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The Pedagogical Efficacy of Targeted Self-Observation and Deliberate Reflection During Preservice Field Experience

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The participants in this study were four undergraduate students pursuing music licensure. All four served as instructors at a one-week junior high instrumental music camp during which they coached at least one small chamber ensemble from the initial sightreading through a culminating performance. All of the rehearsals were video recorded for subsequent self-observation and evaluation in two manners: an instructional time-use study, and a qualitative reflection using the Deliberate Reflection Framework. The purpose of this study was to examine the effect of these two types of self-observation and reflection on the instructional behaviors and decision-making of the participants. Examination of the data indicates that all participants were able to modify some facets of their instructional time use, and increasingly exhibit expert-like decision-making. Additionally, the evidence indicates that these instructional methods promoted an increase in self-confidence and a sense of instructional efficacy.

Research comparing the instructional behaviors of expert music educators with those of less experienced teachers, either novices or preservice teachers, indicates that there are a few reliably identifiable differences. These differences are clearly evident in time-use studies. Wagner & Strul (1979) studied the effect of time-use and reinforcement patterns of pre-interns, interns, and experienced teachers on student attitudes in a general music setting and determined that the only significant difference between the groups was in their rehearsal time-use. They found that pre-interns took nearly twice as long to give directions as experienced teachers. In a later series of similar studies in ensemble rehearsal settings, Goolsby (1996, 1999) documented time-use differences between student teachers and novice teachers, and expert teachers. These studies showed that expert music teachers spend more than 50% of the rehearsal in student performance, while less experienced music teachers allow the students to perform only 35-38% of the rehearsal.

In a study by Worthy (2005), preservice music teachers used SCRIBE (Duke & Farra, 1997) to quantify and track their talk and modeling time versus student performance time in a sequence of peer rehearsals. After four instructional episodes, the preservice music teachers reduced their mean talk-time from 54.25% to 38.18% of the rehearsal, and their mean talk duration from 14.27 seconds to 8.7 seconds. These final results are similar to the time-use of

experienced teachers documented in prior studies (Cavitt, 2003; Goolsby, 1996, 1999; Worthy, 2003).

Experience is a key factor in the development of expert teachers, but experience alone does not lead to expertise (Berliner, 1986; Feiman-Nemser & Buchmann, 1985; Standley & Madsen, 1991). The fact that experience only sometimes leads toward expertise indicates that it is not experience that results in expertise, but rather how the subject deliberately negotiates the sequence of their experiences that is the determining factor. Bereiter & Scardamalia (1993) note that novices who engage in 'expert-like' thinking while still novices are more likely to develop true expertise.

Bereiter & Scardamalia (1993) further indicate that some characteristics of expert-like performance may be relevant to preservice music teacher education. One primary indicator of expert-like thinking is progressive problem solving. A problem is any circumstance to which the best response is not readily apparent. Problem solving requires some amount of searching or deliberation prior to deciding between potential solutions. Progressive problem solving requires the conscious reinvestment of what was learned from solving one problem to obtain a solution for a yet more challenging problem. This ability to reference prior experience has been observed in experienced teachers (Bauer & Berg, 2001; Carter & Doyle, 1987), but novice music teachers do not have a sufficient experience base to make these kinds of references (Schmidt, 2005).

One such framework that promotes progressive problem solving has been developed by Hiebert, Morris, Berk, & Jenson (2007) at the University of Delaware. The framework is based on the premise that there are two primary teacher competencies. The first is Pedagogical Content Knowledge as outlined by Schulman (1986), and the second is the ability to analyze instruction and discern the subtle relationships between instructional behaviors and student achievement. Their purpose in developing this framework was to train preservice teachers to learn how to teach by studying teaching. The framework, referred to in this study as the Deliberate Reflection Framework (DRF), requires four skills of the observers:

Skill 1: Specify the learning goal(s) for the instructional episode (What are the students supposed to learn?)

Skill 2: Conduct empirical observations of teaching and learning (What did the students learn?)

Skill 3: Conduct hypotheses about the effects of teaching on learning (How did teaching help [or not help] students learn?)

Skill 4: Use analysis to propose improvements in teaching (How could teaching more effectively help students learn?)

In practice, preservice and intern music teachers evaluate the effectiveness of their own lessons—that is, their own self-perceived level of expertise—by how little they deviate from their lesson plans when they teach (Schmidt, 2005). There are two significant implications of this fact: (a) young

music teachers have not given themselves permission to deviate from their lesson plan, regardless of how wise that decision might be and (b) young music teachers are failing to attend to student achievement as a marker of lesson effectiveness. The DRF addresses both of these critical issues by focusing the preservice teacher's attention on the relationship between instruction and student achievement, and it promotes progressive problem solving as preservice teachers modify their instructional plans for successive instructional episodes.

Method

This is a mixed-method study designed to test if preservice music teachers could learn to engage in expert-like decision-making during a field experience (as opposed to a peer-instruction setting) thereby consciously modifying their own instructional behaviors, and to examine the usefulness of a specific pedagogical framework designed to promote these changes. More specifically, (a) could these participants choose to use rehearsal time more efficiently if they had accurate information on their time-use behaviors? and (b) what effect would using the Deliberate Reflection Framework have on the reflections and instructional behaviors of these participants? Given these treatments, would these participants begin to exhibit more expert-like decision-making after only one week of fieldwork? Data gathered in this study for analysis includes time-use data and individual instructional reflections.

The participants in this study were four undergraduate instrumental music education majors at a midwestern university. Three of the four were enrolled in a post-baccalaureate music licensure program, having previously earned music performance degrees at other institutions; the fourth was enrolled in the traditional BME program. All four participants were adult learners with a mean age of 38.

The participants were hired by a local school district to serve as staff members for a week-long junior high summer music camp. In addition to their other duties at the camp, which included performing with the large ensemble, running sectionals and supervising non-musical activities, the participants were assigned to coach at least one small chamber ensemble for approximately 40 minutes each day, Monday through Friday. The camp concluded with performances by the chamber ensembles on Friday afternoon and the large ensemble on Saturday.

Five days prior to the camp, the four participants met with the researcher for a briefing and training session. During the briefing, they developed a preliminary list of appropriate goals and objectives for the chamber ensembles, specific goals for their first rehearsal, and general goals for the entire week. Additionally, the participants, along with the researcher, reviewed a summary of the effective teaching principles by Single (1991) and discussed ways to incorporate those instructional behaviors into their rehearsal plans. During the training portion of the session, the participants were trained on the use of eMirror (Browning, 2007) to document instructional time-use.

Three days prior to the camp, the participants attended an organizational meeting for the camp staff that included a briefing on the camp procedures and schedule by the camp director, the orchestra director at the local high school. After this organizational session, the participants were given information about their chamber groups, including instrumentation, the grade level of the students, and approximate abilities of each ensemble member. Three of the four participants were assigned two chamber groups while the other participant was only assigned one group. For this reason, only one group rehearsal from each participant, the more advanced group if they had two, was selected for study. Finally, the camp director supplied the participants with chamber music that she deemed appropriate for each group. The participants were encouraged to study their scores carefully, and to look closely for music and performance fundamentals that could be taught during their rehearsals in addition to performance details.

Each of the five days of the camp began with a mass orchestra rehearsal after which the participants coached their chamber groups in the study. Each of these rehearsals was video recorded for subsequent observation and evaluation. Next, three of the participants coached their second chamber group that were not included in this study and the other participant assisted a district faculty member with an introductory music theory course. Immediately after lunch, the participants and the researcher were provided with a room and a common free hour to implement the first part of the research project.

Time Use Study

During the free hour, the participants first used eMirror on one of two laptop computers to do a time-use self-observation on a ten-minute excerpt from the middle of their chamber ensemble rehearsal. The researcher met briefly with each participant as they finished their self-observation to make sure the technology had worked correctly, the data was saved, and that the participants understood the report generated by the software. The participants were encouraged to have the students actively making music, alone or in groups, for at least 50% of their rehearsals, and that they should try to limit the duration of their instructions to approximately 10 seconds. Consequently, the participants' attention was drawn to the results in these two areas. After the self-observations were completed, the participants and the researcher typically had about 20-minutes of open conversation about the camp and their experiences.

Self-Observation, Reflection and Planning Study

After each day of the camp concluded, the participants were able to download an MPEG4 video of their entire rehearsal to their home computer from a university server. Having previously viewed a 10-minute segment of their rehearsals, the participants viewed the entire video as preparation for answering the four questions from the DRF. Each question was extended to

make it more germane to the music ensemble rehearsal setting. Because one additional purpose of this study was to track instructional changes over time, one 'bonus' question was added.

(Skill 1) State the instructional goals from your rehearsal plan. What exactly were the students supposed to learn (knowledge or skill) during your rehearsal? Be as specific as possible, including measure numbers. (Cut-and-paste from your rehearsal plan is acceptable.)

(Skill 2) What did the students learn (knowledge) or learn how to do (skill) during your rehearsal? (You may refer back to your lesson goals.) What evidence do you have to support your assertions? (Try to supply specific information such as measure numbers or times from the video.)

(Skill 3) What effect did your teaching have on the students' learning? How did your instruction help or hinder the students' learning? Did you follow your plan, or did you decide to deviate from your plan in order to be more effective?

(Skill 4) Analyze your instruction against the models of music pedagogy effectiveness and propose improvements in your teaching for the next rehearsal. How could teaching more effectively help the students learn?

(Bonus Question) Were you able to implement the improvements to your teaching that you prescribed for yourself after your previous self-observation and self-analysis? Be as specific as possible. Include information from your time-use analysis using eMirror and from your reflection.

Subsequently the participants wrote a free-form reflection and a rehearsal plan for the next day using a researcher-developed template. All these items were to be emailed to the researcher prior to the following day of camp.

Technology

One technological challenge in this project was in obtaining video from four simultaneous rehearsals. That video needed to be quickly edited down to 10-minute excerpts for use in eMirror, and converted to a video format that resulted in a small enough file size such that it could conveniently be uploaded to and downloaded from a server.

The grant for this project provided funding to purchase five RCA EZ105 Small Wonder digital video camcorders. These devices, small enough to fit in a shirt pocket, can record up to 60 minutes of video with audio that can be transferred to a computer via a built-in USB connector. The participants were easily able to record their own rehearsals, and the resulting video was acceptable. Other potential users should note one caveat: the participants should experiment with camera placement to make sure they are in the video and that the camera is close enough to clearly record them when they speak. The EZ105 has a built-in microphone that is sufficient in small group settings but, since it does not have an external microphone jack, may not produce acceptable audio in large ensemble rehearsals.

QuickTime Pro on Macintosh OSX was used import the AVI video directly from the EZ105[1]. QuickTime Pro was used to edit and save the 10-minute excerpts from the original videos, and to convert the complete rehearsal videos to MPEG4 format that the participants downloaded for later viewing.

The other technological component of this project was the use of eMirror (Browning, 2007) to complete targeted computer-assisted self-observations. eMirror is a custom software application designed to gather quantitative data during video observations. eMirror records user clicks that are in response to observing various instructional behavior events in the video. Events are tallied by instructional behavior, and the event time and duration during the rehearsal is recorded. When the observation is completed, eMirror calculates the total number of events in each instructional category, the percentage of events in each category from the observation event total, the total time during the rehearsal exhibiting each of the given instructional behaviors, the percentage of time spent on each instructional behavior, and the mean length for each instructional behavior.

Participants in this study recorded three categories of instructional behavior events: (a) Teacher:Talk, (b) Teacher:Model, and (c) Student Response. For consistency, the participants were provided with a written time-use protocol during their initial training.

Results

Time Use Study

The participants in this study were given two explicit time-use goals: (a) the ensemble members should perform at least 50% of the rehearsal time, and (b) teacher-talk events should last on average no longer than 10 seconds. For each participant, this required increasing student performance rates and decreasing teacher-talk length after the baseline rehearsal. (See Table 1 for these results.) All four participants were able to improve the student performance ratio from day 1 through day 4, with all four participants meeting the criteria by day 4. The results from day 5 are mixed, with two participants showing continued success, and two participants, B and D, reverting to rates even lower than their initial data from Day 1. Participants B and D later explained that on day 5 they were giving instructions regarding the performance later that day that skewed their teacher-talk results.

The results from the teacher-talk length portion of the time-use study are also mixed (see Table 2). Two of the participants, B and C, showed dramatic and sustained improvement in their ability to control their talk time lengths. As a group, they showed moderate improvements in teacher-talk length, but three of the four reverted to near or above baseline talk lengths during their last rehearsal.

Self-Observation, Reflection and Planning Study

Hiebert et al. (2007) proposed criteria for evaluating each of the four skills described in their framework:

> (Skill 1) First, goal descriptions are more useful when they are more specific, when they include subgoals and primary or general goals. .... Second, goal descriptions are more useful when they use the language of the subject (p. 51).
>
> (Skill 2) The evidence should reveal clearly whether the learning goals were achieved. This criterion is more likely to be satisfied when the evidence is more detailed and specific, especially when the specificity connects the evidence with particular subgoals. In addition, the evidence is more useful when it captures students' thinking that lies beneath surface behaviors and responses. Finally, the evidence is most useful when it represents the range of thinking in the classroom rather than the selected thinking of the most vocal students (p. 53).
>
> (Skill 3) Hypotheses are more likely to lead to improvements in students' learning when a) they are made about students' achievement of the learning goals (rather than about learning about topics), b) they specify the teaching and learning with enough detail to clarify and justify the hypothesized connections between them and with enough detail to invite testing and refinement, c) they appeal to well-supported principles appropriate for the particular learning goals, and d) they are expressed with appropriate nuance and recognition of the complexity of teaching-learning relationships (p. 55).
>
> (Skill 4) First, the proposed revisions [to instruction] can be interpreted in the light of principles for learning and teaching as described earlier. Second, it is possible to assess the revision's potential by judging the quality of the argument that can be offered by the prospective teacher to support the recommendation (p. 56).

Criteria for the evaluation of the bonus question were developed by the researcher.

> (Bonus Question) First, comments on the ability to incorporate prescribed changes in instruction should describe specific instances when, given an identical or similar instructional circumstance, preactive or interactive decision-making resulted in a different instructional behavior.

Second, these comments will be more useful if they reference the reasons for changing instruction and the effect of the change on student achievement or behavior.

Skill 1 Results

Analysis of the participants' rehearsal plans indicates a sequential approach to preparing the ensemble for the final performance, along with some attention to fundamental knowledge and skills, but only those required by the musical selection. Because the initial plan was developed as a group, all four indicated their primary goal for the first rehearsal was to do a rough assessment of the abilities of the ensemble with an eye toward changing the selection, if necessary.

Although the participants planned separately for the remainder of the week, there is a remarkable similarity in the sequence that performance skills are addressed in their plans. If the rehearsal plans of the four participants are merged, we see similarities in the sequence of their approach to the ensemble, and the day that certain objectives first appeared in their plans:

- Sightread selection all the way through (day 1).
- Rhythmic accuracy in individual parts (day 2)
- Perform in the correct key, correct fingerings for notes in key (day 2)
- Rhythmic independence, performing without being distracted by other performers, relationship between parts (day 3)
- Dynamics (day 3)
- Tempo accuracy (day 3)
- Starting and stopping together without assistant of the coach (days 3-4)
- Articulations, bowings, style (day 4)
- Entering and leaving the stage, performance etiquette (days 4-5)

Once an objective appeared in their plans, it tended to reappear throughout the week. The specificity of their objectives varied noticeably between participants, and none of the stated objectives were specific enough to reference performance tasks in particular measures. The specificity of the objectives ranged from "Students will play from A to B in Bouree, in tune and in correct rhythm, keeping together as an ensemble with minimal assistance from teacher" to "Have a clear understanding of a good sound and tonality."

As is common with young teachers, the participants' rehearsal plans read more like procedures than objectives with related assessments. There is other evidence, however, that indicates some sophisticated thinking in planning for their rehearsals, and that the participants were considering more specific instructional objectives but merely failed to document them in their plans. For example, Participant A's plan for day 3 references having the ensemble warm-up on the two major scales of the two keys represented in the selection, and call and response rhythmic and melodic warm-ups from the selection. Clearly, this young teacher was focusing on specific rhythm and pitch skills

from the performance piece, but she failed to provide the level of detail that would enable another teacher to implement her rehearsal plan.

Participant C indicated in her reflection from day 5 that she used rehearsal frames (Duke, 1999), although she failed to use that term, and taught the students to rehearse themselves in a similar manner. She described her typical rehearsal:

> I rehearsed my objectives: I devoted a lesson each day to focus on rhythm, melody, dynamics, articulations, and every day we dealt with blending and understanding harmonies. After those goals had somewhat been met, I started the piece and played through until trouble spots occurred. When they happened, they knew we were going to attack the problem in this exact same way each time.
>
> 1. Read the notes aloud; they have to know what pitches they're expected to play.
> 2. Play the very isolated section (in extreme under tempo).
> 3. Play the section at tempo.
> 4. Go back a couple of measures and add in (put in context).
> 5. Evaluate success of isolated section, and repeat as necessary.
>
> The students really developed a sense of that pattern of fixing, so much that when I had a student conductor lead the ensemble, he not only knew where things sounded incorrect, but he knew how to fix them, and evaluate success of his attempted fix.

Later in the same reflection she stated:

> It's one of my own personal goals: To assist in training independent musicianship. To create independent musicians means that they have a certain skill set that operates on higher level thinking; not just monkey see monkey do, (Bloom's lower level tasks) but critical, and evaluating skills (higher-level tasks).

Nowhere in her plans, however, did she mention using rehearsal frames or her intent to teach for independent musicianship.

