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CONTENTS

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Digital Music Toys for Young Children: Parents' Review of the *Munchkin Mozart Magic*[TM] *Cube*

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Infants and toddlers today have access to a wide variety of digital music toys designed specifically for them (Bartel & Cameron, 2007; Ilari, 2011; Merkow, 2014a; Young, Street & Davies, 2006). Such toys offer opportunities to experience music in a variety of ways by facilitating the manipulation of sound in an interactive medium as well as the integration of sound with tactile, visual, and verbal information. Crib mobiles, plush toys, interactive play tables, baby iPods, and other commercial products play sounds and music at the press of a button. The sounds are often accompanied by flashing lights, moving parts, labels, and blinking images creating a highly stimulating sensory experience for infants.

Levin and Rosenquest (2001) express concern for electronic talking, sounding, and moving toys. They argue that such products limit a child's creativity and detract from quality social and verbal interactions between children and adults. Music educators have also pointed out that the musical content presented in toys, CDs, and DVDs designed specifically for young children often lacks variety and compromises quality in its production (Brooks, 2012; Merkow & Costa-Giomi, 2014). But Young (2007) believes that the multi-modal functions in digital toys are appropriate for young children because they match the multi-modal, imaginative nature of engagement typical at this age. Arguably, electronic music toys and screen media extend and supplement children's everyday domestic music experiences (Gillen & Young, 2007; Lamont, 2008; Young, 2009).

Regardless of the criticisms elicited by the use of digital technologies in early childhood, digital music devices are present in the homes of children around the world (DeVries, 2007; Gillen & Young, 2007; Lamont, 2008; Ilari et al., 2011; Merkow, 2012; Young et al., 2006). Such devices reflect our present technology-and media-rich culture (Campbell, 1998; Campbell & Lum, 2007; Marsh, 2002, Merkow, 2012) that relies on the use of devices for communication, work, and entertainment. Sales of baby products including those that play music have increased systematically during the last 10 years (Hughes, 2005; Khermouch, 2004). It is clear that the marketing messages of baby multimedia highlighting the value of music and the potential of

music toys to develop musical understanding has been effective in making interactive music toys a common commodity.

There is little empirical evidence about whether digital music toys support independent musical play in young children. Costa-Giomi and Merkow (in press), who observed mothers and their toddlers playing with a popular digital music toy, found that the toy induced and facilitated musical interactions between children and caregivers and that mothers mediated their toddlers' engagement with the toy. However, toddlers rarely showed independent play or displayed musical behaviors such as singing, rhythmic movements, or dancing in the presence of the toy.

When asked about the music experiences that children have at home, parents report that their children interact with a variety of digital and multimedia products that produce sound and music (DeVries, 2007; Ilari et al., 2011; Young et al., 2006). Parents are generally positive about digital music toys and the opportunities that they afford for their young children (Merkow, 2012; Young, 2008) but they also report that the toys can be noisy, irritating, and over-stimulate their infants (Merkow, 2012). These reports are important in the context of child play because parents are instrumental in providing opportunities for play experiences for their children. Parents not only make decisions about toys purchases, but also regulate their children's use and access to them.

The purpose of this study is to gather information about caregivers' views of the value of a digital music toy, its musical features, as well as their comments about children's responses to the toy. Previous studies on young children's musical environment at home have been based on parental interviews. Instead of asking parents to provide their opinions about a broad category of interactive music toys, we selected one of the many toys currently available in the market and searched for adults' voluntary and unguided comments about it online. This type of anonymous and unsolicited review of a specific toy may reveal the value and uses of digital music toys from an adult perspective.

There are thousands of music toys currently in the market. For example, Amazon.com lists 17,000 music toys available for purchase (Amazon, n.d.). Of these, 700 are portrayed as *interactive* musical toys. We chose one of the most popular ones according to purchase and feedback information provided on this particular website. We selected the *Munchkin Mozart Magic*[TM] *Cube* because of its popularity, its original interactive music features, and the marketing message that identifies it as providing a solid music foundation for children. Parents' opinions about toys are readily available on many websites catering to consumers of products for young children. Such sites usually allow reviewers to post comments and to use a rating scale to express their satisfaction with the product.

<center>Method</center>

The Munchkin Mozart Magic[TM] Cube

The toy is a six-inch cube with a button depicting the illustration of an instrument on each side: violin, harp, French horn, flute, piano, and the orchestra. By pressing the orchestra button, a melody orchestrated for the five instruments plays for up to 30 seconds or until the button is pressed again. By pressing the buttons one at the time, one can hear the performance of each instrument individually. By pressing two or more buttons simultaneously or in sequence, it is also possible to hear the combination of various instrumentations. This add-on "orchestrating" function is one of the innovative interactive features of the toy.

The repertoire of the toy consists of eight excerpts by Mozart: *Non Piu Andre (Marriage of Figaro); Country Dance #5, K.609; Come Sweet May, K.596; Ah! Vous Dirai-je, Maman, K. 265 (Twinkle, Twinkle); Der Vogelfanger (The Magic Flute); March in D, K.408; Landler, K. 606; and LaCi Darem La Mano (Don Giovanni)* (Munchkin, 2012). To change the piece, one must press the orchestra button twice. The Cube also displays lights that blink to the rhythm of the melody. Although there is no volume control, there is a master switch that turns the toy on and off.

The marketing descriptors of the cube portray it as toy "for budding young composers of all ages," "that lets your child add and subtract instruments of a symphony," "inspires creativity and interactive play," "provides a fun musical foundation," and "teaches babies and toddlers how to identify the sounds of the distinct classical instruments in Mozart's compositions" (Munchkin, 2013a). A video produced by the company suggests that the toy facilitates composing and can turn a child into a "mini maestro" (Munchkin, 2013b).

Data collection and analysis

As of November 2013, there were over 800 reviews for the *Munchkin Mozart Magic^{TM} Cube* in Amazon.com (Amazon, n.d.). We analyzed the 50 reviews posted on the site during a period of three months to identify references to the musical qualities of the toy and the music behaviors it elicits in children.

We completed a content analysis of the reviews identifying (1) any words with sound or musical connotations (e.g., it's too *loud*, the *songs* are nice); (2) any statements that described children's behaviors and attitudes (e.g., the baby loves the blinking lights; he claps and sings when I press a button; her favorite instrument is the harp); (3) any statement that alluded to learning (e.g., she can now press the buttons; it is good to learn about cause and effect; he remembers the name of the flute). Additionally, we noted the rating provided by the reviewers. The ratings could range from a negative rating of one star to a positive rating of five stars.

Results

The average online rating of the Cube was high (4.5 stars out of 5) with less than 10% of the reviewers rating it below three stars. Most reviews contained positive comments about the Cube. Two reviewers who provided very low ratings (fewer than three stars) explained that the Cube stopped working soon after purchasing it and two others criticized the quality of the sound and the absence of a volume control.

Most reviewers (90%) commented on the musical characteristics of the toy. They referred to the instruments it presented (21%), the loudness of the music (11%), the quality of sound (47%), and the music selections, style of music, and songs (10%). With the exception of a few remarks about the sound being too loud, most of these music-related comments were positive. For example, reviewers wrote:

> My almost 9-month old loves this toy. She plays with it every day. The music is pleasant, not too loud and not too soft. She is drawn to the flashing light which is in time with the music. She's figured out that to make the lights flash she needs to push the button. A great toy to learn cause and effect without driving the parents mental with obnoxiously loud sounds. (February 2, 2013).

I got this toy because of the music. I love that it's very pretty sounding and not like some toys that sound terrible. So far, however, my 7 month old has taken little interest after having it for a month. Pros: interesting way to adding music to child's life, pretty sounds, durable
Cons: my 7 month old has yet to show interest in this. (3/25/13).

Most reviewers chose not to describe children's interactions with the toy in detail but stated in broader terms whether their children liked it or liked playing with it.

My baby seems to really like this cube. He loves watching the flashing lights and hearing the music. The reason I did not give it five stars is because the instruments do all sound very similar and a bit electronic sounding, but other than that not that annoying of electronic toy. (3/16/13).

Cute product. Bought it based upon favorable reviews. It's ok. My 9 month old daughter doesn't seem to like it much at all, but the product is really well made and plays cute music. Maybe she'll grow into it? (3/4/13).

Although most reviewers (83%) commented on children's nonmusical behaviors with the Cube such as liking the toy, playing with its lights, kicking it, dropping it, and sitting on it, fewer elaborated on children's musical behaviors (25%). Those who included references to children's musical behaviors referred to listening (20%) and dancing (5%).

I bought this for my 13 month old son. He loves the toy; music makes him dance every time he plays with it. I'll recommend this toy to anyone. (3/18/13).

My special needs son loves this toy. It's his favorite. He enjoys kicking it and listening to the music. After 3 years it's still his favorite. (3/3/13).

Seriously, we have a top 5 list of must bring/have with us when we go anywhere, and this is one. My MIL freaked out when it ran out of batteries. It's that good. I'm not even sure why, but the baby becomes obsessed with the different instruments and the sounds. And it plays a lot of tunes-excellent purchase. (3/10/13).

Rarely did reviewers refer to the didactical value of the toy. Only 15% of the reviews provided any comments related to what children could learn by playing with the Cube. When reviewers commented on the educational outcomes of playing with the toy, they said that children learned or would learn to recognize the instruments (7%) and songs (4%), or acquire nonmusical skills or knowledge such as pressing buttons, colors, and cause and effect (6%).

I bought it for my 6 month old but my 2 year old loves it too, and she now has learned all of the instruments. (2/23/13).

I like this toy because it has good sound and is a simple introduction to individual instruments. I like its simple features, soft corners and bright colors. It is a favorite gift choice. (3/11/13).

Only one review referred to the creative appeal of the toy as portrayed in the marketing messages. The review was concise but clear in its message:

> Such a fun and creative toy. Interactive music that's not annoying for the adults. I would buy one for every child you know. (3/4/13).

None of the reviews commented on the compositional capabilities of the Cube as described in the company video, and only five included comments about the combinations of instruments afforded by the toy.

> Even a baby can play with this, and toddlers also enjoy it. It is a musical instrument for babies - six different songs that you can play in almost unlimited variety, switching orchestration in mid-song. In addition, it is sturdy, surviving dropping, banging around, and all the tough love an active toddler can dole out. (3/7/13).

> Love, love, love this Cube. My 8 month young daughter loves it too. It never gets old and it's so much fun to hit all the different instruments, then listen to them all play in sync. Great buy!! (2/1/13).

Discussion

Reviewers were positive about the toy and reported that their children enjoyed playing with it. Although their descriptions did not usually focus on its unique musical capabilities (e.g., changing the instrumentation of the recorded performances), references to music-related features were not uncommon. Reviewers liked the look, sturdiness and the interactive way in which the Cube presented the instruments and commented on the colorful buttons and the attractive lights of the toy. They also described the sound and musical features of the Cube. The most common statements related to sound referred to timbre. Almost all reviewers referred to the instruments depicted by the Cube or the general quality of the sound. Although a few reviewers described the tone quality of the Cube as unnatural, electronic, and annoying, most commented on the improved sound quality of the toy as compared to other toys in the market. They identified the display of instruments as a distinct feature of the Cube and obviously liked the variety of musical timbres provided by the toy.

That reviewers talked so often about the timbre of the Cube, the quality of the sound and the instruments, and compared the sound to that of other toys indicates the importance that timbre plays in their assessment of children's music toys. We know that timbre is a perceptually salient feature for infants and that it helps them recognize and remember the sounds around them (Costa-Giomi, 2013). It is comforting to know that caregivers are attentive to the quality and variety of sounds and instruments with which infants interact at home.

Parents provided very few comments about the didactic functions of the toy. Their assessments of the Cube didn't seem to be based on its pedagogical value but on its appeal to children as well as its features. Liking the music repertoire, the selection of timbres, and the quality of the sound seemed more critical factors to reviewers than the learning outcomes it possibly afforded. The seven reviewers (15%) who spontaneously commented on what children learned or could learn by playing with the toy cited musical and nonmusical concepts such as colors, cause and effect, pressing buttons, learning songs and recognizing musical instruments.

The scarcity of explicit references to the pedagogical use of the Cube is surprising considering the strong marketing messages on the toy packaging and company videos about the educational value of the toy. The reviews we analyzed seem to indicate that adults buy toys for children's entertainment rather than learning. After all, "the best toys are those that the child finds pleasure in" (Almquist, 1994; p. 66). Considering that the pedagogical value of toys may be only ancillary to adults, we cannot help but question the effectiveness of marketing campaigns that highlight the educational features of toys. However, because this study focused on a single toy, it is premature to draw conclusions about the educational value of digital music toys in general. Perhaps reviewers' apparent lack of concern for the didactic functions of the Cube may be reflective of an inherited feature of this particular toy. The Cube may simply be inadequate for the development of the creative and compositional skills advertised by the manufacturer.

It is worth noting reviewers' comments about the behaviors that the toy elicited from children. Although all toys provide opportunities for interactive play, the marketing emphasis on the interactive nature of digital toys suggests that such toys may be particularly effective in eliciting a variety of children's responses. We found that most reviewers indeed described a variety of children's responses in their assessments of the Cube. Most of the behaviors described were nonmusical such as button presses, catching the blinking lights, using the Cube for climbing, sitting and other utilitarian purposes, and a broad "liking the toy."

Less than a third of the reviews included references to the musical behaviors of the children when playing with the toy. Reviewers who commented on children's musical behaviors referred to listening and dancing and none mentioned singing. These results support those of previous studies that showed a low incidence of overt musical behaviors on YouTube videos of young children engaged in play with the Cube at home (Merkow, 2012) as well as those of children engaged in play with the toy in a controlled lab environment (Costa-Giomi & Merkow, in press). It seems paradoxical that a toy portrayed as musical and interactive was so ineffective in eliciting the type of behaviors that we most often think of as *musically interactive*. Arguably, the Cube was not designed to elicit singing or dancing but button presses, and as such, it facilitated listening to the music triggered by the buttons. From an educational point of view, the fact that reviewers noticed that their children listened to the music played by the Cube is important because it suggests that caregivers may appreciate the value of repeated listening during early childhood. That the toy portrayed the music of Mozart may be an indication of the manufacturer's interest in prompting repeated listening. Although the claim that listening to Mozart's music makes children smarter has long been discredited (Bangerter & Heath, 2004), it seems that there is still value in capitalizing on such premise.

