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The Effect of Free Movement on Preschool Students'

Preference for and Recognition of

Classical Music

Emilee K. Knell

A thesis submitted to the faculty of  
Brigham Young University  
in partial fulfillment of the requirements for the degree of

Master of Arts

Susan Kenney, Chair  
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August 2010

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## ABSTRACT

### The Effect of Free Movement on Preschool Students' Preference for and Recognition of Classical Music

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Master of Arts

This study was conducted in order to examine two questions: 1) Does free movement while listening to classical music influence a preschooler's preference for the music?; and 2) Does free movement while listening to classical music influence a preschooler's ability to answer recognition questions relative to the music? Subjects ( $N = 34$ ) were 4- to 5-year-old students from two intact classrooms at the BYU Child and Family Studies Laboratory Preschool. After being involved in six lessons utilizing two different classical pieces, each identified by a prominent instrument and experienced either Actively (with free movement) or Passively (while sitting or lying down), the students were interviewed relative to their music preferences and recognition. To strengthen the results, the process was repeated (termed Wave 1 and Wave 2) with different pieces in different experience orders.

Results of a Chi-Squared test of independence indicated no effect for Active or Passive exposure on piece preference in either wave. However, in Wave 1, pieces experienced Passively were significantly preferred to those experienced Actively, while the reverse was true in Wave 2. The Active exposure had no significant effect on the overall accuracy of recognition responses. Observational data is also included, which corroborates and extends statistical results.

Keywords: preschool students, music preference, music recognition, free movement

## ACKNOWLEDGMENTS

I would like to express my gratitude to my committee for their support and encouragement; the feedback I received from Dr. Dunn and Prof. Berrett was indispensable. I would like to give special thanks to my advisor, Susan Kenney, for guiding me through the thesis process, expressing great faith in me, and being a constant friend and mentor. I want to acknowledge the help of Scott Lee Morris and Burt Garfield with the statistical work. I want to thank my children – Jake, Isabella, Packer, Campbell, Rosetta, and Todd – for helping me and tolerating my many hours at the computer. Above all, I express gratitude to my husband Todd for his willingness to help me and for all he has done for our children when I was busy writing or studying – I could not have done this without him.

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## Introduction

“The basis of all musical advance is more comprehensive hearing. And the one support that every artist must have if he is to go on creating music is a world that listens” (Langer, 1953, p. 148).

When considering an early childhood music education, it is hard to overstate the importance of listening. Listening, of course, is the beginning of all music experience. Moog (1976) observed that even in 4- to 6-month-old children, hearing music elicited an affective response which was unrelated to physiological needs (p. 39). It would seem that we come into the world “hard-wired” for the musical experience. According to Hodges (2000), “The fact that babies respond to music at birth . . . gives strong evidence for the existence of neural mechanisms that seem ideally suited for processing musical information” (p. 19). The whole process of music participation begins with listening. As Bayless and Ramsey (1987) have observed, “Listening (aural perception) is embodied in every phase of every activity that contributes to musical understanding and growth. It is considered to be the foundation for all musical experiences” (p. 60).

### *Music Listening in Early Childhood*

If this is the case, a pertinent question would be: To what extent do teachers incorporate music listening into their early childhood music curriculum? A survey (Nardo, Custadero, Persellin & Fox, 2006) administered to NAEYC accredited preschools indicates that “76% of these centers offered children the chance to participate in music listening activities using shadow-play, dramatic play, or child-controlled manipulatives such as scarves or puppets” at least once a week (p. 287). However, it was also noted that “music was treated more often as ‘background’ to other activity, rather than as a foreground activity in its own right” (p. 287). This



section of the article did not identify the types of music listened to, but, in reference to movement in the classroom, the types of recordings identified were those specifically produced for children.

As the first phase of a study conducted in Slovenia (Denac, 2008), randomly selected Kindergarten teachers ( $N = 159$ ) were surveyed about their preferences in lesson planning; in phase two, 3 months of actual plans were submitted by the same teachers ( $N = 131$ ) and examined for musical content. Results of the survey indicated that the teachers' preferred area for lesson planning was language, followed by art and then movement. In the area of art, music was the second area of preference. Relative to music, teachers' actual plans most often included singing songs and listening to music. Again, the type of music used was not identified.

#### *Children's Music Activity Preferences*

These studies indicate that listening does occur, at least occasionally, in the early childhood classroom. A follow-up question would be: Do the children enjoy it? Bowles (1998) surveyed kindergarten through fifth-grade students and found that instrument playing was by far the preferred activity in all grade levels. Singing and listening ranked relatively well and were about equally well-liked across grade levels. It is also noteworthy that creative movement was preferred to dance across and within grade levels.

Additionally, Temmerman (2000) surveyed two classrooms of middle socio-economic preschool children in Australia. While the students involved ( $N = 51$ ) generally reported enjoying all aspects of the music-making process, findings of the study indicated that moving to music was the most preferred activity (followed by instrument playing), and that students especially enjoyed the opportunity to choose their own movements and expression rather than participating in choreographed or dictated movement. Overall findings showed that "preference

is given to involvement in musical learning that focuses on active participation of the learner in a variety of activities that are of interest to the learner” (p. 58). Singing and listening activities were less favored, apparently due to the less active and creative role generally assumed by the students.

In the third phase of the aforementioned Slovenian study (Denac, 2008), 176 children were interviewed and their parents surveyed about music activity preferences. When interviewed by their teachers, results indicated that most of the children were interested in all music activities, but the majority (42%) indicated a preference for dancing and movement to music, followed by singing (29%) and instrument playing (17%). The children in this study indicated that listening to music (4.5%) and creating new songs (4.5%) were their least favored activities. Interestingly, in the parent survey results, listening to music moved to the forefront as a preferred activity in the home, followed closely by dancing and movement, and singing. When children were asked which activities they would like to participate in with their parents, listening to music and singing songs ranked first, followed by dancing and movement. As the researcher points out, this preference for listening at home rather than at school may arise from the freedom to choose listening material. Denac, in this same study, surveyed the children concerning their music preferences and found that they preferred popular and popular folk music to classical music or folk songs. She points out that active listening in conjunction with less preferred music may help students "enjoy and take pleasure in listening to (such) music, to deepen their desire to listen to music, to influence their emotional sensitivity and to develop the basis of their aesthetic taste for music" (p. 443). Again, overall we see a preference by the students for active participation in the music process.

### *Preference and Music Listening*

While the results of these studies are mixed, it is interesting to note that listening is not consistently well-liked, while movement, and specifically free movement, seems to be a favored activity with young children. Listening can be especially critical in the early years, as a desired outcome would be the cultivation of preference for varied styles of music. Many studies have indicated that young children naturally exhibit a high degree of preference for virtually all music styles and genres, which preference decreases with age (Abel-Struth, 1981; Bonderant-Koehler, 1995; Brittin, 2000; Flowers, 1988; Greer, Dorow & Randall, 1974; Hargreaves & Castell, 1987; LeBlanc, Colman, McCrary, Sherrill & Malin, 1988; LeBlanc, Sims, Siivola & Obert, 1996; Mack, 1995; May, 1985; McCrary, 2000; Montgomery, 1996; Morrison & Lew, 2001; Peery & Peery, 1986; Price and Burnsed, 1987; Siebenaler, 1999; Sims, 1987; Trammell, 1977). Given this natural preference, the early years may be the ideal time for the introduction of non-popular styles of music, such as classical music. And listening to classical music while moving freely may serve to nurture the young child's preference for this type of music.

While many studies have examined the connection between music and movement with young children, not many have dealt with movement and music preference. Several have utilized choreographed or specific movements, examining their effect on perception of specific musical elements or skill development (Cohen, 1997; Gromko & Poorman, 1998; Lewis, 1988; Mueller, 1993; Sims, 1988; Sutter, 1999). Gromko and Russell (2002) examined both structured and unstructured movements and their effect on map-reading accuracy. Others have sought to identify the nature of young children's movements to music (Flohr & Brown, 1979; Kerchner, 2000; Metz, 1989; Sims, 1985a, 1985b). Researchers who have dealt with movement and preference are Sims (1986) and Moore (2002), in which studies they examined the effect of

choreographed movement with music listening, and traditional movement with singing, respectively, on music preference. A study by Fung and Gromko (2001) evaluated the effect of active (which included free movement activities with props and in sand) vs. passive exposure on 7- to 12-year-old students' preference for one of two pieces, as well as their invented notations. The active exposure was found to have a significant effect on the degree of preference for the more rhythmic and percussive of two Korean pieces.

There haven't been any studies to this date that have looked exclusively at preschool children in terms of free movement and preference for pieces of music. Although the Fung and Gromko (2001) study did involve movement and preference, the free movement activities performed by the students involved moving with props and moving hands in sand, which are very specific types of free movement. The study did involve some subjects of early childhood age (7- and 8-year-olds), but the majority of the students involved were older.

While movement to music may be a preferred activity of young children, it is possible it may interfere with the actual listening process. Sims (1991, 1995), in her research on music concept discriminations with children, found "most young children may not be ready for music listening tasks requiring attention to more than one element at a time" (1991, p. 298). While Sims research dealt specifically with identifying simultaneous musical elements, the same problem may present itself as young children are asked to attend to movement and music concurrently. While movement may indeed influence preference, the quality of the listening should not be compromised in the process. One indicator of successful listening would be the ability of students to answer recognition questions that related to the music.

### *Recognition and Music Listening*

Not many studies have been conducted involving young children and music recognition. Studies which have been done have examined the ability of subjects to recognize specific songs or pieces (Feierabend, Saunders, Holahan & Getnick, 1998; McGuire, 2002; Moog, 1976; Sims, 1986; Vongpaisal, Trehub & Schellenberg, 2006), themes or musical elements (Abel-Struth, 1981; Mack, 1995; Shiobara, 1994) and instruments (Fullard, 1967; Hufstader, 1977; Jetter, 1978; Mack, 1995; Wooderson & Small, 1981). Results generally indicate that recognition tasks are within the scope of abilities of preschool-age children.

### *Research Questions*

As can be seen from this introduction, researchers have been very interested in the topics of music listening, the effect of movement on listening, music preference, and music recognition. Some researchers have spent time examining early childhood populations in these various areas (e.g., Abel-Struth, 1981; Metz, 1989; Mack, 1995; Sims, 1986). In the present study, there are two areas that the researcher will explore.

Music preference and movement with music have been the topics of much research, but only a few studies have dealt with both (Fung & Gromko, 2001; Moore, 2002; Sims, 1986). As was mentioned previously, there has not been a study to date that focuses on a preschool-age population and investigates the possible connection between music preference and free movement. This leads to the first research question for this study: Does free movement while listening to classical music influence a preschooler's preference for the music?

While there has been some research done in the area of music recognition (e.g., Feierabend et al 1998; Mack, 1995; Sims, 1986), there has been much less done in this area than in the area of music preference. Only two of the studies (Shiobara, 1994; Sims, 1986) examined

a possible connection between moving while listening to music and recognition of music. The results were mixed, with Shiobara indicating a positive effect and Sims indicating no effect. Additionally, there is some evidence to suggest that young children may have a hard time attending to two simultaneous events while listening to music (Sims, 1991,1995). This leads to the second research question for this study: Does free movement while listening to classical music influence a preschooler's ability to answer recognition questions relative to the music?

## Literature Review

This literature review focuses on studies that have been done (a) in the area of music preference, and (b) in the area of music recognition and perception. In the area of music preference, citations fall into the subheadings of effect of music tempo, effect of music style, and effect of treatment. For the music recognition section, subheadings include recognition of specific songs or pieces, recognition of themes or musical elements, and recognition of instruments. A summary of the findings from the research occurs at the end of each subsection, and implications for the present study's research questions and method are drawn at the end of the preference and recognition sections.

In order to limit the review to the most pertinent studies, particularly in the area of preference where a great deal of work has been done, the citations here deal almost exclusively with post-1970 studies in which at least some of the subjects are 3- to 8-year-olds. Additionally, the citations focus on preference for music listened to rather than sung. Studies will be listed chronologically. While the effect of age and gender are not an identified category, these variables are examined throughout the studies.

### *Studies on Music Preference*

Preference is defined as “an act of choosing, esteeming, or giving advantage to one thing over another. Propensity toward something” (Price, 1986). Music preference, then, can involve choosing or esteeming one piece of music over another. A level of preference, or esteem, for a single piece may also be obtained. Various aspects of musical preference have been studied over the years for various age groups. These aspects include the effect on music preference of different variables, such as ethnicity (e.g., Morrison & Lew 2001), familiarity (e.g., Hargreaves

& Castell, 1987) and the use of video (e.g., Geringer & Cassidy, 1999). The studies in this section focus on the effect of music tempo, music style, and treatment on music preference.

*The effect of music tempo.* Sims (1987) tested the effect of tempo on the music preference selection of preschool through fourth-grade children. Two-hundred forty-seven children listened to five fast and five slow excerpts of piano works by Beethoven and Mozart and indicated their preference for the music by marking a smiling, neutral, or frowning face. There was a positive and significant tempo/preference relationship at every grade level except Kindergarten. Also, according to Sims, “attitude responses decrease with each successive age level, from the fairly high positive average responses of 4-year-olds to the somewhat neutral average responses of fourth graders” (p. 24).

