached a peak at 0:60. Both of these peaks were characterized by a high note in the tenor and an increase in dynamics. Further, these peaks were distinct and clearly identifiable on each graph. While clear patterns presented themselves on the compiled graphs, each individual participant's graph was unique and distinctive.

The results for music majors showed Group E (i.e., Group M-E) as distinctly lower than any other group (see Table 1). The first peak (0:37) for Group M-E was 94 degrees – 18% lower than Group M-A (115). Results for Groups M-A, M-B, M-C, and M-D ranged from Group M-B (142) to Group M-C (112). Results for Group M-E were 16% lower than Group M-C and 34% lower than Group M-B. By the second peak (0:68), Group M-E results were more proximate to the other groups. The second peak for Group M-E was 162 – 7% lower than Group M-A. Groups M-A, M-B, M-C, and M-D ranged from Group M-B (188) to Group M-D (156). Results for Group M-E were 4% higher than Group M-D and 14% lower than Group M-B.

Table 1
Results for Music Majors and Nonmajors

Music majors			Nonmajors		
Group	0:37	0:68	Group	0:37	0:68
A	115	174	A	77	128
B	142	188	B	91	138
C	112	159	C	80	108
D	114	156	D	60	92
E	94	162	E	107	152
BCD	123	167	BCD	76	111

Results for music majors in Group E were distinctly lower than the Composite results of Groups M-B, M-C, and M-D. The first peak (0:37) for Group M-E was 94 degrees – 24% lower than the Composite results (123). The second peak for Group M-E was 162 – 3% lower than the Composite results (167).

It is notable that the times given for the peaks in response fall within ten seconds following the identified musical peak. This reinforces the concept of an afterglow effect when the stimulus peaks (Madsen et al., 1993). For purposes of analysis, the peak was identified as the highest degree reached within a 10-second range of the identified musical peak.

The remainder of the time (0:68 – 169) finds similar patterns and ranges in all music majors' groups with the exception of Group M-B which is distinctly higher until the very end.

The graphs for nonmajors showed that Group E (i.e., Group N-E) was distinctly higher than any other Group. The first peak (0:37) for Group N-E was 107 degrees – 39% higher than Group N-A (77). Results for Groups N-A, N-B, N-C, and N-D ranged from Group N-B (91) to Group N-D (60). Results for Group N-E were 78% higher than Group N-D and 18% higher than Group N-B. By the second peak (0:68), the Group N-E results had drawn slightly closer to the other groups. The second peak for Group N-E was 152 – 19% higher than Group N-A. Groups N-A, N-B, N-C, and N-D ranged from Group N-B (138) to Group N-D (92). Results for Group N-E were 65% higher than Group N-D and 10% higher than Group N-B.

Results for nonmajors in Group N-E were distinctly higher than the Composite results of Groups N-B, N-C, and N-D. The first peak (0:37) for Group N-E was 107 degrees – 41% higher than the Composite results (76). The second peak for Group N-E was 152 – 37% higher than the Composite results (111).

Questionnaire data revealed that all music majors claimed to have had an aesthetic experience during the study with 100% stating that their manipulation of the dial roughly corresponded to variations within the experience. One non-

major claimed not to have had an aesthetic experience and three indicated that their manipulation of the dial did not roughly correspond to variations within the experience. Over 56% rated the experience at a magnitude of 6 or above on a scale of 1 (low) to 10 (high) relative to other experiences they have had.

Discussion

The purpose of this study was to explore the impact of a focusing experience upon the aesthetic response to a musical stimulus of music majors and nonmajors. The study method provided two focusing experiences to explore: a musical experience or experiences as in Groups B, C, and D, and a guided imagery experience as in Group E.

Music major and nonmajor responses followed a similar comparative pattern relative to the musical focusing experience. For both music majors and nonmajors, Group B (having heard one musical selection prior to "Nessun dorma") responded higher than Groups C and D at the first peak and the second peak. This reinforces the assertion that peak experiences were preceded by several minutes of focused attention (Madsen et al., 1993).

This assertion is further supported by the responses of the music majors in Group A. The first peak for Group A was within three degrees of Groups C and D. At the second peak, Group A was 15-18 degrees above Groups C and D. This suggests that Group A, having heard "Nessun dorma" without any previous stimulus, peaked distinctly higher (though not as high as Group B) at the second peak due to the focus of attention in the first minute of "Nessun dorma."

The above suggestion must take into account a particular effect on Groups C and D. The Groups C and D music majors followed a similar pattern and range of responses throughout the sample. These groups heard "Nessun dorma" third and fourth respectively in the study. This may suggest a plateau of attentiveness had been reached by the third sample and maintained through the fourth sample.