In summary, the online reviewers were very positive about the appeal of the toy and its musical features but indifferent as to its educational value. The identification of different instruments was the most, and only, musical learning outcome they described. The few reviewers who referred to children's musical behaviors in their comments most often cited listening. Overall, it seems that reviewers appreciated that the toy allowed children to turn the music on and off and that the quality of the music selections and of the sound in general were adequate for a toy. That the toy produces music at the press of a button makes it appropriate for infants and toddlers who may not have the dexterity and motor precision to manipulate more sophisticated music devices. The blinking lights and colorful appearance of the toy may be effective in enticing young children into engaging in repeated listening experiences. However, it seems that consumers are not taking advantage of the interactive features advertised by the manufacturer for the development of creative and composing skills. It seems that children, and possibly adults, need guidance and modeling to discover and utilize the most distinct interactive

features of the Cube. Just like with any other toy, device, or musical instrument, interactions with adults or other children may be needed to support the independent play and learning experiences intended by the manufacturer.

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An Analysis of Sound Exposure in a University Music Rehearsal

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Exposure to high sound levels may lead to a variety of hearing abnormalities, including Noise-Induced Hearing Loss (NIHL). Pre-professional university music majors may experience frequent exposure to elevated sound levels, and this may have implications on their future career prospects (Jansen, Helleman, Dreschler & de Laat, 2009). Studies suggest that college students (aged 18–25) who participate in instrumental music activities are particularly vulnerable to hearing damage and NIHL (Phillips, Henrich, & Mace, 2010).

Additional research has focused on the relationship between musicians' activities and hearing loss. For example, a study by Kähäri, Axelsson, Hellström and Zachau (2001) reported that noise notches at 6,000 hertz were discovered in a selection of professional musicians, although the notches were not outside of normal limits. Another study (Parving, Ostri, Poulsen, & Gyntelberg, 1983) administered audiometric pure tone examinations to a population of musicians from the Royal Danish Theatre. Findings revealed that when testing hearing acuity in one or both ears at levels below 20 dB, a total of 58% of the musicians had a hearing impairment. The study concluded that the impairment might be related to the frequent sound exposure inherent in symphonic music.

NIHL has become a medical issue for a large portion of the population, rating as the second most common form of sensorineural hearing deficit, and surpassed only by presbycusis (age-related hearing loss) (Rabinowitz, 2012). Uncertainty concerning the risk factors and prevalence of NIHL and other hearing ailments among student musicians creates problems for researchers hoping to establish evaluative criteria for the safety of musical venues.

Current American standards regarding acceptable levels of sound exposure are defined by two agencies: the Occupational Safety and Health Administration (OSHA), and the National Institute of Occupational Safety and Health (NIOSH). OSHA standards for sound levels were last revised in October 1974, and remain as the maximum allowable noise levels in the workplace as enforced by law in the United States (U.S. Department of Labor, 2009). The standards are based on a permissible sound exposure of 90 dB for a duration of up to eight hours. Currently, the OSHA decibel exchange rate is set at 5 dB, with exchange rate defined as the amount of decibels at which the permissible sound level is reduced by 50%. For example, a 10-decibel exchange rate would allow that for every increase of 10 decibels, the allowable

exposure time would be cut in half. NIOSH, on the other hand, recommends no more than 85 dB for up to eight hours with a 3 dB exchange rate (Center for Disease Control and Prevention, 2011). Figure 1 illustrates the relationship between dosage and decibel level as described by both agencies.
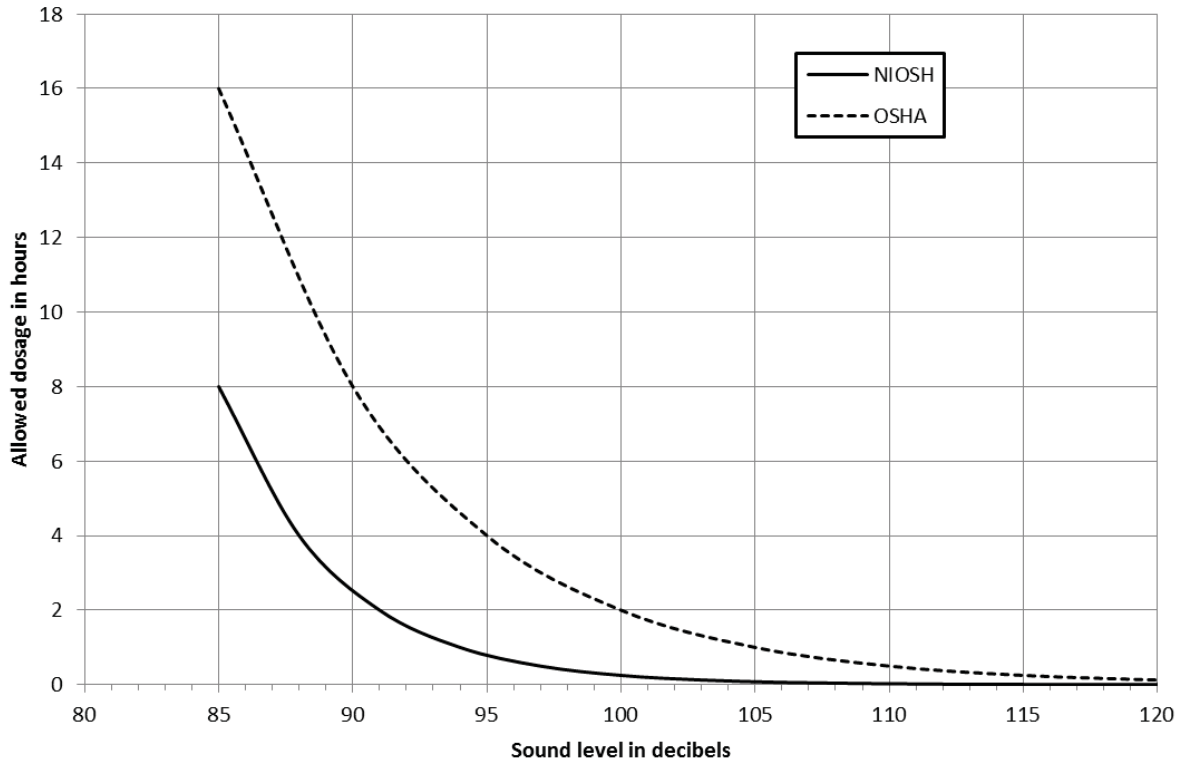

Figure 1. Permissible Noise Dosage as a Function of Sound Level.

In 1981, OSHA required that all employers implement a hearing conservation program. The mandate limits workers to a time-weighted average noise level of 85 dB or lower over an 8-hour shift (United States Department of Labor, 2009). The program requires employers to track sound level readings, to educate employees on hearing loss, and to provide free annual hearing health screenings.

OSHA and NIOSH standards are applicable to most workplace and noise level applications. Although no music-specific sound level standards have been described, several studies use OSHA and NIOSH standards as the standard by which to assess the safety of music venues. For example, an investigation of 130 student music majors at the West Virginia University College of Creative Arts documented that all participants experienced daily noise doses that exceeded both OSHA and NIOSH standards (Callahan et al., 2011). In addition, Chesky (2010) found that students participating in a university wind band program experienced sound exposure levels that exceeded recommended safety standards.

Student musicians devote many hours both to individual practice and group rehearsal. According to the 10,000-hour hypothesis (as set forth by Ericsson, Krampe, & Tesch-Römer, 1993), a student majoring in the art of music with the intention of mastering his/her instrument is likely to practice 10,000 hours over the course of 10 years, or the equivalent of almost 3 hours per day. In 2011, the National Association of Schools of Music affirmed that "music program

policies, protocols, and operations must reflect attention to maintenance of health and injury prevention," and that "students enrolled in music unit programs and faculty and staff with employment status in the music unit must be provided basic information about the maintenance of health and safety within the contexts of practice, performance, teaching, and listening" (NASM 2011-12 Handbook Addendum, 2012). Consequently, efficient tracking and evaluation of the relative safety of venues for music instruction and performance has been defined as a key element in effective music pedagogy. The purpose of this study was to collect and analyze the sound load exposure of a population of university music students participating in instrumental music ensemble rehearsals.

Method

The subject venue is described as Fine Arts Center (FAC) 2007, located within the Cowan Fine Arts Center on the campus of the University of Texas at Tyler. This room serves as a rehearsal venue for a student jazz ensemble, a student jazz combo, and the university Wind Ensemble, all of which were recorded for this study. The venue measures 29 feet by 45 feet (1,305 square feet), with a ceiling height of 12 feet. This results in a total room volume of 15,660 cubic feet. The venue is equipped with 39 sound absorption panels mounted on standard sheetrock walls. These panels range in size from 2' x 4' to 4' x 8'. Panels are constructed from dense foam material wrapped with fabric, and measure 3 inches deep in the center. In addition, sound-absorbing pyramidal ceiling tiles are installed on the ceiling to further disseminate sound. These ceiling tiles are composed of fiberglass and form only a single three-dimensional protrusion per tile.

The Wind Ensemble and jazz combo met three times per week on Monday, Wednesday, and Friday from 12:30 to 1:45 and 3:00 to 4:15, respectively, while the jazz ensemble met twice a week on Tuesday and Thursday from 2:00 to 3:15. The Wind Ensemble is comprised of 34 instrumentalists, the jazz combo has 8 instrumentalists, and the jazz ensemble includes 11 instrumentalists.

All measurements were taken using an ExTech 407764 Datalogging Sound Level Meter. The instrument was placed on a tripod and permanently set at a height of 6 feet from floor level. The tripod was set at the front of the room directly behind the instructor's podium. This point was chosen due to its location at which the majority of the instruments were focused. A research assistant engaged the instrument before each rehearsal session and disengaged the instrument immediately following the end of the rehearsal.

The sound level meter was calibrated and programmed so that the duration, time, and date of each recording was assigned to respective sound level data. The instrument was programmed to record on slow response at 1-second intervals. This setting was chosen so that no peaks in the sound levels were lost. The frequency filter was set to A-weighting and the range of sound levels to be recorded was preset at 30dB to 130dB to represent the average sound level over the duration of the class. Data was collected every week and saved to an external memory storage device. The datalogger was then cleared and reset to collect subsequent data sets.

The data collected from the datalogger each week was uploaded to a workbook and categorized based on the time and date at which it was recorded. The data was then uploaded to a separate workbook, where the sound levels were placed into a single column and labeled with their respective class name and date. For references purposes, a histogram was created for each rehearsal's data set. Standard calculations were performed for all data sets for analysis purposes. These calculations included the duration of rehearsals in seconds, the maximum and minimum sound levels recorded in each rehearsal, and a mean dB value for each rehearsal. Mean dB

values were not used for analysis purposes due to the fact that means do not represent the data in a way that is relevant to safety concerns. After all data points were loaded into the worksheet, Equation (1) (the L_{eq} definition for the exposure period, or shift), was used as the primary data analysis tool. In Equation (1), T is the duration in hours of the particular sound level L_n in dBA.

$$L_{eq,shift} = 10\ log\ \left[\left(\frac{1}{T}\right)\times(T_1\times10^{0.1\ L_1} +\ T_2\times10^{0.1\ L_2}+\ldots+ T_n\times10^{0.1 L_n})\right] \tag{1}$$

Due to the fact that each class period had a slightly different duration, the definition of $L_{ex,8}$, Equation (2), was used in order to have a parameter for comparison. In Equation (2), T is the shift duration in hours, and $L_{ex,8}$ took each $L_{eq,shift}$ result and converted it to its equivalent 8-hour counterpart.

$$L_{ex,8} =\ L_{eq,shift} + 10\ log\ \left(\frac{T}{8}\right) \tag{2}$$

Using the information collected from both the $L_{eq,shift}$ and $L_{ex,8}$ it was possible to also calculate the sound dosage for each particular setting in accordance with Equation (3).

$$Dose = 100\times\left(\frac{T}{8}\right)\times10^{\frac{\left(L_{eq,shift}-85\right)}{10}} \tag{3}$$

Sound dosage is a calculation of how much exposure has been processed before the setting approaches dangerous levels, where T is the total recording time in hours for calculating $L_{eq,shift}$. As discussed in the background of this report, it is important to consider both OSHA and NIOSH standards when studying musicians' proximity to dangerous sound level exposure. With this in mind, the dosage equation was altered in a fashion that would produce a result for both agencies according to their unique 8-hour dosage indications.

<div align="center">Results</div>

The results of the study were based on data retrieved from the datalogger over a period of eight weeks, spanning September 19 to November 24, 2012. During this time, a total of 33 recordings were collected, each with an average duration of 1.28 hours (1 hour and 17 minutes). The lowest decibel values recorded fell below the minimum value of the range set for the meter (30dB), whereas the loudest recorded noise levels reached 130 dB, which was the highest value of the range set for the meter. Results were obtained for each individual rehearsal assuming that students were only involved in one of the three rehearsals. However, during a student's academic career it is common to be involved in multiple rehearsal activities over the course of a single day. With this in mind, it is important to not only evaluate each rehearsal as a single entity, but also to combine rehearsal recordings that fall on the same day. For this particular study, only two of the three classes fell on the same day, jazz combo and Wind Ensemble, with results given in the Combo Class column in Tables 1 to 3.

Table 1 presents summary data for recordings made of each of the three ensembles over this 8-week period: mean duration, standard deviation, and the range of rehearsal durations observed.

The information is reported in seconds, because that is the resolution of the data collection; for every second there is one sample of the decibel level. The data can also be seen in hours on the right column to provide a better idea of the actual length of the class. Rehearsal duration data were quite varied; the longest recorded rehearsal lasted 3.89 hours while the shortest was only 0.23 hours. For the purpose of data analysis, however, mean rehearsal durations were consistent with expected rehearsal durations (based on scheduled class length) within 2 minutes.