Flowers (1988) conducted a study that examined the effects of teaching and learning experiences, tempo, and mode on the music preference selections of undergraduates and children; this summary will focus on the results relating to the children only. Two-hundred seventy-nine children from preschool through sixth grade participated in the study. The students were given a test to determine their preference for one of four orchestral pieces with the following descriptions – fast and major, fast and minor, slow and major, slow and minor. A scale with smiling, neutral, and frowning faces was used to indicate preference. Results indicated that all groups expressed a preference for the two fast selections over the two slow ones, while the mode – major or minor – appeared to have little effect on preference. In addition to indicating preference, the students were encouraged to describe the piece to which they listened. Results indicated that the 177 students who replied to this question referred mainly to the tempo, dynamics or mood of the piece.



LeBlanc, often in conjunction with other researchers, has conducted many studies on the effect of tempo on preference (LeBlanc, 1981; LeBlanc & Cote, 1983; LeBlanc & McCrary, 1983). In a study published in 1988, the only one that focuses on the effect of tempo and includes an early childhood population, LeBlanc, Colman, McCrary, Sherrill and Malin administered listening tests to 926 students in 45 classrooms. They were grouped into six age groups, ranging from third grade to college age. They listened to excerpts of 24 traditional jazz pieces with tempi classified in one of four groups – slow, moderately slow, moderately fast, and fast. Results indicated a significant preference for increasingly faster tempi at every age. Also of interest was the fact that overall preference scores were highest with the youngest listeners, decreased until seventh grade, and rose again as age increased.

In a study by Montgomery (1996), the effect of tempo on the preference choices of Kindergarten to eighth-grade students was examined, again using the smiling, neutral, and frowning face scale. Nine-hundred ninety-six subjects listened to 15 excerpts of orchestral music from early Romantic opera. These excerpts were divided into three tempo groupings – slow, moderate, and fast. Two moderate and three fast excerpts received the highest mean ratings and a positive significant relationship was found between tempo and preference; however, the differences in preference ratings according to tempo were significantly different only for grades 3-8. It was also determined that children in lower grades had higher overall mean ratings for the music than children in the upper grades.

Montgomery (1998) conducted a similar study in which she asked Kindergarten to sixth-grade subjects ( $N = 459$ ) to indicate their preferences for 12 Romantic opera excerpts in either fast, moderate, or slow tempo again using a 3-point smiling to frowning face scale. Students were also asked to indicate the tempo category to which they felt the piece belonged. Results

indicated that the relationship between perceived tempo and preference was significant with pieces perceived as having fast tempos receiving higher ratings. Again, this tempo-related preference increased with age, and was not as prevalent with the students in the youngest three grades. In some cases, the students identified a piece as having a fast tempo where there was a high level of melodic activity and not necessarily a fast tempo.

A study by Brittin (2000) examined the preferences of second- through sixth-grade students ( $N = 343$ ) for simple songs performed in varying styles. Preference was indicated on a 5-faces (smiling to frowning) Likert-type scale. Students were also asked to indicate the perceived tempo of the piece by choosing one of five categories, although all selections played were in the same tempo. Results indicated that second-grade students' preference ratings were the highest overall, that the more popular styles were most preferred, and that there was a correlation between faster perceived tempo and preference for a piece for third- through sixth-graders, but not for second-grade students. Songs with faster-moving accompaniments were perceived as having faster tempos.

There are several implications that can be drawn from these studies that examine the effect of tempo on preference. First, these studies indicate that children second-grade and younger demonstrate some preference for faster music, but indicate generally high levels of preference for music, regardless of tempo (Brittin, 2000; Flowers, 1988; LeBlanc et al, 1988; Montgomery, 1996, 1998; Sims, 1987). Second, pieces of music with a high-level of melodic activity (Montgomery, 1998) or faster-moving accompaniments (Brittin, 2000) may be perceived as having faster tempos when that is not actually the case. Third, the mode of the music – major or minor – does not appear to influence a student's preference for the music (Flowers, 1988). In looking at procedure, several of the researchers asked the children to indicate their preferences

using smiling to frowning face scales (Brittin, 2000; Flowers, 1988; Montgomery, 1996, 1998; Sims, 1987).

*The effect of different music styles.* In 1974, a team of researchers (Greer, Dorow, & Randall) conducted a study using a random sample of 134 subjects nursery school through sixth grade. The subjects were allowed to choose between rock, non-rock – which consisted of classical and show tune pieces – and white noise for a total of 600 seconds of listening. The amount of time spent listening to the examples was used as an indicator of preference. Results indicated that rock was significantly preferred to non-rock music in grades 2-6 with preference becoming stronger as age increased. There was no significant difference between time spent listening to rock and non-rock for nursery or first grade children. Total listening times also increased with age with a dramatic increase between nursery school and first grade.

May (1985) conducted a study involving 577 first-, second-, and third-grade students in an attempt to determine the music style preferences of the students. The subjects listened to 24 musical excerpts in many different styles and were asked to indicate their preference for the piece using a pictographic scale consisting of five different faces from smiling to frowning. The aural skills of the students were also evaluated to determine whether there was an interaction between aural discrimination and preference. Results indicated that all students showed strong preferences for “current popular music styles – rock, country & western, and easy listening pop – to the exclusion of other styles” (p. 19). This preference for popular music grew with advancing grade level. It was also determined that there was no connection between aural abilities and preference.

In another study, conducted by LeBlanc, Sims, Siivola and Obert (1996), the music preferences of 2,262 listeners ranging from 6- to 91-year-olds were measured. For the subjects

fifth-grade and older, a 5-point Likert-type scale was used to indicate preference level, while the younger subjects used a 5-point pictographic scale (smiling to frowning face). Examples included six pieces of varying tempos in the styles of art music, traditional jazz, and rock. Results showed that the youngest listeners had high preference levels that declined until the Junior High years and rose again to a high level with the college students, declining again slightly for the other adults. Surprisingly, preference ratings for all styles were comparatively similar at all age levels.

The Brittin study (2000) summarized in the previous section also examined the effect of style on preference. Results indicated that the more popular styles were most preferred.

Several implications can be drawn from this research dealing with the effect of different music styles on music preference. First, subjects generally indicate a preference for popular or rock styles of music (Brittin, 2000; Greer et al, 1974; May, 1985), although this was not exclusively the case (LeBlanc et al, 1996) and this effect was not documented in subjects younger than first grade. Second, younger students give generally higher positive preference ratings to music pieces than do older subjects, regardless of style (LeBlanc et al, 1996; May 1985. Third, aural perception skills appear to have no effect on preference (May, 1985). Once more, the use of a smiling to frowning face scale for indicating preference is prevalent with young children (Brittin, 2000; LeBlanc et al, 1996; May, 1985).

*The effect of treatment.* In a 1973 study, Greer, Dorow and Hanser examined the effect of discrimination training on the music selection of young children. In Experiment I, second- and third-grade subjects ( $N = 39$ ) were assigned to either an experimental or control group. Both groups completed a pretest and posttest that consisted of recording time spent listening to symphonic music, rock music, or white noise. The experimental group, in the meantime,

received music discrimination training in which they were taught to match the sounds of the four families of orchestral instruments with their corresponding pictures; the control group received non-music instruction. The symphonic examples used in the testing were also used in the lessons. Results indicated no difference in music selection behavior between the experimental and control groups. In Experiment II, nursery school children ( $N = 24$ ) with a mean age of 3.2 years were the subjects and the procedure was very similar to the first experiment with a greater control on the amount of teacher approval each subject received. Results indicated that: (a) adult approval was an effective reinforcer, (b) both groups preferred symphonic selections in the posttest, apparently due to adult approval, and (c) there was no significant difference in posttest symphonic selection between groups, although the experimental group's symphonic and total selection times significantly increased from pretest to posttest. It was noted that the three-year-old children acquired the ability to recognize the four compositions very quickly.

Trammell (1977) sought to ascertain whether repetition and guided listening influence second-grade students' preference for classical music. The subjects ( $N = 137$ ) were divided into three groups. Group R was exposed to musical selections using repetition and guided listening; Group N participated in guided listening without repetition; Group C participated in taking the pretest and posttest and in regular music classes, but received neither guidance nor repetition. The guided listening activities highlighted the following musical features: mood, tone color, rhythm, melody, and form. Preference was measured using the Kuhn Response figures – three faces indicating much enjoyment, little enjoyment and no enjoyment. Posttest results showed that Group C, the control group, indicated the highest levels of enjoyment of music, with Group R indicating less enjoyment than Group C, but more than Group N. Additionally, Group R and Group C showed increases in much enjoyment and decreases in no enjoyment responses, while it

was the reverse for Group N. These results suggest that guided listening and repetition have a more positive effect on student preference than does guided listening alone. It is also noteworthy that, overall, students indicated high levels of enjoyment on both pretests and posttests, suggesting that “second grade children are capable of responding positively to music of quality” (p. 59).

Callihan and Cummings (1985) conducted a small-scale observational study with 3- to 4-year-olds to determine whether “age- and stage-appropriate musical experiences” (p. 79) would influence the children’s recognition of and positive response to excerpts of classical music. Fifteen students participated in whole group lessons for part of the school year and then researchers focused on three individual students for the remainder of the year. Props, movement, and playscapes were used to help engage the children in the listening activities. The researchers concluded that “a planned program, a prepared environment, and appropriate hands-on props enhance learning and enjoyment” (p. 81). Positive teacher modeling was also cited as an important factor in the learning process.

In 1986, Peery and Peery conducted a study to determine whether exposure to classical music influenced preschool children’s preference for the music. Forty-five preschool children were involved, with 21 in the experimental group. The pretest involved all children listening to excerpts from six classical and two popular pieces of music and indicating their preference using a 5-point pictographic scale (smiling to frowning faces). All of the children indicated preference for all pieces in the pretest. The experimental group then participated in weekly 45-minute lessons over the next 10 months. The lessons included listening to classical music, singing themes, becoming familiar with the instruments of the orchestra, playing musical games, etc. Emphasis was on creating a positive, supportive learning environment. Results of the posttest,

which was identical to the pretest, indicated that the experimental group's rankings of the classical music pieces were significantly higher than those of the control group, due to the fact that the experimental group's scores remained high while the control group's scores decreased from pretest to posttest. Rankings for the popular pieces remained the same. These findings support the idea that children will like what they have a chance to hear.

In 1986, Sims conducted a study to determine the effect of high and low teacher affect and passive and active student activity on several variables, including student preference and piece recognition. The subjects ( $N = 94$ ) were 3- to 5-year-olds divided into small treatment groups for a series of four lessons. Two pieces of music were used in the lessons, and were subsequently paired with similar pieces for posttest procedures. Results indicated no difference between preference responses for the taught or untaught piece in each set, nor any difference due to treatment. Time spent listening was also used to measure preference and there was no significant difference found in the listening times for the various treatment groups or for the different music pieces. Recognition results are reported in the next section.

A study by Price and Burnsed (1987) examined the effect of traditional music teaching versus repeated listening on the preferences of 4- to 8-year-olds. The subjects ( $N = 25$ ) listened to 15 excerpts consisting of classical, jazz, and children's music, and indicated their preference for the music using a 3-point smiling to frowning face scale. They then participated in traditional music instruction for five weeks, took the test, experienced repeated exposure to one Mozart piece while participating in art activities for five weeks, took the test a third time, participated in another five weeks of music instruction, and took the test a final time. Results indicated that the only significant difference in scores occurred between the first and second test in the jazz category; scores were significantly lower, although this may have been a statistical anomaly.

Scores were consistently high for all music types, with pieces with the fastest tempos receiving the highest ratings.

Mack (1995) conducted a study with 3- to 5-year-olds ( $N = 60$ ) to determine whether the use of a picture book and/or instrument pictures while listening to *Peter and the Wolf* affected the students' attentiveness, attitude, instrument identification ability or memory for the musical themes. The results indicated that there was no effect due to the treatments on any of the dependent variables. It should be noted that most of the students indicated a high level of preference for the music, again using the smiling to frowning face Likert-type scale.

In a 2001 study, Fung and Gromko examined the effect of active vs. passive listening on the quality of the children's invented notations and their preferences for music from an unfamiliar culture. It was assumed that the quality of the notations would be an indicator of the subject's perception of the music. Subjects ( $N = 35$ ) were 7- to 12-year-olds and were assigned to either a passive or active listening condition. The passive condition consisted of sitting or lying while listening, while the active groups were first invited to spontaneously move "the way the music goes" (p. 132) using various props and then invited to move with their hands in a container of sand. Both groups were then invited to "draw the way the music goes" (p. 132). The pieces chosen were contrasting Korean instrumental pieces. Results indicated that the active listening condition appeared to affect student preference, as 94% of the active group preferred the more rhythmic, percussive Korean piece, while only 53% of the passive group indicated the same preference. Results relating to perception are reported in the next section.