Skill 2 Results

Three of the four participants were able to consistently provide reasonably detailed explanation of what they believed that their students learned during the rehearsals. These responses were often more detailed than their objectives statements, and included information on student achievement that was not listed in their objectives at all. As examples, Participant A listed nearly a dozen specific rhythmic errors in specific parts that tended to rush, and explained in detail how she isolated and worked on each specific issue. Participant B listed a half-dozen specific string fingering issues (mostly using low fingerings for flats) and the challenges of varying bow speed depending on the rhythmic values in the measure. In both cases, comments about these performance issues only appeared in their reflections, and did not appear in the objectives for the given day nor in the plan for the following rehearsal.

Skill 3 Results

Participants' comments on the impact of their teaching on student achievement tended to focus in two areas: (a) their own ability to deliver clear, concise directions to the ensemble, and (b) challenges in motivating the ensemble members. They did not relate their instruction to the accomplishment of specific objectives, but rather to their ability to match the time-use models and a general perception of the effectiveness of their rehearsal. For example, participant A indicated that on day 3 that she "felt like we had accomplished everything that we needed [to] or could accomplish" but did not specify what they had accomplished nor how it had been accomplished. The participants did indicate, however, a perception of the correlation between their instruction and rehearsal effectiveness in that they felt they were better able to keep the ensemble members on-task.

All of the participants indicated in their reflections from the first several days that they often had difficulty organizing their thoughts into coherent instructions. They would, therefore, make several attempts to say the same direction and still, apparently, forget to include important information, like whether or not to take various repeats on a given run-through. On day 3, participant A commented,

> I still think I could take less time with my directions, but at least I am now really aware of it. I need to eliminate some of the extra words in there that have no educational purpose. It's like verbal garbage or filler.

Only participant D continued to observe difficulty in speaking to the ensemble throughout the week; the other three participants commented that they were better able to deliver short instructions, and noted that the students were more on-task as a result. This focus on instructions in their responses to this question, instead of the topics stated in the criteria, is likely a byproduct of the time-use portion of the study.

The participants related that they most often deviated from their rehearsal plan when the students asked questions, or when the students obviously could not meet all the daily objectives. In this case, the teachers generally focused on their primary objective, such as getting through various sections of the piece in the correct key, and did not go on to further goals. There are notable exceptions. Participant A decided to deviate from her rehearsal plan on day 2 after realizing that the student assigned to the most difficult part was unlikely to be successful. She improvised a solution during the rehearsal that would both provide her with additional information about how to change the part assignments, and reduce the potential motivational impact on the student being moved to a less challenging part. She decided to tell the students that they were all going to rotate parts so that they could learn how the parts fit together, thereby making it easier to perform the piece with limited rehearsal time. During this process she informed the student being moved from first to second part that she sounded great in the middle register of the instrument, and that the ensemble would sound better with this new seating arrangement. This improvised solution apparently worked well since the ensemble was one of three chamber groups out of approximately 20 selected to perform a second time on the large ensemble concert on Saturday, and parents of both students commented at the end of camp about how pleased their child was with the part switch.

Participant D wrote about a particular exercise that she developed for the ensemble that she felt had beneficial impact on both student learning and motivation. Having noticed that the ensemble members were still challenged by various rhythms in their selection during the second rehearsal, she composed a melodic etude that evening that included the rhythms and key of the original selection, and spent more than half of the rehearsal on the third day sightreading and practicing the new exercise. This provided the ensemble members with additional practice on rhythm fundamentals. She indicated that she felt as if the students were able to transfer much of their rhythmic learning to the performance selection, and that working on a new piece seemed to motivate them.

Skill 4 Results

In response to question 4, the participants again tended toward general comments on their overall effectiveness without referencing specific instructional objectives, or the impact their instruction had on achieving those objectives. They made additional comments on their time-use habits during rehearsal, but also made several references to instructional pacing and how they could use pacing to control student on-task behavior, such as using a fast pace to get students back on-task, or a slower pace (longer performance episodes) to help them focus. Even though the participants indicated making an effort to keep their comments to 8-10 seconds, two of them commented later in the week that this was sometimes unreasonable, that sometimes words were necessary, and

that it was the function of the words that proved most important. This shows, at least in these two participants, an increasing sophistication in their ability to interactively decide when and how long to talk, and what to say during rehearsal based on the unique temporal circumstances.

Bonus Question Results

For this question, the participants' comments appear to be influenced by the time-use portion of the study, but do show some thinking about modifying their approach to the ensemble. For example, three of the participants commented that they felt they should use more demonstration to reduce their talk-time and on how effective demonstration was in solving low-level performance tasks (rhythms, articulations and pitches), but did not provide any specific evidence or theoretical support for that argument. Additionally, two commented on the occasional challenge of avoiding distractions, and specific strategies for getting the ensemble and themselves back on task. Apparently, for these participants, simple awareness that they could be distracted by student comments and conversations was important in helping them avoid becoming distracted. Participant C commented that she initially attempted to join into some of the student conversations with the intent of leading them back to the musical task, but soon realized that not only did the students remain off-task, but that she tended to also get led off-task. Her preferred strategy toward the end of the week was to resume instruction without even waiting for the students to reach the end of a sentence.

Participant C also commented on the apparent motivational effect of informing the students of the performance goals at the beginning of the rehearsal. Participant B, however, was deeply conflicted over her direction with the ensemble, having difficulty balancing between "lofty goals, like having kids play the pitches in tune" and preparing them for the public performance on day.

> I'm confused about my goal at the moment. If it were just my decision to make, I would have worked on more rudimentary ideas such as playing in tune, clapping rhythms together, [and] etc., but I felt that in the limited time we have, this cannot be done all at once. The darned performance is the thing right now. It's not often I feel like a failure as a teacher. I do not know what my purpose is "supposed" to be in this situation.

In a reflection from a later day, she states:

> I need to focus on the big picture first and then, when there's time, pay attention more to details. This way, they might grasp some basic HUGE concepts right from the beginning. In the future, maybe for some of the less advanced groups [I work with], I'll tackle the big picture first and sweat the details later.

There are at least three overlapping problems at work here. First, she appears to be particularly concerned about the performance at the end of the camp–more so than the other participants. Second, it seems as if she feels personally responsible for fixing every error made by the students, and that she must tune each note and correct each rhythm every time the students make an error. Third, it is likely that the selection is too difficult, not because they have to perform the piece after only one week of rehearsal, but the specific performance tasks, such as dotted rhythms, phrases that start with an up bow on an up beat, F-naturals and B-flats for young string players, are additive. The cognitive load on the students is simply too high to allow any real success on this piece.

Comments from open-ended reflections

Because of their nature, the comments in the open-ended reflections varied widely and ranged from comments about the organization of the camp, other instructors at the camp, to how uncomfortable they were knowing they were being videotaped, as well as general recaps of their more structured reflections. After analysis, two related themes emerge: (a) the usefulness of the software-based observations, and (b) an emerging sense of confidence and efficacy while teaching. These two themes also appear to be related.

Using eMirror helped the participants develop an awareness of their time-use behaviors and habits. After two self-observations, participant C stated that she appreciated getting concrete, objective feedback on her time-use from the software, adding, "I had no idea I fiddled and wasted time as much." Participant D went as far to suggest that she needs "to reflect [on] and maybe even rehearse my verbal instructions to be clear and to the point." The significance of this comment from participant D cannot be overlooked, considering her student-performance percentage time-use numbers showed only modest progress during the week, and her teacher-talk instruction-length regressed.

All four of the participants expressed increased success and comfort levels with teaching their ensembles as the week progressed. Part of this change, of course, had simply to do with familiarity with the students and, as the ensemble learned their piece, a reduction in anxiety level regarding the public performance at the end of camp.

Discussion

The two companion themes of time-use and rehearsal efficacy that emerge from the open-ended comments may be the most consequential results of the study. It appears that the participants first learned that they could control their own use of time during the rehearsal by simply being aware of how much or little the students were performing and how long they were talking. Second, it

appears that they realized that what they do in the rehearsal is important, and that if they can control their own teaching then they have the ability to be proactive and in-control of the learning environment.

All of the participants were able to make some progress on their two time-use criteria toward the standards identified in previous studies (Goolsby, 1996, 1999; Worthy, 2003, 2005), but only participant C in this study was able to meet both criteria on the final day of the study. As stated previously, two of the participants felt that the necessity to provide procedural instructions about the upcoming performance skewed their teacher-talk results for day 5. From this perspective, these participants were not as successful as those from a previous similar study (Worthy, 2005).

One consideration is that the participants in the prior study were conducting peer rehearsals. These participants were working in a more authentic learning context: working with middle school-aged students on their campus, and preparing for a real performance. These participants had not previously used eMirror to analyze peer instruction episodes. Further study will be needed to determine if preservice music teachers can transfer expert-like time-use behaviors from peer instruction settings to authentic contexts.

The participants' responses to the DRF questions showed some incremental improvement during the week. As stated previously, their open-ended reflections indicated an emerging awareness of their ability to affect change in their teaching and in the ensembles' performance level, but often lacked specific evidence to support their opinions. Three of the participants noted instances when they decided to deviate from their plans.

Assessing the participants' writings is fairly straightforward–they lacked the specificity that would be required to meet the DRF criteria. The framework outlines performance ideals. Evaluating the participants' current level of competence requires a more flexible rubric. In a recent study comparing novice, intermediate and expert orchestral conductors, Bergee (2005) cites the Dreyfus & Dreyfus (1986) Model of Skill Acquisition (MSA), which states that there are five stages in the development of expertise.

1. Novice - Subjects initially operate on an intuitive level, but learn to follow simple 'best practice' rules.
2. Advanced Beginner - An advanced beginner is able to use rules more flexibly and in response to circumstantial variables.
3. Competence - The competent subject is able to develop goal-directed plans and strategies.
4. Proficiency - The proficient subject recognizes what needs to be done in a given context and circumstance without conscious planning.
5. Expertise - the expert appears to intuitively respond correctly in response to the context and circumstance.

Based on the MSA, these participants should be categorized as advanced beginners. All showed some flexibility in the way they approached their rehearsals throughout the week, including a willingness to deviate from

their initial plan if circumstantial variables require it. Over time, they reduced focus on themselves as they increasingly showed concern about the impact of their instruction on student achievement. None, however, was able to develop goal-directed plans and strategies at the level of specificity indicated by the DRF. As senior-level preservice teachers, these participants could reasonably be expected to have attained at least advanced beginner level skills at the tasks in this study. All of these participants hope to complete their student teaching during the next academic year and should be working toward developing at least competence at these instructional skills.

It is significant that the participants often commented on specific performance issues in their reflections, but these issues were not addressed in their subsequent rehearsal plans. In future applications of these procedures in a methods courses or future iterations of this study, the questions from the DRF framework and the rehearsal planning templates could be modified to elicit more detailed responses. For example, question 3 could read something like this:

> What effect did your approach to teaching the ensemble have on the students' learning? What specific instructions and strategies were effective for meeting various objectives? How might you approach various objectives differently to better meet the rehearsal objectives, or to teach the students knowledge and skill fundamentals?

The other questions could be similarly rewritten. For example, these participants might have been more successful if they had been prompted to consider exactly how certain instructions were going to be delivered, and about how to motivate their ensemble members.

All of the participants indicated at some point during the week that they needed to focus more on performance fundamentals rather than merely preparing for the performance, and a desire to incorporate fundamental performance tasks into the warm-up procedures. They used several strategies, such as call and response, playing scales in various rhythmic patterns, and devising new etudes to cover these skills. Even after a fundamentals-based warm-up, they tended to 'edit' the performance—that is, to have the ensemble play through the selection and only stop them to correct mistakes—rather than working on one specific skill and then transfer that learning to all instances of that skill in the piece. Colprit (2000) has stated that focusing instruction on performance fundamentals in this manner, as opposed to 'editing' a performance, is an indicator of expert applied lesson pedagogy. The tendency to edit is clearly event in Participant C's previous description of her typical rehearsal.

In an effort to reduce this tendency to edit, the participants should be given a planning worksheet containing sequenced questions and tasks to assist them in identifying and listing the knowledge and skill deficiencies in the ensemble and its' members, and in devising highly detailed rehearsal plans. The following are examples of an appropriate sequence of questions: (a) List the

excerpts in the piece where the ensemble or its' members are not performing satisfactorily; (b) For each excerpt in the list, specify the error and the knowledge or skill deficiencies that are preventing a satisfactory performance; (c) Categorize the excerpts by knowledge or skill deficiency (rhythm, pitch, intonation, incorrect fingering, balance, style, tone, bowing, and etc.), and then devise a strategy to teach the knowledge or skill away from the musical selection; (d) Determine an appropriate assessment for the each newly learned knowledge or skill away from the selection; (e) Write an instructional sequence that will allow the students to attain the new knowledge and skills away from the selection, and then transfer each knowledge or skill to the appropriate excerpts in the selection; and (f) Write a rehearsal plan using the template that incorporates all of the above items. Sequencing the questions in this manner might encourage young teachers to focus on teaching fundamental knowledge and skills, and promote transfer to the musical selection, and discourage them from simply 'editing' the performance during rehearsal.

Finally, with regard to skill 4 (use analysis to propose improvements in teaching), these participants were generally unable to identify and apply appropriate pedagogical approaches to specific performance deficiencies with the exception of a few rehearsal-frame-like sequences. The time constraints of this study required the participants to learn and apply too many pedagogical techniques in a short period of time. Students should be given the opportunity to focus on learning one pedagogical technique at a time and in a logical developmental sequence. Only then will they be able to learn to string various teaching techniques together into an effective instructional interaction.

One possible confounding variable in this study was the mean age of the participants. With a mean age of 38 years, these preservice teachers were nearly twice the age of many students engaged in early fieldwork. Consequently, they bring many years of experience– primarily performance experience in these cases–with them to the rehearsal. This study was not designed to address that variable. One might reasonably argue that, due to their maturity, they might learn more quickly from these instructional experiences. On the other hand, they might have substantial habit strength with regard to their instructional behaviors, and might in fact be resistant to change. Perhaps a future population of preservice teachers will allow this variable to be tested.

In direct response to the research questions, during one week of field work these participants were able to substantially improve their time-use during rehearsals by using systematic computer-based self-observations. The Deliberate Reflection Framework (Hiebert et al., 2007) did appear to have a positive effect on the participants ability to plan for subsequent rehearsals and, although the evidence is somewhat hidden, to promote expert-like decision-making. As an important byproduct, the participants learned that they could control their own instructional behaviors, and therefore control the rehearsal environment.

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Footnotes

[1]This requires installation of the DivX video codec, which can be downloaded for free from www.divx.com.

Table 1: *Percentage of student performance from daily 10-minute rehearsal excerpt for each participant and daily mean.*

	Student Performance Percentage				
Participant	Day 1	Day 2	Day 3	Day 4	Day 5
A	44.4	44.6	41.1	**74.2**	61.2
B	40.5	**61.6**	**51.3**	**52.9**	29.5
C	36.5	**50.8**	**57.4**	**57.9**	**72.9**
D	44.4	**50**	**55.5**	**52**	22.4
Mean	41.5	**51.8**	**51.3**	**59.3**	46.5

Table 2: *Mean length of teacher talk from 10-minute excerpt for each participant and daily mean.*

	Mean length teacher talk				
Participant	Day 1	Day 2	Day 3	Day 4	Day 5
A	12.7	17.5	18.6	15.4	19.3
B	14.3	16.9	**8.6**	**9.7**	12.7
C	24.1	**8.3**	**9.5**	**8.4**	**6.2**
D	14.6	10.6	17.6	21.7	42.9
Mean	16.4	13.3	13.6	13.8	20.3

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The Perception and Restoration of Tonality in Power Chords

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The use of "power chords," a chord without a sounding third that produces an open fifth interval, within harmonic progressions creates an absence or flexibility of tonality that purposefully leaves the listener with a certain sense of ambiguity. Thus, the tonal perception of these chord progressions is based on either additional information provided in the music or by restoration of tones on the part of the listener. The purpose of this study was to investigate the tonal perception and restoration of power chords within various chord progressions. Eight chord progressions, including a set of paired major and minor progressions, were created by the researcher for this study. Based on existing progressions used in a variety of popular Western music rock/pop songs, each chord progression consisted of four chords that culminated with a power chord. Fifty-three participants (N = 53), comprised of undergraduate and graduate music majors, listened to all eight chord progressions and rated the degree of tonality, from minor to major, of the final chord for each chord sequence. A two-way repeated-measures ANOVA revealed significant differences between responses for each paired set of major and minor chord progressions. Additionally, significant differences were found between undergraduate and graduate student responses. No significant interactions were found between chord progressions by level in school.

Listening to music is an active process that requires the individual to decode a plethora of musical information. Thus, musical perception is dependent on how each listener perceives the auditory information presented. Because the structural elements that exist in Western music appear to create a sense of expectation on the part of the listener (Meyer, 1967; Sloboda, 1985), researchers have become increasingly interested in examining how people perceive and cognitively process melodic, harmonic, and tonal information (Radocy & Boyle, 2003). Researchers have long determined that tonality is a culturally learned phenomenon (Farnsworth, 1969; Holleran, Jones, & Butler, 1995; Taylor, 1976; Tillman, Bharucha, & Bigand, 2000; Wassum, 1979), in which individuals are able to recognize differences at a very early age (Boyle & Penticoff, 1989; Costa-Giomi, 1994; Hair, 1973; Wassum, 1979). However, as individuals increase their ability to identify and discriminate tonality in music, it appears certain expectations arise with respect to tonal structure (Radocy & Boyle, 2003).