Table 1
Rehearsal Duration

	Jazz Combo		Jazz Ensemble		Wind Ensemble		Combo Class	
	(MUEN 1131)		(MUEN 1135)		(MUEN 1140)		(MUEN 1131) + (MUEN 1140)	
	Seconds	Hours	Seconds	Hours	Seconds	Hours	Seconds	Hours
MEAN:	3878	1.08	3453	0.96	6526	1.81	9142	2.54
SD:	1427	0.40	2281	0.63	3795	1.05	4821	1.34
MIN:	1690	0.47	831	0.23	1771	0.49	2851	0.79
MAX:	5601	1.56	6904	1.92	13986	3.89	14631	4.06

$L_{eq,shift}$ and $L_{ex,8}$ values for each recorded rehearsal appear in Table 2, which lists the mean, standard deviation, and the range of rehearsal durations for every ensemble. Similarly, Table 3 illustrates the equivalent dosages experienced during the class times listed. This data serves as a guide for determining how close the sound level was to approaching dangerous dosages. For each respective standard (NIOSH and OSHA), the percentage represents the proximity of exposure to harmful levels (0% being no exposure and 100% representing the maximum allowed exposure).

Table 2
dB Level Results

	MUEN 1131		MUEN 1135		MUEN 1140		Combo Class	
	$L_{eq,shift}$ (dB)	$L_{ex,8}$ (dB)	$L_{eq,shift}$ (dB)	$L_{ex,8}$ (dB)	$L_{eq,shift}$ (dB)	$L_{ex,8}$ (dB)	$L_{eq,shift}$ (dB)	$L_{ex,8}$ (dB)
MEAN:	84.9	75.9	88.3	77.9	83.2	75.2	83.9	78.2
SD:	3.3	3.4	1.5	4.6	4.2	8.2	2.8	3.2
MIN:	79.6	72.4	85.5	71.0	76.7	48.5	79.5	74.4
MAX:	89.7	81.5	90.7	83.0	97.4	89.9	87.0	82.9

Table 3
Dosage Results (%)

	MUEN 1131		MUEN 1135		MUEN 1140		Combo Class	
	NIOSH Dosage	OSHA Dosage	NIOSH Dosage	OSHA Dosage	NIOSH Dosage	OSHA Dosage	NIOSH Dosage	OSHA Dosage
MEAN:	16.3	5.1	29.0	9.2	31.7	10.0	26.3	8.3
SD:	14.7	4.6	22.1	7.0	71.5	22.6	19.7	6.2
MIN:	5.5	1.7	3.9	1.2	0.0	0.0	8.7	2.8
MAX:	44.9	14.2	62.9	19.9	306.0	96.8	61.1	19.3

Discussion

In order to define whether or not a class is being exposed to a dangerous sound dosage, it is helpful to refer to the dosage value (%) in the related tables. Out of a total of 33 recording sets, none exceeded the mandatory OSHA values for safety regulations, and only one exceeded the recommended NIOSH values. This information suggests that the room in which the recordings took place is safe for the amount of sound being produced according to the legal OSHA workplace values; however, due to the proximity of some recording sets to the maximum allowable dosage level, it would be common in most manufacturing industries to implement a hearing conservation program as mentioned in the background of this report. The dosages measured by NIOSH standards consistently fell within the safe range with the exception of one session. This indicates that a corrective action may be needed.

Inconsistencies in dB data can be rationalized given the general nature of a performing ensemble. Because each piece of music is unique in terms of style and composition, there will be a wide range of volume differences within each recording set. In addition to stylistic and compositional variation, conductors also introduce variation in ensemble volume in a rehearsal due to their own interpretation of how pieces should be performed. Because of the variation associated with volume levels experienced from piece to piece, between rehearsals, and with different conductors, it is important to utilize a data analysis method which takes all data sets into account and weights them according to their $L_{eq,shift}$. Data show that the mean dosage for each ensemble rehearsal fell below 30%, with the next highest dosage measuring 62.9% of NIOSH allowances for jazz ensemble. This trend shows that the maximum NIOSH dosage of 306% recorded in Wind Ensemble rehearsals cannot be thought of as an outlier, but rather as an uncommon situation. It is important to note that this high value (306%) is related to the dependent measure's (dB) logarithmic behavior. The recording set for this particular data has several seconds of high dB values which indicate that for the sake of hearing health, these performers should take a break from sound exposure. However, this is the only data set that indicates any inherent danger.

Aside from the high values previously discussed, the rehearsal room remains in a safe range of dB values for both NIOSH and OSHA regulations. With the majority of the recording

sessions not exceeding 50% of the maximum allowable dosage on a regular basis, the data indicate that these teachers and students are not consistently exposed to dangerous dB levels.

Although these data support the idea that this rehearsal space is a safe environment for hearing health, a single research investigation can never predict the needs and tolerances of each individual's hearing tolerances. The results included in this paper are based on standards set forth by two major agencies that are believed to be indicative of healthy dB levels that function for a majority of the population; individual tolerances for dB levels may vary from these standards, though.

Conclusion

Students majoring in music devote many hours to individual practice and rehearsing, causing them to be exposed to sound levels that could lead to a variety of medical conditions. In this sense, the overall purpose of this study was to determine the hearing safety of students practicing in the rehearsal room identified as Fine Arts Center (FAC) 2007 at the University of Texas at Tyler. Results from this study suggest that the risk of approaching dangerous dosages of noise may be of intermittent concern. The safety of a specific venue may be compromised by allowing students or teachers to remain active in the venue for excessive periods of time in a single day, and future research might explore this idea further due to the influence that data could have for rehearsal scheduling decisions. Utilizing the protocol described in this study may potentially assist musicians and engineers to better manage possible risks to hearing health.

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Home Listening Practices of Parents, Infants, and Toddlers: A Survey of Parents Enrolled in Early Childhood Music Education Classes

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Musical interactions between parents and their very young children are common both in and outside the home (Custodero, 2006; Custodero & Johnson-Green, 2003; Fox, 2000; Howe, Davidson, Moore, & Sloboda, 1995). The scope and frequency of these experiences can vary (Custodero & Johnson-Green, 2003), and their nature and characteristics are often shaped by each parent's unique musical background and attitude toward music (Custodero & Johnson-Green, 2003; Duke, Flowers, & Wolfe, 1997). Many parents structure impromptu musical experiences with their children throughout the day that include listening to recorded music or singing, whereas others arrange formal experiences in an early childhood music classroom.

A national survey by Custodero & Johnson-Green (2003) examined how parents experienced music with their infants and found that many reported playing and singing music frequently. More than half of the parents described playing recorded music for their children daily, and parents who had played an instrument and taken music lessons themselves as children were more likely to report playing recorded music to their infants than parents who had not had the same childhood experience. Particularly relevant to the present study is the finding that parents who were given a classical music CD at the time of their child's birth were not more likely to provide listening opportunities for their children than they would have if not given such a recording. Parents enrolled in early music classes are often provided with recordings of class material, though little is known about how parents utilize these recordings.

In addition to playing music for their children, most surveyed parents also reported singing to their children daily (Custodero & Johnson-Green, 2003). Parents who were sung to when they were children were more likely to report singing to their own children. Many described doing so while engaging their infants and toddlers in everyday routines, such as bathing, feeding, or diaper changing, during playtime, and while upholding traditions and experiences from their own childhood. Some parents reported singing spontaneous or made-up songs with their infants as needed (Custodero, 2006; Custodero & Johnson-Green, 2003). This suggests singing music may be an improvisatory decision for many parents, which illuminates the responsiveness and flexibility they often exhibit with their infant children.

Interactions between parents and their young children are present in early childhood music classrooms, where the parent-child dyad actively works together toward a common musical goal

(Fox, 2000). During class, singing and listening provide the opportunity for parents to engage with their child and interact with the music, however, little is known about whether parents structure similar musical interactions with their children at home. Such interactions can encourage the building and maintaining of strong emotional ties (de l'Etoile, 2006; Trehub et al., 1997), and educators working with this population often strive to increase the frequency and quality of such interactions.

The present study investigated how families enrolled in an early childhood music education class used a recording intended for home practice with their young children. Research questions were designed to identify how often, how long, and when parents listened to class material with their children, and to identify what parents and their children did while listening to the recordings. The survey also asked parents why they chose to enroll their children in the class.

Method

A survey was completed by 17 families participating in a university-sponsored music education program for children who ranged in age from 10 months to 4 years. Each family had been given a CD containing audio recordings of action songs and rhymes used during class. The survey asked parents to provide information about their family's musical background, listening habits outside of class, and interactions with their child while listening to music at home.

Background information: how long the student has participated in this music class, participation in other early childhood music classes, parent's musical background, and reasons why they chose to enroll their child in an early music class.

Home listening habits: how often, how long, and when parents listened, process of selecting songs for listening, presence of a parent during home listening, and parent and child activities while listening.

Transfer of materials: use of songs and rhymes outside of class in situations other than home listening, and familiarity with the songs and rhymes from class by other adults and siblings living in the child's home.

Results and Discussion

Ten parents (59%) reported listening to the recording of class material on a weekly basis, two (12%) reported daily listening, two (12%) reported listening on a monthly basis, and two (12%) reported never listening to the class recording at all. The results are in agreement with those from a national survey showing that most parents listen to recorded music with their infant at least once per week (Custodero & Johnson-Green, 2003). Although early music classes often prompt parents to listen to specific recordings daily, it seems that this expectation may be difficult to attain.

Four parents (24%) noted on the survey that their listening had decreased since they first acquired the recording. One parent wrote, "We played it a lot, multiple times per week, for a

couple of months and then got tired of it." Another parent reported, "We listened to it frequently the first year, but not as much this year." Parents who are encouraged through class and home activities to systematically rotate through different parts of the recording may be less likely to experience a sharp decline in listening over the year.

When parents were asked at what time of day they listened to the recording with their child, three parents (18%) indicated morning, one parent (6%) indicated afternoon, three parents (18%) indicated evening, four parents (24%) indicated they listened at inconsistent times, and five parents (30%) indicated that they played the recording while driving. Past studies have found that many parents reported singing music spontaneously and improvisatorially with their infant children throughout daily routines (Custodero, 2006; Custodero & Johnson-Green, 2003). Singing gives parents more flexibility to stop and start and requires less set-up and equipment than playing recorded music, which may make it easier for parents to incorporate singing intermittently throughout their daily routine. Conversely, findings from the present study suggest that parents listen to music during pockets of time they have structured into their day, and no parents indicated listening throughout the day.

Listening duration times varied greatly between families. Six parents (36%) reported listening to the recording between 1-15 minutes, while six (36%) reported listening for 16-30 minutes, and four (24%) listened with their child for 31-60 minutes. Parents also indicated a variety of listening practices. Some reported listening to the recording from beginning to end before restarting the recording again, while others described playing their child's favorite songs or those songs that elicited the most response from their child. Some parents indicated they selected the songs most often sung in class to provide a sense of familiarity for their children, yet others indicated they selected those that were not being used in class to provide variety throughout the week.

When asked to report on their own behaviors and their child's behaviors while listening at home, some parents described music-centered activities, such as singing, clapping, tapping, and dancing. Thirteen parents (77%) reported they engaged in these activities themselves, and ten parents (59%) reported that their children engaged in such activities. Some parents may not have felt comfortable participating in these activities or may have had their attention directed towards other activities. Of particular note is that parents who reported listening in the car were less likely to describe their children as engaged in music-centered activities. It is unclear if these children did not engage in overt musical behaviors or if parents were less likely to notice their children's behaviors. Listening may be a readily available activity in the car, but it seems that the nature of parent-child interactions could be different in this situation than in others. It is important to note that differences in teaching styles may affect how parents utilize a recording intended for home practice. Teachers who suggest engaging in musical play during home listening may be able to influence the parent-student dyad and alter the expectations and attitudes of the parent (Creech & Hallam, 2009; Creech & Hallam, 2010). Future research could explore how teachers can best help parents and their children engage in stimulating musical play in the home environment.

Parents indicated many different reasons for enrolling their child in an early childhood music class. Nine parents (53%) identified musical goals such as growing up with music. One parent stated, "I want them to grow up with music in their lives," and another parent expressed the desire, "To plant a musical seed within the child." Six parents (35%) identified developmental goals for enrolling their child, such as improving brain development, increasing IQ or academic achievement, or providing opportunities for their child to work with peers in a structured environment. Four parents (24%) cited enjoyment of music as a reason for enrolling, and two

parents (12%) listed other objectives, such as enrolling their child to be with friends or to gain admittance into a program of study.

Musical interactions between parents and their children can be enjoyable experiences for everyone involved. Music teachers working with this special population are often seeking ways to enhance the quantity and quality of these experiences both inside the classroom and within children's home environment. Exploring how parents use music class material outside of the classroom provides valuable insight on how to best help these parent-child dyads.

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The Effects of Technology on the Sight-Reading Achievement of Beginning Choir Students

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The ultimate goal for many choral directors is to develop independent musicians within the ensemble. The ability to sing a series of pitches and rhythms at first sight is widely understood to be a fundamental building block of independent musicianship. Yet sight-reading is not simply a holistic skill. There are separate components of sight-reading, including pitch, rhythm, and harmonic context which must be considered when deciding how to teach sight-reading in the choral classroom.

Junda (1994) asserts that students must possess an arsenal of readiness skills before being expected to have success in music reading, including intonation, aural perception, rhythm, and inner hearing. The ability to translate pitch reading into sound is integral to the sight-reading process, particularly for singers (Henry, 2011). Henry (2001) developed The Vocal Sight-Reading Inventory (VSRI) for assessment using designated pitch skills, resulting in a hierarchy of difficulty levels for 28 distinct pitch skills. Subsequently, Henry applied a similar approach to create a hierarchy of difficulty for 26 discrete rhythm skills (2009). Lucas (1994) found a significant relationship between that sight-singing success and the harmonic context in which sight-singing skills were taught and tested among middle school choir students.

Other factors, such as visual stimulation and eye movement, can play an important role in determining sight-reading success. Rogers (1996) found that elementary general music students performed rhythm exercises with more interest and accuracy when the rhythms were written with colored chalk on a chalkboard, as opposed to white chalk. Goolsby (1994) explored the differences in eye movement between highly-skilled student musicians and students who are less skilled in music reading. Significant differences were discovered between the eye movements used by highly-skilled and less-skilled sight-readers during the music reading activity.