Several implications can be drawn from these studies dealing with the effect of treatment on preference. First, adult approval and positive teacher modeling may (Callihan & Cummings, 1985; Greer et al, 1973; Peery & Peery, 1986) or may not (Sims, 1986) influence students'



preferences. Second, musical training or instruction may (Peery & Peery, 1986) or may not (Greer et al, 1973; Mack, 1995 ) influence preference. Third, repetition alone does not appear to influence music preference (Price & Burnsed, 1987), nor does guided listening (Trammell, 1977), but the combination may have an effect on preference (Trammell, 1977). Lastly, active participation while listening to music may (Fung & Gromko, 2001) or may not (Sims, 1986) influence preference. Again, the use of the pictographic scale is prevalent and overall preference ratings are high for early childhood subjects (Mack, 1995; Peery & Peery, 1986; Price & Burnsed, 1987; Trammell, 1977).

*Implications for this study.* Looking back at the review of preference literature, implications drawn that are most pertinent to the present study include the fact that young children indicate high levels of preference for many types of music, including classical music (Brittin, 2000; Flowers, 1988; Greer et al, 1974; LeBlanc et al, 1988; LeBlanc et al, 1996; Mack, 1995; May, 1985; Montgomery, 1996; Peery & Peery, 1986; Price & Burnsed, 1987; Sims, 1987; Trammell, 1977). Tempo (Brittin, 2000; Flowers, 1988; LeBlanc et al, 1988; Montgomery, 1996, 1998; Sims, 1987) and mode (Flowers, 1988) appear to have little or no effect on music preference with children of preschool age. Additionally, it appears that young children can express their level of preference for music through the use of a pictographic scale consisting of a smiling face for the highest level of preference to a frowning face for no preference (Brittin, 2000; Flowers, 1988; LeBlanc et al, 1996; Mack, 1995; May, 1985; Montgomery, 1996, 1998; Peery & Peery, 1986; Price & Burnsed, 1987; Sims, 1987; Trammell, 1977). As will be seen, these ideas will be utilized in the design of the present study.

It is interesting to note that, while all of the foregoing preference studies sought to measure levels of preference for music, only a few attempted to determine the effect of a given

treatment on preference for pieces of music (Callihan & Cummings, 1985; Greer et al, 1973; Fung & Gromko, 2001; Mack, 1995; Peery & Peery, 1986; Price & Burnsed, 1987; Sims, 1986; Trammell, 1977). Of those that examined a treatment, only two focused on the effect of movement on preference, one using choreographed movements (Sims, 1986) and one free movement (Fung & Gromko, 2001). Sims found no effect for movement on preference, while Fung & Gromko discovered a positive effect. The present study will examine the possible connection between movement and preference further in addressing the first research question: Does free movement while listening to classical music influence a preschooler's preference for the music? (see Method section).

### *Studies on Recognition of Music*

Recognition deals with the identification of something previously experienced. Music recognition, for the purposes of this study, is the identification of music previously heard. Not much research has been done in the area of music recognition with early childhood subjects. However, this section will focus on the areas that have been covered, which are recognition of specific songs or pieces, themes or musical elements, and instruments.

*Recognition of specific songs or pieces.* Moog (1976) conducted an extensive study in Germany on musical development in the early years. Involving 500 children, his findings relative to recognition indicate that 40% of the 4-year-olds and 75% of the 5-year-olds were able to identify a song they knew when it was presented without words.

The Sims (1986) study cited previously dealt with the effect of high versus low teacher affect and passive versus active listening condition on several variables. The subjects ( $N = 94$ ) were 3- to 5-year-olds divided into small treatment groups for a series of four lessons. Results

reported no difference between ability to recognize taught or untaught pieces due to treatment group, but found that older subjects' responses were more accurate than younger.

A team of researchers (Feierabend, Saunders, Holahan & Getnick, 1998) sought to determine the effect of words on the song recognition ability of 3- to 5-year-olds. The subjects ( $N = 75$ ) were involved in listening to original, short compositions on a recording at home. Songs with related melodies and songs with unrelated melodies were included. Some children listened to the songs with lyrics, some with lyrics and a neutral syllable, and some with only the neutral syllable. They all then listened to the pieces without the lyrics and were asked to identify the piece by pointing to a related picture. Results indicated that those who had heard the songs with lyrics were more successful in identifying the pieces. Songs with melodies that were distinct rather than related were easier to recognize.

Vongpaisal, Trehub and Schellenberg (2006) conducted several experiments that compared the song and pitch change recognition abilities of normal-hearing children and teens with the abilities of adolescents with cochlear implants. Not all of the results obtained are pertinent to the present study, but results did indicate that 5- to 18-year-old normal-hearing subjects were significantly successful in identifying familiar popular songs in their original (vocal + instrumental), original instrumental, and synthesized melody versions, although identification in the latter condition was less often achieved.

There are several implications that can be drawn from these studies on the recognition of songs or pieces of music. First, young children can identify songs or music they are familiar with (Feierabend et al, 1998; Moog, 1976; Vongpaisal et al, 2006) but cannot always distinguish them from pieces that are similar (Feierabend et al, 1998; Sims, 1986). Second, if the music to be identified was originally heard with lyrics, recognition tends to be easier, even when the lyrics

are absent (Feierabend et al, 1998; Moog, 1976; Vongpaisal et al, 2006). Third, age may be a factor in recognition, with 5-year-old subjects performing better than 3- or 4-year-old subjects (Moog, 1976; Sims, 1986).

*Recognition of themes or musical elements.* An experiment by Abel-Struth (1981) sought to discover the effect of training on audio-analytical ability. The 5- to 7-year-old subjects were asked to identify musical themes as a signal-theme, crescendo-decrescendo-theme, or a cantabile-theme. The pretest indicated high levels of success for the subjects, particularly with the crescendo-decrescendo-theme identification. An experimental group then received training while the control group did not and then both groups were posttested. Results indicated that there was a significant difference in improvement for the signal-theme and cantabile-theme identification for the experimental group. There was no significant difference between the two group's scores for crescendo-decrescendo-theme identification, but there was a significant difference between the pretest and posttest scores of the experimental group and not the control group.

Shiobara (1994) conducted a study with 7- to 8-year-old subjects ( $N = 16$ ) in England and Japan to determine whether movement to music was more effective than drawing to music in helping students identify musical events as they listened to music. The eight pieces used were from the Western classical tradition. Students received instruction, which included listening with movement or drawing alternately, and then were asked, in individual interviews, to indicate, via their choice of picture cards depicting gestures, what was happening in the music. Results indicated that students chose the appropriate cards more often when they had experienced the piece with movement rather than drawing.

As was mentioned previously, Mack (1995), in her study involving 3- to 5-year-olds, found no effect for the use of a picture book or instrument pictures on memory for themes or instrument identification in the piece *Peter and the Wolf*. However, the researcher notes that the instrument pictures did appear to be “an effective condition for teaching instrument identification” (p. 79).

A study by Gromko and Poorman (1998) investigated the effect of perceptual-motor performance on the ability of students to perceive form. Subjects ( $N = 29$ ) were 7- to 12-year-olds and were divided into two groups. The music piece used was Gershwin’s *Prelude No. 3*. The map-reading group ( $n = 15$ ) listened and followed an iconic listening guide and the perceptual-motor group ( $n = 14$ ) mirrored the teacher in performing kinesthetic analogues and then assembled the same iconic listening guide. All students were given a test and asked to identify whether the motives in the music stayed the same or were different, and whether they reoccurred. Results indicated that those in the perceptual-motor group performed significantly better on the test than did those in the map-reading group. Test results were also significantly higher for older students in the map-reading group while there was no significant difference due to age for students in the perceptual-motor group.

Sutter (1999) replicated Gromko and Poorman’s study, using a bigger sample ( $N = 353$ ) with 7- to 14-year-olds, including a control group, and using a pretest and posttest for form perception. Results included the fact that the perceptual-motor condition caused the greatest gains in test scores from pretest to posttest for all age groups.

The results of the study by Fung and Gromko (2001) cited in the preference section included the fact that the 7- to 12-year-olds’ perceptions of rhythm and phrasing appeared to be

enhanced by listening actively to music. This conclusion was drawn from examining the invented notations of the subjects.

Several implications can be drawn from these studies on recognition of themes or musical elements in music. First, young students are capable of recognizing or perceiving themes and musical elements present in music (Abel-Struth, 1981; Fung & Gromko, 2001; Gromko & Poorman, 1998; Shiobara, 1994; Sutter, 1999). Second, training (Abel-Struth, 1981) and movement (Fung & Gromko, 2001; Gromko & Poorman, 1998; Shiobara, 1994; Sutter, 1999) may enhance a student's music recognition or perception ability. Third, the use of picture books and instrument pictures (Mack, 1995) did not appear to affect theme recognition.

*Recognition of instruments.* Fullard (1967) conducted a small-scale study involving 3- to 4-year-old subjects ( $N = 10$ ) to determine whether training would improve instrument sound recognition. Students received individual training, which consisted of matching an instrument with its sound by pointing to and naming the instrument. Subjects were rewarded with candy for correct answers. Results indicated a significant difference between pretest and posttest scores, which would suggest that students of this age can be taught to hear the difference in timbre between different instruments.

A study by Hufstader (1977) sought to identify a learning sequence for the concepts of timbre, rhythm, melodic pitch patterns, and harmony. Five-hundred ninety-six first-, third-, fifth-, and seventh-grade students were tested and it was determined that the skills examined developed in the aforementioned order. Results pertinent to the present study indicated that, by first grade, students were already skilled in distinguishing different timbres.

Jetter (1978) explored the ability of 4-year-olds to identify and label different music phenomena, including clarinet, trombone, and cello timbre, when the Aural-Visual Identification

Instruction model was used. Subjects ( $N = 61$ ) were from both high and low socioeconomic groups. Results indicated that 67% of students correctly identified 4-6 examples of trombone and clarinet, and 54% correctly identified 4-6 cello examples where there was a total of six items on each subtest. These results support the idea that children of this age can master these concepts. Socioeconomic background, sex, and age were not significantly related to achievement.

Wooderson and Small (1981) conducted a study to determine the ability of first- and second-grade students to identify instruments as they were heard. Subjects ( $N = 789$ ) were asked to identify which of two instruments displayed they heard. Instruments were paired with others of the same instrument family. Results indicated that second-grade students scored significantly higher than first-grade students on the tests. The results of this study also support the idea that students bring a substantial amount of knowledge with them to the music classroom.

These studies on instrument recognition point to several implications. First, young children can distinguish between different instrument timbres (Fullard, 1967; Hufstader, 1977; Jetter, 1978; Wooderson & Small, 1981). Second, students appear to bring some ability to distinguish timbre with them to the classroom (Hufstader, 1977; Wooderson & Small, 1981). Third, training appears to enhance instrument recognition ability (Fullard, 1967; Jetter, 1978). Fourth, instrument pictures may be an effective tool in helping students identify instruments (Fullard, 1967; Jetter, 1978; Mack, 1995; Wooderson & Small, 1981).

*Implications for this study.* Not a lot of studies have been done with young children in the area of music recognition. Implications pertinent to the present study include the idea that young children may be able to identify a song or music piece after they become familiar with it (Feierabend et al, 1998; Moog, 1976; Vongpaisal et al, 2006). Additionally, young children can distinguish between different instrument timbres (Fullard, 1967; Hufstader, 1977; Jetter, 1978;

Wooderson & Small, 1981) and instrument pictures may aid in this process (Fullard, 1967; Jetter, 1978; Mack, 1995; Wooderson & Small, 1981). These concepts will be utilized in the design of the present study.

It is clear from the literature that the effect of training and movement on recognition have been examined mostly in relationship to recognition of certain elements or themes in the music, which effect has been mostly positive (Abel-Struth, 1981; Fung & Gromko, 2001; Gromko & Poorman, 1998; Mack, 1995; Shiobara, 1994; Sutter, 1999). However, the Sims (1986) study did examine the effect of high and low teacher affect, and passive or active listening condition on children's recognition of music pieces, and found no effect for treatment on recognition. The recognition task in Sims' study consisted of asking the subjects to identify the piece they had been exposed to when it was paired with an unfamiliar, similar piece. A different approach to evaluating the possible effect of movement on recognition will be utilized in the present study in order to answer the second research question: Does free movement while listening to classical music influence a preschooler's ability to answer recognition questions relative to the music? (see Method section).



## Method

The research questions for this study are:

1. Does free movement while listening to classical music influence a preschooler's preference for the music?
2. Does free movement while listening to classical music influence a preschooler's ability to answer recognition questions relative to the music?

### *Subjects*

Subjects came from two different intact classes at the BYU Child and Family Studies Laboratory Preschool. There were 20 students in each class. Students at the preschool were mostly from families affiliated with the university as children of faculty/staff or students (81%), with the remaining 19% chosen from among community applicants. Consent forms were sent home with all 40 students and were returned (see Appendix A). More will be said in the Procedures section, but a little background is necessary now to understand how many students participated in the study. The study was conducted in two parts, which are labeled Wave 1 and Wave 2. Each Wave included six lessons – three lessons for each of the two pieces used in each Wave – followed by an individual interview. Subjects were interviewed if they were present for at least two out of the three lessons for each piece ( $N = 34$ ). Thirty-two students were interviewed in Wave 1, and 26 were interviewed in Wave 2. Two of the students interviewed in Wave 2 were not included in Wave 1. Of the total 34 students interviewed, 16 were female and 18 male. The age-range at the time the study began was 4 years to 5 years, 1 month.