Specifically, researchers have sought to determine where these tonal expectations occur, investigating various musical sequences including individual tones, scales, and melodies. Krumhansl and Shepard (1979) revealed that participants prefer, in order, the tonic, fifth, third, remaining scale tones, and nondiatonic tones in order, respectively, when rating individual tones on their appropriateness for completing a major scale. Taylor (1976) suggests that this preference directly transfers to melodies, as listeners also prefer melodies that utilize strong scale and chord tones within their structure. Further, the number of tones derived from the scale and chords of a particular key affects the perceived tonality of the melody, as melodies that use the scale and chord tones of the key are perceived with greater tonal strength than melodies that did not utilize scale and chord tones. Subsequently, listeners rely a great deal on harmonic information when perceiving melodies and pitches (Platt & Racine, 1994) and show preference to those that follow harmonic guidelines (Holleran, Jones, & Butler, 1995).

It also appears the perception of tonality in chord progressions follow similar expectations to those found with melodies. Researchers have concluded that listeners use the sequence of chords to develop a sense of key that is solely dependent on the chord progression (Krumhansl & Kessler, 1982). In addition, when examining each individual chord for its' importance within the overall harmonic structure, the tonic is demonstrated to be the most stable, followed by the dominant, subdominant, submediant, supertonic, mediant, and leading tone chords, respectively (Krumhansl, Bharucha, & Kessler, 1982). Because specific chords appear to provide stability within chord sequences, researchers have examined which chords are appropriate for substituting within chord progressions. Steedman (1984) developed a set of substitution rules for jazz chord sequences, most notably the standard 12-bar blues progression. Based on the harmonic structure of this chord progression, any variation or substitution must conform to and maintain the harmonic structure of the piece. To test the validity of these substitution rules, Lohst & Ashley (2006) examined listeners' perceptions of various chord substitutions within the 12-bar blues progression. Participants listened to various examples of "expected," "acceptable," and "unexpected" chords during a 12-bar blues progression and rated each chord as "does not fit," "fits moderately well," and "fits well" while listening to the chord progression. Findings showed that "expected" chords were rated as "fits well", while "unexpected" chords were rated as "did not fit," concluding that listeners showed certain expectations for chord substitutions within chord progressions. These expectations extend to the construction of original chord sequences, in which all participants, regardless of musical training, showed a propensity to follow a general set of rules in their progressions (Ziv, Storino, Bonfiglioli, Incasa, Caterina, & Baroni, 2006).

Because melodic, harmonic, and tonal information create musical expectations on the part of the listener, several researchers have examined the phenomenon in which individuals perceive certain sounds even when they are

not occurring. Commonly referred to as "restoration" (Warren, Wrightson, & Puretz, 1988), Warren (1984) describes these events as "temporal inductions," in which auditory signals are perceived because of the information heard before and after the excerpt. Specifically, Sasaki (1980) found that when notes of a familiar melody played on a piano were deliberately replaced by loud noise, listeners still perceived the tones as sounding. The restoration of these musical tones was heard as a complete melody with noise obstructing certain pitches. Subsequently, DeWitt and Samuel (1990) further examined musical restoration by investigating melodies, scales, and chords within a key. Results paralleled those found by Sasaki; when tones of a melody were replaced by noise, listeners' perceived the tones as sounding. Additionally, when scales and chords within a key were examined for restoration, participants also perceived pitches when they were either removed or replaced by noise. In all cases, the amount of melodic and/or harmonic information given to the listener created a sense of expectation that was directly related to the amount of restoration of sounds perceived by the listener.

The emergence of the genre of popular music within Western music, most notably, rock, metal, and pop music, has created a new set of compositional practices (Berger, 1999; Walser, 1993). While several researchers and theorists have criticized the simplistic nature of the rock/pop compositional structures (Bobbitt, 1976; Shepherd 1993; Winkler, 1978), others have posited that changes to the harmonic and tonal structures have led to the unique sound of rock/pop music (McDonald, 2000; Moore 1995). One example includes the "flat seventh" utilized in rock music, in which the use of the flat seventh interval instead of the traditional leading tone found in classical music led to changes in traditional chord progressions and cadences (Moore, 1995). Another compositional technique idiosyncratic to the rock/pop genre, is the development of the "power chord," a chord without a sounding third that produces an open fifth interval. Because of the timbral complexity of the instrumentation generally used in rock/pop ensembles, many instrumentalists simplify their chordal sonorities by removing the third of the major/minor chord (McDonald, 2000). In this manner, the power chord is neither major nor minor and leaves the listener with a certain sense of ambiguity. Therefore, because of the absence of the third or flexibility of tonality created by these chord progressions, the perception of tonality may be based on either additional information provided in the music or by the filling in or restoration of tones on the part of the listener.

The purpose of this experiment was to investigate the perceived tonality of power chords within chord progressions. Specifically, the following questions were addressed: (a) Do listeners perceive power chords as major or minor?; (b) Does the tonal information within the chord progressions affect how power chords are perceived?; and (c) Does the amount of musical training affect the perception of power chords?

Method

Participants

Participants (N = 53) were undergraduate (n = 32) and graduate (n = 21) music majors from a large southeastern state university. There was no stipulation as to specific majors of the participants, as students from a variety of music degree programs were used. In addition, 28 of the participants were male and 25 were female.

Materials

Eight chord progressions, each consisting of four chords, were created by the researcher for this study. These progressions were based on existing progressions used in a variety of popular Western music rock/pop songs. Each chord progression utilized power chords within the progression. The term "power chord" was defined for this study as a chord built on open fifth intervals, without a sounding third, and with the root on top of the chord (McDonald, 2000). All chord progressions ended with a power chord as the final chord of the sequence. Two progressions were paired together, one with a sequence of major chords ending with a power chord (e.g. F, Ab, Eb, Bb5), the other with the same chord sequence all performed as power chords (e.g. F5, Ab5, Eb5, Bb5). Additionally, another paired set of progressions, one with a sequence of minor chords ending with a power chord (e.g. Am, C, Dm, A5), the other with the same chord sequence all performed as power chords (e.g. A5, C5, D5, A5), were also developed. Furthermore, two practice example chord progressions containing sounding major and minor chords were created as well. A complete list of the chord progressions used is provided in Table 1.

Table 1. *Chord Progressions*

Practice Example 1.	D	G	A	G
Practice Example 2.	C	C/Bb	Ab	Fm
Progression 1.	F	Ab	Eb	Bb5
Progression 2.	Am	C	Dm	A5
Progression 3.	Em	D	Bm	C5
Progression 4.	E5	D5	A5	E5
Progression 5.	F5	Ab5	Eb5	Bb5
Progression 6.	Gm	Cm	D	C5
Progression 7.	A5	C5	D5	A5
Progression 8.	Bbm	Gb	Db	Ab5

Note. "5" indicates "power chord"

The chord progressions were digitally recorded four times on a concert grand piano using a Sony Hi-MD Linear PCM Digital Audio Recorder with a power stereo condenser microphone. From these recordings, the researcher and a reliability observer selected the best performance for each of the ten chord progressions. These performances were then digitally transferred to an audio program on a Gateway TA-1 Laptop. Using Sonic Stage audio software, the progressions were layered so that each chord progression was played twice with three seconds of silence between each performance. A male voice announcing the number of each chord progression was placed at the beginning of each chord sequence. Additionally, ten seconds of twentieth-century atonal orchestral music was placed between the chord progressions to allow time for the listener to notate their responses, and to help reduce memory of the previous progression. After consulting with several experts in the field of musical perception and cognition, the researcher determined that a randomly selected presentation order of the chord progressions or the utilization of multiple presentation orders to help control for order effect could produce an unintentional order effect in which certain chord progressions could conceivably influence each other harmonically. Therefore, the presentation order of the progressions was sequenced so that each chord progression, including the set of major and minor progressions, would not influence the subsequent progression harmonically (i.e. avoiding tonic, dominant, and/or subdominant relationships between the end of one chord progression and the beginning of the next) (Krumhansl, Bharucha, & Kessler, 1982). A master audio CD was then created containing all ten chord progressions. The duration of the stimulus CD was approximately seven minutes in length.

Evaluation Forms were created including demographic information and questions for participants to rate the tonality of the final chord for each of the chord progressions. All questions on the Evaluation Form used a seven-point Likert-type scale ranging from minor to major with a neutral indicator located in the middle of the scale. The assessment scale provided indications for the degree of tonality located on the extreme anchors of the scale, from 3 on the left side = strongly minor to 3 on the right side = strongly major, with 0 in the middle = neutral. The researcher selected this type of measurement format to allow listeners to notate their responses more descriptively rather than restricting the answers to three predetermined choices of either major, minor, or open-fifth chords.

Procedure

Participants received the Evaluation Form and were directed to complete the demographic information located at the top of the form. Additionally, participants were reminded the Evaluation Form consisted of two pages, with progressions five through eight located on the second page. A short

introduction was read to the participants immediately prior to the start of the experiment, which stated:

> You are participating in a study in which you will be evaluating tonality. Eight chord progressions, consisting of four chords each, will be played through twice. Upon completion of the second listening, please mark the tonality of the final chord you hear. You will notice the assessment scale is marked from minor to major with varying levels from one to three. These levels are there to allow you to notate the degree of tonality for your response. For example, if you hear a chord that is strongly major, circle three on the right side for major. If you hear a chord that you perceive to be slightly minor, mark one on the left side for minor. If you hear a chord that you do not believe to be major or minor, mark zero for neutral. Two practice examples are given at the beginning to allow you to become acquainted with the listening process and evaluation. There will be approximately ten seconds between performance examples to give you ample time to notate your responses. Please note the Evaluation Form is two-sided with Chord Progressions 5 – 8 located on the back. Are there any questions? Please do not talk during the experiment.

Upon completion of the experiment, the Evaluation Forms were collected by the researcher. The total administration time of the experiment lasted approximately ten minutes.

Results

The rating scores for all eight chord progressions were analyzed. A mean was obtained for the undergraduate, graduate, and combined groups (see Table 2). A two-way repeated-measures analysis of variance (ANOVA) was calculated to compare chord progressions and level in school. Because the Mauchley's test for sphericity was significant ($p > .05$), the Huynh-Feldt adjustment was employed to correct the degrees of freedom in the F-ratio. Results revealed significant differences for the main effect between chord progressions, F (6.82, 347.98) = 18.88, $p < .001$. Pairwise comparisons with Bonferroni corrections for multiple comparisons were then conducted to determine differences between the paired set of major and minor chord progressions. Significant differences were found between the set of major chord progressions ($p < .001$) and minor chord progressions ($p < .02$). The major chord progression (+2.02) was perceived as more major than the same progression consisting of all power chords (+1.02). Conversely, the minor chord progression (-1.02) was perceived as more minor than the same progression

consisting of all power chords (+.12). Results also found significant differences for the main effect of level in school, F (1, 52) = 4.92, p < .04. Undergraduate students (M = +0.52) perceived the power chords as slightly higher than graduate students (M = +0.11). No significant interactions were found for chord progressions by level in school.

Table 2. *Mean Ratings for Chord Progressions*

	1	2	3	4	5	6	7	8
Undergrads	+ 2.0	- .91	+ 1.56	- .03	+ 1.12	- .63	+ .16	+ 1.25
Grads	+ 2.04	- 1.19	0.00	+ .43	+ .86	- 1.24	+ .10	- .91
Combined	+ 2.02	- 1.02	+ .70	+ .15	+ 1.02	- .87	+ .13	+ .72

Note. (+) = major, (-) = minor

Discussion

The purpose of this study was to investigate listeners' tonal perception and restoration of power chords within various chord progressions. Additionally, the effect of musical training on the perception of power chords was also examined. Results revealed significant differences between the chord progressions, indicating a propensity on the part of the listener to fill in or "restore" either major or minor tonal information. These results are interesting because the final chord evaluated at the end of each chord progression was a power chord, consisting of open fifth intervals without a sounding third. However, the significant differences found between the paired set of major and minor chord progressions suggest the tonal information presented throughout the chord progressions affected how the power chord at the end of each sequence was perceived. For example, Progressions 1 and 5 paired a major progression (F, Bb, Eb, and Bb5) with the same sequence presented entirely as power chords (F5, Bb5, Eb5, and Bb5). The mean scores for these two chord progressions revealed that Progression 1 (M = + 2.02) received a major rating one full point higher than Progression 5 (M = + 1.02). Additionally, the set of paired minor progressions, Progression 2 (Am, C, Dm, A5) and its counterpart of sequenced power chords, Progression 7 (A5, C5, D5, A5), also showed differences in their respective ratings. Progression 2 was rated as slightly minor, receiving a rating of one (M = - 1.02), while Progression 7 was perceived as essentially neutral, showing a small inclination towards major (M = + .13). These differences between the set of paired major and minor progressions propose that listeners based their perception of these power chords on the previous tonal information presented during the entire chord progression, a finding that mirrors the conclusions drawn from previous investigations on the influence of preceding tonal and/or harmonic information on listeners' tendencies to imply or restore tones (DeWitt & Samuel, 1990; Platt & Racine, 1994).

Another aim of this study was to examine the effect of musical training on the perception of power chords, as well as to investigate possible interactions between chord ratings by level in school. While no significant interactions were

found, results did reveal significant differences for the main effect of level in school. Undergraduate participants, overall, tended to rate most chords as slightly more major than graduate participants. Differences in the mean ratings between undergraduate and graduate students were quite apparent for Progressions 3 and 8. The final chord from Progression 3 was perceived by undergraduates as major ($M = +1.5$), while graduates rated the chord as neutral ($M = 0$). Likewise, undergraduates rated the final chord of Progression 8 more than slightly major ($M = +1.25$), while graduates perceived the same chord as slightly minor ($M = -.91$). In both cases, undergraduate listeners perceived the final chord as more major than the graduates, by at least one and a half scale degrees on the seven-point rating scale. With respect to the other chord progressions in this study, both groups consistently perceived the power chord at the end of the sequence in similar directions of quality. Progression 4 (E5, D5, A5, E5) was rated as neutral, with a slight propensity towards major ($M = +.15$), while Progression 6, (Gm, Cm, D, C5) showed an inclination of slightly minor ($M = -.87$).

Is it possible the amount of musical training leads to more acute perceptions of tonal and harmonic information? Does a more extensive musical background, including exposure to diverse music styles and genres, affect the perception of neutral chords within a chord progression? While it is difficult to pinpoint why the power chords were perceived differently by the two groups, the tonal and harmonic information presented throughout the chord progression had less of an effect on the perception of neutral chords for the graduate students than it did for the undergraduate listeners. Longuet-Higgins (1979) states that "the perception of tonality...involves an interplay between the sounds themselves and the frame of reference created by the listener" (p. 319). Since each chord analyzed did not contain a sounding third, the perception of the final chord is arguably dependent on the information presented within the chord progression. Therefore, the listeners' perception of these chords may be solely based on the relationship and sequence of the preceding harmonic material.

One factor that may have affected the outcome of the study was the use of the term tonality to describe the perception of the power chords within the chord progression. While the term tonality is generally used with respect to scales, chords, and harmonic functions, the broad use of this term for this study may have led to differing ideas on the part of the listener as to the specific task being asked to identify. Therefore, future studies may consider using a different term, perhaps asking participants to rate the majorness or minorness of a particular chord, to eliminate any possible confusion.

In summary, these findings indicate the tonal information of the chord progressions led to the implying or restoration of tones by the listener. Significant differences were found between the two groups, as undergraduate listeners tended to perceive the power chords as slightly more major than graduate listeners. Additionally, all participants tended to rate the final chord of the progression in a similar direction. The restoration of tones by listeners

suggest that while major and minor harmonies may not be present in the chords used in these progressions, the information appears to be filled in by the listener as he/she experiences the music. Composers and arrangers alike should take note that a) when writing music listeners may fill in neutral chords based on the tonal information of the chord progression, and b) it may not be necessary to define each chord with the sounding third, especially within the Western rock/pop genre. While both undergraduate and graduate music majors were used in this study, future research that investigates the amount of formal theory and ear training of listeners as well as the influence of cultural background, such as those individuals exposed to primarily eastern music as opposed to western music, on the perception of power chords may yield interesting insights. Obviously, it seems warranted to continue empirical examinations into factors that affect musical perception.

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Fifth Graders' Responses to Brief Instruction in Minimalist Music

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The purpose of this study was to determine if guided listening, general information about pieces, and active performance related to "Knee Play 1" from Philip Glass' Einstein on the Beach would increase self-reported liking for this and selected minimalist works. The participants included 421 students enrolled in 19 intact classes of fifth grade general music. Listening responses of the participants were examined to determine affective responses and focus of attention. Students' descriptors of the music in pre- and post-surveys were categorized. Results indicated a significant, positive change in students' reported liking and desire-to-learn for the treatment piece only. There was no significant change that generalized to other minimalist works. A correlation analysis between desire-to-learn and liking for all five pieces in the survey indicated that participants were more interested in learning about pieces they preferred. Children used more positive and neutral than negative descriptors to describe the unfamiliar music they heard. The results of this study inform and encourage music educators who wish to incorporate non-traditional music in the elementary general music classroom. The minimalist music should be presented in the classroom with active participation and training specific to the piece being studied.

Music teachers hope their students will appreciate the music presented in class and often seek ways to heighten student interest and attention. Researchers in music preference have explored characteristics that may affect a listener's like or dislike response to specific musical pieces. They have designed studies to test examples from one genre, such as Western classical (Peery & Peery, 1986), jazz (LeBlanc, 1981, LeBlanc & McCrary, 1983; LeBlanc & Sherrill, 1986), opera (LeBlanc & Sherrill, 1986), world music (Fung, 1992 and 1994a), and monophonic synthesized sounds (Burnsed, 1998), or from a variety of musical genres (e.g. Leblanc, 1979).