Researchers have explored many approaches for both sight-reading pedagogy and practice strategies for students. Killian and Henry (2005) discovered a relationship between specific practice strategies and success in sight-singing, including tonicizing, the use of hand signs, isolating problem areas, and keeping a steady tempo. In addition to group instruction, Demorest (1998) examined the effect of individual testing on the sight-reading success of high school choral students. Participants who received regular individual assessment as a part of instruction made significant gains in sight-reading performance, when compared to those who received only group instruction. Research has not investigated the effectiveness of this strategy with younger singers or beginning sight-readers.

Recently, significant strides have been made in the development of instructional technologies utilizing voice-recognition capabilities. As a result, this opens up a new field of inquiry for choral and vocal researchers. Henry (2012) found that high school singers initially were not receptive to the use of this technology for sight-reading assessment. However, after reaching a comfort level with the technology through a thorough introduction and significant practice opportunities, participants were more open to its use. Perhaps younger singers, just beginning sight-reading instruction, would be more receptive to this technology, as they will have had no prior means of instruction with which to compare it.

The advent of new technologies and voice recognition software, along with the previously-determined effective use of individual assessment as a teaching strategy, calls for an exploration into the possible benefits of using technology both to teach and to assess vocal sight-reading skills. The purpose of this study was to determine the effects of technology and individual practice on the vocal sight-reading achievement of beginning choir students. Research questions include:

1) What is the ability level of beginning choir singers in sight-reading?
2) Is there a significant gain in sight-reading scores after an 8-week instructional period using technology and/or individual practice?
3) Is there a significant difference in the scores of those who use technology versus those who do not use technology in instruction and individual practice time?
4) What is the effect of applied music instruction or previous choral experience on vocal sight-reading ability in for beginning choir singers?

Method

Participants in this study were sixth grade beginning choir students attending a suburban intermediate school in central Texas ($N = 83$). Participants were randomly assigned to gender-specific choir classes. Two classes were designated as technology classes ($n = 47$) and two classes were designated as non-technology classes ($n = 36$). Each choir class met daily for approximately 48 minutes. Prior to any sight-reading instruction, each participant was given a pretest to determine initial sight-reading ability. The pretest consisted of one of two similar 4-measure melodies and a written survey concerning previous musical experience. During the treatment period, all choir classes received teacher-directed instruction in sight-reading. Using identical materials, technology classes received instruction using the 2012b version of SmartMusic software and a headset microphone, while non-technology classes received instruction using a projection camera. Throughout the eight-week treatment period, each participant underwent a weekly individual assessment session, either using SmartMusic or paper notation, and a continuously-running video camera. At the end of the treatment period, participants completed a posttest in the same format as the pretest, using the melody that they did not see during pretesting. All performances were digitally recorded for scoring at a later time.

Two similar melodies containing basic pitch (scalar motion and tonic skips/leaps) and rhythm (quarter and eighth notes) skills were composed for testing purposes. Participants were randomly assigned one melody for pretesting, and received the other melody for the posttest. Scoring procedures were designed to correspond with those of the SmartMusic program that a portion of the participants had been using throughout the treatment period. The two testing melodies each contained 12 notes. One point credit was awarded for each correct pitch and for each correct rhythm, resulting in a potential total score of 24 for each melody. One of the researchers served

as the primary scorer, listening to the digital recordings in one sitting. For reliability purposes, another sixth grade choir director in the same district served as a second scorer, grading 28% of the total pretest and posttest performances ($n = 46$). Using the agreements/(agreements + disagreements) formula, the scorers obtained an interscorer reliability of .90. Suitability as parallel forms was determined through a *t*-test on scores between forms, which resulted in no significant difference, $t = 1.50$, 164 *df*, $p = .14$.

Results

On the pretest, participants achieved a mean score of 5.77 or 24%, $N = 83$, $SD = 3.71$, with a minimum score of 0 and a maximum score of 16. There was no significant difference between treatment groups on the pretest, with mean scores of 5.72 ($n = 47$) for the technology group and 5.83 for the non-technology group ($n = 36$), $t = .13$, 81 *df*, $p = .89$. On the posttest, participants achieved a mean score of 14.02, $N = 83$, $SD = 5.38$, with a minimum score of 2 and a maximum score of 24, with mean scores of 8.53 for the technology group and 8.11 for the non-technology group. When compared to performance on the pretest, posttest scores after instruction were significantly higher, $t = 12.86$, 82 *df*, $p = < .0001$. Each treatment group also scored significantly higher on the posttest when compare to pretest scores, $t = 9.77$, 46 *df*, $p < .0001$ for the technology group and $t = 8.24$, 35 *df*, $p < .0001$ for the non-technology group (see Figure 1).
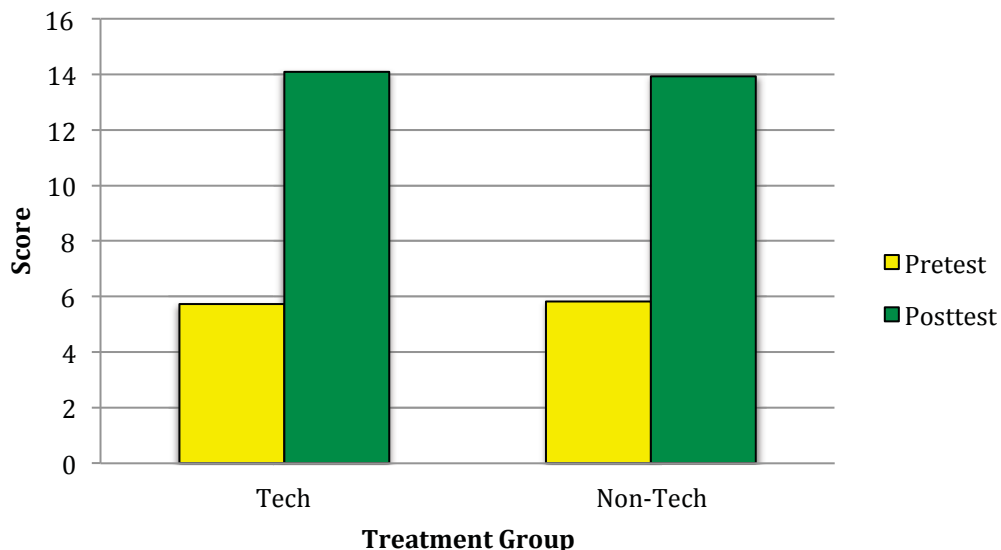

Figure 1. Pretest and Posttest Mean Scores by Treatment Group.

A comparison of difference scores between pretest and posttest revealed no significant differences between groups, $t = -.32$, 81 *df*, $p = .75$.

Twenty-one participants reported having one or more years of piano experience, with 16 of those indicating 1-2 years of experience. Six participants indicated having additional instrumental experience: percussion-3, violin-2, and cello-1. Because only one of the participants who had instrumental experience did not also have piano experience, only piano experience was considered in this analysis. Thirty-four participants reported previous choral experience, ranging

from 1-10 years. While no significant difference was found between piano and non-piano participants on the pretest, a significant difference was found for posttest scores, $t = 2.54$, 81 *df*, *p* = .01. Those without piano experience (*n* = 62) obtained a mean score of 13.18 on the posttest, while those with piano experience (*n* = 21) obtained a mean score of 16.52 on the posttest (see Figure 2).
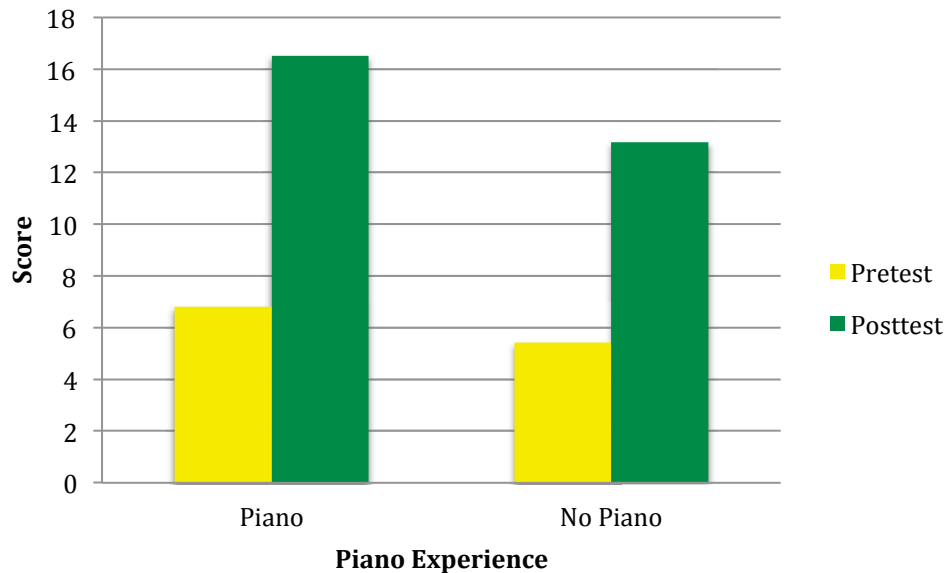

Figure 2. Pretest and Posttest Mean Scores by Piano Experience.

Choral experience was not significantly related to success on either the pretest or the posttest.

Discussion

Vocal sight-reading instruction typically begins with formalized choral instruction. Because these singers have virtually no prior experience in regard to vocal sight-reading or familiarity with any instructional strategies, this population provides an opportunity to isolate the effects of instructional strategies. This study sought to determine the effectiveness of technology and individual practice on the vocal sight-reading achievement of beginning choir students.

The participants in this study had minimal sight-reading skill prior to instruction, as evidenced by the mean score of 5.77/24 on the pretest. The skill that was displayed was likely the result of music reading skills acquired in previous general music classes, as well as minimal additional training in piano or auxiliary choral experience for approximately one third of the population. After the eight-week treatment period, the mean score on the posttest was 14.02/24, an increase of 143%. It is clear that vocal sight-reading skill improved throughout the treatment period. Part of this may be ascribed to familiarity with testing procedures through repetition of the process during individual practice. The teaching strategies used in the classroom instruction and individual practice appear to have been effective.

Between those who experienced instruction with technology and those who did not, no significant difference was found. This indicates that classroom instruction and individual practice were effective instructional strategies for the improvement of sight-reading skills regardless of

the medium by which the instruction and practice were delivered. The results suggest that teachers who lack financial resources to equip practice rooms with computers and software can feel confident that instruction and opportunity provided through traditional methods (sight-reading books, overhead projection, audio recording, etc.) are an effective means of providing effective instruction on sight-reading. Those who have the means and interest in technology (and who may have students interested in acquiring the technology for their own personal practice) may use such resources to achieve individual sight-reading success. An advantage of using technology, when teaching sight-reading, is that computer programs provide automatic feedback to singers reducing the time teachers spend administering and scoring the exercises.

Previous auxiliary choral experience did not significantly impact results, yet those with piano experience achieved a significantly higher mean score on the posttest. While piano experience has frequently correlated with higher vocal sight-reading achievement (Demorest, 1998; Demorest & May, 1995; Henry, 2011; Henry, 2001; Henry & Demorest, 1994; Killian & Henry, 2005), these results are somewhat unique in that the scores between experience groups were not significantly different on the pretest. Perhaps the piano background allowed these students to progress at a faster pace during instruction, but they did not come into the treatment with a noticeable advantage. While encouraging singers to pursue additional music instruction is an obvious strategy for improving individual sight-reading skill, perhaps practitioners might also look for other means for making connections with prior and current music study beyond the typical choral rehearsal components. Piano (or other instrument study) may provide a more tangible or concrete means for singers to make connections between notation reading and physical production of sound.

One potential benefit of the technology utilized in this study is the instantaneous feedback feature. While it was beyond the scope of current study, research should be conducted to determine whether the feedback provided through the software during individual practice can impact aural skills acquisition and error detection skills. Future research might also include investigation into preference for technology between genders. Practitioners should commit themselves to regular vocal sight-reading instruction and to providing a means for individualized practice and feedback, recognizing that the opportunity to execute the process individually is an important part of the learning and mastery process.

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Score Study Practices of Texas High School Choir Directors

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The link between music theory and music education has been demonstrated in many articles addressing both topics. Pragmatic articles have cited the benefits of experiencing theory for the choral student, with McCarry (2010) providing theory training software and activities to develop the overall singer, and Klonski (2006) detailing a sequence of instruction for aural skill learning designed to benefit the critical listening of high school musicians. In research, Decker (1984) found that the music theory concepts that were rated as most important to teaching were key signatures, accidentals, rhythmic notation, and meter signatures, and the lowest rated were serialism, neapolitan or phrygian II, pandiatonicism, and harmonic bases other than tertian. Johnson (2010) surveyed Texas music theory professors and determined that due to theory professors not teaching concepts that were in alignment with the Texas Essential Knowledge and Skills, collegiate music education students were not being adequately prepared to teach music in the public schools.

Score study combines the task of what music educators do to prepare for class everyday with many of the components that are taught in collegiate theory classes. Pragmatic articles about score study have documented that "a significant amount of time should be dedicated to score study" (Gillis, 2008, p. 37), with Lonis (1993) and Ulrich (2009) listing important common music study concepts that should be addressed before rehearsing any piece, such as form, cadences, key centers, and texture. Choral directors may spend extensive time linking text to musical concepts and either doing silent study or playing the score at the piano to get an overall feel for the music (Romey, 2008). Hale (2012) advocated that directors use technology to do an analysis of the key musical concepts in a piece that could then be shared with the choir.

Score study with conductor music educators has been investigated in research to determine what preparation techniques may be most effective. Crowe (1996) found that score study with an appropriate aural example was more effective than score study alone, and Silvey (2011) found that after training, conductors had improved eye conduct, confidence, and effective conducting gesture. Lane (2006) documented conductor experience to be an important variable, with more experienced band directors providing more specific score study verbalizations, being more organized in their rehearsal plan, talking less, and addressing expression more.

Music education books on choral methods have stressed the importance of aural and vocal exploration of a score (Brinson, 1996; Jordan, 1996). Jordan (1996) suggested that choral conductors hum or moan the melody of the piece and play or sing all vocal parts prior to marking the score. This process can allow the conductor to understand all combinations of the parts as well as make decisions regarding phrasing. Brinson (1996) encouraged conductors to listen to the score multiple times, performed by multiple choirs in order to provide a variety of options for

interpreting and understanding of the work holistically. In addition, Jordan (1996) advocated that the choral conductor conduct the piece while breathing through phrases during score study (Jordan, 1996). After aural exploration, the conductor can visually explore the score for dynamics, thematic and imitative material, non-harmonic tones, articulation, challenging areas of vowel placement, harmonic progressions, and syllabic stress in the text (Jordan, 1996). Additionally, Brinson (1996) urged the conductor to observe form, climatic points, melodic motives, modulations, rhythmic and meter changes, texture, relationship of parts, and historical background of the composition.