No attempt was made to ascertain the individual musical backgrounds of the subjects, but a survey completed by the head teacher indicated that music activities in the classroom consisted of singing “current popular children’s music” on a daily basis as a transition activity, during the

large group instruction time in connection with large motor movement, and sometimes in connection with an interactive literature activity. Instrument playing was done only in connection with specific centers, although there was an array of sound-producing apparatus (i.e., pots and pans, pipe bells, etc.) hanging and available on the playground on a daily basis. Improvisation was limited to snapping and clapping activities, and the only musical elements that had been labeled in the classroom were loud/soft and fast/slow. The teacher indicated that quiet listening, including listening with any kind of movement, was limited.

### *Procedures*

The study was conducted in two parts, which are labeled Wave 1 and Wave 2. Each wave of the study consisted of six lessons and an interview, and took place over a three-week period, the first in November 2009 and the second in February 2010. Lessons were conducted on Monday and Tuesday of each week, with the individual interviews on the Wednesday immediately following the last lesson (see Table 1). The excerpts used in the lessons were from “Badinerie” from *Orchestra Suite No. 2 in B Minor* by Johann Sebastian Bach (1:27), “Presto” from *Concerto in A Minor* by Antonio Vivaldi (1:18), *Horn Concerto No. 2 in E flat* (3<sup>rd</sup> movement) by Wolfgang Amadeus Mozart (1:20), and *Trombone Concerto in D Major* (3<sup>rd</sup> movement) by Michael Haydn (1:07). Excerpt length was chosen to be long enough for the character of the piece and the prominent instrument to be heard without taxing the students’ attention. Each excerpt also ended at the completion of a musical idea. Two similar pieces were used in each wave of the study in an effort to prevent the piece itself from becoming a confounding variable. Paired pieces were from the same music period, and had the same tempo, meter, and tonality. Each piece was also chosen for the presence of a prominent instrument,

Table 1

*Order of Music Listening Excerpts with Type of Exposure*

WAVE 1	AM CLASS	PM CLASS
Day 1	1P	1A
Day 2	2A	2P
Day 3	1P	1A
Day 4	2A	2P
Day 5	1P	1A
Day 6	2A	2P
Day 7	Interviews	Interviews
WAVE 2	AM CLASS	PM CLASS
Day 1	3A	3P
Day 2	4P	4A
Day 3	3A	3P
Day 4	4P	4A
Day 5	3A	3P
Day 6	4P	4A
Day 7	Interviews	Interviews

## Key

P = passive participation (sitting or lying still)

A = active participation (free movement)

1 = Bach, 2 = Vivaldi, 3 = Mozart, 4 = Haydn

which was introduced in the lessons and helped facilitate the students' responses during the interviews.

### *Lessons*

The researcher taught all twelve of the lessons to each class. Each class – AM and PM – was taught using the same piece on the same day, one class with Active exposure, one with Passive. In Wave 1, the AM class received the Passive exposure first and the PM class received the Active exposure first. In Wave 2, this order was reversed.

The lessons were taught after the students finished their snack and before their parents picked them up during about a ten-minute window of time. This timing made it difficult to ascertain exactly how complete the students' involvement was, as some students ate long enough that they missed the beginning of the lessons, while occasionally others were picked up before the lesson was over.

The area of the room used for the lessons was the large group area, which included a large rug, with spots indicating where the children were to sit. The instructor sat on a chair in front of the class while teaching the lessons. When the students moved while listening to music, they were encouraged to spread out and use space in addition to that which the rug covered.

The lessons were scripted and copies of the scripts are in Appendix B. Deviations from the script occurred mostly in response to questions and comments from the students, or if there was a need for reiteration or clarification of guidelines. Positive feedback, labeled "Praise" in the lessons, was scripted in order to control the teacher approval variable. The teacher modeled either Active or Passive listening for the students as indicated in the lesson plans. It was determined by the instructor following the first week of lessons that it would help set the tone for

the lesson and engage the children if she sang with them as they gradually gathered to the rug. Songs used were *Old MacDonald*, *Five Little Speckled Frogs*, *Three Little Fishes*, *The Old Grey Cat*, and *If You're Happy and You Know It*.

During the lessons, students listened to the music using either an Active or Passive exposure. Active exposure included free movement choices by the students about how to move while listening to the music. Teacher prompts for the students were given, ranging from instructions to make their movements “match the way the music sounds,” to suggestions of moving high or low and moving specific body parts. Free movement prompts also included instructions for moving safely within the group and teacher modeling. While suggestions were made and modeling took place, the students were free to choose whether they incorporated these ideas or not as they moved.

Passive exposure did not include movement, but the students were asked assume specific body positions as they listened. These ranged from sitting still with hands in laps to lying down on the floor with eyes closed. These positions were defined and modeled by the teacher, and did not invite students choice.

The lessons included the use of pictures of the prominent instruments associated with each piece and pictures showing individual children in Active and Passive exposure. In any given lesson, only the pictures appropriate to the piece and the exposure experienced that day were used. These pictures were also utilized in the interviews to help facilitate the students' answers.

The excerpts of the music pieces were played on a small portable CD player available in the classroom. All of the lessons were filmed via a Sony Handycam on a tripod. Video data was collected to facilitate future observational analysis.

### *Interviews*

The researcher conducted all interviews with the students individually during a regular classroom period. Students were invited to leave the class and join the researcher in the hall directly outside the classroom for the interview. The student sat across from the researcher with a desk in between. Pictures of the instruments and children modeling Passive or Active exposure were used during the interview by the researcher, who placed them on the desk for the children to point to in answering the questions. A portable CD player was used to play the excerpts of the pieces. The interviews were filmed via a Sony Handycam on a tripod. This filming was done in order to verify answers and facilitate observational analysis. The first part of each piece was played; however, the length of the excerpt varied according to the presence of a cadence in the music. The lengths of the excerpts in seconds were as follows: Bach – 00:16, Vivaldi – 00:25, Mozart – 00:20, and Haydn – 00:24. The length of these excerpts was consistent with excerpt lengths used in other studies (e.g., LeBlanc et al, 1996; May, 1985; Sims, 1986). Each of the pieces was on a separate CD so as to give the students a visual cue as well each time they heard a different piece.

In each Wave, two different copies of the interview were used, the only difference being the order of the music excerpts. The two interviews in Wave 1 were labeled Interview #1 (Bach first) and #2 (Vivaldi first); for Wave 2 they were Interview #3 (Mozart first) and #4 (Haydn first). Interview #1 was conducted sixteen times and #2 sixteen times; interview #3 was conducted fourteen times and #4 twelve times. The interviews lasted approximately 7-10 minutes.

The interview forms are in Appendix C. Questions 1 and 3 in the interview dealt with recognition of the pieces, while questions 2, 4, and 5 dealt with preference. Question 1 had three

parts: (a) Have you heard this piece before? (If the student answered “yes,” parts b and c were asked); (b) (As appropriate pictures were placed on the desk), Which picture shows the instrument we listened for in this piece when we listened in class?; and (c) (As appropriate pictures were placed on the desk), Which of these pictures shows what we did while we listened to this music in class? Question 2 dealt with the same piece and asked the student to identify their level of preference via a scale consisting of a smiling, neutral, and frowning face. Questions 3 and 4 mirrored 1 and 2, but dealt with the other piece of music used in the lessons for that Wave of the study. For Question 5, the excerpts of both pieces were played again as the appropriate instrument picture was placed on the desk. The students were then asked to indicate which piece they liked best. Lastly, one open-ended question was included, asking the students to indicate why they liked the piece they had chosen as their favorite.

## Results

### *Statistical Results*

The question related to preference – Does free movement while listening to classical music influence a preschooler’s preference for the music? – will be examined first. The responses to Questions 2, 4, and 5 are all preference-related, with question 5 dealing specifically with comparing the two pieces in each wave. Student responses to question 5 were used for analysis in a Chi-Squared test of independence testing piece preference as a function of Active or Passive exposure. The results of the test were insignificant in both waves of the study (Wave 1,  $p = .46$ , Wave 2,  $p = .49$ ; see Appendix D). This indicates that neither Active nor Passive exposure had a significant effect on piece preference.

However, a two-sample test of proportions comparing the total number of preference responses for pieces experienced in Active vs. Passive exposure showed that pieces experienced in the Passive condition were significantly preferred to those experienced in the Active condition in Wave 1 (20 vs. 12 responses,  $p = .02$ ). In Wave 2, pieces experienced in an Active condition were significantly preferred to those experienced in a Passive condition (18 vs. 8 responses,  $p < .01$ ; see Appendix E). Further, a Chi-Squared test of independence comparing the number of Active and Passive preference responses between Wave 1 and Wave 2 indicated that the difference was significant ( $p < .01$ ; see Appendix F).

Looking still at question 5 responses, it was found that there were 16 responses for both Vivaldi and Bach in Wave 1. However, in Wave 2, there were 17 responses for Mozart and 9 for Haydn. Setting a level of significance at the .05 level, a two-sample test of proportions indicated the preference for Mozart over Haydn was significant ( $p = .03$ ; see Appendix G).



Also related to preference were the responses to questions 2 and 4, in which the smiling, neutral, and frowning faces were used to indicate degree of preference for each piece. The number of responses in each category appears in Table 2. By far the majority of students indicated they liked each piece, with the percentage slightly higher in Wave 1 than Wave 2.

The second research question – Does free movement while listening to classical music effect a preschooler’s ability to answer recognition questions relative to the music? – will now be addressed. Turning to the results of the recognition questions, which are 1abc and 3abc in the interview, a test for differences in population means was conducted to determine whether there was a difference in the total number of correct responses to questions relating to the Active and Passive pieces in each Wave. There was no significant difference found for either Wave (Wave 1,  $p = .36$ , Wave 2,  $p = .43$ ; see Appendix H).

A pooled two sample t-test for difference in means was used to test the difference between the total number of accurate responses to the recognition questions in Wave 1 and Wave 2. The results indicated there was no significant difference ( $p = .09$ ; see Appendix I).

Table 3 shows the percentage of correct responses for each recognition question in each Wave. A two independent samples z-test for proportions was used for comparing the number of correct responses for each recognition question. The results indicated that there was a significant difference between the answers in Wave 1 and Wave 2 for questions 1b ( $p < .05$ ) and 3b ( $p < .05$ ; see Appendix J). (Z-tests are generally used for large sample sizes. It was used here because there is no equivalent t-test, but it should be noted that the results may be skewed by the smaller sample size).

Table 2

*Number of Responses to Questions 2 and 4*

<b>Wave 1</b>	<b>Like</b>	<b>Neutral</b>	<b>Dislike</b>	<b>Wave 2</b>	<b>Like</b>	<b>Neutral</b>	<b>Dislike</b>
<b>Bach</b>	26	4	2	<b>Mozart</b>	21	4	1
<b>Vivaldi</b>	24	5	3	<b>Haydn</b>	18	7	1
<b>Total</b>	50	9	5	<b>Total</b>	39	11	2
<b>Total %</b>	78	14	8	<b>Total %</b>	75	21	4

Table 3

*Total Percentage of Correct Responses for Recognition**Questions*

<b>Question #</b>	<b>Wave 1</b>	<b>Wave 2</b>
<b>1a</b>	94	96
<b>3a</b>	97	96
<b>1b</b>	67	44
<b>3b</b>	74	48
<b>1c</b>	67	52
<b>3c</b>	65	44

One open-ended question was included at the end of the interview, asking the subject to identify why they liked the piece that they chose as their favorite. Responses were recorded and categorized in Table 4, based on their content. The General Preference category includes answers such as, “Because I like it,” or “Because it sounds cool.” The Instrument category includes statements made about an instrument, whether accurate or not. The Active/Passive category

Table 4

*Responses to the Open-Ended Question*

<b>Category</b>	<b>Wave 1</b>	<b>Wave 2</b>
<b>General Preference</b>	7	6
<b>Instrument</b>	11	5
<b>Active/Passive</b>	3	4
<b>Musical Terms</b>	0	6
<b>Unrelated</b>	3	2
<b>Ambiguous</b>	6	3
<b>Unintelligible</b>	2	0

includes statements about lying down or moving to the music, whether accurate or not. The Musical Terms category includes responses that focused on a musical aspect of the music, most often dynamics, such as, “Because it sounds loud,” whether accurate or not. The Unrelated category refers to responses that did not relate directly to the music, such as, “Because my mom loves that music sometimes.” The Ambiguous category includes responses that were vague or undecided, such as, “I can’t tell.” Finally, two responses were Unintelligible when viewing the video data.

*Observations*

Observations were made both on-site and via the video data collected. Observations relative to what occurred during both the Active and Passive exposure lessons include the following:

1) As each group participated in their first Active lesson, when instructed to move to the music, the participation of the students was minimal at best. Most moved very little, staying in

one spot, and attempting to imitate the instructor. The instructor was modeling on the periphery of the group, as moving through the group was not possible given the general lack of movement by the students.

2) As the Active lessons progressed in Wave 1, the students moved more and used the space more as they were encouraged to, although large motor movement was still minimal and a few students in each lesson chose to sit or stand rather than move. Modeling was done by the instructor, as well as student teachers. Beyond the first Active lessons, this modeling appeared to have minimal effect on the students' movement choices. Movement suggestions were given in some of the Active lessons, but no attempt was made to ascertain the degree to which these suggestions were incorporated in the movement choices of the students.