The nonmajors' responses in Groups A, B, C, and D provided a pattern similar to the music majors'. Group A responses were within three degrees of Group C at the first peak then rose sharply to the second peak. This may further support the suggestion above that the Group A responses had a greater increase because of focused attention while Group C results increased less because of reaching an attentive plateau. Group B responses were high throughout the sample, suggesting a stronger effect of the longer focus time. Groups C and D were, like the music majors, the lowest, however for nonmajors Group D responses were considerably lower than Group C. This may suggest some participant fatigue among the nonmajors.

The intriguing result of this study was the marked difference in response of Group E music majors and Group E nonmajors. Group E music majors' responses were lower than other music majors' groups at the first peak, and Group E nonmajors' responses were higher than other nonmajors' groups at the first peak. To suggest that the focusing experience of the guided imagery provided the needed attention for a peak experience supports the nonmajors' results but not those of the music majors. Likewise, to suggest that the relaxing and calming quality of the guided imagery experience provided the needed mood change to subdue initial responses supports the music majors' results but not those of the nonmajors. The guided imagery seemed to produce opposite effects.

A guided imagery experience is one that relaxes the body, clears the mind of daily stresses, and engages the imagination. It focuses the participant internally with attention given to breathing, thoughts, feelings, and an imagined place. Guided imagery has been used to induce a calm, reflective mood. Music can induce various moods. Steele et al. (1999) investigated the effect of three different treatments on mood: listening to Mozart, silence, and listening to Philip Glass. These stimuli produced varying scores on tension and anger but they had no effect on cognitive scores (i.e., they did not replicate the Mozart effect).

The widely varied results between guided imagery and music as focusing experiences suggests the importance of the quality of the focusing experience. The guided imagery engages the imagination and focuses the participant on internal processes. Perhaps in having one's imagination engaged, the nonmajor opened himself less judgmentally to opera and was prepared to enjoy rather than to critique. Perhaps by engaging the music majors' imaginations, they, like their nonmajor counterparts, opened themselves to enjoyment and became less critical. Perhaps the experience of the imagery simply continued into the experience of the music.

A music major participant informally related to the researcher following the study that she was engaged by the guided imagery and the experience flowed into the music. She continued to engage the music such that it was several seconds before she remembered to manipulate the dial. This prompted a closer examination of individual results of the music majors in Group E (i.e., Group M-E).

In examining individual results of Group M-E it was notable that five of 15 music majors had almost no response within the first 15 seconds. Three participants at 20 seconds, two participants at 45 seconds and one participant at 90 seconds had little or no movement of the dial. Further, the two participants with little response after 45 seconds used the entire 256 degree range of the dial once they began responding. In every other group, participants who exceeded 20 seconds with little or no movement of the dial completed the study using less than two-thirds of the dial, with the majority of them using less than half. This supports the notion that the guided imagery experience engaged the imagination of a few Group M-E music major participants so that they flowed between the guided imagery and the music stimulus. An aesthetic experience was likely occurring without being reported via the CRDI dial.

More investigation is warranted in various areas: Does the type of focusing experience profoundly affect the aesthetic experience of the music? Are there variables to be considered

in the match of focusing experience to musical stimulus? Is there a difference to be investigated between critical listening and aesthetic listening? These and other questions require investigation if we are to find a focusing experience that serves to garner the concentration of our students while setting a mood that is conducive to a greater aesthetic experience.

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Appendix

Questionnaire CRDI #___

1. Did you have what you consider to be an aesthetic experience(s) while listening to the music?

NO _____ YES _____ SEVERAL _____

2. Did you feel that your movement of the dial roughly corresponded to variations of the above aesthetic experience?

(circle one) YES NO

3. How long did this experience last (check all that apply)?

ALL OF THE SAMPLE_____ PARTS OF THE SAMPLE_____

SPECIFIC SECTIONS_____ PARTS OF SECTIONS_____

OTHER _____

4. What was the highest magnitude (intensity) of this experience(s) compared to others you have had?

1 2 3 4 5 6 7 8 9 10
Low High

CONDUCTING AMATEUR MUSICIANS: LEADERSHIP OF COMMUNITY ORCHESTRAS IN THE UNITED STATES

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Missouri State University
May 2006
Committee Chairperson: Robert C. Quebbeman

Thesis Abstract

Amateur classical musicians in the United States have gone underground. This study's objective was to shed light on an orchestra culture seldom mentioned by the mainstream media. A total of 160 community orchestra conductors from the United States received surveys questioning all facets of community orchestra structure, including what types of community orchestras exist, the experience and education of the conductors, what the finances are like, their role in their individual community, and what literature is being performed.