Although music theory pedagogy books have not tended to discuss application of analytical skills to score study for conducting, aural skills pedagogy has acknowledged the connection between score study and aural skills. In his aural skills pedagogy text, Karpinski (2000) emphasized that in order to study scores, a conductor must be able to hear internally the markings in a score including tempo, meter, rhythm, pitch, harmony, timbre, articulation, and phrasing. Instead of depending on the piano or recordings, Karpinski stated that a director's aural skills—as taught in music theory classes—should be strong enough to auralize (or hear mentally) a score.

In his music theory pedagogy text, Rogers (1984) considered the musical components listed in aural skills pedagogy and choral music education texts, not as part of analysis but as part of description—a lower-level step of finding and labeling cadences, harmonies, and other components. While Rogers (1984) did not address these lower-level details of score analysis specifically as an issue for theory classroom pedagogy, Rogers addressed the higher-order issue of horizontal (melodic) versus vertical (harmonic) approaches to analysis and encouraged a combination of the two as the best approach.

While non-research articles have cited the practical application of score study techniques, there is a need for research on score study to describe the ways choral educators pragmatically use the musical knowledge they learned in college. This information could help revise collegiate music and theory course content and sequencing through an understanding of what directors perceive to be important in their authentic score study practices. Therefore, the purpose of the current study was to describe score study practices of high school choir directors, with specific sub-questions being: (a) what steps do directors take when studying a score, (b) what musical components do the directors highlight as significant to their score study of a piece, and (c) which of the musical components do the directors see as a priority to introduce to their students in class, and why?

Method

Twenty Texas high school choral directors from 5A ($n = 17$) and 4A ($n = 3$) high schools were interviewed for the current study. The female ($n = 6$) and male ($n = 14$) participants had teaching experience that ranged from 3 to 34 years ($M = 16.50$, $SD = 9.14$), had earned bachelors ($n = 10$) or masters degrees ($n = 10$), and were traditionally certified ($n = 19$) or had alternate certification ($n = 1$).

Participants were given a 44-measure, Grade IV high school choral score that was written for use in the current study. In stage one, the participants were asked to study the score as they would normally in preparation for teaching the piece, and the interviewers observed their processes. Participants were then asked to describe the musical components that were significant to their score study. In stage two, the interviewers then prompted participants regarding identification of other musical components not mentioned in the initial prompt in order

to have comprehensive data on the musical concepts that were measured in the study. Finally, the interviewers asked the participants which of the musical concepts that they described were priorities to introduce to the high school choir students in their classes. All interviews were audio-recorded and transcribed for analysis.

There were eight musical concepts that were chosen as music theoretical concepts that were authentic to the 44-measure piece and that are commonly covered in undergraduate music theory coursework: (a) form/text, (b) sequences of repeated phrases, (c) phrasing, (d) climactic points/cadences/harmonic components, (e) rhythmic complexities, (f) texture, (g) key centers, (h) non-harmonic tones/anticipations/suspensions. The musical components from the piece were confirmed as valid by a panel of content validity members. The three authors compiled the coding of the themes and an external evaluator confirmed the accuracy of the results after reviewing all transcriptions, audio-recordings, and results.

Results

In answer to research question one (what steps do directors take when studying a score), 17 participants approached their score study by starting at the beginning of the score and progressing linearly to the end. Two participants skipped to sections throughout the score to locate examples of musical concepts such as key changes and form. For one participant, the specific score study process was not discernable.

When the participants discussed their score study of musical concepts, nine of them used single line melodic examples almost exclusively, three used chordal/harmonic examples almost exclusively, and eight participants used a combination of melodic and harmonic examples. Of the eight participants who used a combination approach, two were the score studiers who skipped to sections throughout the score. The participants used the following score study techniques: sing musical sections ($n = 2$), play musical sections on the piano ($n = 4$), both sing and play ($n = 5$), visual-without-sound-source technique ($n = 9$).

In answer to research question two (what musical components do the directors highlight as significant to their score study of a piece), the most common musical concepts that were addressed without any prompting were rhythmic complexities ($n = 16$), followed by form/text ($n = 13$), and texture ($n = 13$). The least common musical concepts that were addressed were cadences ($n = 9$), non-harmonic tones ($n = 6$), and sequences ($n = 3$).

In the second stage of the study process, the participants were shown a list of eight musical concepts and asked whether these were important in their score study (cadences, form/text, key center, non-harmonic tones, phrasing, rhythmic complexity, sequences, and texture). The second stage process only documented participant responses concerning concepts that were not highlighted in the first stage responses in order to have comprehensive data on the eight music theory concepts that were measured in the study. The most commonly cited important concepts in this second stage were phrasing ($n = 11$), key center ($n = 9$), and cadences ($n = 8$), and the least cited were form/text ($n = 5$), texture ($n = 4$), and rhythmic complexities ($n = 2$). There were concepts that were not addressed in either the first stage or the second stage of the process by teachers, with the most commonly un-cited concepts being sequences ($n = 11$), non-harmonic tones ($n = 7$), cadences ($n = 3$), and texture ($n = 3$).

In answer to research question three (which of the musical components do the directors see as a priority to introduce to their students in class), the most commonly cited teaching priorities were phrasing ($n = 14$), rhythmic complexities ($n = 14$), and key center ($n = 14$), while the least

commonly cited teaching priorities were non-harmonic tones ($n = 11$), texture ($n = 10$), and sequences ($n = 4$).

Conclusions

Results of the current study highlight the practices of one group of directors. It should be noted that these results may not generalize to other directors, especially given that the participants were a convenience sample of choral directors from a specific area in Texas. Future research that could replicate these research procedures in other locations may add context to these generalizability issues.

In the current study, most participants studied their score linearly, from beginning to end. This finding appears in contrast to Lonis's (1993) and Ulrich's (2009) music concept-focused approach to score study that highlighted the ability to identify music concepts early in the score study process. Directors may have approached their score study in a linear way due to the music having common characteristics associated with a UIL sight-reading piece; the directors, therefore, may have defaulted to the linear score study process since that would be common in the sight reading room. For those directors who skipped around in the music looking for concepts, as advocated by Lonis and Ulrich, it may have been for a similar reason as those who approached the score linearly; since the piece was in a familiar format, they may have been expecting to see certain key changes and formal properties in their score study and skipping around confirmed their expectations. Future research that could investigate authentic case study analyses of long-term study procedures of directors using complex, less formally-predictable music might provide further clarification to the practices directors may use over time in studying scores.

When the participants discussed their score study of musical concepts, the most common trend was to highlight single line melodic examples. It appears that a primary purpose of initial score study for the majority of the participants was to prepare for challenges that might occur in rehearsals for single voice parts, such as tenor line chromaticism or leaps. Brinson (1996) recommended that "locating these potential trouble spots in the music and contemplating possible solutions to the problems before rehearsal will save valuable rehearsal time" (p. 114). It seems logical that since choral textbooks have advocated for directors to search for individual challenges within parts prior to discovering harmonic relationships (Brinson, 1996; Jordan, 1996), directors may have a tendency to favor melodic score study initially. It may also be that some directors focus on individual lines because they feel less comfortable with open scores due to a lack of extensive harmonic score study instruction at the undergraduate level, or due to a possible deficiency of practical application in undergraduate piano courses.

It should be noted, though, that there were participants who approached the score with both a melodic and harmonic lens. This technique of melodic and harmonic score study was advocated by Rogers (1984) in his theory pedagogy text. If music education and music theory professors value students having access to both melodic and harmonic study skills, then they may want to weigh the pedagogical steps needed to instruct students on how to score study using both melodic and harmonic techniques. It may be that this combination technique would require extra training; future studies investigating the score study of participants in terms of high skill in piano and theoretical analysis may help educators understand this phenomenon more completely. Undergraduate theory and aural skills classes may need to determine an appropriate sequence of instructional steps for students to be able to approach the high-level skill of internal hearing of

multiple lines together.

In their score study, the largest number of participants used the visual-without-sound-source score study technique, which aligns with the music theory pedagogy literature as a higher level score study skill (Karpinski, 2000). There has also been music education literature that has advocated for either silent or piano score study techniques (Romey, 2008), and still other music education literature that has advocated for the use of some form of sound exploration with initial score study (Brinson, 1996; Crowe, 1996; Jordan, 1996). The topic of score study techniques is complex and clearly needs additional investigation. It may be that teaching experience and background variables are interacting with the finding in the current study. Lane (2006) found that highly experienced directors used different score study techniques than less experienced directors did. Future research that could measure pre-service, senior music education students' score study practices would be valuable to see if there is consistency across findings for the use of score study techniques with participants of different experience levels than those in the current study.

The most common musical components that were identified by choral directors without any prompting from the researchers were rhythmic complexities, form/text, and texture; the least common musical concepts that were addressed were cadences, non-harmonic tones, and sequences. For those participants who did not mention certain musical concepts, a page was given to them prompting them to discuss those concepts they had not yet addressed. In this second stage, the most commonly cited concepts were phrasing, key center, and cadences, and the least cited were form/text, texture, and rhythmic complexities. Additionally, directors identified non-theory musical components that were not on the provided list: tempo, tone, blend, dynamics, articulation, accidentals and chromatics, and vocal technique challenges. Many of these theoretical and non-theoretical musical components have also been cited in music education choral methods textbooks (Brinson, 1996; Jordan, 1996) and in research (Decker, 1984) as important in the preparation of a score for rehearsal. Teachers may perceive pragmatic, non-theoretical music issues to be as important or more important in their teaching than some of the music's endemic music theory components. It would be valuable for music education coursework to be able to sequence score study in terms of theoretical and non-theoretical music concepts so teachers could be experienced pedagogically with both sets of terms.

The most commonly cited teaching priorities in this study were phrasing, rhythmic complexities, and key centers. Since choral methods textbooks have stressed the importance of identifying specific challenges, such as breathing, rhythms, and pitches, for singers within scores, it is possible that is why directors chose these concepts as primary teaching ideas. It may be that the most common musical teaching priorities could be considered as music concepts that potentially allowed the directors to have the greatest success in early rehearsals; these concepts appear to be a basic framework for the structure of a piece instead of being expressive components that might be addressed later. It should also be noted that participants tended to state music concept descriptions in terms of their choirs' skill levels. Hence, some directors of outstanding choirs may not have cited what they considered to be concepts that would be obvious to their singers.

The least commonly cited teaching priorities in this study were non-harmonic tones, texture, and sequences. The least commonly cited teaching priorities and most commonly un-cited musical concepts may be due to music theory terminology misunderstandings. Sequences and non-harmonic tones may not be mentioned as teaching priorities possibly because directors may have varying definitions for the terms (such as sequences equating with form, and non-harmonic tones equating with accidentals). Rogers (1984) warned of possible inconsistent use of music

theory terminology across college music curricula. It may benefit undergraduate curricula designers to determine consistent terminology for these important concepts.

It may also be that the musical concepts stated as being less important in teaching are not being sequenced well enough across music theory curricula; therefore graduates may not feel able to internalize the concepts and apply issues such as sequences or non-harmonic tones in practical rehearsal settings. Designers of music theory curricula may want to consider how these topics can be reinforced consistently across a multiple semester sequence of aural skills and theory. Additionally, directors may not have chosen to indicate non-harmonic tones or texture because both can be discovered visually and aurally in rehearsal. Therefore, directors may not have stated that they would teach certain concepts because they felt that not identifying these concepts would have little to no effect on the rehearsal and performance of the music.

Based on the study's results, music education collegiate programs may benefit from organizational planning sessions with music theory faculty to discuss the sequencing of contextual score study skills across the two areas for undergraduate music education students. Weighing the major concepts, and the timing of introduction and reinforcement of the concepts may benefit students' choral score study development. Having practical, authentic score study assignments across both theory and music education classes may help music theory terminology and score study practices become more comfortable and systematized for the future choral music directors. Universities could offer an elective score study course that would provide music education students with the option to have in-depth practice on score study techniques and application skills.

Discussing terminology consistently across theory and music education areas may also help students learn the concepts in a way that could lead to deeper term understanding, leading to long term memory storage and easy recall. In addition, offering theory course sections specifically for music education students so that authentic examples could be highlighted may lead to greater transparency for the students; this transparency may lead to greater mastery, which could help future choral directors achieve their goals of being highly skilled educators.

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Expressive Movement of High School Choral Musicians

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Expressive performance entails a complex set of behaviors that interact to produce music. In addition to sound cues, performers can benefit from non-verbal communication with each other while performing. Visual information concerning movements has been found to help synchronization (Katahira, et al., 2007), and the relationship between synchronization and movement has been found to exist regardless of musical genre (Seddon & Biasutti, 2009). Goebl and Palmer (2009) found that when auditory feedback was reduced, then motion increased in order to aid communication. Leman, Desmet, Styns, Van Noorden, and Moelants (2009) found that listeners and performers tended to agree on the movement and expressive components of music, with movement being linked to preference for listeners (Juchniewicz, 2008; Sedlmeier, Weigelt, & Walther, 2011). As McClaren (1988) added, "listeners will consistently rate viewed performances higher than heard performances, but only if the visual presentation is positive" (p. 57).

In terms of listeners, there are mixed results for studies of performance ratings. While some studies have documented no differences across raters (Juchniewicz, 2008; Leman, et al., 2009), other studies have shown more experienced listeners to rate performances higher than less experienced listeners (Broughton, Stevens, & Malloch, 2006; Gromko, 1993), suggesting that non-experienced listeners may have a greater benefit from visual supplementary information due to this inequality of perception (Davidson, 1993). Juchniewicz (2008) and Leman, et al. (2009) found no gender differences for raters. Studies on attractiveness bias, however, have found gender differences with females being more lenient raters than males (Wapnick, Darrow, Kovacs, & Dalrymple, 1997; Wapnick, Kovacs-Mazza, & Darrow, 2000).