Western classical listening examples in research studies have been mostly representative of the Baroque, Classic, and Romantic eras. Children in the general music classroom often study music from the time period of 1600 to 1850 or simple folk music of the early twentieth century. The apparent absence of the most recent genres—twentieth and twenty first century art music—might support Prince's (1974) conclusion that college-aged and older adults like contemporary music less than music of previous historical periods. The multicultural movement, coupled with technological advances, has allowed

music educators to introduce students to music from many different cultures. If music teachers strive to increase preferences for a wide range of musical styles, perhaps they should include contemporary classical repertory. Referred to generically as contemporary art music, this music has numerous labels, including aleatoric, chance, process, minimalist, and avant-garde (Harvard Dictionary of Music). This music genre is arguably the least familiar to the general public, and may serve as an appropriate genre for studies related to methods for increasing musical preferences.

Preference investigators have used a variety of excerpt lengths and number of examples in their research. One of the longest examples found was that of Burnsed (1998) who used 20 entire folk song recordings. Most researchers appear to prefer using 15 to 24 excerpts averaging 30 seconds to one minute in length, with 15-20 seconds for response time (Darrow, Haack, & Kuribayashi, 1987; Hargreaves & Colman, 1979; LeBlanc, 1979, 1981; LeBlanc, Sims, Siivola, & Obert, 1996; and Sims, 1987). Perhaps the shortest of all was used by Hargreaves and Castell (1987), with 20 single-tone lines each of five seconds in length.

The effect of maturity on music preference has been of interest to many music researchers, as evidenced in the ages of study participants. Hargreaves (1982) discussed the "open-earedness" theory of decreasing preference from early elementary through adolescence, with a partial rebound in early adulthood, followed by a decrease through old age. The study appears to have helped narrow the research to a popular age-level – teenagers. A few studies have utilized a larger population ranging in age from 5 through 91, including; Boyle, Hosterman, and Ramsey (1981); LeBlanc, Sims, Malin, and Sherrill (1992); and LeBlanc, Sims, Siivola, and Obert (1996). College students also have been surveyed, notably by Fung (1994; 1994a), but most extant research has focused on the pivotal years of elementary school age and early adolescence (e.g. Burnsed, 1998; Killian, 1990; LeBlanc, 1979; LeBlanc & Sherrill, 1986; and Sims, 1987).

Researchers have examined varied teaching techniques and their effect on participants' preferences for various music genres. Fung (1993) hypothesized that "preferences could be increased if students were given certain instruction or exposure and that active student involvement seemed to be more efficient in expanding students' non-Western preferences" (p. 46). Finnäs (1989) found that repeated listening to complex art music increased music preference while repeated listening to less-complicated music decreased expressed preference.

In terms of effecting preference, research into transfers of instruction about one particular piece to another, untaught piece of a similar style was studied by Shehan (1985). In her study, middle-school participants listened to twelve pieces of non-Western music and completed a pre- and post survey with treatments between the surveys. Shehan concluded that "no generalization of preference response can be inferred, regardless of stylistic similarities between pieces" (p. 156).

Research methodologies used to study participants' preferences for music are mostly quantitative, but Flowers (1998) used a qualitative approach. The study concluded that first graders were consistent in vocabulary choices for describing music. Attending to musical elements primarily, the students used terms such as "loud," "soft," "fast," "slow," "high," and "long." Flowers (1984) suggested that another common descriptor is that of timbres. While more technical than "fast" or "slow," these descriptors are helpful to identify participants' attentiveness within excerpts. Flowers (1996) found free response descriptors given by fifth graders could be correctly matched to the specific listening sample by experts at 41.5%. Music majors' descriptors, collected in the same study, were matched at 92% by the experts. The children participating in the study focused on instruments, passed judgment, or described an emotion while college-age music major participants focused their comments on the changes audible within an excerpt (e.g. "begins with…").

Focus of attention has been studied across a broad range of participant ages and levels of sophistication from college professors, to young children, and college-aged musicians. Flowers & O'Neill (2005) found that children reported 1.60 distractions per minute while listening to classical music examples. In a previous study using written and oral feedback, Flowers (2001) reported 1.45 distractions per minute. The purpose of this study was to determine if guided listening, general information about pieces, and active performance of one selected piece would increase self-reported liking for that piece and other minimalist works. Listening responses of the participants were examined to determine if students were listening attentively to the music selections and to determine what attracted their attention while listening. Additionally, students' descriptors of the music in pre and post surveys were categorized.

Method

Four hundred students enrolled in 19 sections of fifth grade general music attending six elementary schools in a mid-sized southwestern community participated in this study as part of their regularly scheduled music class. Data were collected during three consecutive class sessions. A pre-survey was administered during a regularly scheduled music class. The treatment was administered during the next music class session, and the post-survey was completed during the following class session. The pre- and post-surveys were identical except for different colored paper to differentiate between them and student names were used for matching pre- and post-survey responses.

Surveys were administered during the last three weeks of the school year–after all state standardized tests had been completed. I chose the month based on the timing in the music curricula and the availability of the participants. One of the schools had students in a schedule of three twenty-minute music classes per week. Although the most common model was forty-

five minute music classes twice per week, I taught each class as if it were twenty minutes in length to aid in treatment consistency.

The listening survey, shown as Figure 1, included five listening examples, and the same questions were used for each listening example. There were two Likert-type scales of one to seven for each example. The first measured the participant's liking of the listening example ranging from "not at all" (1) to "loved it" (7). The second assessed the participant's desire to learn more about the listening selection ranging from "no" (1) to "I would love it" (7).

How well do you like this piece?

1----------2----------3----------4----------5----------6----------7
Not at all.....It was just OK.....I loved it!

Did you feel a beat? YES NO

Have you heard something like this before? YES NO

Would you like to listen to it again? YES NO

What did you hear?

_____ Loud Dynamics _____ Soft Dynamics

_____ Fast Tempo _____ Slow Tempo

_____ Stringed Instruments _____ Brass Instruments

_____ High Notes _____ Low Notes

_____ Percussion Instruments__ Voices

_____ Lots of sounds _____ Not many sounds

_____ Woodwinds _____ Piano or Organ

Would you like to learn more about this piece?
1----------2----------3----------4----------5----------6----------7
No..... A little bit would be nice.....I would love it!

Figure 1. Sample response form used for data collection

Other questions included check boxes where participants could mark what they heard. Options included slow or fast tempo, loud or soft dynamics, instrument families, high or low pitches, and thick or thin texture. Instructions were given to the participants to check any or all of the boxes reflecting what they heard in the listening examples. These questions were included in order to direct participants' attention to the music during the survey and to identify characteristics related to liking or desire-to-learn.

Other questions assessed the participants' perception of tempo, familiarity, and desire to hear the music again. The final two questions asked participants to provide five words that described the music they heard, and to provide additional comments. Prior to administration of the survey, participants were taught the terminology and layout of the survey with limited mentioned of the music selected for the survey.

The minimalist musical pieces included in this study were chosen because it was believed it would be unfamiliar to the participants. I also believe that this music literature is under-represented in the upper elementary curriculum and was interested in the students' reactions. I chose excerpts to include both vocal and instrumental sounds. The fastest tempo selection was placed first to attempt to capture the attention of the students, since children this age have been found to prefer music with faster tempi (Leblanc, 1981). The order of the remaining listening examples was randomized resulting in excerpts as follows: (a) *"It's been a honeymoon-Can't take no mo"* from the suite *City Life by* Steven Reich; (b)*"Whip her to death* from the opera *Nixon in China* by John Adams; (c) *"Knee Play 1"* from *Einstein on the Beach* by Philip Glass; (d) *Aria* by John Cage; and (d) *Fragments from Leonardo's Notebooks: 'Anima Della Terra'* by Gloria Coates. I selected a two-minute excerpt from each example intended to show diversity of sounds and tempos. Students were allowed to write while listening to excerpts and then were allowed thirty seconds to finish writing responses after each. The survey took twelve and one-half minutes, with an additional five to ten minutes prior to the start of the listening to distribute materials, explain directions, check for understanding, and review terminology.

I pre selected Phillip Glass' *"Knee Play 1"* from *Einstein on the Beach* as the treatment piece. The other four listening examples received no instruction or discussion, and were not heard by the participants again until the post-survey. As participants entered the classroom for session two (instruction), a recording of *"Knee Play 1"* was playing. This was done to familiarize the students with the piece and served as an advanced organizer for the session. A PowerPoint presentation including 12 slides was created to aid consistency of instruction across the nineteen different class groups. Since available technology varied across the six schools, each participant was given and lead through a four-page handout of the PowerPoint slides, containing biographical information about Phillip Glass, the plot of the opera, Glass' experimental theatre inspiration for *Einstein on the Beach*, the layering compositional technique used to create

"*Knee Play I*," the cryptic poem used by Glass in the opera, a listening map of "*Knee Play I*," a professional critique of the opera, and a final slide asking participants how they would have responded as an audience member. The treatment session concluded with a minimalistic-type layering activity that is displayed in Figure 2.

The activity was constructed in a similar compositional style as Glass' piece. The participants were oriented to the various layers of the composed piece, just as they were to Glass' piece. The students were then taught each of the layers and asked to perform the work as a class using a group of performers on each layer. Additional performances featured quartets – one performer on each layer.

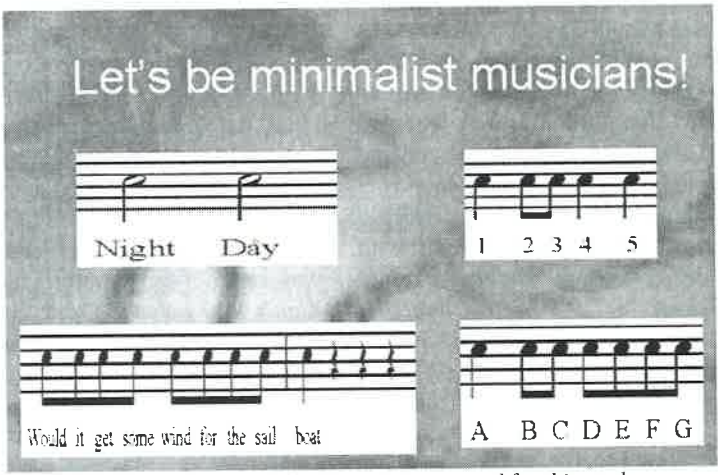

Figure 2. *Minimalist-type layering activity created for this study*

The goal of this study was to examine possible changes in participants' appreciation for minimalist music as a result of instruction. I used the listening map, performance of a minimalist-type piece, and background information to assist participants in understanding the composition by Phillip Glass. The listening map simplified the complex layering technique and is a commonly used strategy in general music classrooms. An extension of the map was my minimalist-type piece using the layering technique exemplified in "*Knee Play I.*" Consistent with MENC's National Standards for Music Education, this instruction was designed to draw upon several of the skills appropriate for the fifth grade classroom.

Results

A repeated measures within-subjects ANOVA was used to compare pre- and post-survey Likert scales. Table 1 displays the ANOVA results for both liking and desire-to-learn for each of the five listening examples.

The treatment piece (Glass) is the only piece for which both liking and desire-to-learn were significantly more positive after instruction ($p < .0001$ and $p < .004$ respectively). The participants' reported liking and desire-to-learn for three of the other pieces were lower on the post-survey, while responses to the Cage piece only slightly (Table 1). Pre-post correlations of Likert scale scores on identical questions affirmed that the participants were fairly consistent in completing the survey (Table 2).

Table 1. *Comparisons of pre and post survey responses*

	Pre	Post	Mean	SD	Change	Significance of Change
Reich - Like	4.62	4.37	4.50	1.90	-0.25	0.09
*Reich - Learn	4.31	3.66	3.99	2.21	-0.65	0.00
Adams - Like	4.17	4.04	4.11	2.03	-0.13	0.30
*Adams - Learn	3.84	3.34	3.60	2.17	-0.50	0.00
*Glass - Like	3.90	4.39	4.15	1.97	0.49	0.00
*Glass - Learn	3.41	3.68	3.54	2.13	0.27	0.00
Cage - Like	4.07	4.18	4.12	2.31	0.11	0.44
Cage - Learn	3.79	3.88	3.83	2.40	0.09	1.00
*Coates - Like	3.55	3.22	3.39	2.09	-0.33	0.01
Coates - Learn	3.20	2.79	3.00	2.14	-0.41	0.05

Note. * Significant at .01

Table 2. *Pre- and post-surveys' Liking and Desire-to-Learn Correlations*

	r^2	p value	df
Reich-Pre-Like to Reich-Post-Like	0.543	0.000	1
Reich-Pre-Lean to Reich-Post-Learn	0.461	0.000	1
Adams-Pre-Like to Adams-Post-Like	0.487	0.000	1
Adams-Pre-Learn to Adams-Post-Learn	0.439	0.000	1
Glass-Pre-Like to Glass-Post-Like	0.460	0.000	1
Glass-Pre-Learn to Glass-Post-Learn	0.411	0.000	1
Cage-Pre-Like to Cage-Post-Like	0.453	0.000	1
Cage-Pre-Learn to Cage-Post-Learn	0.473	0.000	1
Coates-Pre-Like to Coates-Post-Like	0.605	0.000	1
Coates-Pre-Learn to Coates-Post-Learn	0.586	0.000	1

The participants' yes/no responses about musical characteristics from the post-survey were compared to responses from a panel of six licensed music educators who served as experts (Table 3). For the majority of the questions, participants resembled the experts' opinion. Questions resulting in the most discrepancies were those regarding timbre, and perceived beat in the listening examples.

Table 3. *Post-Survey comparisons of Fifth Grade and Music Educator "yes" responses.*

	Reich	Adams	Glass	Cage	Coates
Do you feel a beat?	69% (100%)	68% (100%)	49% (100%)	11% (0%)	32% (100%)
Have you heard something like this before?	18% (NA)	18% (NA%)	28% (NA%)	11% (NA%)	24% (NA%)
Would you like to listen to it again?	63% (NA)	56% (NA%)	46% (NA%)	54% (NA%)	32% (NA%)
Do you hear loud dynamics?	68% (83%)	85% (100%)	24% (33%)	55% (83%)	82% (66%)
Do you hear soft dynamics?	20% (33%)	29% (67%)	69% (83%)	49% (83%)	24% (50%)
Is this a fast tempo?	90% (100%)	71% (83%)	7% (0%)	13% (0%)	27% (0%)
Is this a slow tempo?	5% (0%)	40% (0%)	88% (83%)	63% (33%)	68% (83%)
Do you hear stringed instruments?	31% (17%)	35% (100%)	30% (0%)	8% (0%)	32% (100%)
Do you hear brass instruments?	24% (17%)	47% (100%)	37% (0%)	11% (0%)	45% (83%)
Do you hear high notes?	61% (33%)	80% (83%)	27% (17%)	67% (83%)	83% (66%)
Do you hear low notes?	26% (50%)	43% (83%)	74% (83%)	47% (66%)	40% (83%)
Do you hear percussion instruments?	27% (33%)	33% (100%)	17% (0%)	3% (0%)	35% (100%)
Do you hear voices?	64% (100%)	94% (83%)	91% (100%)	95% (100%)	92% (100%)
Do you haer lots of sounds?	76% (67%)	82% (100%)	22% (50%)	29% (0%)	64% (83%)
Are there not many sounds?	13% (17%)	13% (17%)	64% (66%)	53% (100%)	24% (50%)
Do you hear woodwinds?	22% (0%)	27% (100%)	15% (0%)	14% (0%)	30% (100%)
Do you hear a piano or organ?	47% (50%)	51% (0%)	67% (66%)	7% (0%)	53% (17%)

Note. Music Educator responses in parentheses.

A McNemar test for significance of changes in participants' responses was applied to examine differences among the yes/no responses (Table 4). The only question with a consistently different response on each piece ($p < .001$) is "Have you heard something like this before?" All other significant differences discovered between fifth grade participants and music educators show no consistent pattern.

Table 4. *McNemar test for significance of changes in pre-post survey "yes" responses.*

	Reich	Adams	Glass	Cage	Coates
Pre-beat/Post-beat	1.000	0.000	0.207	0.871	0.804
Pre-heard/Post-heard	0.000	0.000	0.000	0.000	0.000
Pre-listen again/Post-listen again	0.133	0.332	0.008	0.300	0.590
Pre-loud/Post-loud	0.714	0.442	0.278	0.145	0.189
Pre-soft/Post-soft	0.025	0.402	0.606	0.355	0.000
Pre-fast/Post-fast	0.010	0.000	0.000	0.182	0.102
Pre-slow/Post-slow	0.037	0.373	0.885	0.020	0.746
Pre-strings/Post-strings	0.746	0.272	0.176	0.027	0.841
Pre-brass/Post-brass	0.434	0.002	0.759	0.142	1.000
Pre-high/Post-high	1.000	0.029	0.839	1.000	1.000
Pre-low/Post-low	0.009	0.916	0.450	0.448	0.198
Pre-percussion/Post-percussion	1.000	0.691	0.396	0.021	0.921
Pre-voices/Post-voices	0.000	0.405	0.337	1.000	0.742
Pre-lots/Post-lots	0.590	0.136	0.000	0.272	0.377
Pre-little/Post-little	0.023	0.625	0.006	0.207	0.004
Pre-woodwinds/Post-woodwinds	0.483	0.675	0.525	0.677	0.213
Pre-piano/Post-piano	0.009	0.139	0.004	0.005	0.001

Note. Reported as significance of change between pre- and post-surveys.

A correlation analysis between the Likert scale responses liking and desire-to-learn yielded a substantial correlation (Best and Kahn, 1989) with all correlations found to be between .643 and .775 (Table 5). These correlations indicate that the participants were more interested in learning about pieces that they liked.