The results of the survey indicated the presence of an active community orchestra culture. The community orchestras' presence represents a significant artistic and commercial impact. The existence of such groups also provides a venue for new composers and for obscure American composers.

The orchestras' leaders tend to be dedicated risk takers from various walks of life, and the majority of the conductors are music educators with Masters and Doctoral Degrees in Music Education or Conducting. Many of the groups are actively providing musical services to their communities and local school systems. These small groups of dedicated musicians provide live orchestral music to an under-served public that would have little exposure to live classical music any other way. Some of the services these groups provide are: guest soloists, scholarships, mentoring programs, concerto competitions, commissioned works from local composers and master classes.

Sixty-six percent (66%) of the groups operate with a yearly budget of less than $50,000.00, and 12 of the 70 orchestras participating in the survey reported yearly operating budgets of less than $10,000.00. Results of this study show that the governing boards of these groups primarily consist of players from the group, some community members, and the conductor. These players and music educators are taking an active role in a unique form of community music education that isn't bogged down by shrinking public school budgets and school reform politics.

Beautiful Choral Tone Quality: Rehearsal Techniques of a Successful High School Choral Director

Bonnie L. Jenkins, PhD
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December 2005
Committee Chairperson: Wendy Sims

Dissertation Abstract

What is *beautiful choral tone quality?* What effective rehearsal techniques might be found if a successful high school choral director could be observed and interviewed? The primary goal of this study was to discover the strategy and technique used by a successful high school choral director to achieve a beautiful choral tone quality in his ensembles.

This case study revealed that the participant, Matt (pseudonym), had outlined five basic areas of technique that affect beautiful choral tone quality. These areas are posture, breath control, tone quality or resonance factors, vowels, and vocal freedom. This study also found that Matt developed a strategic plan and process in teaching these skills.

The data further revealed that his philosophy and method of teaching were contributors to his success. The participant had defined his "ideal" choral tone quality and his philosophy involved not only developing vocal excellence but developing the whole person. Matt stated that tone quality is affected by both.

The results of this study should help to enlighten choral directors, vocal instructors, and the music education field in general on how one can conduct successful choral rehearsals that will bring about a beautiful choral sound.

Religion/Spirituality and Health Outcomes in a Secondary Analysis of Data on Patients Recovering from an Acute Myocardial Infarction: Implications for Music Therapy

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Dissertation Abstract

This study began with a description of music therapy case studies that instigated questions about the relationship between religious and spiritual variables and health outcomes. Cardiovascular disease was chosen to assess for health outcomes because it is the most prominent cause of mortality and morbidity. A heart attack affects not only physical health but psychosocial well being which may include religious or spiritual values.

A secondary analysis of data investigated variables of religion as a source of strength and comfort and religious coping as predictors of quality of life and symptom burden in people recovering from a heart attack. Outcome variables came from the Seattle Angina Questionnaire. The PREMIER database at the Mid America Heart Institute in Kansas City Missouri was accessed with permission and included nearly 2500 respondents.

Regression analyses showed that baseline levels of religion as a source of strength and comfort did not predict higher quality of life or less symptom burden at one month and six month follow up interviews. However, respondents with a higher level of baseline rating for religion as a source of strength and comfort were most likely to use religion for coping at one month follow up. Further analyses (ANCOVA) combining religion as a source of strength and comfort and religious coping showed that religion was not a significant predictor of quality of life beyond level of social support or health locus of control. Analyses were adjusted for baseline quality of life or symptom burden scores and for risk factors or psychosocial covariates relevant to recovery from a heart attack.

Although this study did not demonstrate a strong relationship between religious variables and disease specific quality of life, most respondents viewed religion as a valuable source of strength and comfort. More research is needed to discover the multifaceted relationship between religious and spiritual variables and cardiac health outcomes.

Implications for music therapy were discussed. Some of the most effective music therapy interventions use calm, quiet music to reduce anxiety for cardiac surgery or assist in recovery from a heart attack. Music therapists can help strengthen a patient's inner spirituality which may contribute to quality of life. This can be done through using music for important rituals, for expression of religious/spiritual feelings, or to elicit transcendent experiences.