Research studies have highlighted the combination of intent and musical components that can interact to lead to expressive performances. Fear was found to be more difficult for musicians to portray than sadness, happiness, or anger (Dahl & Friberg, 2007). Madison (2006) found that certain types of music tended to elicit movement in the listener, including music with flow, regularity/irregularity, swing, and groove. Studies have found that expressive movements

are often linked to the structure of the music (Loehr & Palmer, 2009; MacRitchie, Buck, & Bailey, 2009; Palmer, Koopmans, Carter, Loehr, & Wanderley, 2009; Snyder & Krumhansl, 2001), with Toiviainen, Luck, and Thompson (2010) finding that movements were linked to metrical groupings. Davidson and Dawson (1995) documented that when performers were asked to restrict their motions, aural and visual components of their performance were perceived as less expressive than when the performers could move naturally.

Research has found that movement can aid in the perception of expression (Davidson, 1993), with visual-audio conditions being documented as the most expressive of performances (Broughton, et al., 2006). The expressive intent of movements may be idiosyncratic to the player, though; observers in one study did not rate certain types of movements as more expressive than other movements (Nusseck & Wanderley, 2009). However, researchers have documented certain expressive movement trends. Keller and Appel (2010) found performers used body sway synchrony as a measure of ensemble cohesion. With pianists (Castellano, Mortillaro, Camurri, Volpe, & Scherer, 2008; Davidson, 1994), and percussionists (Dahl & Friberg, 2007) head movements were found to portray the most consistent expression information, and larger movements tended to align with more expression (Davidson, 1994). For instrumentalists' key strokes contributed to time accuracy (Palmer, Koopmans, Loehr, & Carter, 2009). With conductors, gesture expressiveness was found to have certain characteristics such as larger and faster right hand movements (Luck, Toiviainen, & Thompson, 2010). It should be noted, though, that a lack of movement may be a conscious decision of musicians (Wanderley, Vines, Middleton, McKay, & Hatch, 2005), and on the other extreme, musicians may be unable to completely curtail their expressive performance behaviors (Sundberg, Iwarsson, & Hagegård, 1995).

Since movement can be related to expressive intent with other performers and/or with the audience, it may be important to conduct studies in authentic music performance group settings. Most musical movement studies have used solo performers (Broughton, et al., 2006; Castellano, et al., 2008; Dahl & Friberg, 2007; Juchniewicz, 2008; Leman, et al., 2009; Loehr & Palmer, 2009; MacRitchie, et al., 2009). There are few studies that have measured musical movement in musical ensemble settings. Keller and Appel (2010) measured pianists in duo settings, finding that performance synchronization happened when the primo player swayed in advance of the segundo player. Flohr and Brown (1979) found that peer imitation of movements occurred when pre-school and kindergarten students were sat in groups.

There is a need for a musical ensemble study that can describe the idiosyncratic, authentic movements that choral musicians make in a performance setting. In addition, it could benefit teachers to know whether those who score highest on a measure of expressive performance also tend to be strong performers. If this is the case, then the link between these two components can be highlighted in a systematic, strategic way. If there is little to no correlation between movement and performance, then teachers may help students more by sequencing these instructional issues separately. The purposes of the current study were (a) to describe the expressive movements, and (b) to investigate the relationship between expressive movement and performance achievement for a group of high school choral musicians.

Method

The 23 participants were a convenience sample of female choral musicians in one Texas 5A high school. The females were sophomores ($n = 5$), juniors ($n = 12$) and seniors ($n = 6$) in a

varsity women's choir. The current study measured performance achievement in a blind audition format, and measured expression in a contextual group format in a dress rehearsal situation. This format of audition and group dress rehearsal setting was authentic to the normal behaviors of high school choral students. The audition happened in the spring semester, and the dress rehearsal happened the following fall. Three judges scored the audition using a 70-point rating scale that assessed tone, intonation, accuracy, musicianship, and technique; interjudge reliability across the judges was high (ICC = .97). Videotaping was a normal part of the rehearsals for this choir and the students were not made aware that the purpose of the videotaping was to document movement.

For the movement measurement, individual participants were videotaped performing a dress rehearsal of a choral piece in a group women's choir setting. Four pieces were analyzed for variety of expressive movement, and one piece was chosen as having the greatest amount of movement by the greatest number of performers; the piece was a SSAA rhythmic, multicultural piece entitled, *Ogo ni fun Oluwa!* (2012) by Rosephanye Powell. The three content validity judges determined that in order for movement to be useful as a component part of expression, any movement had to be appropriate and synchronized, so points were awarded for each of these components. The videos were analyzed using a 70-point rating scale that assessed movement appropriateness and synchronization (15 points each) and expression (40 points).

The scale ranged from a low score number representing unexpressive to a high score number representing highly expressive (or inappropriate to highly appropriate, or unsynchronized to highly synchronized). One to three points were awarded for each of the following body parts for both appropriateness and synchronization if movement was apparent in the student's performance: head (1-3 points), shoulders (1-3 points), hands (1-3 points), hips (1-3 points), and knees (1-3 points), totaling a possible 15 points for appropriateness and 15 for synchronization. For expression, the same body parts were assessed (head, shoulders, hands, hips, and knees), but the range for each body part was 1-8 points, totaling 40 points. If students did not move then no points were awarded in any category. For descriptive purposes, each of the five body parts was also scored separately in terms of expressive movement with a possible score of 14 (3 possible points for appropriateness, 3 for synchronization, and 8 for expression).

The primary author adjudicated the 23 video performances, and an external judge evaluated a subgroup of the performances as a reliability assessment. Interjudge reliability with the summed scores of 10 of the movement performances for the primary author and an external judge documented acceptable reliability (r = .81). To answer research purpose one, to describe the expressive body movements of a group of high school choral students, the following descriptive questions were answered: What body parts did the choir student move; how large were the movements; and where in the music were the movements made? To answer research purpose two, to investigate the relationship between expressive movement and performance achievement for a group of high school choral musicians, an interval to interval level bivariate correlation (Pearson) was calculated between the summed expression scores and the summed audition scores.

Results

Two of the 23 students scored zero on the expressive movement task. The other 21 students ranged from a score of 1 to 59 out of a possible expressive movement score of 70 (M = 19.52 SD = 15.04). For the three expressive movement subsections (appropriateness, synchronization, and

expression), appropriateness scores ranged from 0 to 11 out of a possible 15 ($M = 3.91$, $SD = 2.94$), synchronization scores ranged from 0 to 15 out of a possible 15 ($M = 6.57$, $SD = 4.61$) and expression scores ranged from 0 to 33 out of a possible 40 ($M = 7.04$, $SD = 8.19$). Those students who scored high on appropriateness also tended to score high on synchronization ($r = .94$), and expression ($r = .86$). Those students who scored high on synchronization also had a tendency to score high on expression ($r = .77$).

The most common body part that was moved by the students was the head ($n = 19$), followed by the shoulder ($n = 14$) and the knee ($n = 11$). The highest movement expression score for body parts was the head followed by the knee and then the shoulder. Of the 19 students who moved their head, they scored an average of 7.84 out of a possible score of 14 (range = 12, $SD = 3.22$); thirteen students had small movements, five had medium, and one had large head movements. Of the 11 students who moved their knee, they scored an average of 7.36 out of a possible score of 14 (range = 11, $SD = 3.47$); four students had small movements, five had medium, and two had large knee movements. Knee movements tended to be predominately one knee (n = 9), with only two students bouncing both knees. Of the 14 students who moved their shoulder, they scored an average of 6.00 out of a possible score of 14 (range = 10, $SD = 2.75$); ten students had small movements, three had medium, and one had large shoulder movements. The body movements tended to continue throughout the piece, with very few instances ($n = 2$) of students beginning with slight movements and then increasing in size as the piece continued. The movements did not appear to be linked to specific musical components of the piece other than the issue of continuous rhythmic stability.

The audition scores for all participants ranged from 24 to 63.67 out of a possible score of 70 ($M = 49.72$, $SD = 8.05$) and expressive movement scores for all participants ranged from 0 to 59 out of a possible score of 70 ($M = 17.82$, $SD = 15.41$). The scatterplot documented a linear path to the data with no apparent outliers, and the range of scores was sufficient to calculate the correlation coefficient without great concern for restriction of scores. There was a small, positive, non-significant relationship between movement and audition scores ($r = .12$, $p = .57$, $r^2 = .14$).

Conclusions

It needs to be cautioned that the findings of the current study may not be generalizable to other settings because the sample size was small, only females were measured, and only a rhythmic piece was used to document movement. Initially, the plan was to take three choirs that were all singing the same piece and have them perform together, but having 100 singers cramped on stage made for almost no movement due to space issues. Future studies that can address the contextual nature of group singing while also having the space for larger numbers of both male and female singers could be valuable.

In terms of music choice, the slow piece that the students were rehearsing was not chosen as the measurement piece due to the very small amount of movement that was evidenced by the singers. Madison (2006) noted that pieces such as the rhythmic-with-great-regularity piece that was measured in the current study can elicit movement. Whether slow pieces commonly elicit movements with other high school groups is a viable question. Hence, it would be useful for future studies to investigate musical style and tempo issues further in regard to high school students' expressive movement.

In the current study there were only two students who did not move at all. Having very few non-movers in a group of movers may align with Flohr and Brown's (1979) finding that peers who move may influence the movement of others. For those who did not move, it may have been a conscious decision to do so (as in Wanderley, et al., 2005) or there may have been some other reason for their lack of movement participation. Future research on high school musician expressive movement may benefit from an interview component to the study to describe student perceptions about movement.

For those who did move, synchronization was generally scored high and was related to appropriateness and expression. Since synchronization seems to be a necessary part of expressive movement, sequencing this skill first may be helpful for the successful learning of students. Without the ability to synchronize, it may be difficult for students to add expressive communication skills to their performance skills. Teachers may, then, want to assess their students' abilities on basic tapping tasks before beginning any expressive movement instruction.

The most common body movement documented in the current study was with the head, which aligns with past research findings (Castellano, et al., 2008; Dahl & Friberg, 2007; Davidson, 1994). The common use of the head as a movement technique may be due to the nature of choral singing where text, breathing, and making a sound all use facial and neck body movements. Since the head was common as an expressive tool for the high school students, it may be a comfortable, safe place for teachers to begin expressive movement instruction. Since the shoulder was the second most common body part and is adjacent to the head, some students may have success with adding shoulder movements as well. Knee was third most common and second most expressive body part for the students. It should be noted that the lower limb movement in this study may be specific to this percussive piece and may not be generalizable to less rhythmic pieces. Depending on the music, then, teachers may note the authenticity of certain body movements as an issue to weigh in movement instruction.

In the current study it was uncommon for students to make specific movements that linked to musical parts of the piece. The movements tended to be consistent throughout the piece. This finding is contrary to the findings of previous research (Loehr & Palmer, 2009; MacRitchie, Buck, & Bailey, 2009; Palmer, Koopmans, Carter, Loehr, & Wanderley, 2009; Snyder & Krumhansl, 2001) that found participants to link movement to the structure of music. The reason for this contradictory finding may be due to high school students not being as attuned to theoretical/formal components of pieces, or it may be that expressive movement skills are still in their infancy with high school singers. It may, then, be a more difficult task to link expressive movements to musical components in order to portray formal issues found in the music. If a piece has a general mood across the whole piece, then students may have an easier time in their initial learning due to the consistency of the movements needed. While body sway was documented in Keller and Appel (2010) as an expressive movement that groups used for cohesion, the current study did not find that technique to be commonly used by the choral musicians. It may be that the presence of a conductor makes this movement less necessary or common. Studies that could use small ensembles of high school choral students who sing without a conductor may help future research address this issue.

It should be noted that some teachers may want students to look uniform and not detract from the music with movement. If, however, expressive movement is a desirable skill that teachers would like to teach, then envisioning a sequence of instructional steps for school settings may be helpful. Especially since Davidson (1993) stated that non-experienced listeners may benefit from movement to encourage preference, the visual-aid assistance may be useful for high school parent audience members who may not be musically trained concert goers. Starting with basic

synchronization tasks of listening to music and tapping along may be an appropriate first step for high school students who are learning to move expressively. Next, teachers could have students view (by video or in person) performance groups that utilize movement for expressive purposes and the class could engage in a discussion about which movements were used and which seemed most appropriate and communicative. Whether video or in person concert, screening groups for positive instances of authentic, expressive movement may be important (McClaren, 1988) so that movement choices are less confusing.

Depending on the group that the students watch, the common movements of head, shoulder, and knee that were found in the current study may or may not be as prevalent, so having the teacher guide the movement choices in terms of sequencing and difficulty to the group in their early stages of learning may be important. For instance, since knee movement tended to happen in one knee or the other in the current study, it may be important to consider dominant handedness for student comfort, ease, and authenticity when introducing this expressive movement to students. Once movements have been discussed, the class could then practice using their chosen movements in a piece they would practice. In order to facilitate the communicative potential of movement expression, the teacher may wish not to conduct. Also, while Leman, et al. (2009) found that performers tended to agree on movement intent, teachers may need to let students know that expressive choices can be individualistic, and so students shouldn't feel compelled to exactly mirror other students (Nusseck & Wanderley, 2009).

The small positive, non-significant correlation between achievement and expressive movement found in the current study may mean that these are two fairly distinct skills that teachers may want to address separately in their instruction time. The best singers in a group may not necessarily be expressive movement leaders; they may be anywhere on the expressive movement spectrum. When looking for student leader models, then, teachers may need to look beyond performance skill when searching for teaching assistant helpers. Therefore, a teacher may be able to highlight a student as a volunteer model of appropriate, synchronized, expressive movement who might not normally be able to serve as a model for beautiful tone or diction, but could be a leader in this arena.

Expressive movement is a part of performance communication that is authentic to what performers do in professional settings. If teachers believe that "the facts about performance movement suggest that it is necessary for musicians to be able to use the full potentiality of their movements in their preparation and performance to make their music optimally communicable" (Lehmann & Davidson, 2002, p. 554), then weighing instructional choices for school-aged musicians needs to be part of the discussion. The more research that can help teachers understand this complex behavior, the greater the possible benefit to student musicians as they progress through choral instructional ensembles and into the community or professional setting.