Table 5. *Correlations of Pre- and post- Liking and Desire-to-Learn responses*

	r^2	*p* value	*df*
Reich-Pre-Like to Reich-Pre-Learn	0.697	0.000	1
Reich-Post-Like to Reich-Post-Learn	0.692	0.000	1
Adams-Pre-Like to Adams-Pre-Learn	0.662	0.000	1
Adams-Post-Like to Adams-Post-Learn	0.663	0.000	1
Glass-Pre-Like to Glass-Pre-Learn	0.643	0.000	1
Glass-Post-Like to Glass-Post-Learn	0.719	0.000	1
Cage-Pre-Like to Cage-Pre-Learn	0.722	0.000	1
Cage-Post-Like to Cage-Post-Learn	0.714	0.000	1
Coates-Pre-Like to Coates-Pre-Learn	0.775	0.000	1
Coates-Post-Like to Coates-Post-Learn	0.726	0.000	1

Student participants generated 2100 descriptor words on the pre-survey and 1698 words on the post-survey. General themes that emerged from the data became the five categories established: (a) Musical Elements (rhythm, tempo, dynamics, texture, timbre, lyrics; (b) Miscellaneous Comments (music and general comments); (c) Positive Affect (liked, exciting, beautiful); (d) Neutral Affect (neutral, calm, academic descriptions, hilarious, weird, other neutral comments); and (e) Negative Affect (disliked, depressing, dull, angry, and negative attacks). Categories were established and participant data were analyzed using an independent corroborator with a high inter-rater reliability. Comments were counted and divided into categories in order to graphically represent the participants' words (Table 6). The distribution frequency percentages across categories remained relatively stable from pre-survey to post survey with the negative affect accounting for 12% of the words, musical elements 20%, positive affect 25%, and neutral affect the most popular of the descriptors with 40% of the responses. Participants chose words in the affective domain far more often than words to describe musical elements.

Table 6. *Categorical distribution of free-response descriptor words*

	Pre-Survey	Post-Survey
Elements of Music	19%	20%
Positive Affect	26%	25%
Neutral Affect	40%	40%
Negative Affect	12%	12%
Misc. Comments	3%	3%

Discussion

The data gathered during this project suggests that the listening map, minimalist-type performance activity, and piece-specific information were effective in increasing the participants' self-reported liking and desire-to-learn for the treatment piece. Fung (1993) concluded that preferences for non-Western musics could increase if participants received instruction or had an active involvement in the learning. My data suggest the same is true for minimalist music, at least for the specific treatment piece. The same result was not evident in these data for the non-treatment pieces.

The use of five listening examples averaging two minutes in length with 30 seconds for response time was based on the previous research (Darrow, Haack, & Kuribayashi, 1987; Hargreaves & Colman, 1979; LeBlanc, 1979, 1981; LeBlanc, Sims, Siivola, & Obert, 1996; and Sims, 1987). My examples appeared to be among the longest listening times in the literature, but I believe these provided participants with sufficient time to complete the survey and actively listen to each piece. None of the participants had heard the specific pieces prior to the study, and the nature of some of minimalist music required longer listening times in which participants could experience the wide variety of sounds.

Fifth-grade students were selected as study participants based in part on Hargreaves' (1982) "open-eardness" theory stating that early adolescence was when students were the most open-eared. The young participants were consistent in completing the survey (based on McNemar analysis results presented in Table 4) and their attentiveness responses resembled those of music educators who completed the survey (Table 3).

Informal observations were made during the administration of each survey and at the time of the treatment as another source to help in interpreting the results of the data. A plethora of movements, questions, giggles, looks of astonishment, surprise, confusion, happiness, and some blurting out of negative and positive comments were noticed, all of which were contrary to the directions given prior to the survey. The comments were most likely made because the musical genre was unfamiliar and participants were insecure with the new sounds. I considered these actions and verbal responses typical for this situation and age group.

Steven Reich's *It's been a honeymoon-Can't take no mo* received several positive comments from the participants. Many participants were seen bobbing their heads to the beat and smiling during this listening example, perhaps as a result of the tempo (quarter note = 170 beats per minute). Some students wondered whether there was a problem with the recording because it was so repetitive. John Adams' piece provoked some of the children to act aggressively. They may have perceived anger from the strongly accented beat and lyrics suggesting violent actions, and their motions mimicked the beat and rhythms prominent in the work (quarter note = 90 bpm). During Phillip Glass's "*Knee Play 1*" (quarter note = 102 bpm), students were attentive to the use of random numbers and the cryptic poem. Several quietly chanted the numbers with the recording towards the end of the excerpt. While listening to Cage's *Aria* students responded favorable to the variety of sounds. Some of their apparent favorites included the extreme highs and lows, contrasting dynamics, nonsense text, vocal techniques, and the lack of meter. The vocal techniques in this piece included: buzzing of the lips, humming, word painting, heavy vibrato, straight voice, squeaking, chanting, and improvisation. Students listened attentively to the recording as each technique was revealed. Coates' *Fragments from Leonardo's Notebook* (quarter note = 76 bpm) received little outward expression by the participants. Participants listened closely and displayed very little physical involvement. The majority of the students seemed to occupy their time identifying specific instruments heard and marking these on the answer sheet.

The in-class performance of the minimalist-type piece was well received by students, with many participants smiling and asking to do this activity again. This activity was so successful that after the post-survey, two female participants composed their own minimalist-type operas and presented them to the researchers. The instruction related to the Phillip Glass piece included material designed to meet National Standards 1 (singing alone and with others), 5 (reading and notating music), 6 (listening, analyzing, describing), 7 (evaluating, 8 (music in relation to the other arts), and 9 (music in relation to culture and history). I believe the students' significantly more positive post-survey responses to the treatment piece can be attributed in good part to the participation in this activity. Indeed, it was encouraging that even this very brief instruction segment resulted in such positive response including the newly composed pieces noted above. It is important to note, however, that participants' responses did not transfer to the pieces for which no instruction had been provided. The extent to which children's reactions are piece and experience specific, rather than related to style or genre, should be of on-going concern to teachers and researchers. The literature of Shehan (1985) concluded similarly that the preference did not transfer to pieces of a similar style that had not been studied.

Tempo also may have influenced the participants' responses. I observed that the slower the piece, the more the participants moved around, were easily distracted, or whispered to a peer. The Coates piece was the slowest (quarter note = 76), and it received the lowest ratings. The faster the piece, the more participants listened and wrote on their surveys. The Reich piece (quarter note = 170) was placed as the first example because it was the fastest and I believed it would capture the favorable attention of participants so they would be motivated to complete the survey, based on the tempo preference research of LeBlanc (1981). In the future, I recommend changing the order of listening examples from pre- to post-survey in order to control for the effect of presentation order.

In this study, children responded more favorably to the piece they had heard more often, within the context of instruction. Isolating the effects of multiple listenings from the effect of instruction was not possible, and future studies might be designed to account for this. Because the children were quite interested in the pieces with varied sound production, it would be informative to contrast attitudes for listening only versus listening while viewing performances that use non-traditional sound sources. This echoes Tunks' (1992) research stating that "desired gain in any area of learning is more likely to occur if addressed directly by instruction" (p. 443).

Findings from this study have importance for music educators. Students were found to be open-eared toward minimalist music when instruction that engaged them actively was provided; however, it remains unclear as to whether this is a result of instruction, novelty, or familiarity. A longitudinal study may determine if the increased willingness-to-learn continues as participants enter college, or if the effect is short term. Only a subsequent research study using the same participants would delineate if the training and exposure was effective over time.

Teachers may not feel comfortable teaching minimalist music because they do not know as much about it as other styles and genres. Colleges and universities should devote more instructional time to twentieth century music in order to encourage all musicians to appreciate and understand the multitude of styles and genres available today. With more training, teachers may feel more secure in presenting this music to their students.

After instruction, participants were more willing to learn about the piece that was taught. The words children used to describe the unfamiliar music they heard were more positive and neutral than negative. These listening examples presented interesting sounds that intrigued the students, perhaps in much the same way that students are interested in world music because of the unfamiliar sounds. The results of this study should inform and encourage music educators who wish to incorporate non-traditional music into the elementary general music classroom.

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A Study of the Effects of Perceptual Modality and Interrelated Arts Instruction on Student Achievement in the High School Choral Classroom

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The purpose of this research was to investigate interrelated arts instruction in addressing the needs of visual and mixed modality strength learners. Using the Swassing-Barbe Modality Index, the researcher identified dominant modality strengths of choral students from three selected high schools. Choral directors from these schools taught a researcher-created interrelated arts unit. Through a pretest-posttest assessment, students of all perceptual modalities showed similar levels of achievement; therefore, the researcher suggested that perceptual modality strength was not a factor in achievement in an interrelated arts unit. This researcher recommends that this study be expanded to learn more about the use of interrelated arts instruction in the choral music classroom. This researcher also recommends further study of the role of perceptual modality in the teaching and learning process.

Music teachers guide students with instruction designed to address learning styles, teaching styles, and perceptual modalities in an effort to enhance student achievement (Barbe, Swassing, & Milone, 1979; Dunn & Dunn, 1978). Moreover, music teachers design instruction to develop music concepts and knowledge of related art forms. Dunn and Dunn assert that instruction designed to match student learning styles is effective. Dunn (1994) suggests that matching perceptual modality strengths and teaching approaches may be more suitable for some students than a multisensory approach.

Perceptual Modality

Although early research of perceptual modality focused on identifying correlations between perceptual modality and student achievement in reading (Carbo, 1980, 1983; Carbo, Dunn, & Dunn, 1986), researchers have also examined perceptual modality and student achievement in music (Apfelstadt, 1986; Dunn, 1994; Falkner, 1994; Persellin, 1992, 1994; Sanders, 1991). Apfelstadt played major, minor, and pentatonic melodies for second grade students. Using the *Swassing-Barbe Modality Index* (SBMI), she found that students of visual modality strength sang with better pitch accuracy than students of auditory modality strength. Apfelstadt attributed these findings to the abstraction of auditory perception. She proposed that students be encouraged to

develop more than one modality strength and that visual reinforcement be used for the auditory learner, rather than rote-singing.

Using the *Swassing-Barbe Modality Index* (SBMI) and the Colwell *Music Achievement Tests 1 and 2* (MAT 1 and MAT 2), Sanders (1991) investigated the relationship between modality strength and music achievement in fifth grade choral students. Sanders found 32 statistically significant correlations between modality raw scores and music achievement raw scores in his sample groups. He found that visual learners scored significantly higher than learners of auditory and mixed modalities.

Falkner (1994) investigated the relationship among modality preferences, music aptitude, and attitude toward music of 185 third grade students. Using the *Learning Style Inventory* (LSI) by Dunn, Dunn, and Price, she found no statistically significant difference among the levels of music attitude and perceptual modality; however, she did find that auditory and visual students scored higher on the *Primary Measures of Music Audiation* (PMMA) by Edwin Gordon than tactual and kinesthetic students. Falkner, suggesting a multisensory approach, recommended that instruction meet the perceptual needs of all students.

Persellin (1994) assessed whether melodic and rhythmic retention and pitch-matching ability could be improved through instruction based on perceptual modalities. Sixty-one children, ages 4-5, were taught using one of four treatments: visual (visual aids); auditory (singing and listening); kinesthetic (moving to music); or multimodal. Using a pretest-posttest design, Persellin found that children taught using auditory and multimodal presentations had a more statistically significant increase in achievement than children in the other two groups in melodic and rhythmic retention and in pitch-matching ability. The kinesthetic group showed the lowest achievement on both melodic and rhythmic retention.

Persellin (1992) randomly assigned 210 first, third, and fifth grade students into one of seven groups: (a) visual; (b) auditory; (c) kinesthetic; (d) visual and auditory; (e) visual and kinesthetic; (f) auditory and kinesthetic; and (g) visual, auditory, and kinesthetic. Each group was presented six rhythm patterns of increasing difficulty in their respective modality or modalities: visual (icons); auditory (played on resonator bells); or kinesthetic (patting the hand of the child). All groups within each grade level had statistically significant differences, with the exception of the visual-only first grade students who scored lower. Persellin concluded that incorporation of multiple learning modalities in instruction could result in more efficient learning of rhythmic patterns and that students were not confused by multisensory input.

Dunn (1994) presented 16 third grade students with three types of repeated-listening experiences: (a) auditory only; (b) auditory reinforced with visual stimuli; and (c) auditory reinforced with kinesthetic stimuli. During and after each listening experience, the students offered verbal comments. He then administered the *Swassing-Barbe Modality Index* (SBMI) to students and asked

students, teacher, and parents of the students to identify student perceptual modality preference. Dunn found that students more effectively "perceive, process, and recall musical events in one modality presentation than others" (p. 373).

Although the above researchers agree that children whose perceptual modality matched the corresponding treatment scored higher than those whose treatment did not match their perceptual modality, Falkner (1994) and Persellin (1992) differs from conclusions made by Dunn (1994) in regards to multisensory instruction and its effect on student achievement in music. Dunn, concerned about confusion that could be created for students in multisensory instruction, recommended that students learn music more effectively in one modality presentation. Persellin concluded that students were not confused by multisensory input and learned rhythmic patterns more efficiently through this approach. Falkner, suggesting a multisensory approach, recommended that instruction meet the perceptual needs of all students.

Interrelated Arts Instruction

Researchers and practitioners stress the importance of using interrelated arts instruction as a means to develop multisensory instruction (Haack, 1970, 1982). Additionally, researchers and practitioners point to interrelated arts instruction as a means to allow students to make connections among the arts (Anderson & Lawrence, 1982; Best, 1995; Breckenridge, 1976; Bresler, 1995; De Bauche, 1980; De Lio, 1981; Gibson, 1988; Irwin & Reynolds, 1995; Levy, 1974; Lubar, 2004; Mason, 1995; Okada, 2003; Swiggum, 1998; Uszler, 1995).

Anderson and Lawrence (1982) recommend that music educators use the analogous concepts of different art forms to reinforce musical concepts. Uszler (1995) offers strategies to teach students fundamentals and vocabulary shared by visual art and music, illustrating musical concepts through visual art characteristics.

Haack (1970) investigated the use of visual arts as an aid to the development of broad musical stylistic concepts in junior high school music students. He concluded that a bisensory approach was more effective in the development of aural concepts and skills.

Lubar (2004) compares the 12-tone musical scale to the 12-hued color wheel, applying the musical principles of intervallic consonance and dissonance to color intervals. Using a color wheel, Lubar concludes that although color intervals do not share the same characteristics as musical intervals, both follow a similar pattern in terms of consonance and dissonance. She suggests further analysis of paintings be conducted relating harmonic interaction among colors.

Gibson (1988) studied the effects of using a multiple-arts approach to develop creativity. Using a pretest/posttest design, Gibson assessed creativity (*Torrence Test of Creative Thinking*), improvisational ability (*Thinking Creatively with Music* by Webster), and musical sensitivity (*Musical Aptitude*

Profile by Gordon) in two groups of students. The control group was given a traditional treatment of exclusively musical strategies in developing musical creativity. The experimental group was given a multiple-arts treatment in developing musical creativity. Gibson found that students exposed to the multiple-arts treatment made a greater gain in the test results in general creativity and improvisation than the group receiving the traditional treatment.

The purpose of this research is to investigate interrelated arts instruction in addressing the needs of visual and mixed modality strength learners. The specific problems of the study are:

1. To identify how the musical, visual art, and interrelated arts concepts achievement gains of high school choral students vary by perceptual modality;
2. To identify the relationship between the dominant modality strength of the choral director and high school choral student achievement of interrelated arts concepts;
3. To identify high school choral student perceptions of the effectiveness of an interrelated arts unit;
4. To identify high school choral director perceptions of the effectiveness of an interrelated arts unit; and
5. To identify the relationship between student achievement and high school chorus student and choral director perceptions of the effectiveness of an interrelated arts unit.

Method

Design and Procedures

Pilot Study

This researcher identified choral music and visual art exemplars in a 2005 pilot study to provide a foundation for the present study. In the pilot study, this researcher surveyed high school choral directors and high school visual art teachers. Choral directors identified choral literature exemplars most appropriate for high school choral students, musical concepts present in the choral literature, and strategies choral directors employed to relate music to visual art. High school visual art teachers identified visual art exemplars most appropriate for high school visual art students, art fundamentals and elements present in those ten works of visual art, and strategies art teachers employed to relate visual art to music.

Selection of Subjects

Based on their experience and expertise, this researcher selected three high school choral directors and their school chorus programs from a suburban town in the Mid-Atlantic region of the United States to participate in the present,

pretest-posttest design, study. The researcher-selected choral directors identified a specific chorus class to participate in the study and implemented the researcher-designed units. In addition, the choral directors selected two pieces of choral literature, one with the intention to perform and another to study through guided listening. This choral literature was selected from choral music exemplars identified in the pilot study to this research. Based on conceptual content of those exemplars and strategies of interrelating music and visual art, as delineated by choral directors and visual art teachers from the pilot study survey, this researcher wrote two units of instruction (a performance unit and a guided listening unit) based on choral music exemplars selected by each choral director (a total of six units). The musical and visual art concepts and the choral music and visual art exemplars used in each lesson are listed in Tables 1 and 2.