3) In Wave 2, there were a few hesitant students in the first Active lessons, but, overall, the movement was more energetic and involved more large motor movements. Although, for safety reasons, the children were instructed not to touch others while they were moving, the children seemed to want to assemble in small groups or couples.

4) During the Passive lessons in Wave 1, the students were generally very still and quiet while listening. In Wave 2, the students got a little more restless and generated more noise during the Passive lessons than they did in Wave 1, although, overall, they still seemed to listen well. In both waves during Passive listening, there were some students who seemed unable to keep themselves from moving, usually by pretending to playing an instrument or moving to the beat in some way. These types of movements seemed indicative of focused listening rather than distraction.

5) During the Active lessons, the more the students moved, the more noise they generated. Moving with a partner or in a small group increased the noise- level even more.

## Discussion

According to the results of the Chi-Squared test of independence, there was no effect for Passive or Active exposure on piece preference. However, in Wave 1, pieces experienced Passively were significantly preferred to those experienced Actively, while the reverse was true for Wave 2. As was observed, the students were hesitant to move during the first Active lessons. This hesitancy may have had its roots in the fact that the children had never been asked to move freely in the space before; the fact that the rug in the area had spots on it, on which the students were accustomed to sitting; and the fact that the space was big enough, but not overly accommodating. However, this hesitancy did not last. It was also observed that as the students gained experience with moving, they moved more readily and energetically when invited to do so in the lessons. Along with that, it was observed that the children were generally more still and attentive during the Passive lessons in Wave 1 and became increasingly restless during the Passive lessons in Wave 2.

These observations may explain some of what was reported in the statistical data. In Wave 1, the Passive piece was statistically preferred to the Active piece, and it was during Wave 1 that the students were most attentive during the Passive exposures and least participative during the Active exposures. In Wave 2, the Active piece was statistically preferred to the Passive, and it was during the Wave 2 lessons that the students were generally more involved during the Active exposures and increasingly restless during the Passive.

It was interesting to note the fact that, as the students gained experience moving, they appeared to pay very little attention to the modeling that was going on. This observation is supported by Metz (1989), who determined that teacher modeling was more effective in eliciting a music-related response when accompanied by describing and suggesting (p. 58) and by Sims

(1985b) who found that the modeling of dancers on TV had no effect on children's movement choices.

The students appeared to enjoy dancing in pairs or groups. This observation is supported by the findings of previous research as well. Metz observed that, "with maturity, modeling changed from being purely imitational to invitational or interactional in nature" (1989, p. 57). Moog also stated that, after the age of 18 months, children demonstrate a clear desire to "dance with someone" (1976, p. 41).

In taking a closer look at the responses to the open-ended preference question, it is interesting to note the differences between the responses in Wave 1 and Wave 2. While the number of responses in the General Preference, Unrelated, and Active/Passive categories is similar in both waves, there are some notable differences in the other categories. In Wave 2, there are half as many Ambiguous responses and less than half as many Instrument responses; in Wave 1, there were no responses involving Musical Terms, but in Wave 2, there were 6. There were also no Unintelligible responses in Wave 2. The change in the number of responses for the Ambiguous and Unintelligible categories may be due to the fact that the students were more comfortable with the interview process and had gained some maturity in the months between interviews. The shift away from references to Instruments to Musical Terms was likely due, at least in part, to the dynamic contrast evident in the excerpt played from the Mozart piece in Wave 2. Five of the six responses in the Musical Terms category refer to dynamics; the sixth response was, "Because it goes up high and down low," which may also have referred to the dynamics, as the melodic contrast in the excerpt is less obvious. Flowers (1988) also indicated that the students in her study mentioned dynamics in their open-ended responses to music. The breakdown of the six Musical Terms responses looks like this:

<u>Response</u>	<u>Piece preference</u>
“Because it’s loud”	Mozart
“It’s really loud and . . .”	Haydn
“Because it’s quieter”	Mozart
“Because it sounds loud”	Haydn
“Because it goes up high and down low”	Mozart
“I think I like the one that gets louder”	Haydn

The presence of this dynamic contrast in the Mozart may also explain the fact that significantly more students preferred Mozart over Haydn. However, there is no way to know this for certain.

Additionally, the fact that half of the students indicated that their preference was for Haydn and then mentioned the dynamics underscores the fact that results obtained from subjects in this age group should be viewed with caution. It is very difficult to know what they are hearing or to what they are responding. For example, a female subject during an interview commented on how she liked the “feathers” (which were the valves) on the French horn; this observation may have led her to choose the French horn in response to a question because of the “feathers” and not in response to what she had heard. Another example of this was observed in an interview when a female subject pointed to the picture of a girl moving to indicate that that is what she had done while listening to a piece, and then said, “I picked that one because I am a girl.” This same subject declared while listening to the Haydn trombone piece, “I think this one’s the trombone,” and then picked the French horn when asked to identify the prominent instrument, probably because she had incorrectly chosen the trombone for the Mozart piece before that. In general, the students appeared to understand that if they had chosen one picture

for a piece of music, the other picture must correspond to the remaining piece. This fact makes it hard to ascertain whether the Active exposure interfered with accuracy on the recognition questions or not; a student's response to the recognition questions could be the result of their memory, or could just be the result of the interview design. In other words, if a student was questioned about the Passive exposure piece first in the interview and answered accurately, they would likely get the answers right for the Active exposure piece simply by process of elimination.

The question of the response fidelity also arises when comparing the subjects' responses to questions 2 and 4 with their responses to question 5. Fidelity, in this case, is defined as an adherence to detail, and deals with accuracy or exactness. Most students chose the smiling face for questions 2 and 4 when asked to indicate their preference level. These results are consistent with many of the studies cited in the literature review (e.g., Montgomery, 1996; Sims, 1987; Trammell, 1977). There were only a few students whose responses to questions 2 and 4 differed – four in Wave 1 and seven in Wave 2. Of those, one subject in Wave 1 and four subjects in Wave 2 gave responses inconsistent with their stated piece preference in question 5. For example, one subject indicated a smiling face for the Mozart piece, a neutral face for the Haydn piece, and then chose the Haydn piece as the preferred piece. The fact that almost half of the students in this group made that error may call into question the accuracy of the smiling to frowning face scale in helping young children indicate their music preference level as well as the accuracy of asking young children to verbally indicate their favorite of two pieces.

As regards the recognition questions, the students had more accurate responses on these questions in Wave 1 than they did in Wave 2. The fact that there is a significant difference between the number of correct responses in Wave 1 and Wave 2 on questions 1b and 3b, which



deal with instrument recognition, may be explained by several factors. First, the participation of the students in Wave 2 was less consistent than in Wave 1. As it was a lab school, there were different lead teachers for the students in Wave 1 and Wave 2, and the first teacher was better about keeping the students on schedule than the second. Consequently, the researcher was often forced to begin the lessons in Wave 2 before several of the children had finished their snack and joined the group. This lack of structure may also have had an impact on the results of the study in general.

Second, the fact that the children were moving more (and generating more noise) during the Active exposure lessons in Wave 2, and were more restless and slightly noisier during the Passive exposures as well, may account for the difference in accuracy of responses. As was indicated earlier, the interview design was such that, although there was no apparent difference in accuracy of response due to exposure, it is very difficult to know if this was actually the case.

Third, and most probable, deals with the fact that the pieces chosen in Wave 2 both highlighted brass instruments with similar timbres. Both questions 1b and 3b ask the children to identify the instrument for which they listened in a given piece. In Wave 2, the pieces were the Mozart French horn piece and the Haydn trombone piece. The choice to use two different brass instrument pieces was made in an effort to keep one instrument from being more visually appealing during the interview process. For example, if the French horn piece had been paired with a clarinet piece, the fear was that the French horn would be visually more inviting, and students would indicate preference for French horn music simply because it looked “shinier” than the clarinet. The use of the two brass instruments, however, may have caused confusion for the students. This theory is supported by some of the results obtained in Wooderson and Small’s study (1981), as well as the study by Jetter (1978), who indicated that some students confused

the trombone for the French horn. This confusion may have been further enhanced by the fact that the pieces chosen were in keys only a half-step apart, making the range of pitch levels similar as well. Wooderson and Small (1981) noted the possibility of this type of confusion in their study, but drew no definite conclusion about it (p. 44).

## Summary and Conclusion

### *Summary*

This study was conducted in order to examine two research questions: 1) Does free movement while listening to classical music influence a preschooler's preference for the music? And 2) Does free movement while listening to classical music influence a preschooler's ability to answer recognition questions relative to the music? Subjects ( $N = 34$ ) were 4- to 5-year-old students from two intact classrooms at the BYU Child and Family Studies Laboratory Preschool. After being involved in six lessons utilizing two different classical pieces, each identified by a prominent instrument and experienced either Actively or Passively, the students were interviewed relative to their music preferences and recognition. The subjects participated in this process twice, called Wave 1 and Wave 2 for this study.

Relative to Research Question 1, a Chi-Squared test of independence indicated there was no effect of exposure on piece preference. However, in Wave 1, the Passively-experienced piece was significantly preferred to the Actively-experienced piece while the reverse was true for Wave 2. It was also found that the number of Active and Passive preference responses was significantly different between the two Waves of the study. Observational data supports these findings, in that the students seemed very comfortable and attentive while listening passively, particularly in Wave 1. Conversely, the students were reluctant at first to move during the Active exposure lessons, but participated more willingly and energetically as they gained experience, especially in Wave 2. It would seem that students need consistent opportunities to move in order to be comfortable doing so. This idea is supported in Moog's (1976) research, wherein he observes that, between the ages of 3 and 5, spontaneous movements to music decline until, at age 6, "children no longer respond to music with repetitive spontaneous movements" (p. 43).

Overall, the majority of students indicated that they liked all of the pieces used in the study as measured by the 3-point smiling to frowning face scale. This corroborates the findings of previous research ( Bonderant-Koehler, 1995; Brittin, 2000; Flowers, 1988; Greer et al, 1974; Hargreaves & Castell, 1987; LeBlanc et al, 1988; LeBlanc et al, 1996; Mack, 1995; May, 1985; McCrary, 2000; Montgomery, 1996; Morrison & Lew, 2001; Peery & Peery, 1986; Price & Burnsed, 1987; Siebenaler, 1999; Sims, 1987; Trammell, 1977). There were some notable inconsistencies between preference as indicated by this scale (responses to questions 2 and 4 of the interview) and the students' selection of a preferred piece when comparing the two different pieces played one right after the other (response to question 5 of the interview).

In the first Wave, the Bach and Vivaldi pieces were equally preferred, while, in Wave 2, the Mozart piece was significantly preferred to the Haydn piece. This may have been due, at least in part, to the dynamic contrast apparent in the Mozart excerpt used during the interview. The researcher observed that several students responded either physically (through a look of shock or heightened attention) or verbally to this contrast.

One open-ended question was asked relative to why a student's preferred piece was their favorite. Answers fell into one of the following categories: General Preference, Instrument, Active/Passive, Musical Terms, Ambiguous, Unrelated, or Unintelligible. Answers were similar between Waves, with a notable shift away from mentioning instruments in Wave 1 to dynamics-related responses in Wave 2. Again, this may have been due to the apparent dynamic contrast in the Mozart excerpt.

Relative to Research Question 2, dealing with recognition, results indicated that there was no effect for Active exposure on the ability of the students to answer the recognition questions correctly. However, the interview design may have had an influence on these results, as the

majority of students appeared to understand that if they chose one out of two pictures for the answer regarding the first piece in the interview, they should choose the other picture for the other piece. Therefore, if a student correctly identified the instrument associated with a Passively-experienced piece, and this piece came first in the interview, the students would likely pick the correct instrument for the Actively-experienced piece, simply by process of elimination. Additionally, the number of correct responses to the questions dealing with instrument identification was significantly different between Wave 1 and Wave 2, with the Wave 1 scores being higher. This was most likely due to the fact that the instruments highlighted in the pieces of Wave 2 had very similar timbres.

### *Suggestions for Teaching*

The importance of listening in the music education process is critical. “Listening to, analyzing, and describing music” is identified as one of the National Standards for Music Education by MENC (MENC, 2010). Young children have been shown to be particularly open to music of differing genres. If this proclivity can be nurtured by providing young children with meaningful listening opportunities involving a wide variety of musical styles, the students will then be prepared to engage in increasingly rich and diverse music experiences as they mature. Inviting young children to move while listening to music may be an effective way of generating interest in the music, as some studies have shown that young students particularly enjoy free movement to music (Denac, 2008; Temmerman, 2000). The results of this study hint at the fact that movement is more likely to be enjoyed and influence preference as students become experienced at moving. However, the findings of this study also indicate that passive listening may be effective and enjoyable for students of this age. In view of the overall positive response to the music selections used in this study, which findings are supported by the results of many

previous studies, teachers of preschool students may want to consider introducing music from many genres, including classical music, in the classroom.