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Batons and Babies: A Qualitative Phenomenological Study of Mothers Who Are Band Directors

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I do not remember when it was that I decided I would like to be a mother. While in elementary school, I decided that I would like to become a teacher, and in the sixth grade, I began to play the flute in our elementary school band. My director, Mrs. Spencer, was also a flutist and helped me pry open the door to music one shaky whole note at a time. I did not realize at the time what an unusual thing it was to have a female band director. After that year, Mrs. Spencer accepted a job a few hours away. We were getting a new band director named Mr. Lane. I was just miserable. Mrs. Spencer thought I was special! She had chosen me to play a solo for Solo and Ensemble Contest, and you have to be invited to play a solo in the sixth grade!

In spite of myself, I remember that it took no time at all for Mr. Lane to gain my complete confidence. To this day, I can remember the way he would smile and greet us by name with great enthusiasm and a pat on the back. I worked very hard through my junior high years, and band became my priority. I loved learning how to play all of the music, competing against other junior high bands and competing against other flutists. Nobody was very surprised when I began to talk about being a band director someday. No one said, "That's a man's job!" or "Wouldn't you rather teach elementary music?" While I usually attribute my initial desire to teach band to Mr. Lane, Mrs. Spencer has a place of honor in my heart. With the exception of one honor band conductor, she was the only female band director I would ever have. I do not remember much about the way she taught, but I am glad that she was my teacher because I suppose that is how I knew that it was okay for a woman to become a band director. When I graduated from high school, I began to study music education. My goal was to become a middle school band director.

This story is not so uncommon. Some girls love band and decide to become band directors. Some girls love family and children and decide to become mothers. Some of us do both. The concept for this research was born just over seven years ago when I, a band director, became a mother. Venturing into an overloaded lifestyle for which I had little model or guidance, I dealt with the demands of balancing motherhood with band directing in a variety of ways. At first, I left band directing and taught elementary music, and at one point, I left the profession for a year. However, I am most comfortable in the role of "band director," and when I re-entered the band directing profession, I was the mother of a four-year-old daughter and two-year-old son. There were scheduling challenges compounded by the fact that my husband and I were both band

directors and not employed within the same district. We dealt with each challenge as it occurred, often with the gracious assistance and support of in-town relatives. Whenever possible, I attended professional clinics, read and asked the few other mother/band directors I knew about how to balance this life effectively.

What I finally found out for myself was that I needed to be a band director to feel true joy for my work, and that a happy woman at work helped make a happy mommy at home. The challenges I faced were sometimes daunting. Laundry piled up. Dishes needed washing. The carpet needed vacuuming. Dinner needed to be made. Children needed baths, bedtime stories and goodnight prayers. I was constantly exhausted, but still happier than I had been in any other job. This is the birth of my research. How many other mother/band directors are looking for a community of support, resources and ideas? They have made decisions about careers and family. What have these decisions been like for them? How do they do it all?

Aims of the Study

The purpose of this study was to examine what it is to be a mother and a band director from the perspectives of 15 women. The researcher hoped to create a document which will be helpful to band directors who are or who someday may become mothers. According to statements made in the Band Director Group on Facebook, there is a need for a sense of community among those who are mothers and band directors. The fundamental question that drove this study was "What is the experience of being both a mother and a band director?" Within that question, the joys and challenges of being both a mother and a band director were identified along with resources that mother/band directors reported as helpful. Also included is advice these women would share with others about managing this life.

This research is a qualitative, phenomenological study of the experiences of women who are both mothers and band directors, using a social constructivist interpretive framework. According to Creswell (2013), "In social constructivism, individuals seek understanding of the world in which they live and work" (pg. 24):

> Researchers recognize that their own background shapes their interpretation, and they 'position themselves' in the research to acknowledge how their interpretation flows from their own personal, cultural, and historical experiences. Thus the researchers make an interpretation of what they find, an interpretation shaped by their own experiences and background. The researcher's intent, then, is to make sense of (or interpret) the meanings others have about the world. (pg. 25)

Review of Literature

Relatively little research exists on the topic of being a mother and a band director. With the exception of a clinic sponsored by Women Band Directors International at the Texas Music Educators Association 2010 Conference, few resources were found that address this particular phenomenon. There are books that address the concerns of conducting bands and managing programs (Janzen, 1985), and books that address the challenges of being a working mother (Benjamin, 1966; Brettell, 1999), but none were found that addressed both. It occured to me that

being a mother and a band director has its own very specialized set of joys, challenges and solutions and that other women who are, or may become, mothers and also band directors, could benefit from the research and results of a study particular to this situation.

Key words and phrases used for online and library searches include "working mothers," "band directors," "mothers who are band directors," and "female band directors." Most hardcopy resources limit discussion to that of a more generic "working mother" model, that is, not specifically mothers who are band directors (Benjamin, 1966; Hoffman, 1974). However, a more current academic journal article illuminated the issues surrounding mothering and band directing, and demonstrated a possible growing audience for such research (Fitzpatrick, 2013).

A mother working outside the home is not a new phenomenon. In fact, working mothers have been raising children for many years. However, there are emotional challenges that accompany the paycheck. Mothers appear to have experienced "mommy-guilt." Benjamin (1966) illustrated this concept with a story about a child who was sick at home with his caregiver. She warned that, when the mother is tempted to leave work to care for her child, she should consider her motivations and the actual need (or lack of need) for her to do that.

> The key to making the right decision every time lies in finding the delicate - maybe even precarious - balance between your level working head and your not-so-level mothering heart. It's almost like developing a new kind of woman's intuition - and even that isn't as hard as it sounds. You do what you think you *should* do, but you never base it on guilt alone. Some other, higher purpose has to be served by the decision - and not just temporary relief from those twinges. (Benjamin, p. 60)

Mothers who consider working must also evaluate the financial contribution the mother is making when working. Some families find that the mother's contribution, after day care and additional food and gasoline expenses, actually is not significant (Benjamin, 1966).

That said, there are benefits of being a working mother. Hoffman (1974) cited one study in which women were asked questions about housekeeping and working outside the home. Their blood pressure readings were recorded as they responded to each question. Women who indicated that they were satisfied with their current housekeeping habits exhibited lower blood pressure. Interestingly, women who indicated that they wanted to quit their job in order to stay home actually exhibited lower blood pressure than those who responded that they desired to continue working. Researchers speculated that women felt that while housekeeping tasks were inescapable, working outside the home was negotiable, allowing some flexibility and freedom that may have had a positive impact on their blood pressure readings.

Hoffman (1974) alluded to other potential benefits of being a working mother. Mothers who worked full-time also reported having a greater satisfaction with their daily routine than mothers who worked part-time, possibly due to the decreased likelihood of promotion and decreased earning of part-time employees.

> Given higher costs which full-time employed mothers incur in conflicts between household and employee roles and given their much longer working week, they still are more satisfied with their daily work than are those who restrict their responsibilities to housekeeper and child-care roles. (p. 219)

Working mothers also reported greater enjoyment of time and activities with their children. "Although many studies reported concern and self-doubt about the child-care role, employed

mothers were more likely to enjoy their activities and relationships with children" (Hoffman, 1974, p. 224). Finally, it is commonly thought that working mothers have a worse state of mental health than their stay-at-home counterparts. However, Hoffman suggests that working mothers were found to have a slightly better state of mental health than housewives (p. 211, 1974).

On the other hand, few band director resources comment on the personal aspects of band directing. Most often these resources describe budgeting, the act of teaching and building performance ensembles, selecting teaching materials and working with parent groups and administrators (Janzen, 1985). However, Janzen offers that a successful teacher must have the following quality:

> Discipline of self in order to clearly define priorities and objectives. Simply stated, this trait means knowing what the mission is, finding out how to get it done, and being willing to sacrifice the hours within the framework of a rigid schedule to complete the task. (p. 2, 1985)

Clearly, the commitment of time is an important element in a band director's success. Janzen describes the importance of commitment in education, saying:

> For the teacher, the love of music must develop into a commitment, a deep and total conviction of the 'rightness' of teaching musical skills to others, and the urgency to share with others this universal art of communication that needs no interpreter. The strength of such a commitment may develop very gradually within the years of success and failure that trace every career. The important and abiding difference for those who stay the course is that the success, regardless of how minimal at the outset, continues to wield a far greater influence on professional commitment than the manifold failures. Alone and small victory in a year of teaching gilds the tarnish of a score of failures. The gradual, multiplying reinforcement of small successes is the elemental process by which commitment grows strong. (p. 5, 1985)

Fitzpatrick recently completed a case study of mother and band director Sarah Lowell (2013). Lowell kept a blog for the purposes of the study, and was observed and interviewed by Fitzpatrick over the course of 21 months. Lowell is a mother of three children aged 6 and younger. She is married and has been a high school band director for 14 years. She currently serves as the only female officer on the board of her state organization. Upon having children, Lowell negotiated her teaching position to "part-time" in order to allow more time with her children, however she still works 40-hour weeks. She indicated that she has learned to delegate responsibilities, work efficiently and be organized. She reported that her husband is very supportive of her and is a highly involved parent. Her administration is supportive, and her program is very successful. Still, Lowell expressed sentiments of "mommy guilt" because of missed time with her children. She said that she does not take time for herself because so much is needed for her professional and personal responsibilities. She also cited logistical concerns that center on caring for children, household work, transportation to/from daycare or school and not having family nearby. Because her children are young, and there are three of them, her home life presents unique challenges (such as finding a discreet place to pump milk for the children when they were babies, caring for them when they were sick and attending preschool activities). Finally, Lowell identified the expectations of male parents as being quite different from those of female parents, both between herself and her husband as well as within her profession

(Fitzpatrick, 2013). Given the lack of studies examining band directors who are mothers, the following qualitative study was designed to explore that question in greater depth. The semi-structured questions that became the focus of the study were:

- How did you get involved in teaching band? Was there anything in particular that led you to that decision?
- Are there challenges in the dual roles you have as band director and mother? What are they? How do you achieve a balance between these two demanding activities?
- What advice would you offer a woman on this path?
- Have there been any resources to help you?
- Have you ever felt treated differently in the band directing profession from your male counterparts?
- Has anything changed over time in what it means to be a woman band director?

These questions were selected based upon the researcher's experience as a mother and band director, followed questions implied by Fitzpatrick (2013) and were evaluated by a panel of experienced music educators (N=6) for clarity and validity. The answers to these questions may provide practical advice to the new mother who is a band director, as well as illuminate other issues surrounding the blending of the roles of mother and band director.

Data Collection

A phenomenological study in qualitative research is the study of a phenomenon as experienced by multiple people (Creswell, 2013). In this case, the phenomenon studied is that of a mother who has the occupation of band directing. Initially, one local band director who is also a mother was selected for observations and interview. On the Facebook group "Band Director Group," the researcher invited all women who were both mothers and band directors to participate in this study. Twenty-one surveys listing the predetermined questions mentioned earlier were emailed to potentially interested respondents. Fourteen surveys were returned via email and were included in the study along with the local director who was interviewed in person.

Data Analysis

Fifteen women who share the experiences of being mothers and band directors served as participants in this study. Data collection included surveys, text messages and email messages. A local participant was selected to be interviewed and observed. Interviews were transcribed and coded by the researcher. Data were analyzed for significant statements, detailed descriptions, and common themes, using the constant comparative method (Merriam, 1998). Four category headings were generated from the data, which accounted for seventy-six percent of the total data. The researcher then developed textual descriptions and structural descriptions (Creswell, 2013), using them to convey the essence of being a mother and a band director. A copy of the research was distributed to each contributing member of the study for the purpose of data triangulation via member checks.

Findings

This study is an account of the experiences of 15 mother/band directors from various parts of the United States. The participants represent a diverse population, and yet common themes arise from their responses. They often talked about the support they receive from their husbands, families, colleagues and administrators. They discussed their passion for their biological families and their band families, the influence of music on their children and the unique relationships between their students and their children. The most common topic of discussion was balance: balance of time, balance of financial resources, balance of household duties, balance of childcare, and balance of emotional self. Four basic categories of information emerged from the collected data. The first category, "Logistical Concerns," addressed such things as arranging childcare and caring for the home. The second category, "Time Management," addressed the time mother/band directors spend with and without their children. The third category is "Resources and Support." This category has the subtopics of "Supportive Husband," "Friends and Family," and "Discrimination." The fourth category, "Emotional Effects," has additional subtopics: "Advice Shared," "Beneficial Effects of Music on Children," and "Beneficial Effects of the Band Family on Children." Pseudonyms are used in the following discussions to protect the anonymity of those participating in the study.

Logistical Concerns

Mother/band director participants indicated that there are two main logistical concerns with their chosen profession. The first was that they must be able to manage their lives. Learning to balance time, money, and childcare resources was a priority for them, and these concepts were clearly articulated in their advice to others who might choose this path. The other logistical concern mentioned was that of domestic responsibilities. The idea that was expressed by a few is that cleaning the house moves lower on the list of priorities. Hannah volunteered that:

> I am fairly anal retentive and feel that my house gets severely neglected (vacuuming, dusting, etc.) during those crazy concert/parade/game/etc. weeks -- I am constantly doing housework at night or going crazy on Sunday afternoons so that I can truly relax and not feel guilty about just sitting down and doing nothing...I need a hobby!

Chandra affirmed this with her own statement.

> Both of us have had to come to a point where we say, "Ya know, if the kitchen isn't clean before we go to bed at night, that is okay." We make spending time with our children outside of the band world a priority and spend the first Saturday after marching contests end really cleaning our house from top to bottom.

Sometimes the efforts to conserve one resource will deplete another, as Kayla mentioned:

> When I get home at night, I am physically and mentally exhausted. But, there is dinner to cook, laundry to do, and a toddler to care for. My husband works second shift (we did

this on purpose so we could keep daycare costs down), so it's up to me to do the after-work care for our daughter.

This resilient statement from Karen expressed the Superwoman concept: that we can be it all, have it all and do it all.

> The hardest thing was trying to nurse twins (four years ago) and still having time during the day for planning. I managed to direct a musical as well during that time so apparently I found a balance. You just do what you have to do. Women always make it work!