Table 1: *Musical and Visual Art Concepts Taught in Performance Units*

Choral Music: *Sing Me to Heaven* by Daniel Gawthrop

School 111 Unit	Musical/Visual Art Concepts	Visual Art Exemplars
Lesson 1	Music: Diction and Articulation Visual Art: Texture (Impasto Technique)	1. *Starry Night* by Vincent van Gogh
		2. *A Sunday Afternoon on the Island of La Grand Jatte* by Georges Seurat
		3. *Broadway Boogie Woogie* by Piet Mondrian
Lesson 2	Music: Harmonic Dissonance and Consonance Visual Art: Color (Color Wheel)	*Impression: Sunrise* by Claude Monet
Lesson 3	Music: Melodic Contour and Climax Points Visual Art: Rhythm (Progressive Rhythm)	1. *Metamorphosis I* by M.C. Escher
		2. Giza Pyramids

Choral Music: "Hallelujah" from *Messiah* by G.F. Handel

School 222 Unit	Musical/Visual Art Concepts	Visual Art Exemplars
Lesson 1	Music: Texture (Polyphony and Homophony)	*Sistine Chapel* by Michelangelo
Lesson 2	Music: Balance (Emphasizing Important Themes)	1. *Mona Lisa* by Leonardo da Vinci
		2. *Guernica* by Pablo Picasso
Lesson 3	Music: Diction and Articulation Visual Art: Texture (Impasto Technique)	1. *Starry Night* by Vincent van Gogh
		2. *A Sunday Afternoon on the Island of La Grand Jatte* by Georges Seurat
		3. *Broadway Boogie Woogie* by Piet Mondrian
Lesson 4	Music: Harmony (Tonic and Dominant Relationships)	*Electric Chairs* by Andy Warhol

Choral Music: *Sing We and Chant It* by Thomas Morley

School 333 Unit	Musical/Visual Art Concepts	Visual Art Exemplars
Lesson 1	Music: Tone Quality	1. *Nightwatch* by Rembrandt
		2. *Fishing in Spring* by Vincent van Gogh
Lesson 2	Music: Texture (Polyphony and Homophony)	*Sistine Chapel* by Michelangelo
Lesson 3	Music: Dynamics (Contrast)	1. *Electric Chairs* by Andy Warhol
		2. *Falling Water House*, Bear Run, PA, by Frank Lloyd Wright

Table 2: *Musical and Visual Art Concepts Taught in Guided Listening Units*

Choral Music: *Requiem* by W.A. Mozart

School 111 Unit	Musical/Visual Art Concepts	Visual Art Exemplars
Lesson 1	Music: Texture (Polyphony and Homophony)	*Sistine Chapel* by Michelangelo
Lesson 2	Music: Balance (Emphasizing Important Themes)	1. *Mona Lisa* by Leonardo da Vinci
		2. *Guernica* by Pablo Picasso
Lesson 3	Music: Form (ABA)	*U.S. Capitol*
Lesson 4	Music: Harmony (Tonic and Dominant Relationships)	*Electric Chairs* by Andy Warhol

Choral Music: *Cantique de Jean Racine* by Gabriel Fauré

School 222 Unit	Musical/Visual Art Concepts	Visual Art Exemplars
Lesson 1	Music: Harmonic Dissonance and Consonance Visual Art: Color (Color Wheel)	*Impression: Sunrise* by Claude Monet
Lesson 2	Music: Form (ABA)	*U.S. Capitol*
Lesson 3	Music: Melodic Contour and Climax Points Visual Art: Rhythm (Progressive Rhythm)	1. *Metamorphosis I* by M.C. Escher
		2. Giza Pyramids

Choral Music: *Gloria* by Antonio Vivaldi

School 333 Unit	Musical/Visual Art Concepts	Visual Art Exemplars
Lesson 1	Music: Texture (Polyphony and Homophony)	*Sistine Chapel* by Michelangelo
Lesson 2	Music: Harmony (Tonic and Dominant Relationships)	*Electric Chairs* by Andy Warhol
Lesson 3	Music: Articulation Visual Art: Texture (Impasto Technique)	1. *Starry Night* by Vincent van Gogh
		2. *A Sunday Afternoon on the Island of La Grand Jatte* by Georges Seurat
		3. *Broadway Boogie Woogie* by Piet Mondrian

To maintain uniformity, this researcher: provided verbal and written instructions in implementing instructional units to participating choral directors; received verbal and written accounts of each teaching session from participating choral directors; and provided feedback to all of the participating choral directors based on choral director verbal and written teaching session accounts. A researcher-designed pretest-posttest was created to assess choral student knowledge of musical concepts, visual art concepts, choral music exemplars, and visual art exemplars. Based on recommendations of researchers and practitioners of interrelated arts instruction (Anderson & Lawrence, 1982; Best, 1995; Breckenridge, 1976; Bresler, 1995; De Bauche, 1980; De Lio, 1981; Gibson, 1988; Irwin & Reynolds, 1995; Mason, 1995; Haack, 1970, 1982; Levy, 1974; Lubar, 2004; Okada, 2003; Swiggum, 1998; Uszler, 1995), the test contained 36 multiple-choice questions in three categories (musical concepts, visual art concepts, and music and visual art (combined)) and various subcategories (see Table 3). Prior to teaching lessons, the three participating choral directors reviewed the test questions for clarity and provided feedback. This researcher incorporated suggestions, which dealt with word choice that choral directors thought would be clearer for their students.

Table 3: *Test Categories and Subcategories*

Musical Concepts (18 questions)	**Visual Art Concepts (13 questions)**	**Music and Visual Art (Combined) (5 questions)**
Texture (6 questions)	Identification (8 questions)	Interval/Color (2 questions)
Articulation (3 questions)	Texture (1 question)	Contour/Rhythm (1 question)
Diction (1 question)	Rhythm (2 questions)	Articulation/Texture (1 question)
Harmony (4 questions)	Color (2 questions)	Form/Architecture (1 question)
Form (1 question)		
Contour (1 question)		
Dynamics (2 questions)		

During scheduled class time, the choral director administered the researcher-designed pretest. The choral director then taught units of study over the course of one week. After the choral director completed both units, he administered the posttest. This researcher scored all tests.

Swassing-Barbe Modality Index

This researcher used the *Swassing-Barbe Modality Index* (SBMI) by Barbe, Swassing, and Milone (1979) to assess the modality strength of each student. Moreover, SBMI was administered to identify the perceptual modality strength of the choral directors.

The points of each subject for each modality are divided by the total number of points for all modalities to determine the percentage of modality

strength. According to Barbe, Swassing, and Milone (1979), a five percent difference in modality strength percentages is considered "educationally significant" (p. 5), indicating strength in that modality, if modality percent scores are within five percent of each other, the subject is considered to have mixed modality strength between the two modalities.

Researchers (Dunn, 1994; Persellin & Pierce, 1988; Sanders, 1991; Wojcik, 1990) have used SBMI to identify dominant perceptual modalities. The subjects for all of these studies have been under the age of eleven. This researcher was unable to locate recent research that used SBMI for populations over the age of eleven.

Procedures

All of the students and the choral director in each selected chorus class met once outside of their scheduled class time for the administration of the *Swassing-Barbe Modality Index* (SBMI). This researcher administered SBMI individually to each participant. Testing occurred in practice rooms adjacent to the choral classroom; thus, in a familiar setting to the students. Modality strengths are assessed by SBMI through a presentation of shapes in each modality, arranged in sequences of increasing length. Subjects are asked to repeat the sequence of those shapes. In the visual test, students were shown the shape sequences and are given ten seconds to look at the sequence. The sequence is then hidden from view and the students are asked to say what the sequence was. In the auditory test, this researcher said the sequence and asked the student to repeat the sequence immediately. In the kinesthetic test, the student is blindfolded and this researcher put each of the shapes in his hand. After the student has felt the shape he puts it down on a table and receives the next shape of the sequence. Once all the shapes of the sequence had been touched by the student, he says what the sequence was.

Following the instruction and posttest, a researcher-designed exit survey was administered to students and choral director. This survey was designed to elicit opinions regarding the effectiveness of the interrelated arts unit.

Analysis

Based on results of the *Swassing-Barbe Modality Index* (SBMI), students were divided into four groups: visual, auditory, kinesthetic, and mixed. This researcher compared the mean increase of scores from the pretest to the posttest of each group to determine if visual and/or mixed modality learners showed greater improvement than auditory or kinesthetic learners in each of the test categories (musical concepts, visual art concepts, and music and visual art (combined)) and various subcategories. This researcher also compared the mean increase of scores from the pretest to the posttest of students who demonstrated

the same modality strength as their choral director to those students who demonstrated varying modality strength.

After students completed the posttest, they and their choral director completed an exit survey. The first section of the survey is a five-point Likert scale section that was totaled according to the following point system:

SA: Strongly Agree (5 points)
A: Agree (4 points)
N: No Opinion (3 points)
D: Disagree (2 points)
SD: Strongly Disagree (1 point)

The total number of points was calculated in the following survey categories:

1. Overall score (maximum score: 40)
2. Musical Concepts (maximum score: 10)
3. Visual Art Concepts (maximum score: 15)
4. Music and Visual Art (Combined) (maximum score: 10)

These points were compared to the mean increase of scores from the pretest to the posttest for each student: (a) overall score, (b) score in musical concepts, (c) score in visual art concepts, and (d) music and visual art (combined).

Results

Using the *Swassing-Barbe Modality Index* (SBMI), this researcher divided the sample into modality strength groups as shown in Table 4. Although visual (N=28) and mixed modality (N=16) learners showed a greater increase in three test subcategories than auditory (N=4) and kinesthetic (N=11) learners, visual and mixed modality learners overall did not show greater achievement in an interrelated arts unit. Visual learners showed a greater increase in the musical concept harmony subcategory than auditory learners, but visual learners showed a lesser increase in the musical concept form subcategory than auditory learners. Mixed modality learners showed a greater increase in the musical concept harmony subcategory than auditory learners and a greater increase in the musical concept form subcategory than kinesthetic learners. Kinesthetic learners showed a greater increase in the musical concept harmony subcategory than auditory learners, but kinesthetic learners showed a lesser increase in the musical concept form subcategory than auditory learners.

Table 4: *Perceptual Modality Strengths of All Participating Students (N=59)*

Visual	Auditory	Kinesthetic	Mixed
28 (47.5%)	4 (6.8%)	11 (18.6%)	16 (27.1%)

In identifying the relationship between the dominant modality strength of the choral director and high school choral student achievement of interrelated arts concepts, no statistically significant results ($\alpha = .05$) in regards to students who shared the same modality strength as their choral director were found. High school choral student perceptions and high school choral director perceptions of the effectiveness of an interrelated arts unit were found. These perceptions were identified through a Likert-scale and open-ended response survey. The mean scores for the Likert-scale section of the student survey (N=56) are shown in Table 5.

Table 5: *Mean Scores for Likert-Scale Section of Student Survey*

Overall (max. 40)	Music (max. 10)	Visual Art (max. 15)	Music and Visual Art (Combined) (max. 10)
32.0	7.5	12.4	8.2

Student responses for the first open-ended question of the survey ("What aspects of the interrelated arts unit did you find most insightful? How did it help your understanding of musical and visual art concepts?") reflect conceptual connections between music and visual art. One student wrote, "It was interesting to note that things I understood in music (*i.e.*, consonance and dissonance) were easily adapted to visual art, where I could understand them both much better. I could compare them and understand. Pictures give form to music, expanding and explaining it." In regards to using visual art as a means to teach musical concepts, a student wrote, "Just comparing the terms, musically to something visual was the most insightful to me. It helped me see the musical concepts easier by seeing them in art.

Student responses for the second open-ended question of the survey ("What aspects of the interrelated arts unit did you find most confusing? How could it be clarified to help your understanding of musical and visual art concepts?") reflect confusion in the differences between musical texture and visual art texture. Students also found that the visual art matched with the music listening examples conflicted with their own "image" of the music. One student wrote, "I had my own mental 'picture' of the song and viewing the other pictures muddled it up." Another student expressed that the subject matter of the visual art was confusing, "I found that singing the song after looking at the pictures was difficult and confusing. I tried to match my voice to the softness or harshness of the picture and things weren't quite right."

The mean scores for the Likert-scale section of the choral director survey (N=3) are shown in Table 6. In response to the first open-ended question of the survey ("What aspects of the interrelated arts unit did you find most insightful for your students? How did it help their understanding of musical and visual art concepts?"), the first choral director wrote, "my students were pleasantly surprised to see all of the things in common between the two art forms. I think that it opened to them a more holistic view of the arts. It actually

initiated a discussion of dance, poetry, and other art forms. In the end, I think that anytime we can explore a subject from multiple angles, we will experience more clarity for our students. These lessons achieved that." The second choral director wrote, "The students easily understood the correlation between the art examples and the music concept and the art examples and information provided were excellent visuals for the students to easily grasp." The third choral director commented that her students enjoyed the lessons, which helped them "understand that the arts are really related."

Table 6: *Mean Scores for Likert-Scale Section of Choral Director Survey*

Overall (max. 40)	Music (max. 10)	Visual Art (max. 15)	Music and Visual Art (Combined) (max. 10)
33.0	9.0	10.7	8.3

In response to the second open-ended question of the survey ("What aspects of the interrelated arts unit did your students find most confusing? How could it be clarified to help their understanding of musical and visual art concepts?"), all three choral directors reported no confusion among their students and no need for clarification. In identifying the relationship between student achievement and high school chorus student and choral director perceptions of the effectiveness of an interrelated arts unit, no statistically significant results were found.

Discussion

The data obtained from the SBMI consisted of perceptual modality strengths in the kinesthetic and mixed categories were consistent with estimates reported by the authors of the SBMI. The visual and auditory perceptual modality strengths, however, were above or below the estimates (respectively) provided by Barbe and Milone (1981). Both the findings obtained in this research and the estimates provided by Barbe and Milone show visual and mixed perceptual modality strengths as the largest percentages of a population.

The age of the sample in the present research may explain the difference in sample percentages as compared to the estimates provided by Barbe and Milone. The sample in the present research consisted of high school students (ages 14 to 18). Barbe, Swassing, and Milone (1979) report that SBMI is appropriate for all populations/age levels, but researchers have employed this test with populations younger than age eleven (grade six) (Dunn, 1994; Persellin & Pierce, 1988; Sanders, 1991; Wojcik, 1990). Accordingly, data obtained in this research (student perceptual modality) may be inaccurate for populations older than age eleven.

The test administration of SBMI in the present research may have influenced the data obtained. As part of the visual and kinesthetic tests, students had the opportunity to review patterns by repeating them out loud or internally

as they saw the shape sequence or felt the shapes. Because the auditory test did not allow the time for such review, students only had one opportunity to "process" the sequence. This lack of review may have resulted in inaccurate data for the auditory component of SBMI.

Implications

The findings obtained in this research may be used to guide researchers and music educators as they design and implement instruction for students. The identification of perceptual modality strength may allow choral directors to better understand the needs of their students. Choral directors should also be mindful of their own perceptual modality strengths and how that strength may affect their teaching and their perception of their students. Accordingly, they may be able to meet the specific needs of students whose perceptual modality strengths may differ from their own by designing and offering instruction to meet those needs.

Visual reinforcement of information occurs regularly in a classroom setting. In the elementary music classroom, music educators use a variety of visual aids to reinforce musical concepts. As students age, their modality strength may be less defined; however, the manner in which music students are instructed often lacks visual reinforcement of musical concepts. At the high school level, the musical score is the primary visual aid employed by music teachers. Emerging music readers, particularly visual and mixed modality students, may benefit from visual aids such as graphic organizers, pictures, or symbols that may complement concepts.

A choral director who employs a combination of visual art and music can address some needs of visual and mixed modality learners, while simultaneously addressing National Standard #8 (understanding relationships between music, the other arts, and disciplines outside the arts). By addressing this standard, choral directors have the opportunity to introduce music and visual art exemplars to students, to show conceptual connections between music and visual art through these exemplars, and to illustrate to students means of creative expression employed by musical and visual artists.

Conclusions

Based on the data obtained in this research, it appears that perceptual modality strength was not a factor in achievement in the interrelated arts unit. This conclusion reflects the findings that all students, regardless of perceptual modality strength, showed similar improvement from pretest to posttest. The present researcher, therefore, asserts that a multisensory approach to instruction is more appropriate than matching perceptual modality strength to instruction in the high school choral classroom.

This researcher concurs with researchers of perceptual modality (Falkner, 1994; Persellin, 1992), recommending multisensory instruction be used to increase student achievement. Dunn (1994) found that matching perceptual modality strength with instruction is more suitable than multisensory instruction with third grade students. This researcher suggests that multisensory instruction may become more effective as the child matures into the high school years.

Recommendations

This researcher recommends additional studies regarding the use of interrelated arts instruction in the choral music classroom. This researcher also recommends further study of the role of perceptual modality strength in the teaching and learning process.

A new assessment of perceptual modality must be developed. The assessment should be tested for reliability for students of all ages. Moreover, this test could be specified to musical instruction, determining how students most effectively learn musical concepts.

The present study should be replicated with a larger sample and include a more thorough analysis of the data obtained via survey. Increasing the number of students will increase the sample size of all perceptual modality categories and may provide more insight regarding perceptual modality and student achievement in an interrelated arts unit. The open-ended questions contained in the survey provided many insights from students and choral directors; however, coding surveyed data would allow the researcher to identify trends within the responses.

The interrelated arts unit should be used as a model or replicated to investigate its effectiveness with other populations. In addition, this interrelated arts unit should be revised in its presentation of common terminology used in both music and visual art. Although a concept such as line (contour) has a similar meaning in both music and visual art, terms such as rhythm and texture have different meanings in music and visual art. This difference may have resulted in confusion among the students. These visual art concepts should continue to be used to illustrate the musical concepts, but the visual art terminology may need to be de-emphasized to ensure that the definition of the musical concept terminology is clear to students.

This researcher recommends choral directors address perceptual modalities when developing interrelated arts instruction. National Standard #8 provides a guideline to ensure that American students receive rich educational experiences that includes the study of music and its relationship to the other arts. Additional research regarding the design and implementation of this interrelated arts instruction will strengthen the quality of music teaching and learning.

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Influences on Introduction to Music Education Class Members: A Survey of Recollections by Future Teachers

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This study represents an attempt to identify motivating factors for students choosing to major in music education at the beginning of their formal training to teach. Participants (N = 47) were students in two intact Introduction to Music Education courses at two large comprehensive state universities. Participants completed a survey that sought to determine when preservice music education students chose to pursue music education as a career and who may have influenced that decision-making process. Results indicate that the majority of respondents chose to major in music education during or after their junior year in high school. Results suggest that high school music educators and private music teachers have a strong influence on students' decision to major in music education. In addition, students who chose to major in music education reported a variety of teaching experiences prior to college. Areas for further research are discussed.