### *Implications for Future Research*

Given the small, non-random sample used in this study, results are not generalizable to other preschool populations. Replication of this study with a larger, more diverse sample is called for and may yield clearer results. Also, a study that included additional Waves (three or more) may indicate more clearly whether preference related to Active exposure increases as students gain movement experience. A longitudinal study examining the effect of consistent movement and listening opportunities over time on music preference and/or recognition may also yield interesting results. Other questions for future research, generated by this study, include the following:

- Do young children prefer to listen to music passively or actively?
- What is the most effective way of determining the music preferences of preschool-age children?
- How might the desire to move with partners or in small groups be utilized when listening to music?
- To what degree do children incorporate suggested or modeled movement when listening to music?
- Would the acquisition of a “movement vocabulary” encourage students to move to music when they are invited to do so?
- What influence does the individual background and experience of the students have on music preference and/or recognition?

-Can young students distinguish between pieces that highlight instruments of similar timbres and/or pitch levels?

-Do the age or gender of preschool students affect music preference or recognition?

### *Closing*

In a world where music is playing in the background almost constantly, children need opportunities which pull it to the foreground and engage their attention. As Langer (1953) observed, “People learn to read and study with music – sometimes beautiful and powerful music – going on in the background. As they cultivate inattention or divided attention, music as such becomes more and more a mere psychological stimulant or sedative . . . , which they enjoy even during conversation. In this way they cultivate *passive hearing*, which is the very contradiction of listening. . . Anything that helps concentration and sustains the [musical] illusion – be it inward singing, following a half-comprehended score, or dreaming in dramatic images [or moving] – may be one’s personal way to understanding. For *listening* is the primary musical activity” (p. 147-148). Let us continue to discover what will best encourage real listening with young children, a skill which can open the doors to a musical life.

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## Appendix A: Consent Form

### **The Effect of Free Movement while Listening to Music on Preschoolers' Preference for and Recognition of Classical Music Pieces**

#### **Parental Permission Form**

##### **Introduction**

This research study is being conducted by Emilee Knell, a graduate student in music education at Brigham Young University, under the direction of Professor Susan Kenney. The purpose of the study is to determine whether free movement while listening to classical music influences a preschooler's preference for and recognition of the piece. Your child has been invited to participate through his/her enrollment in the two preschool sessions that have been targeted for this research.

##### **Procedures**

Your child will participate in 12 music listening lessons, approximately 10-15 minutes in length, involving four different classical music pieces. For two of the music selections, the children will be invited to move to the music as they listen; for the other two, they will be invited to lie still and listen. After the first six lessons, your child will participate in a 10-15 minute individual interview where he/she will be asked some questions about his/her recognition of and preference for the music selections. The interview process will be repeated again after the next six lessons. The researcher will conduct the lessons and the interviews. Both the lessons and the interviews will be filmed for viewing by the researcher for the sole purpose of analysis.

If you do not wish to have your child participate in the study, he/she will be involved in an alternative activity under the direction of the regular classroom teacher(s).

##### **Risks/Discomforts**

There are minimal to no risks associated with this study. However, there is always some possibility of a child falling or bumping into something when they move in the classroom. General instructions on how to move will be given in an attempt to minimize this risk. A child may also feel some self-consciousness when in the interview, although the researcher will make every attempt to keep the interview process comfortable and free of pressure. A student may discontinue participation in the study at any time.

##### **Benefits**

There are no direct benefits to the participants. It is hoped that this study will help determine whether moving to classical music enhances a child's understanding and enjoyment of the piece, giving teachers a better understanding of how to approach classical music in the early childhood classroom.

##### **Confidentiality**

All information provided will remain confidential and will only be reported as group data with no identifying information. All data, including interview notes, field notes, and video data, will be stored in a

locked office on campus. Raw data, including video data, will only be viewed by the researcher and advisor, and will be destroyed once the research is complete.

Any child whose parents do not give permission for them to be videotaped will be situated in the room so as not to be included in the group taping, and his/her individual interview will not be recorded.

### **Participation**

Participation in this study is voluntary. You have the right to withdraw at anytime or refuse to participate entirely without negative consequences. Withdrawal or refusal will not affect the child's standing at the preschool or the services they receive from BYU.

### **Questions about the Research**

If you have questions regarding this study, you may contact Emilee Knell at (801)228-7251 or [ekknell@yahoo.com](mailto:ekknell@yahoo.com).

### **Questions about your Rights as Research Participants**

If you have questions regarding your rights as a research participant, you may contact the BYU IRB Administrator, A-285 ASB, Brigham Young University, Provo, UT 84602, 801-422-1461, [irb@byu.edu](mailto:irb@byu.edu).

I, \_\_\_\_\_, the parent or guardian of \_\_\_\_\_, have

(Parent/Guardian Name)

(Student Name)

received, read, and understood a copy of the above consent form and agree to allow the aforementioned child to participate in the study.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Yes, I give permission for my child to be videotaped, according the videotaping procedures explained in the Procedures section.

No, I do not give permission for my child to be videotaped.



## Appendix B: Lesson Plans

## BACH PASSIVE DAY #1

(Greet the students)

Today I am going to play some music for you. The composer of this music, or the person who wrote this music, is Bach. Can you say Bach?

While we listen to this music, we are going to sit still with our hands in our lap. Make sure you are not talking so you can listen very carefully. There are several different instruments playing in this music, but the instrument that is easiest to hear is the flute. This is what a flute looks like. (Show a picture of a flute). See if you can hear the flute while you are listening. Here we go.

(Play music – point out flute).

Let's listen one more time. Did you hear the flute? Raise your hand if you heard it.

(Play music again).

How many of you heard the flute that time? (Praise their efforts) Can you remember who the composer was? Bach. Can you say Bach?

Thank you for your help today. I am going to come tomorrow and we'll listen to some different music.

## BACH PASSIVE DAY #3

(Greet students and sing as they gather)

Last week we listened to some music by Bach. Can you say Bach?

We are going to listen to the same music again today. This time while we listen, we will lie down on the floor and listen very quietly, like the person in this picture (show picture of person lying down). Maybe you will hear the flute again if you listen closely (show picture). Let's get ready – be sure to lie down in your own space and let your neighbor have their own space. Here we go.

(Play music – model lying down)

How many of you heard the flute? (Praise). I'm going to play it one more time. Be sure to keep listening quietly.

(Play music again – observe instead of modeling)

Did you hear the flute again? (Praise their efforts).

Thank you for your help today. I'll come again tomorrow and we'll listen to some other music.

### BACH PASSIVE DAY #5

(Greet students and sing as they gather)

Today we are going to listen to some music we have heard before by Bach. Can you say Bach?

Raise your hand if you remember what instrument we listened for in this music. (Accept responses). That's right – it was the flute. (Show the picture of a flute).

We are going to listen to Bach's music again today. We will lie down again, like the person in this picture (show picture), only this time we will close our eyes while we listen. Remember to listen for the flute. Let's get ready – find your own space (help them get situated) and be sure to close your eyes. When it's all quiet, I'll start the music.

(Play the music – model lying down and closing eyes).

Did you hear the flute? (Praise). Let's listen one more time and this time I'm going to watch to see if you are closing your eyes so get ready. (Encourage them to close their eyes as needed). Here we go.

(Play the music again – observe instead of modeling).

How many of you heard the flute that time? (Praise). Thank you for your help today. Tomorrow I'll come and we'll listen to some different music again.

### BACH ACTIVE DAY #1

(Greet the students)

Today I am going to play some music for you. The composer of this music, or the person who wrote this music, is Bach. Can you say Bach?

While we listen, we are going to move our bodies to the music, making our movements match the way the music sounds. You will have to listen closely so the music can tell you how to move. There are several different instruments playing in this music, but the instrument that is easiest to hear is the flute. This is what a flute looks like. (Show a picture of a flute). See if you can hear the flute while you are listening. Now stand up and find your own space. When the music starts, you start moving, and when the music stops, you stop also. Make sure not to touch any furniture or any other students while you are moving, and make sure you are listening and not talking so you will know how to move. Here we go.

(Play music – point out flute) Reminder – You can move however you want.

Did you stop when the music stopped? Did you hear the flute? Raise your hand if you heard it. I'm going to play the music one more time. Get ready to move. You can move however you want – you don't have to watch me. You can move around in the space however you want but just listen real closely to the music. (Praise their efforts).

(Play music again)

Did you stop when the music stopped? How many of you heard the flute that time? (Praise their efforts). Thank you for your help today. I'm going to come tomorrow and we will listen to some different music.

### BACH ACTIVE DAY #3

(Greet students and sing as they gather)

Last week we listened to some music by Bach. Can you say Bach?

We are going to listen to the same music again, and, again, I want you to listen for the flute. (Show a picture of a flute).

While you listen, I want you to move your body to the music again, making your movements match the way the music sounds. Here is a picture of someone moving to music (show picture). You don't have to stay in one spot on the carpet. You can move all through the space back here like this if you choose (demonstrate). You also might want to move your body up high while you're listening (demonstrate) or down low (demonstrate). You will have to listen closely so the music can tell you how to move. Now stand up and spread out and find your own space from which to start. When the music starts, you start moving, and when the music stops, you stop also. (Give this direction only as needed – “Make sure not to touch any furniture or any other students while you are moving, and make sure you are listening and not talking so you will know how to move.”) Here we go.

(Play music)

Did you stop when the music stopped? How many of you heard the flute? (Praise their efforts and reiterate movement directions as needed). I'm going to play the music one more time. Get ready to move when the music starts, and stop when the music stops.

(Play music again)

Did you stop when the music stopped? Did you hear the flute again? (Praise their efforts). Thank you for your help today. I'll come again tomorrow and we'll listen to some other music.

## BACH ACTIVE DAY #5

(Greet students and sing as they gather)

Today we are going to listen to some music we have heard before by Bach. Can you say Bach?

Raise your hand if you remember what instrument we listened for in this music by Bach. (Accept responses). That's right – it was the flute. (Show the picture of a flute).

Again, we are going to move while we listen to the music, like the person in this picture is doing (show picture). Remember, you don't have to stay in one spot; you can move through space like this (demonstrate). You may also want to move up high (demonstrate) or down low (demonstrate); you may want to move just your hands (demonstrate), or just your legs (demonstrate) or your whole body (demonstrate). You will have to listen closely so the music can tell you how to move. Now stand up and find your own space. (Help them get situated and review movement protocol as needed). When the music starts, you start moving, and when the music stops, you stop also. Here we go.

(Play music)

Did you stop when the music stopped? Did you hear the flute that time? (Praise). I'm going to play the music one more time. Get ready to move when the music starts, and stop when the music stops.

(Play music again)

Did you stop when the music stopped? How many of you heard the flute that time? (Praise). Thank you for your help today. Tomorrow I'll come and we'll listen to some different music again.

## VIVALDI PASSIVE DAY #2

(Greet the students)

Today I am going to play some more music for you. The composer of this music, or the person who wrote this music, is Vivaldi. Can you say Vivaldi?

While we listen to this music, we are going to sit still with our hands in our laps. Make sure you are not talking so you can listen very carefully. There are several different instruments playing in this music, but the instrument that is easiest to hear is the violin. This is what a violin looks like. (Show a picture of a violin). See if you can hear the violin while you are listening. Here we go.

(Play music) (Point out the violin).

Did you hear the violin? Raise your hand if you heard it. Let's listen one more time. (Play music again).

How many of you heard the violin that time? (Praise their efforts) Can you remember who the composer was? Vivaldi. Can you say Vivaldi?

Thank you for your help today. I'll see you again next week.

## VIVALDI PASSIVE DAY #4

(Greet the students and sing as they gather)

Last week we listened to some music by Vivaldi. Can you say Vivaldi?

We are going to listen to the same music again today. This time while we listen, we will lie down on the floor and listen very quietly, like the person in this picture (show picture of person lying down). Maybe you will hear the violin again if you listen closely (show picture). Let's get ready – be sure to lie down in your own space and let your neighbor have their own space. (Help them get situated as needed). Here we go.

(Play music – model lying down)

How many of you heard the violin? (Praise). I'm going to play it one more time. Be sure to keep listening quietly.

(Play music again – observe instead of model).

Did you hear the violin again? (Praise).

Thank you for your help today. I'll see you again next week.

## VIVALDI PASSIVE DAY #6

(Greet the students and sing as they gather)

Today we are going to listen to some music we have heard before by Vivaldi. Can you say Vivaldi?

Raise your hand if you remember what instrument we listened for in this music. (Accept responses). That's right – it was the violin. (Show the picture of a violin).

We are going to listen to Vivaldi's music again today. We will lie down again, like the person in this picture (show picture), only this time I want you to close your eyes while you listen. Remember to listen for the violin. Let's get ready – find your own space (help them get situated) and be sure to close your eyes. When it's all quiet, I'll start the music.

(Play the music – model lying down and closing eyes).

Did you hear the violin? (Praise). Let's listen one more time and this time I'm going to watch to see if you are closing your eyes so get ready. (Encourage them to close their eyes as needed). Here we go.

(Play the music again – observe instead of modeling).

How many of you heard the violin that time? (Praise). Thank you for your help today. When I come tomorrow, I'll have a different activity for you to do that I think you will like.

## VIVALDI ACTIVE DAY #2

(Greet the students)

Today I am going to play some more music for you. The composer of this music, or the person who wrote this music, is Vivaldi. Can you say Vivaldi?