Time Management

Balancing time spent with family with time spent at work can be one of the greatest challenges. Fall is a notoriously busy season for most band directors. In West Texas, the fall season typically includes 10 football games, band contests (as many as 6 of them, if the band advances to state), middle school and high school all-region concert band and jazz band auditions, and civic duties such as parades. Also, there may be weekly and daily professional commitments such as after school rehearsals, driving a bus route, cafeteria or bus duties, and being available after school to help students. Natalie, whose daughters Leslie and Avery attend different schools, painted this picture of their family life in the fall.

> Right now, Leslie is going to school at School A, Avery is going to school out here (School B). We have Monday night rehearsal so I don't see Leslie on Mondays at all. Leslie has Tuesday night rehearsals, so I don't see her on Tuesday nights. Wednesday nights, I haven't seen my husband, so I want to spend time with him. And generally it's Jared and I sitting on the loveseat and Leslie's either squashed in between us or on the side because she wants her time also. Time is probably the biggest issue. Friday nights, Leslie goes off with School A, we go off with School B. And even with Avery being in my band, I don't really spend time with her because I've got 80 students that I'm trying to take care of. Generally, Avery's behaving herself, so you're dealing with the kids that you're trying to get to stay in their seat, stop touching them, et cetera!

Caroline detailed her family's answer to the lack of weekend time available for family relaxation.

> When I'm home, I try very hard to focus on my family only and not work, but often times I am answering emails, returning phone calls and preparing for future band related items. My family and I recently have made a point to take a personal day in October to regroup and do something midweek to treat our family to a bit of quality time. Often times there is no weekend for family time because it's spent at school related functions. To be honest, the balance is often times not there.

Yet mother/band directors reported that they truly enjoy the time they have with their families during vacations, and that it is nice when the school calendars line up on special holidays. For those who carve time out of evenings and weekends for family time, it seems to be enough to re-energize for the week. Some mothers are still exploring possible ways to make more family time available. Said Karen, "I love coming home to my girls (when they're not

whining) and just snuggling. Unfortunately I have to teach private lessons at home too so our time is typically cut short. I should do away with private lessons......"

Resources and Support
- Supportive Husband

Mothers reported that one source of significant support is their husband. Some helpful husbands were said to have a supportive and understanding attitude about the amount of time required by the job. Hannah shared this advice for unmarried band directors:

> I would say to first of all make sure you find the right mate for your partner. They have to understand that the job is not just a 7-2:30 job, and not make you feel guilty for loving it so much. There has to be a true partnership for ANY teacher to be successful, and that partnership has to be even more solid for a MUSIC teacher (especially at the HS level).

Some husbands use their technical or musical expertise to assist the band in such ways as setting up sound equipment for a concert or coming to practice. Julia remarked that she ought to pay her husband for all he does for her band, explaining:

> My husband is my rock and my husband understands the demands my job has. So he has embraced it by totally helping me with it. Truly I need to pay my husband as an assistant for all the work he does. I am very blessed and very lucky to have such a support system through him. The band is as much his as it is mine.

Others husbands help with children by taking care of them while the mother fulfills her professional obligations.

- Friends and Family

Friends and family provide another area of support for mother/band directors. In-laws and parents who live nearby were often said to take care of children during band activities. Karen shared this about her child care options:

> I live three minutes away from my in-laws so finding a sitter on concert nights or late rehearsals is not a problem. During the summer I had to pay for a sitter during summer marching band rehearsals but for the most part my mother-in-law will do it.

Colleagues who have children of their own provide childcare, emotional support, and a sense of community. A unique relationship was presented by Hailey:

> It takes a village. Develop your community of family/friends to help. The parents of your kid's friends are an ally! For example, I am home for holidays, so I watch all of the kids while the non-teacher parents have to work. In return, when my spouse is traveling and I am teaching by 7:25 AM I can drop my kids off and they will get them to school. In addition if I have afterschool conflicts, they will pick the kids up from school.

Band parents and band students alike sometimes provide babysitting services. This is valuable to these mother/band directors because they feel as though they know these individuals exceptionally well.

- Discrimination

Mothers were asked if they have ever sensed discrimination at work. Of the 40 comments regarding discrimination, 57% indicated the mothers felt as though they experienced discrimination. Contrastingly, 43% of comments about discrimination actually indicated that they did not experience discrimination in the field. One common sentiment was that women may have experienced discrimination prior to the 1980s when there were fewer female band directors. A few respondents indicated that they felt that they were not discriminated against because female band directors are commonly accepted in the area or state in which they work. A few others commented that, either because their programs were very strong or because they do not care what others think of their gender, they do not experience discrimination. Lori said:

> I think being a female band director now is much more accepted than it was even 15 years ago. That boys club I mentioned [previously] is getting smaller and smaller as women are taking higher level positions in the field. It's a great thing to see! And as more of those women are having children, it makes being a mom an easier choice too.

Some forms of discrimination are more subtle. More than one director reported being mistakenly identified as a choir director or orchestra director because of her gender. One mother said, "I don't know why, but I always feel slightly offended when people who find out I teach secondary music assume that I teach choral music." Hannah illustrated this point with the following story:

> [This story] comes from an interview with an Assistant Superintendent and Principal for a MS band position when I was first interviewing. I sat in the office and he said "we have a part time choral position--wouldn't that be a better suit for you?" I told him that I was trained both vocally AND instrumentally and was certified and capable of teaching both, but was really looking forward to the full time band opening. I was called back for the job, but did not accept it because I knew that there was a serious chauvinistic attitude there that would most likely be a concern. Just because I was a petite female DID not mean that I was better suited for chorus! REALLY! (Granted, I LOVE teaching chorus as well, but I wanted that band job!)

Yet, the discrimination sometimes comes from within the community of women. Carrie shared a conversation she had with a female friend who said to her "you can't be a good band director AND a good mom." To Carrie, the comment was unfounded but still hurtful. Another respondent reported getting more "backlash" from women than men in the field.

Emotional Effects

> Being a new mom, I've found several challenges! There is the standard "mommy guilt" of putting him in daycare while I go to work. That feeling is especially strong when I'm having a bad day, and I want nothing more than to be at home with my son. A major

challenge happens when my son is sick and I have to stay home with him. Since my band lessons are pull-out, my classes are usually just cancelled if I'm not there. I see my students once a week, so that can have a big impact on their instruction, progress, retention, etc. I feel pulled to go to work, and pulled to stay home with my child. -Lori

In the statement above, Lori summed up the basic feeling of "mommy guilt" expressed by so many working women. It seems that everyone addressed this on some level. Many discussed balancing their time at home and at school by working very efficiently during the school day so that they can leave school and have time with their children at home. Several also mentioned changing jobs to be a middle school director rather than a high school director, which requires fewer evening and after school responsibilities (in general). Still others remain in their high school positions because it is the job they prefer.

There are other emotional challenges in band directing and motherhood. Some mothers reported feeling a great responsibility to the students they teach, almost like another form of "parenthood." In fact, one can feel the weight Kayla bears in her description of her experience.

I feel like I'm a mom to not only my own child, but 106 other students as well. Forty percent of our student body is considered "at-risk." Many of them come from single-parent households, low socio-economic status, and are on free/reduced lunch. Many of them lack some kind of stability at home, and in some cases, band or school in general is where they get that stability. That's a massive (and sometimes overwhelming) commitment.

Julia echoed this sentiment as she described feeling like "a mother to [her] band kids." She described feeling torn, after having her own children, between being there for both sets of "family." Kayla summarized a related theme, stating that when she is at home taking care of a sick child, she is worrying about what may or may not be happening at school. When she has to stay late at school, she worries about what she may be missing at home.

There are positive emotions associated with band directing as well. Eight of the 15 respondents indicated that they would not choose to do any other job over band directing. They are overall quite satisfied with their work, believing that it is both valuable and rewarding. Hailey hopes that her children "are also learning the importance of not only hard work and success, but the blessing to have a "job" that you love, not just do." A few remarked that they feel their particular position and students make their career choice desirable and will not consider leaving because of that.

• Advice Shared

Respondents offered much advice to the woman who aspires to be both a mother and a band director. Above all, they encouraged her to follow her dreams and to try to do it all if she truly desires to have both a band and a family. In order to accomplish this, they recommended developing a very strong support system. They advised creating boundaries so that one can have a home life separate from a work life. Yet, they advised bringing the two together from time to time. Many agreed that there are benefits to the band seeing their director as a mother because it makes her someone to whom they can relate. They also agreed that it is good for the children to see the mother as a band director, as someone who is professional and who has found work that

makes her happy and fulfilled. As Natalie stated, "I get to be a better mom because I am happy."
Anne, a brand-new mother, had a slightly different but valuable piece of advice.

> My advice would be to follow your dreams and your goals, but also take into
> consideration how other aspects of your life will fit in. It doesn't even have to be about
> family. How will you maintain your friendships? Will you get to enjoy your hobbies?
> Will you pursue higher education? I had the full support of my husband when I worked
> on my master's degree and National Board Certification. I'm just thankful I accomplished
> all of that before having my son, because, looking back, I probably wouldn't feel like I
> had time for those things if I was a mother at the time.

At the height of frustration while trying to maintain this balance, Kayla began listening to
"The Dave Ramsey Show," a radio show about money management. In addition to giving advice
about financial planning, he also talked about winning in life. She said, "When my attitude and
my approach to work changed, I became happier, more successful. My students and husband
noticed it, too!" Hannah suggested that different authors have been inspirational to her, such as
Peter Boonshaft and Tim Lauhtzenheiser. Several turned to colleagues both in and out of the
band world for advice about how to make this work. Many cited the Band Director Group on
Facebook as being a source of inspiration, community, and professional development while on
maternity leave. Caroline's advice to others was simply, "It's a difficult job to do both, but it's
okay to not be perfect at both. Set down the motherly guilt on the long days."

- Beneficial Effects of Music on Children

One positive effect of being raised around music seems to be the development of musical
skill and musical enjoyment in the band director's child(ren). Mothers reported a genuine
enjoyment of music by their children as evidenced by the children conducting the pep band at
football games, playing instruments at home or mimicking marching around the living room
while humming catchy band tunes. A few mothers reported that their children have learned
musical instruments with ease. Chandra said her "5th grader picked up an oboe and started
playing the other day. She reads music and plays pretty well and I've never taught her how to do
that."

- Beneficial Effects of the Band Family on Children

Another positive effect of being raised around the band seems to be the development of
relationships between the band and the band director's family. Many mothers appreciated the
interest that students and band parents have in their children. It made them feel good, too, to see
their children take an interest in the students they teach every day. According to Julia, her band
was very involved with her personal life, even before she had a family. When Julia was single
and was in her first year of band directing, her seniors set her up on a blind date. This man
became her husband in 2006. In her words:

> From the start he was my biggest supporter. He understood my love and passion for
> music and for teaching. He helped me with no questions asked and to be honest I think he
> enjoys it. He too was in band when he was in high school and even though it was not his
> profession I know he enjoys being around music.

About the children they now have, she said:

> I hope my children choose to be in band but I will not force them to. I also hope by them being exposed to it already they will develop a love for it like I have. My band students love my kids and help me out so much. My kids love my band students and truly enjoy spending time with them. In fact, my children have each invited several of my band students to their birthday parties. This was their request.

Discussion

What is the experience of being a mother and a band director? These mother/band directors love their families and love their work. According to respondents, a typical mother/band director is surrounded by varying levels of support, including her spouse, family, in-laws, friends, band parents, parents of children's friends and band students themselves. She believes in the value of organization and managing her life. She arranges childcare for the times that she is unable to be with her children or is unable to take them with her to professional obligations. She prioritizes, accomplishes some goals, makes the most of her time with her family and usually longs for a little more time in the day.

Findings in this study concur with the literature reviewed. While some sentiments expressed in the literature review, especially those by Benjamin (1966) may be somewhat antiquated notions, the basic ideas are the same. The workloads on the job and at home are great. One must manage available resources and decide what "shortcuts" can be taken. Just as Hoffman's (1974) comment suggests, band-directing mothers do enjoy their time off with their children. My questions paralleled those of Fitzpatrick (2013) and it is notable that most of my respondents' comments closely resembled the results noted by Fitzpatrick.

The researcher was surprised by two findings in particular. The first is the report from two respondents that discrimination from other women had been an issue for them in the recent past. With so many messages of empowerment for women in our society, it is difficult to imagine that a female band director or any other woman would attack another in this way. The other striking concept is the timeless nature of the struggle of working mothers. Women have been combating the same "mommy guilt," the same balance of responsibility, the same balance of finances, and the same inequalities in societal expectations of parents (based on gender) for decades (Benjamin, 1966; Hoffman, 1974).

There were interesting statements made by individual mother/band directors that bear mentioning. Of all 15 respondents, and the many important statements they made, only one commented on the lack of "me-time" (e.g., time alone to shop, craft, read, engage in other hobbies) she manages to get. This could reflect that everyone else finds "me-time" in their schedules, or it could reflect that "me-time" is low on the list of priorities of many band directors. Even still, it could reflect that mothers who are band directors do not often consider the possibility of getting "me-time." One respondent included a note with her returned survey, saying that the experience of writing her answers had been "therapeutic," and a few others indicated that the experience forced them to reflect on the choices they are currently making (e.g., "I should do away with private lessons…").

Conclusions

Much like other working mothers, mothers who direct bands must become excellent managers of their resources. Coordinating childcare for evening and weekend obligations is an idea which surfaced many times throughout the data collection and literature review phases of this study. Supportive husbands can have a powerful influence in this area, providing care for their children, assisting their wives with logistical details of running rehearsals and setting up for concerts, and sporting a positive attitude regarding job demands. Family and in-laws can also have a significant, positive impact on the function of the mother/band director's family by their involvement and support.

There are many opportunities for additional research related to this study. Further research could assess the contentment of mothers who have changed jobs to have a more family-friendly schedule. Similarly, one could examine the differences between work-feelings of middle school and of high school mother/band directors. Stemming from the comments regarding negative feedback from women who criticize mothers who become band directors, further research could be done to study women's professional support of one another. Another interesting area of study could be a chronological history of the female band director to present.

The findings of this research may have been different if respondents had only been asked the central question "what is the experience of being a mother and a band director?" with follow-up questions relating to their initial answers. It would be interesting to see if the same categories would surface, and what the tone of the answers would be. The findings of this research could also have been different if a larger number of respondents had participated, or if a more quantifiable survey had been distributed to a larger and even more diverse sampling. Certainly there are boundless possibilities for research on this important topic.

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