For any music teacher, answering the question "When did you decide to become a teacher?" involves recalling a moment from their past. The memory is influenced by the passage of time, and, in all probability, is also shaped by intervening events of varying magnitudes. Identifying and understanding these influences, especially as they relate to the timing of decisions, may prove valuable in recruiting the next generation of teachers. The career decision process of undergraduate music education majors and music educators has been a topic of interest for some time (White, 1967).

Many investigators have focused on preservice or practicing music educators and found that the majority identify their middle school/high school music teacher and/or private lesson teacher as the single most influential factor in their decision to major in music education (Bergee, 1992; Bergee & Demorest, 2003; Bergee, Coffman, Demorest, Humphreys, & Thorton, 2001; Cox, 1994; Gillespie & Hamann, 1999; Hamann & Cutietta, 1996; Hamann & Walker, 1993; Madsen & Kelly, 2002; White, 1967). Bergee (1992), Cox (1994), and White (1967) also documented the importance of familial influence in the decision to major in music education and Jones (1970) found that, although parental and teacher influences toward majoring in music education were very strong during the middle and high school years, ego-

satisfaction, status, and confidence in talent became more meaningful in the late high school years and through college.

Some research has highlighted influential activities that impact the choice to major in music education. Gillespie and Hamann (1999) noted that subjects (N = 153) most often chose a career in music education because they liked teaching, playing their instrument, enjoy music, and being a role model for children. But most often and most specifically cited were past experiences in music, including previous teaching opportunities, which seem to be the most influential determinants of a career in music education (Gillespie & Hamman, 1999; Jones, 1970).

Thornton and Bergee (2008) investigated college music education majors' (N = 242) reported career influences and how it might fit the Social Cognitive Career Theory (SCCT) model (Lent, Brown, & Hackett, 1994). They suggested that the SCCT model, which proposes that career choices are predicted by self-efficacy and outcome expectations developed in ongoing learning activities, was evidenced in the choices their participants' made in responding to their survey. Respondents' top five reported influences were "important others," a love of music, a love of teaching, being able to participate in music organizations, and a desire to share music with students. Recommendations to music teachers for building music self-efficacy in their students included helping them develop their music skills, exposing them to a variety of music, using music to "inspire" their students, make music class fun, and being aware of portraying confidence in themselves as professionals.

In her research on the social perception, self-efficacy, and potential enjoyment perceptions of sixth- through eleventh-grade music students toward music education and various other careers, Councill (2005) found that the opinions of the subjects did not differ significantly across grade levels for any of the careers on the survey. These data support the idea that career opinions are formed at an early age (Gottfredson, 1981) and indicate that earlier insight into the influences of career paths and perceptions may prove beneficial to recruiting potential music education majors.

Fredrickson and Burton (2005) made several suggestions for ways that K-12 music teachers might encourage their precollegiate students to consider music teaching as a vocational goal. Suggestions included the importance of portraying "...the music teaching profession's diversity to high school students" (p. 30), promoting "...the positive aspects of their profession to their students and community" (p. 31), and "...enfranchise students early by helping develop teaching experiences (such as peer-tutoring) for students" (p. 31). Bergee et al. (2001) found that teaching opportunities for future teachers had been highly influential in their decisions to become teachers, but did not seem to occur often.

The present study was designed to achieve two things. The first goal is to learn more about the reported influences of a population of collegiate music students taking an introduction to music education class. As noted by Allen (2003), the "vocational identity" of preservice music education majors appears

to become stronger over time, so the present study is focused on students at the very beginning of their formal training to become teachers. Second, to quantify the various experiences they may have already had as part of their precollege school and community programs that relate to teaching and music. Madsen and Kelly (2002) found that while 76% of college students in their sample settled on music education as a career choice prior to college, many of the students who made the choice later remained ambivalent over time. They suggest that those who have made the decision early may be better suited for success in the long term. These early experiences may well play an important role in that process.

Method

Participants ($N = 47$) were members of an undergraduate introduction to music education class at one of two large, comprehensive state university music units. Both courses were designed to be taken sometime within the first two years of the degree program and before the students take the majority of other coursework specific to the music education content area. The instrument used was developed by Rickels et al. (in press) to survey a population of high school students who were in the process of applying to collegiate music education programs (see Appendix A). Participants in the current study were given the instrument in groups during regular class meeting times. The only instructions given were to fill the questionnaire out as completely as possible. Participants were allowed to ask questions for clarification. Questionnaires were collected as they were completed and participants were given as much time as necessary to fully complete the questionnaire.

Results

The first two survey questions required respondents to choose the grade level that best described the time during which their decision was made to major in music (Question 1), and more specifically in music education (Question 2)(see Table 1). For Question 1, 37% of the respondents recalled having decided by their sophomore year in high school to major in music in college with another 34% choosing to major in music during their junior year of high school alone. As seen in Question 2, the decision to major specifically in music education generally came slightly later with over half of the participants indicating that they made the decision to major in music education during their last two years of high school (HS junior year, $n = 13$, 28%; HS senior year, $n = 13$, 28%) with nearly a quarter ($n = 11$, 24%) deciding after high school.

Question 3 asked respondents: "Did your music teachers talk to you about becoming a music educator?" Five respondents (2%) indicated "Not at all," while 7 (15%) indicated "Rarely." The largest number of individuals ($n = 17$, 36%) responded "Sometimes." Thirty-eight percent of the sample

responded to this question with either "Often" (n = 12, 25%) or "Very often" (n = 6, 13%).

Ascertaining which music teachers talked with them about becoming a teacher was examined in Question 4. Instructions for this question allowed respondents to "check all that apply," and percentages were calculated as a portion of the total sample size or subgroup for each response and do not add up to 100%. High school ensemble directors (n = 35, 74%) were by far the largest group cited as a source of input about careers in music teaching. Private music teachers were also cited by a large group of respondents (n = 20, 43%) as a source of information about teaching music as a career. Twenty-five percent (n = 12) actually recalled a middle school/junior high director talking to them about a career in teaching. It is important to note that some participants indicated that the same person served as a combination of middle school, high school, and/or private music teacher. One participant indicated that their middle school music teacher encouraged music education as a profession while their high school music teacher discouraged entering the profession.

Question 5 examined respondents' personal motivations for becoming a music educator. Respondents were asked to check any or all of 11 statements describing possible motivators for choosing a music education vocation, with an additional open response for "Other." As with Question 4, percentages were calculated as a portion of the total sample size for each response and do not sum to 100% because respondents could select multiple answers. A vast majority of the sample indicated that they wanted to help others experience music in some fashion.

As in previous studies, researchers wanted to determine whom the influential individuals were when it came to the decision to pursue a music education major. For Question 6, the frequency of responses for each of 20 items appears in Table 1. Again, percentages do not add up to 100% because respondents could select any number of responses. Just over half of all participants indicated that their parent(s)/guardian(s) influenced their decision (n = 26, 55%). Many respondents indicated influence by a music educator (private music teacher, n = 22, 47%; high school choral director, n = 20, 43%; high school band director, n = 20, 43%). These respondents also indicated that they were influenced by their peers (n = 16, 34%) and people/experiences in their current university environment (higher education music professors, n = 16, 34%; college music major acquaintances, n = 13, 28%).

In Question 7, respondents were asked about frequency of opportunities to engage in teaching experience prior to college. Responding to one of five scaled descriptors for the question "Have you had opportunities to teach prior to entering college?" the greatest number of responses were for "Yes, weekly or daily" (n = 18, 38%) and "Yes, a few times" (n = 11, 24%). Other responses included "Yes, more than 10 times" (n = 8, 18%) followed by "No opportunity" (n = 5, 11%), and "Yes, 5-10 times" (n = 4, 9%). Question 8 was designed to investigate the frequency of respondents' prior teaching experiences.

Respondents could check one or more categories so percentages do not add to 100%. Of the 11 choices from which respondents chose, the top 6 were "Rehearsed sectionals" (n = 32, 68%), "Rehearsed entire group" (n = 28, 59%), "Tutored individuals in music" (n = 26, 54%), "Gave private lessons" (n = 23, 49%), "Taught in other settings" (n = 21, 45%), and "Tutored individuals in subjects other than music" (n = 19, 40%). Since almost half of respondents "Taught in other settings," it is interesting to note the settings they listed when choosing this response (some listed more than one "other" setting so the total is more than 21). From most frequently mentioned to least these included "Camp Counselor" (n = 13), "Place of Worship" (n = 7), "Community Group, Scouts" (n = 4), "Swimming Instructor" (n = 2), and "Other" (n = 7, including "Softball," "Puppets," "Bible Study," "Karate," "Double-reed Camp," "Marching Band," and "Summer School").

Since these respondents were all beginning their formal music education study, having them indicate their potential future teaching specialization in Question 9 was considered useful information. This was not a forced choice, so some students checked more than one future teaching venue. A majority of these students (79%) were focused on teaching in a high school. The 37 students who checked one or more specialty areas at the high school level chose Choir (n = 19), Band (n = 15), General Music (n = 11), and Orchestra (n = 10). The next most frequently chosen option was actually Private Lesson Teaching (n = 30, 64%). Nearly half (49%) of the respondents indicated an expectation of teaching at the middle school/junior high level. The 23 participants who checked one or more specialty areas at the middle school, junior high school level chose Choir (n = 13), Band (n = 10), General Music (n = 7), and Orchestra (n = 5).

Discussion

The purpose of this investigation was to identify potential motivating factors of preservice music education majors choosing to pursue music education as a career. These data may be a way of developing a better understanding of possible predictor variables for students choosing to major in music education and ultimately join the profession. Additionally, researchers wanted to determine the points at which students tend to make career decisions. The survey was used as a way of identifying some characteristics that might be studied in greater detail in ongoing investigations.

The first two questions were used to establish a timetable of sorts for determining when this consequential decision was likely made. Based on the sample, adolescent years tend to be the time most participants indicated they made the decision to major in music. Interestingly, the decision to major specifically in music education occurred somewhat later in their educational career. The junior year of high school is a time when many students begin thinking about life after high school and, if higher education was an option for

them, where they would like to attend college/university and for what purpose. Eighty percent of the sample made the decision to major in music education during the junior year of high school or later. One possible explanation is that by the junior year, high school is no longer a "new experience." One could reasonably surmise that these students were in their second or third iteration of the primary performance ensemble. For instance, a junior in high school band has likely finished at least one if not two marching band seasons and may have established some semblance of perspective relative to what their band director does and what it might be like. By their senior year, they have experienced most aspects of their high school music program multiple times. This may be a plausible explanation when this repeated experience is paired with the decision-making process common at the end of the K-12 education system. In addition, the ongoing social interaction within a high school music peer group likely plays a role, but this issue was not part of the current study. The 24% who made the decision to pursue music education after high school may have been influenced by a variety of professional and social factors that begin to exert influence after leaving the K-12 environment. These data further support the findings of Madsen and Kelly (2002) and Allen's (2003) findings that "vocational identity" tends to become stronger over time. While this is counter to Councill's (2005) findings that career opinions were not affected by grade in school, it is likely that high school students and college students are probably in different stages of career identity development. This aspect bears further examination.

The next two questions pertained to possible discussions participants may have had with their previous music educators about majoring in music education specifically. Only a small number of respondents indicated that they had no discussions of any kind with their music teachers about music education as a profession. The vast majority indicated some form of conversation with various music educators about the profession of music education, with the overwhelming majority indicating their high school music teacher(s) facilitated this discourse. High school music educators are in the unique position of being in contact with students at a crucial decision-making time in students' lives.

Personal motivators identified in Question 5 tended to center around music and sharing music with others. Specifically, a substantial majority of the sample indicated that they want to help others develop a strong appreciation and liking for music. Similar to previous findings (Gillespie & Hamann, 1999; White, 1967), other statements also often chosen pertained to their love of music and the opportunity to share music with others. Over half of the respondents indicated that they had a strong music education model in their past and wanted to emulate that person. The fourth-ranked personal motivator, "I want to lead others," did not include music but is often seen as a necessary disposition for teachers in general. Over half of the participants indicated "I came from a great situation. I want to model my director." Taken together with the results of the previous question the role played by high school music educators in students' career decisions takes on particular importance.

Question 6 was designed to further emphasize the role of others in students' career choice process by broadly asking for individuals and groups who influenced the decision. As in previous research parent(s)/guardian(s) were cited most often as having an influence. However, nearly half of the respondents indicated that their private music instructor had an influence on their decision, slightly more so than other high school music teachers. There is little surprise that family is influential in the decision making process of career choice, and high school teachers connected with group music activities have long been seen as highly influential. The most interesting observation concerned how often respondents identified a private music instructor as having influenced their decision to pursue music education. Clearly, the influence of all music teachers encountered during adolescence plays an important role in choosing a career path in music education, but based on responses to Questions 4 and 6, the role of the private music instructor is one that deserves more attention in the music education community.

Having an opportunity to experience the act of teaching others is an integral part of music teacher education. Data from Question 7 show that only a small number of participants indicated having no opportunities to teach prior to entering college. A substantial number of respondents had some sort of teaching experience, with a majority of those indicating regular (weekly or daily) opportunities. Question 8 explored the specific types of teaching experiences respondents indicated they had prior to college. Approximately two-thirds of the respondents had some experience with running sectional rehearsals and over half had experience rehearsing an entire ensemble. Extant data suggest that past music experiences tend to be influential and, specifically, previous teaching experiences are important in the decision-making process (Bergee et al., 2001; Fredrickson & Burton, 2005; Gillespie & Hamann, 1999; Jones, 1970). One way high school music educators facilitate informed decision-making by their students is by offering precollege level students roles that involve them in teaching opportunities regularly (drum majors, section leaders, running sectionals, peer tutoring, etc.). A focus for future research in this aspect of music teacher influence should be the frequency of these opportunities and the level of involvement by mentor teachers in giving students feedback related to teaching.

The final question focused on participants' expected teaching specialization after earning a degree. Responses of anticipated teaching level appeared to be influenced by recency. A strong majority of participants anticipated teaching in the high school setting followed by middle school/junior high and then elementary school music. These respondents were most recently exposed to the high school setting and at a time when most were making the decision to major in music education. In addition to the data provided by this question, approximately half of the participants indicated in Question 5 that they matriculated from what they considered to be a good music program. Nearly half of respondents indicated their high school music teacher(s) was/were

influential in their deciding to major in music and to become a music educator. Since models and experiences likely play a pivotal role in these decisions as discussed, it is imperative that students in collegiate music education programs gain exposure to models of good music teaching and learning in elementary and middle school settings. Future research in this area might investigate the effects of these models on reported choice of teaching venue.

The current study looks at a small sample and any generalizations to larger populations should be made with caution. Still, it is clear from this and previous studies that music educators are important in recruiting students to join the profession. High school music educators and private music teachers in particular have a unique opportunity to influence students at a time when they are actively exploring options for their future. It appears that speaking to students about music education as a career and modeling good music teaching are responsibilities we dare not take lightly as a profession. More investigation is necessary to find specific relationships among the myriad variables that might predict a person's choice to become a music educator and better way to prepare them to make the decision. Recognizing predictors for success in music education before a student enters college, or early in the degree program, can help collegiate faculty to more effectively guide the career choices of young musicians.

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Table 1: *Survey Results for Introduction to Music Education Student Participants (N = 47)*

I. When did you decide to become a college music major? (check one response only)

2%	1	Elementary school
13%	6	Middle/Junior High School
11%	5	Freshman Year High School
11%	5	Sophomore Year High School
34%	16	Junior Year High School
19%	9	Senior Year High School
8%	4	After High School
2%	1	Don't know/Not sure

II. When did you decide to become a music education major? (check one response only)

2%	1	Elementary school
4%	2	Middle/Junior High School
4%	2	Freshman Year High School
8%	4	Sophomore Year High School
28%	13	Junior Year High School
28%	13	Senior Year High School
24%	11	After High School
2%	1	Don't know/Not sure

III. Did your music teachers talk to you about becoming a music educator? (check one response only)

11%	5	Not at all
15%	7	Rarely
36%	17	Sometimes
25%	12	Often
13%	6	Very often

IV. Which music teachers talked to you about being a teacher? (check all that apply)

8%	4	None Talked to Me		
15%	7	General Music Teacher		
		5 High School	1 Middle School/Jr. High	2 Elementary
25%	12	Middle School/Junior High Director		
		8 Band	1 Orchestra	4 Choir
74%	35	High School Director		
		19 Band	4 Orchestra	18 Choir
43%	20	Private Lesson Teacher		
		20 High School	4 Middle School/Jr. High	Elementary
15%	7	Other (please specify): **Private teacher in college, church music leaders, summer camp directors, piano accompanist, mother/father/stepmother, conductor of Christian orchestra, piano teacher**		

Note: **My MS/HS Band/Choir teachers were all one person**
Note: **My MS/HS Choir/General teachers were all the same person**
Note: **My HS Choir/Private teachers were all the same person**
Note: **MS BD did, HS BD said not a good idea**

V. Why do you want to be a music educator? (check all that apply)

59%	28	I came from a great situation. I want to model my director
19%	9	I came from a terrible situation. I want to make sure others don't have such an experience.
89%	42	I want to teach others to love music
85%	40	I want to teach others to make music
81%	38	I want to lead others
36%	17	I want job security
89%	42	I enjoy music; I want to help others do so
64%	30	I love working with children.
62%	29	Music is my life. I want to share it.
43%	20	I can't imagine doing anything else
6%	3	I really don't know; I just do
4%	2	Other (please specify):

I want to become a positive influence on children and adolescents.
I'm actually not sure that I do want to be a music educator, still struggling with that.