While we listen, we are going to move our bodies to the music, making your movements match the way the music sounds. You will have to listen closely so the music can tell you how to move. Also, there are several different instruments playing in this music, but the instrument that is easiest to hear is the violin. This is what a violin looks like. (Show a picture of a violin). See if you can hear the violin while you are listening. Now stand up and find your own space. When the music starts, you start moving, and when the music stops, you stop also. Make sure not to touch any furniture or any other students while you are moving, and make sure you are listening and not talking so you will know how to move. Stay in this space (indicate the boundaries). Here we go.

(Play music) (Point out the violin)

Did you stop when the music stopped? Did you hear the violin? Raise your hand if you heard it. I'm going to play the music one more time. Get ready to move. You don't have to watch me – you can move however you want, but just listen closely to the music. (Praise their efforts).

(Play music again)

Did you stop when the music stopped? How many of you heard the violin that time? (Praise their efforts). Thank you for your help today. I'll see you again next week.

#### VIVALDI ACTIVE DAY #4

(Greet the students and sing as they gather)

Last week we listened to some music by Vivaldi. Can you say Vivaldi?

We are going to listen to the same music again, and, again, I want you to listen for the violin. This is what a violin looks like. (Show a picture of a violin).

While you listen, I want you to move your body to the music again, making your movements match the way the music sounds. Here is a picture of someone moving to music (show picture). You don't have to stay in one spot on the carpet. You can move all through the space back here like this if you choose (demonstrate). You also might want to move your body up high while you're listening (demonstrate) or down low (demonstrate). You will have to listen closely so the music can tell you how to move. Now stand up and spread out and find your own space from which to start. You don't have to stay there. When the music starts, you start moving, and when the music stops, you stop also. (Give this direction only as needed – “Make sure not to touch any furniture or any other students while you are moving, and make sure you are listening and not talking so you will know how to move.”) Here we go.

(Play music)

Did you stop when the music stopped? How many of you heard the flute? (Praise their efforts and reiterate movement directions as needed). I'm going to play the music one more time. Get ready to move when the music starts, and stop when the music stops.

(Play music again)

Did you stop when the music stopped? Did you hear the flute again? (Praise their efforts). Thank you for your help today. I'll see you again next week.

## VIVALDI ACTIVE DAY #6

(Greet the students and sing as they gather)

Today we are going to listen to some music we have heard before by Vivaldi. Can you say Vivaldi?

Raise your hand if you remember what instrument we listened for in this music by Vivaldi. (Accept responses). That's right – it was the violin. (Show the picture of a violin).

Again, we are going to move while we listen to the music, like the person in this picture is doing (show picture). Remember, you don't have to stay in one spot; you can move through space like this (demonstrate). You may also want to move up high (demonstrate) or down low (demonstrate); you may want to move just your hands (demonstrate), or just your legs (demonstrate) or your whole body (demonstrate). You will have to listen closely so the music can tell you how to move. Now stand up and find your own space from which to start. (Help them get situated and review movement protocol as needed). When the music starts, you start moving, and when the music stops, you stop also. Here we go.

(Play music)

Did you stop when the music stopped? Did you hear the violin that time? (Praise). I'm going to play the music one more time. Get ready to move when the music starts, and stop when the music stops.

(Play music again)

Did you stop when the music stopped? How many of you heard the violin that time? (Praise). Thank you for your help today. When I come tomorrow, I'll have a different activity for you to do that I think you will like.



### MOZART PASSIVE DAY #1

(Greet the students and sing as they gather)

Today I am going to play some music for you. The composer of this music, or the person who wrote this music, is Mozart. Can you say Mozart?

While we listen to this music, we are going to sit still with our hands in our lap. Make sure you are not talking so you can listen very carefully. There are several different instruments playing in this music, but the instrument that is easiest to hear is the French horn. This is what a French horn looks like. (Show a picture of a French horn). See if you can hear the French horn while you are listening. Here we go.

(Play music – point out French horn).

Did you hear the French horn? Raise your hand if you heard it. (Praise) Let's listen one more time.

(Play music again).

How many of you heard the French horn that time? (Praise their efforts) Can you remember who the composer was? Mozart. Can you say Mozart?

Thank you for your help today. I am going to come tomorrow and we'll listen to some different music.

### MOZART PASSIVE DAY #3

(Greet students and sing as they gather)

Last week we listened to some music by Mozart. Can you say Mozart?

We are going to listen to the same music again today. This time while we listen, we will lie down on the floor and listen very quietly, like the person in this picture (show picture of person lying down). Maybe you will hear the French horn again if you listen closely (show picture). Let's get ready – be sure to lie down in your own space and let your neighbor have their own space. Here we go.

(Play music – model lying down)

How many of you heard the French horn? (Praise). I'm going to play it one more time. Be sure to keep listening quietly.

(Play music again – observe instead of modeling)

Did you hear the French horn again? (Praise their efforts).

Thank you for your help today. I'll come again tomorrow and we'll listen to some other music.

### MOZART PASSIVE DAY #5

(Greet students and sing as they gather)

Today we are going to listen to some music we have heard before by Mozart. Can you say Mozart?

Raise your hand if you remember what instrument we listened for in this music. (Accept responses). That's right – it was the French horn. (Show the picture of a French horn).

While we listen, we will lie down again, like the person in this picture (show picture), only this time we will close our eyes while we listen. Remember to listen for the French horn. Let's get ready – find your own space (help them get situated) and be sure to close your eyes. When it's all quiet, I'll start the music.

(Play the music – model lying down and closing eyes).

Did you hear the French horn? (Praise). Let's listen one more time and this time I'm going to watch to see if you are closing your eyes so get ready. (Encourage them to close their eyes as needed). Here we go.

(Play the music again – observe instead of modeling).

How many of you heard the French horn that time? (Praise). Thank you for your help today. Tomorrow I'll come and we'll listen to some different music again.

### MOZART ACTIVE DAY #1

(Greet the students and sing as they gather)

Today I am going to play some music for you. The composer of this music, or the person who wrote this music, is Mozart. Can you say Mozart?

While we listen, we are going to move our bodies to the music, making our movements match the way the music sounds. You will have to listen closely so the music can tell you how to move. There are several different instruments playing in this music, but the instrument that is easiest to hear is the French horn. This is what a French horn looks like. (Show a picture of a French horn). See if you can hear the French horn while you are listening. Now stand up and find your own

space. When the music starts, you start moving, and when the music stops, you stop also. Make sure not to touch any furniture or any other students while you are moving, and make sure you are listening and not talking so you will know how to move. Here we go.

(Play music – point out French horn)

Did you stop when the music stopped? Did you hear the French horn? Raise your hand if you heard it. (Praise). Let's listen one more time. Get ready to move. (As needed – “You don't have to watch me – you can move however you want, but just listen closely to the music.”)

(Play music again)

Did you stop when the music stopped? How many of you heard the French horn that time? (Praise their efforts). Can you remember who the composer was? (Mozart) Can you say Mozart? Thank you for your help today. I'm going to come tomorrow and we will listen to some different music.

### MOZART ACTIVE DAY #3

(Greet students and sing as they gather)

Last week we listened to some music by Mozart. Can you say Mozart?

We are going to listen to the same music again, and, again, I want you to listen for the French horn. (Show a picture of a French horn).

While you listen, I want you to move your body to the music again, making your movements match the way the music sounds. Here is a picture of someone moving to music (show picture). You don't have to stay in one spot on the carpet. You can move all through the space back here like this if you choose (demonstrate). You also might want to move your body up high while you're listening (demonstrate) or down low (demonstrate). You will have to listen closely so the music can tell you how to move. Now stand up and spread out and find your own space from which to start. When the music starts, you start moving, and when the music stops, you stop also. (Give this direction only as needed – “Make sure not to touch any furniture or any other students while you are moving, and make sure you are listening and not talking so you will know how to move.”) Here we go.

(Play music)

Did you stop when the music stopped? How many of you heard the French horn? (Praise their efforts and reiterate movement directions as needed). I'm going to play the music one more time. Get ready to move when the music starts, and stop when the music stops.

(Play music again)

Did you stop when the music stopped? Did you hear the French horn again? (Praise their efforts). Thank you for your help today. I'll come again tomorrow and we'll listen to some other music.

### MOZART ACTIVE DAY #5

(Greet students and sing as they gather)

Today we are going to listen to some music we have heard before by Mozart. Can you say Mozart?

Raise your hand if you remember what instrument we listened for in this music. (Accept responses). That's right – it was the French horn. (Show the picture of a French horn).

Again, we are going to move while we listen to the music, like the person in this picture is doing (show picture). Remember, you don't have to stay in one spot; you can move through space like this (demonstrate). You may also want to move up high (demonstrate) or down low (demonstrate); you may want to move just your hands (demonstrate), or just your legs (demonstrate) or your whole body (demonstrate). You will have to listen closely so the music can tell you how to move. Now stand up and find your own space from which to start. (Help them get situated and review movement protocol as needed). When the music starts, you start moving, and when the music stops, you stop also. Here we go.

(Play music)

Did you stop when the music stopped? Did you hear the French horn that time? (Praise). I'm going to play the music one more time. Get ready to move when the music starts, and stop when the music stops.

(Play music again)

Did you stop when the music stopped? How many of you heard the French horn that time? (Praise). Thank you for your help today. Tomorrow I'll come and we'll listen to some different music again.

## HAYDN PASSIVE DAY #2

(Greet the students and sing as they gather)

Today I am going to play some more music for you. The composer of this music, or the person who wrote this music, is Haydn. Can you say Haydn?

While we listen to this music, we are going to sit still with our hands in our laps. Make sure you are not talking so you can listen very carefully. There are several different instruments playing in this music, but the instrument that is easiest to hear is the trombone. This is what a trombone looks like. (Show a picture of a trombone). See if you can hear the trombone while you are listening. Here we go.

(Play music) (Point out the trombone).

Did you hear the trombone? Raise your hand if you heard it. (Praise) Let's listen one more time.

(Play music again).

How many of you heard the trombone that time? (Praise their efforts) Can you remember who the composer was? Haydn. Can you say Haydn?

Thank you for your help today. I'll see you again next week.

## HAYDN PASSIVE DAY #4

(Greet the students and sing as they gather)

Last week we listened to some music by Haydn. Can you say Haydn?

We are going to listen to the same music again today.

This time while we listen, we will lie down on the floor and listen very quietly, like the person in this picture (show picture of person lying down). Maybe you will hear the trombone again if you listen closely (show picture). Let's get ready – be sure to lie down in your own space and let your neighbor have their own space. (Help them get situated as needed). Here we go.

(Play music – model lying down)

How many of you heard the trombone? (Praise). I'm going to play it one more time. Be sure to keep listening quietly.

(Play music again – observe instead of modeling).

Did you hear the trombone again? (Praise).

Thank you for your help today. I'll see you again next week.

### HAYDN PASSIVE DAY #6

(Greet the students and sing as they gather)

Today we are going to listen to some music we have heard before by Haydn. Can you say Haydn?

Raise your hand if you remember what instrument we listened for in this music. (Accept responses). That's right – it was the trombone. (Show the picture of a trombone).

While we listen, we will lie down again, like the person in this picture (show picture), only this time we will close our eyes while we listen. Remember to listen for the trombone. Let's get ready – find your own space (help them get situated) and be sure to close your eyes. When it's all quiet, I'll start the music.

(Play the music – model lying down and closing eyes).

Did you hear the trombone? (Praise). Let's listen one more time and this time I'm going to watch to see if you are closing your eyes so get ready. (Encourage them to close their eyes as needed). Here we go.

(Play the music again – observe instead of modeling).

How many of you heard the trombone that time? (Praise). Thank you for your help today. When I come tomorrow, I'll have a different activity for you to do that I think you will like.

### HAYDN ACTIVE DAY #2

(Greet the students and sing while they gather)

Today I am going to play some music for you. The composer of this music, or the person who wrote this music, is Haydn. Can you say Haydn?

While we listen, we are going to move our bodies to the music, making our movements match the way the music sounds. You will have to listen closely so the music can tell you how to move. There are several different instruments playing in this music, but the instrument that is easiest to hear is the trombone. This is what a trombone looks like. (Show a picture of a trombone). See if you can hear the trombone while you are listening. Now stand up and find your own space. When the music starts, you start moving, and when the music stops, you stop also. Make sure not

to touch any furniture or any other students while you are moving, and make sure you are listening and not talking so you will know how to move. Here we go.

(Play music) (Point out the trombone)

Did you stop when the music stopped? Did you hear the trombone? Raise your hand if you heard it. (Praise). Let's listen one more time. Get ready to move. (As needed – “You don't have to watch me – you can move however you want, but just listen closely to the music.”)

(Play music again)

Did you stop when the music stopped? How many of you heard the trombone that time? (Praise their efforts). Can you remember who the composer was? Haydn. Can you say Haydn? Thank you for your help today. I'll see you again next week.

#### HAYDN ACTIVE DAY #4

(Greet the students and sing as they gather)

Last week we listened to some music by Haydn. Can you say Haydn?

We are going to listen to the same music again, and, again, I want you to listen for the trombone. (Show a picture of a trombone).