Development of a Music Assisted Relaxation Protocol for Children with Sickle Cell Disease

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December 2005
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Thesis Abstract

Sickle cell disease is a group of inherited blood disorders in which the hemoglobin of the red blood cells is defective, leading to pain and tissue damage. The purposes of this study were to evaluate the feasibility of a music assisted relaxation intervention for pediatric patients with sickle cell disease, evaluate the efficacy of the intervention, and solicit feedback from the patients regarding the complexity, time requirements, and format of the intervention. Hospital inpatients ($N = 5$) between nine and eighteen years old participated in a music assisted relaxation protocol which included therapist-directed sessions and independent practice in a within-subjects design. Subjects completed pain, mood, and anxiety scales before and after each session.

Results indicated that the music assisted relaxation intervention had a statistically significant effect ($p = .003$) on anxiety from pre- to post-session. No other significant effects were found. Implications for future research studies and clinical practice are examined.

Ready, Set, Doh!: The Effect of Timed Practice Drills on Music Reading Fluency

Kimberly Anne Michaelis, MME
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May 2006
Committee Chairperson: William E. Fredrickson

Thesis Abstract

The purpose of this study was to determine the effect of timed practice drills on the music reading fluency of elementary strings students. The study used a pretest- posttest design where 179 fourth-, fifth, and sixth-grade students were randomly assigned to control and experimental conditions for the 12-week study.

Both groups participated in normal class activities while the experimental group also participated in a weekly timed worksheet covering a variety of note-naming tasks. Results from accuracy and speed measures showed the experimental groups' gain scores were significantly greater than the control groups' gain scores for five of the six measures.

Building Common Ground: An Investigation of Choral Conductors' Definition of Community within a Choral Ensemble

David Lee Sharlow, PhD
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August 2006
Committee Chairperson: Charles Robinson

Dissertation Abstract

This study explored the psychological, sociological, and anthropological behaviors of a choir as defined by the literature relating to the interaction and development of organizations and by the analysis and assessment of conductors' perceptions of "community" within choral ensembles. Completed surveys (N = 295), of choral conductors from the Southwest division of the American Choral Directors Association (representing a variety of conducting focuses including elementary, secondary, collegiate, community, professional, and church choirs) served as data for subsequent analysis.

Empirical data were evaluated using both descriptive and chi-square analyses, to examine the nature of conductors' agreement and/or disagreement with statements regarding choral community and typical approach. A collapsed, bi-modal analysis revealed conductors were in agreement with these statements, while Chi-Square analysis also discovered years teaching experience were proven to be significant in respondents' views on aspects of choral community.

Conductors' open-ended responses (characterized by their experience, thoughts and opinions) were examined and categorized according to the four aspects of choral community within the study: *trust, commitment – accountability, communication, and relationships*. Aspects of *trust* included security, acceptance, vulnerability, and fairness, with a sense of mutual respect and a safe environment. Aspects of *commitment* and *accountability* were comprised of responsibility, respect, a standard of excellence, the creation of high quality music, and pride and purpose in performance. Aspects of *communication* consisted of honesty and equal and straightforward interaction between the sender and receiver. Finally, aspects of relationship were characterized by the quality of rapport and integrity between members and defined by a supportive atmosphere.

A Comparison of School District Representation and School Size Classification Representation Related to the Implementation of a Live Versus Audiotape Audition Process for the Kansas Music Educators Association Festival Band

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May 2006
Committee Chairperson: William E. Fredrickson

Thesis Abstract

This study compared school district and school size classification representation during the change from an audiotape to live procedure of the Kansas Music Educators Association (KMEA) Festival Honor (All-State) Band. Using data from the first three years of taped audition and the last three years of live auditions, the differences in demographic trends that may be related in some way to the differences in the audition procedure were compared and contrasted.

The average number of students in KMEA represented from each school, number of different schools represented, and average number of students and schools represented within the six class sizes in the state of Kansas were compared. It was determined there is no statistically significant difference between the taped audition process and the live audition process currently in use. However, certain trends from the last three years of live audition may assist future studies and examinations of the audition process.

INFORMATION TO CONTRIBUTORS

The editorial committee welcomes contributions of a philosophical, historical, or scientific nature, which report the results of research pertinent in any way to instruction in music.

Manuscripts should be addressed to Carol McDowell, Editor, Missouri Journal of Research in Music Education, Music Department, Mail Stop 7800, Southeast Missouri State University, One University Plaza, MS 7800, Cape Girardeau, MO, 63701. Four copies of the manuscript must be submitted and must conform with the most recent style requirements set forth in the PUBLICATIONS MANUAL for the American Psychological Association (APA, 5th edition). For historical or philosophical papers, Chicago (Turabian) style is also acceptable. An abstract of 150-200 words should accompany the manuscript. All figures and tables should be submitted camera ready.

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