VI. Who influenced your decision? (check all that apply)

55%	26	Parent(s)/Guardian(s)
8%	4	Sibling(s)
17%	8	Other Relative(s)
11%	5	Elementary General Music Teacher
21%	10	Middle School/Jr. High/ El Band Director
17%	8	Middle School/Jr. High/El Choral Director
6%	3	Middle School/Jr. High/El Orchestra Director
43%	20	High School Band Director
43%	20	High School Choral Director
11%	5	High School Orchestral Director
47%	22	Private Music Teacher
24%	11	Other Teacher
11%	5	Guidance Counselor
34%	16	Peers/Friends
17%	8	Significant Other/Boyfriend/Girlfriend
15%	7	Community Musicians
34%	16	Higher Education Music Professors
28%	13	College Music Major Acquaintance(s)
11%	5	Professional Musician
8%	4	Other (please specify)

God, church musicians, Florida Young Artists Orchestra Conductor, Drum Corps Instructor

VII. Have you had opportunities to teach prior to entering college? (check one response only)

11%	5	No opportunity
24%	11	Yes, a few times.
9%	4	Yes, 5-10 times.
18%	8	Yes, more than 10 times.
38%	18	Yes, weekly or daily

VIII. Types of Prior Teaching Experiences (check all that apply)

11%	5	Have had no experiences
32%	15	Conducted performing group
59%	28	Rehearsed entire group
68%	32	Rehearsed sectionals
49%	23	Gave private lessons
54%	26	Tutored individuals in music
40%	19	Tutored individuals in subjects other than music
13%	6	Taught religious musical groups
15%	7	Taught non-musical students in religious settings
30%	14	Led music in service groups (scouts, camp, etc.)
45%	21	Taught in other settings

15%	7	Place of Worship
28%	13	Camp Counselor
8%	4	Community group, Scouts
4%	2	Swimming Instructor
15%	7	Other: **Softball, Puppets, Bible Study, Karate, dbl Reed Camp, Marching Band, Summer School**

IX. What do you anticipate that you will teach after graduation? (check all that apply)

8%	4	Music in early childhood (pre-K or earlier)			
34%	16	Elementary			
		12 General Music	1 Band	3 Orchestra	4 Choir
49%	23	Middle School/Junior High			
		7 General Music	10 Band	5 Orchestra	13 Choir
79%	37	High School			
		11 General Music	15 Band	10 Orchestra	19 Choir
64%	30	Private Lesson Teacher			
15%	7	Don't know/Not sure			
0%	0	Don't plan to teach			

X. Any other comments? (please specify)

Right now I am in my life and in school where I am experiencing new ideas and concepts to where I have not decided which exact age group I want to teach. All I know is that I WANT TO TEACH and I'll decide during student teaching which age group will fit me and what I work with best.

I am a freshman performance and education major and am still deciding what exactly to do.

I'll teach high school choir at a high school but other ages in church choir and camp.

In reference to questions IX, I don't (know) that I do plan to teach, but I might, and if I do, that's what I would want to teach.

Percussion specialist

I want to experience all levels of music, and see what each age bracket has to offer.

I think interviews are Really important for incoming music ed majors – interviews help find the students who are passionate about teaching and have a great teaching potential, even if their musical talent isn't at the same level as other auditioners.

Appendix A

Survey for Prospective Music Educators

Please do not put your name on this survey. Your answers will have no impact on your application or admission to the College of Music. Your answers will help us learn more, in a general way, about students who choose to major in music education. Please put the survey in the basket you will find at the general information table outside HMU 101.

I. When did you decide to become a college <u>music major</u>? (check one response only)

_____ Elementary school
_____ Middle/Junior High School
_____ Freshman Year High School
_____ Sophomore Year High School
_____ Junior Year High School
_____ Senior Year High School
_____ After High School
_____ Don't know/Not sure

II. When did you decide to become a music <u>education</u> major? (check one response only)

_____ Elementary school
_____ Middle/Junior High School
_____ Freshman Year High School
_____ Sophomore Year High School
_____ Junior Year High School
_____ Senior Year High School
_____ After High School
_____ Don't know/Not sure

III. Did your music teachers talk to you about becoming a music educator? (check one response only)

_____ Not at all
_____ Rarely
_____ Sometimes
_____ Often
_____ Very often

IV. Which music teachers talked to you about being a teacher? (check all that apply)

_____ None Talked to Me
_____ General Music Teacher
___ High School ___ Middle School/Jr. High ___ Elementary
_____ Middle School/Junior High Director
___ Band ___ Orchestra ___ Choir
_____ High School Director
___ Band ___ Orchestra ___ Choir
_____ Private Lesson Teacher
___ High School ___ Middle School/Jr. High ___ Elementary
_____ Other (please specify)

V. Why do you want to be a music educator? (check all that apply)

___ I came from a great situation. I want to model my director
___ I came from a terrible situation. I want to make sure others don't have such an experience.
___ I want to teach others to love music
___ I want to teach others to make music
___ I want to lead others
___ I want job security
___ I enjoy music; I want to help others do so.
___ I love working with children.
___ Music is my life. I want to share it.
___ I can't imagine doing anything else
___ I really don't know; I just do
___ Other (please specify)

VI. Who influenced your decision? (check all that apply)

_____ Parent(s)/Guardian(s)
_____ Sibling(s)
_____ Other Relative(s)
_____ Elementary General Music Teacher
_____ Middle School/Jr. High/ El Band Director
_____ Middle School/Jr. High/El Choral Director
_____ Middle School/Jr. High/El Orchestra Director
_____ High School Band Director
_____ High School Choral Director
_____ High School Orchestral Director
_____ Private Music Teacher
_____ Other Teacher
_____ Guidance Counselor
_____ Peers/Friends
_____ Significant Other/Boyfriend/Girlfriend
_____ Community Musicians
_____ Higher Education Music Professors
_____ College Music Major Acquaintance(s)
_____ Professional Musician
_____ Other (please specify)
_____
_____

VII. Have you had opportunities to teach prior to entering college? (check one response only)

_____ No opportunity
_____ Yes, a few times.
_____ Yes, 5-10 times.
_____ Yes, more than 10 times.
_____ Yes, weekly or daily

VIII. Types of <u>Prior</u> Teaching Experiences (check all that apply)

Teaching Experience(s)

_____ Have had no experiences
_____ Conducted performing group
_____ Rehearsed entire group
_____ Rehearsed sectionals
_____ Gave private lessons
_____ Tutored individuals in music
_____ Tutored individuals in subjects other than music
_____ Taught religious musical groups
_____ Taught non-musical students in religious settings
_____ Led music in service groups (scouts, camp, etc.)
_____ Taught in other settings
  _____ Place of Worship
  _____ Camp Counselor
  _____ Community group, Scouts
  _____ Swimming Instructor
  _____ Other _____
  _____
  (please specify)

IX. What do you anticipate that you will teach after graduation? (check all that apply)

_____ Music in early childhood (pre-K or earlier)
_____ Elementary
____ General Music ____ Band ____ Orchestra ____ Choir
_____ Middle School/Junior High
____ General Music ____ Band ____ Orchestra ____ Choir
_____ High School
____ General Music ____ Band ____ Orchestra ____ Choir
_____ Private Lesson Teacher
_____ Don't know/Not sure
_____ Don't plan to teach

X. Any other comments? (please specify)

The Effect of Vocal Attrition in Music Educators on Teaching Styles and Practices that Facilitate Student Learning

Mindy Fry
University of Missouri-Kansas City
April 2009
Committee Chairperson: Lindsey R. Williams

Thesis Abstract:

The purpose of this study was to examine the effect of vocal attrition in music educators on teaching styles and practices that facilitate student learning. Training received in undergraduate degree programs on vocal health education was also evaluated to see if it was sufficient to meet the demands of teaching. One hundred and eight music educators from the northeast region of Kansas, teaching elementary general music through secondary choral programs, were surveyed electronically. The results were evaluated to determine if vocal attrition in the teacher had an affect on student learning and whether or not training received in their bachelor's degree program was adequate for maintaining vocal health throughout a teaching career.

Just over forty-eight percent of all participants indicated that they sometimes experienced vocal attrition and that it had worsened over the course of their career. Fifty-percent of teachers felt that their ability to communicate clearly with their students was sometimes affected, but due to use of non-verbal cueing, classroom management was rarely impeded by teacher vocal attrition. Fifty-five percent of participants, however, felt that their capability for modeling proper vocal techniques was impaired at least quarterly, which in turn appeared to affect student singing abilities. When questioned over whether or not participants had acquired vocal health education in their undergraduate degree, fifty-six teachers specified that they had received training but that it had not been adequate in dealing with the vocal demands of music education. Teachers who had pursued further training in vocal health following their bachelor's degree suggested that it had been advantageous in preventing vocal attrition.

The Effect of Selected Nonmusical Factors on Adjudicators' Ratings of High School Solo Vocal Performances

Sandra Allison Howard
University of Missouri-Kansas City
May 2009
Committee Chairperson: Charles Robinson

Dissertation Abstract:

The primary purpose of this study was to examine the effect of differentiated (formal versus casual) performance attire and stage deportment on adjudicators' ratings of high school vocal solo performances. Of additional interest was the comparison of ratings assigned to audiovisual and audio-only stimulus presentation conditions.

High school choral students (n = 153), undergraduate music majors (n = 97), and graduate music majors (n = 32) participated as volunteer adjudicators (N = 282) for this investigation. Participants were tested in small groups at high school and university music classrooms. Participants rated solo vocal performances recorded on a stimulus DVD using a 6-point Likert-type scale (1 = weak; 6 = strong). Performances were displayed in four audiovisual presentation conditions involving differentiated combinations of performance attire and stage deportment (formal attire/formal deportment; formal attire/casual deportment; casual attire/formal deportment; and casual attire/casual deportment). In addition, one excerpt was presented in an audio-only presentation condition. Results found that performance quality ratings were significantly ($p < .05$) affected by soloists' performance attire, soloists' stage deportment, and adjudicators' academic level. A significant two-way interaction was found between adjudicator gender and academic level for comparisons of performance ratings assigned in four of the five stimulus presentation conditions. Also, a significant two-way interaction was found for ratings between adjudicator gender and academic level when differentiated attire (formal versus casual) was isolated from presentation conditions.

Significantly higher ($p < .05$) ratings were assigned to performances presented in the audio-only condition compared with those in audiovisual presentation conditions. Pearson correlations revealed no significant relationship between participants' actual assigned performance ratings and stated beliefs about the importance of performance attire, stage deportment, and visual factors in evaluating high school solo vocalists.

Music Practices and Teachers' Needs for Teaching Music in Public Preschools of South Korea

Youngae Lee
University of Missouri-Columbia
December 2008
Committee Chairperson: Wendy L. Sims

Dissertation Abstract:

The present study aimed to investigate the current music practices and teachers' needs for teaching music in public preschools of South Korea. The data were obtained from the public preschools in South Korea, and 66.7% (n = 606) of the total sample (N = 908) responded. The online survey consisted of 42 questions: 38 Likert-type scales or multiple-choice questions, and 4 open-ended. The 42 questions regarding the current music practices of public preschools were divided into seven categories according to question content. The majority of teachers stated that their lesson plans included group music activities more than twice a week, lasting less than 30 minutes on average. The most important reason indicated for including music in the curriculum was "enjoyment and recreation." Almost all teachers planned music curriculum with a weekly theme, and they chose songs to complement the theme. Singing and finger play were reported to be the most frequently occurring activities in public preschools. The teachers taught songs with piano accompaniment or a CD, and several common CD collections for music activities were revealed. Rhythmic instruments were the most accessible instruments in a music center, but a piano was the most frequently used by teachers during circle time in the classroom. Teachers identified a lack of ideas for music activity in preschools as a difficulty. The majority of participants requested more applicable and thorough preservice and inservice music training programs for preschool teachers.

Relationships Between Siblings Engaged in Music Study: An Exploratory Investigation

Chang Liu
University of Missouri-Columbia
May 2009
Committee Chairperson: Wendy L Sims

Dissertation Abstract:

The goal of this research was to investigate interactions between siblings with respect to music study. Data were collected from five two-child families, each with a younger sister and older brother between 7 and 15 years old, both of whom were taking private piano lessons. Participants included the children and both parents. The participants responded through (a) written questionnaires completed by each participant, (b) written self-surveys completed by each participant, and (c) interviews with the parents together and with each sibling alone. All interviews were videotaped, transcribed and coded by the researcher. Results indicated that there were patterns of sibling relationships in music study that are consistent with the research literature: helping, modeling, rivalry, and identification. Siblings were considered as companions, friends, helpers, and communicators in music study. The older sibling provided most of the music teaching and modeling for the younger sibling, and the younger sibling requested information often from the older sibling. All siblings maintained a positive attitude towards one another with regards to rivalry in music study. The results indicated that the identification of sibling relationships within the family context took on an important role in relation to siblings' music study. The evidence presently available indicated that many topics related to siblings relationships engaged in music study would be worthy of further study.

The Bethel College Concert Choir: A Mennonite Voice in Choral Music From 1932 to 2008

Renae Joi Schmidt Peters
University of Missouri-Kansas City
May 2009
Committee Chairperson: Charles Robinson

Thesis Abstract:

This study documents the history and development of the Bethel College Concert Choir at Bethel College in North Newton, Kansas. The researcher investigates (a) the choirs and events preceding the formation of the Bethel College Concert Choir; (b) the evolution of the Bethel College Concert Choir between 1932 and 2008; (c) the performances of the Bethel College Concert Choir; (d) the impact of the Bethel College Concert Choir on the Bethel College community and the broader Mennonite community; (e) the musical backgrounds and educational philosophies of the Bethel College Concert Choir directors; and (f) the changes that each conductor brought to the Bethel College Concert Choir. Interviews with directors of the Concert Choir, primary source material, and dissertations and journal articles about other collegiate choral ensembles reveal that the Bethel College Concert Choir has provided a model of choral excellence for Mennonite communities and the broader American choral community.

Effects of Grade Level, Gender, and Music Class Enrollment on Children's and Adolescents' Self-Reported Preference for Video Presentations of Selected Opera Excerpts

Angela Jo Larson Viebrock
University of Missouri-Kansas City
April 2009
Committee Chairperson: Lindsey R. Williams

Thesis Abstract:

The purpose of this study was to determine children's and adolescents' preference for opera as a function of students' grade level, gender, and music class enrollment. Students (N=276) in second-grade, fifth-grade, seventh-grade, and high school from a suburban community in the Midwest indicated preference for selected aspects of opera using a seven-point semantic differential. Each grade level watched video excerpts from professional performance of Mozart's *Don Giovanni* and indicated preference for selected aspects including costumes, sets, acting, and singing. No significant difference (p>.05) was found as a function of grade level. Results indicated significant difference in students' reported preference for opera as a function of gender and an interaction of grade level and gender effects. Areas for further research were discussed.

The Effects of Listening Conditions, Error Types, and Ensemble Textures on the Error Detection Skills of Undergraduate Instrumental Music Education Majors

Dori T. Waggoner
University of Missouri-Columbia
August 2009
Committee Chairperson: Wendy L. Sims

Dissertation Abstract:

This study was designed with three main purposes; to compare (a) the effects of two listening conditions on error detection accuracy, (b) error detection responses for rhythm errors and note errors, and (c) the influences of texture on error detection accuracy. Undergraduate music education students (n = 18) listened to purposefully incorrect performances of band literature in two formats, on recordings and while conducting a live ensemble. Note and rhythm errors were inserted into the musical excerpts to investigate responses to different types of errors. Half of the excerpts were played by the full ensemble and half by a single section. Participants served as their own controls by completing the error detection tasks under all conditions.

Results indicated that participants were significantly more successful in identifying errors in the recording condition than in the conducting condition. A significant interaction existed between the error type (note or rhythm) and the ensemble texture (single section or full ensemble). Participants more accurately identified rhythm errors in the single section texture, and diagnosed note errors more successfully in the full ensemble excerpts.

Criteria Identified by Selected Missouri High School Choral Directors for Placement of Concert Repertoire in Program Order

Claude R. Westfall
University of Missouri-Columbia
Summer 2008
Committee Chairperson: Wendy L. Sims

Dissertation Abstract:

This descriptive study was designed to investigate the criteria used by selected Missouri high school choral music educators for sequencing repertoire on concert programs. The purposes were to (a) examine choral music educators' rationales for placing each piece in order on a concert program, (b) identify criteria used by choral music educators when selecting the first and last song to place on a concert program, and (c) determine whether experienced, successful choral music educators employ common strategies when creating a concert program, which might be useful for consideration by other choral music educators.

Participants were Missouri high school choral music teachers (N=22), who had been recommended by a panel of university choral directors, based on the teachers' experience and success in the choral classroom. Participants were asked to consider the latest non-holiday concert presented by their top ensemble, and respond to a questionnaire about how they determined the concert order for each piece of literature performed. For each repertoire selection, they were instructed to provide their reasons for placing the piece in it's spot on the program and to explain how influential these reasons were in their decision making process. A list of possible categories to address was provided for their reference, including aesthetic elements, musical fit, teaching goals, quality of music, historical/multicultural considerations, and extra musical influences.

Results revealed that the surveyed directors based program order decisions on a wide diversity of rationales. Several were found to be common among the respondents, however, including (a) appeal to particular individuals or groups, (b) variety through the use of contrast and unity among the pieces, and (c) teaching goals related to intended student learning outcomes from the concert experience.

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 must be submitted through email to the editor, Joseph Parisi, at parisijo@umkc.edu. The manuscript must conform with the most recent style requirements set forth in the PUBLICATIONS MANUAL for the American Psychological Association (APA, Sixth 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.

Manuscripts are reviewed by the editorial board in a blind review process. To assure anonymity during the review process, the author's name and affiliation should appear on a separate cover page only. Authors are also requested to remove all identifying personal data from submitted articles. The collective recommendations of the reviewers determine whether a manuscript will be accepted for publication. Manuscripts submitted for review must not have been published nor be under consideration for publication elsewhere.

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