While you listen, I want you to move your body to the music again, making your movements match the way the music sounds. Here is a picture of someone moving to music (show picture). You don't have to stay in one spot on the carpet. You can move all through the space back here like this if you choose (demonstrate). You also might want to move your body up high while you're listening (demonstrate) or down low (demonstrate). You will have to listen closely so the music can tell you how to move. Now stand up and spread out and find your own space from which to start. When the music starts, you start moving, and when the music stops, you stop also. (Give this direction only as needed – “Make sure not to touch any furniture or any other students while you are moving, and make sure you are listening and not talking so you will know how to move.”) Here we go.

(Play music)

Did you stop when the music stopped? How many of you heard the trombone? (Praise their efforts and reiterate movement directions as needed). I'm going to play the music one more time. Get ready to move when the music starts, and stop when the music stops.

(Play music again)

Did you stop when the music stopped? Did you hear the trombone again? (Praise their efforts). Thank you for your help today. I'll see you again next week.

### HAYDN ACTIVE DAY #6

(Greet the students and sing as they gather)

Today we are going to listen to some music we have heard before by Haydn. Can you say Haydn?

Raise your hand if you remember what instrument we listened for in this music. (Accept responses). That's right – it was the trombone. (Show the picture of a trombone).

Again, we are going to move while we listen to the music, like the person in this picture is doing (show picture). Remember, you don't have to stay in one spot; you can move through space like this (demonstrate). You may also want to move up high (demonstrate) or down low (demonstrate); you may want to move just your hands (demonstrate), or just your legs (demonstrate) or your whole body (demonstrate). You will have to listen closely so the music can tell you how to move. Now stand up and find your own space from which to start. (Help them get situated and review movement protocol as needed). When the music starts, you start moving, and when the music stops, you stop also. Here we go.

(Play music)

Did you stop when the music stopped? Did you hear the trombone that time? (Praise). I'm going to play the music one more time. Get ready to move when the music starts, and stop when the music stops.

(Play music again)

Did you stop when the music stopped? How many of you heard the trombone that time? (Praise). Thank you for your help today. When I come tomorrow, I'll have a different activity for you to do that I think you will like.



## Appendix C: Interviews

### Interview Questions – 1

“I am going to play part of some music for you and ask you a few questions about it. Here is the first piece.”

1) (Play 16 seconds of Bach)

a - “Have you heard this music before?” (If “yes,” respond with, “I have too. It is the piece by Bach we heard together in class.” Then ask questions b and c. If “no,” go to question 2).

b- (Show flute and violin) “Which picture shows the instrument we listened for in this piece when we listened in class?”

c- (Show a picture of a child moving and a picture of a child resting and ask), “Which of these pictures shows what we did while we listened to this music in class?”

(Give student a row of 3 faces from smiling to frowning to look at).

2) “These faces can help you show me how much you like this music. This face (smiling) means that you really like this music, this one (neutral) means that you think it is just OK, and this one (frowning) means that you don’t like it at all. Point to the face that shows how much you like the music I just played for you.”

(Thank the child for their responses).

3) “Now I will play part of some different music.”

(Play 25 seconds of Vivaldi)

a - “Have you heard this music before?” (If yes, respond with, “I have too. It is the piece by Vivaldi we heard together in class also.” Then ask questions b and c. If no, go to question 4).

b- (Show flute and violin) “Which picture shows the instrument we listened for in this piece when we listened in class?”

c- (Show a picture of a child moving and a picture of a child resting and ask), “Which of these pictures shows what we did while we listened to this music in class?”

4) (Show the student the row of faces again).

“Point to the face that shows how much you like this music I just played for you.”

5) “Now I will play part of each piece one more time. After you listen to both selections, tell me which music you like better.”

(Show flute) “This is the piece by Bach with the flute.”

(Play 16 seconds of the Bach).

(Show violin) “This is the piece by Vivaldi with the violin.”

(Play 26 seconds of the Vivaldi).

(Using the pictures which represent the pieces) “Which music do you like better?”

(If they say they liked both, say, “Pick the one that you like a little bit more.” If they still say both, say “Just pick one.”)

(Record answer)

“Oh. You like the (composer) piece the best. Can you tell me why you like that one the best?”

(Thank the student for their help).

## Interview Questions – 2

“I am going to play part of some music for you and ask you a few questions about it. Here is the first piece.”

1) (Play 25 seconds of Vivaldi)

a- “Have you heard this music before?” (If “yes,” respond with, “I have too. It is the piece by Vivaldi we heard together in class.” Then ask questions b and c. If “no,” go to question 2).

b- (Show flute and violin) “Which picture shows the instrument we listened for in this piece when we listened in class?”

c- (Show a picture of a child moving and a picture of a child resting and ask), “Which of these pictures shows what we did while we listened to this music in class?”

(Give student a row of 3 faces from smiling to frowning to look at).

2) “These faces can help you show me how much you like this music. This face (smiling) means that you really like this music, this one (neutral) means that you think it is just OK, and this one (frowning) means that you don’t like it at all. Point to the face that shows how much you like the music I just played for you.”

(Thank the child for their responses).

3) “Now I will play part of some different music.”

(Play 16 seconds of Bach)

a- “Have you heard this music before?” (If yes, respond with, “I have too. It is the piece by Bach we heard together in class also.” Then ask questions b and c. If no, go to question 4.)

b- (Show flute and violin) “Which picture shows the instrument we listened for in this piece when we listened in class?”

c- (Show a picture of a child moving and a picture of a child resting and ask), “Which of these pictures shows what we did while we listened to this music in class?”

4) (Show the student the row of faces again).

“Point to the face that shows how much you like this music I just played for you.”

5) “Now I will play part of each piece one more time. After you listen to both selections, tell me which music you like better.”

(Show violin) “This is the piece by Vivaldi with the violin.”

(Play 25 seconds of the Vivaldi).

(Show flute) “This is the piece by Bach with the flute.”

(Play 16 seconds of the Bach).

(Using the pictures which represent the pieces) “Which music do you like better?”

(If they say they liked both, say, “Pick the one that you like a little bit more.” If they still say both, say “Just pick one.”)

(Record answer)

“Oh. You like the (composer) piece the best. Can you tell me why you like that one the best?”

(Thank the student for their help).

### Interview Questions – 3

“I am going to play part of some music for you and ask you a few questions about it. Here is the first piece.”

1) (Play 20 seconds of Mozart)

a- “Have you heard this music before?” (If “yes,” respond with, “I have too. It is the piece by Mozart we heard together in class.” Then ask questions b and c. If “no,” go to question 2).

b- (Show French horn and trombone) “Which picture shows the instrument we listened for in this piece when we listened in class?”

c- (Show a picture of a child moving and a picture of a child resting and ask), “Which of these pictures shows what we did while we listened to this music in class?”

(Give student a row of 3 faces from smiling to frowning to look at).

2) “These faces can help you show me how much you like this music. This face (smiling) means that you really like this music, this one (neutral) means that you think it is just OK, and this one (frowning) means that you don’t like it at all. Point to the face that shows how much you like the music I just played for you.”

(Thank the child for their responses).

3) “Now I will play part of some different music.”

(Play 24 seconds of Haydn)

a- “Have you heard this music before?” (If yes, respond with, “I have too. It is the piece by Haydn we heard together in class also.” Then ask questions b and c. If no, go to question 4.)

b- (Show French horn and trombone) “Which picture shows the instrument we listened for in this piece when we listened in class?”

c- (Show a picture of a child moving and a picture of a child resting and ask), “Which of these pictures shows what we did while we listened to this music in class?”

4) (Show the student the row of faces again).

“Point to the face that shows how much you like this music I just played for you.”

5) “Now I will play part of each piece one more time. After you listen to both selections, tell me which music you like better.”

(Show French horn) “This is the piece by Mozart with the French horn.”

(Play 20 seconds of the Mozart).

(Show trombone) “This is the piece by Haydn with the trombone.”

(Play 24 seconds of the Haydn).

(Using the pictures which represent the pieces) “Which music do you like better?”

(If they say they liked both, say, “Pick the one that you like a little bit more.” If they still say both, say “Just pick one.”)

(Record answer)

“Oh. You like the (composer) piece the best. Can you tell me why you like that one the best?”

(Thank the student for their help).

### Interview Questions – 4

“I am going to play part of some music for you and ask you a few questions about it. Here is the first piece.”

1) (Play 24 seconds of Haydn)

a- “Have you heard this music before?” (If “yes,” respond with, “I have too. It is the piece by Haydn we heard together in class.” Then ask questions b and c. If “no,” go to question 2).

b- (Show French horn and trombone) “Which picture shows the instrument we listened for in this piece when we listened in class?”

c- (Show a picture of a child moving and a picture of a child resting and ask), “Which of these pictures shows what we did while we listened to this music in class?”

(Give student a row of 3 faces from smiling to frowning to look at).

2) “These faces can help you show me how much you like this music. This face (smiling) means that you really like this music, this one (neutral) means that you think it is just OK, and this one (frowning) means that you don’t like it at all. Point to the face that shows how much you like the music I just played for you.”

(Thank the child for their responses).

3) “Now I will play part of some different music.”

(Play 20 seconds of Mozart)

a- “Have you heard this music before?” (If yes, respond with, “I have too. It is the piece by Mozart we heard together in class also.” Then ask questions b and c. If no, go to question 4.)

b- (Show French horn and trombone) “Which picture shows the instrument we listened for in this piece when we listened in class?”

c- (Show a picture of a child moving and a picture of a child resting and ask), “Which of these pictures shows what we did while we listened to this music in class?”

4) (Show the student the row of faces again).

“Point to the face that shows how much you like this music I just played for you.”

5) “Now I will play part of each piece one more time. After you listen to both selections, tell me which music you like better.”

(Show trombone) “This is the piece by Haydn with the trombone.”

(Play 24 seconds of the Haydn).

(Show French horn) “This is the piece by Mozart with the French horn.”

(Play 20 seconds of the Mozart).

(Using the pictures which represent the pieces) “Which music do you like better?”

(If they say they liked both, say, “Pick the one that you like a little bit more.” If they still say both, say “Just pick one.”)

(Record answer)

“Oh. You like the (composer) piece the best. Can you tell me why you like that one the best?”

(Thank the student for their help).



## Appendix D: Piece Preference as a Function of Active or Passive Exposure

*Wave 1*

	Vivaldi	Bach		Expected Counts	
Active	7	5	12	6	6
Passive	9	11	20	10	10
	16	16	32		

ChiSqStat 0.53333  $p = .465$

*Wave 2*

	Mozart	Haydn		Expected Counts	
Active	11	7	18	11.7692	6.23077
Passive	6	2	8	5.23077	2.76923
	17	9	26		

ChiSqStat 0.47204  $p = .4920$

## Appendix E: Difference in Passive and Active Exposure Responses between Waves

	Wave 1	Wave 2
phat1	0.375	0.692308
phat2	0.625	0.307692
n1	32	26
n2	32	26
zstat	-2.06559	3.004626
p-value	0.0194	0.0013

## Appendix F: Passive and Active Exposure as a Function of Wave

	Wave 1	Wave 2		Expected Counts	
Active	12	18	30	16.55172	13.44828
Passive	20	8	28	12.55172	15.44828
	32	26	58		
ChiSqStat	10.8033	$p = 0.0010$			

## Appendix G: Preference for Mozart and Haydn

phat1	0.653846
phat2	0.346154
n1	16
n2	16
zstat	1.829318
p-value	0.0337

## Appendix H: Effect of Active or Passive Exposure on Recognition Responses

Wave 1		Wave 2	
2.333333	0.574713	1.92	0.576667
2.4	0.455172	1.96	0.623333
Sp=	0.717595	Sp=	0.774597
SE(Y2Y1)	0.185282	SE(Y2-Y1)	0.214834
Tstat	0.359811	Tstat	0.18619
P-value	0.3601	P-value	0.4265

## Appendix I: Difference between Recognition Responses in Wave 1 and Wave 2

Wave 1	2.366667	0.507345	n1=30
Wave 2	1.94	0.588163	n2=25
Sp=		0.740104	df=30+25-2
SE(Y2- Y1)		0.315581	
Tstat		-1.352	
P-value		0.0911	

## Appendix J: Differences in Recognition Question Responses between Waves

<b>1b</b>	Wave 1	Wave 2		
Yes	20	11		
Sample Size	30	25		
p hat	0.666667	0.44	0.226667	
p hat, general	0.563636			
			Z	P
Numerator		0.226667	1.68777	0.0475
Denominator		0.1343		
		0.018036		
		0.563636	0.436364	0.073333

<b>1c</b>	Wave 1	Wave 2		
Yes	20	13		
Sample Size	30	25		
p hat	0.666667	0.52	0.146667	
p hat, general	0.6			
			Z	P
Numerator		0.146667	1.105542	0.1357
Denominator		0.132665		
		0.0176		
		0.6	0.4	0.073333

<b>3b</b>	Sample 1	Sample 2		
Yes	23	12		
Sample Size	31	25		
p hat	0.741935	0.48	0.261935	
p hat, general	0.625			
			Z	P
Numerator		0.261935	2.012776	0.0222
Denominator		0.130136		
		0.016935		
		0.625	0.375	0.072258

<b>3c</b>	Wave 1	Wave 2		
Yes	20	11		
Sample Size	31	25		
p hat	0.645161	0.44	0.205161	
p hat, general	0.553571			
			Z	P
Numerator	0.205161	1.535287		0.063
Denominator	0.133631	0.017857		
	0.553571	0.446429	0.072258	