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The Effects of Rehearsal Sequence on the Musical Expressivity of Young Voices

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Abstract

The purpose of this study was to investigate whether the sequence in which a choir learns the elements of a song (e.g., rhythm, pitch, text, expression) influence the musical expression (e.g., articulation, dynamics) of their performance. We were also curious if learning sequence would affect expressive retention over time. Participants included four intact sixth-grade choir classes from two large middle schools located in the southeast United States. Participants learned two different songs, one with an infused-expression sequence and one with a post-expression sequence. During the infused-expression sequence, participants learned expressive elements alongside rhythm, pitch, and text. During the post-expression sequence, participants learned the rhythm, pitch, and text first, followed by expressive elements. Each participant recorded a performance of each song immediately after the initial learning sequence and again one week later. Results showed that when students learned a song using an infused-expression sequence they performed more expressively both on the initial and retention recording than students who learned the same song using a post-expression sequence. Implications for the use and benefits of infused-expression sequencing as well as future research are discussed.

Keywords: children's choir, song-learning sequence, expressive singing

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The Effects of Rehearsal Sequence on the Musical Expressivity of Young Voices

Musical expression is the art of playing or singing music with a personal response (Scruton, 1982). Unlike rhythm or pitch, expression is open to performer interpretation. Two choirs could theoretically sing the same song with effective musical expression but in different ways. Often composers or editors include expression markings to aid performers in their expressive interpretation. Practically speaking, performing with musical expression means making appropriate use of dynamics, phrasing, timbre, and articulations to help make the music come to life (Scruton, 1982). Expressivity creates auditory variations in a melody. Changes in articulation, dynamics, and tempo influence the expressivity of a piece of music (Juslin & Laukka, 2003).

Pedagogy on Teaching Expression

Various authors recommended different sequences when introducing a song to a choir. Sequences can focus on rhythm and pitch (Robinson & Winold, 1976), developing part-singing (Collins,1993), music literacy skills (Goetze et al., 2011), or creating a comprehensive picture of the song (Leck & Jordan, 2009; Phillips, 2016). There were variations between authors about when to introduce expressive elements in the song-learning sequence. Most often authors recommended teachers introduce expressive elements after rhythm, pitch, and text were learned (Collins, 1993; Goetze et al., 2011; Robinson & Winold, 1976).

Conversely, Jaques-Dalcroze (1967) believed students should learn rhythm, pitch, and expressive elements concurrently. Leck and Jordan (2009) recommend using Jaques-Dalcroze eurhythmics to introduce expressive and form elements to the singer prior to singing. Similarly, Robert Shaw would teach expressive elements early in the learning sequence by pairing each element of a song (rhythm, pitch, text, and expressivity) in various combinations during a rehearsal to create a precise and expressive performance. Jaques-Dalcroze and Shaw treated all four elements of a song as equal contributors to the overall performance (Yarbrough, 2002).

Watkins and Scott (2012) also recommended introducing expressive elements early in the learning process. "Expressive musicianship is fundamental to all students' development and should not be delayed until technique is in place" (p. 104). Performing with expression early creates a need for technique to be addressed, and improving technique helps increase the available expression vocabulary. Furthermore, expression motivates students to improve their vocal technique and/or musicianship skills. By including expressive elements early in the learning sequence, students will hopefully recognize that expressiveness is an integral part of the music and never perform the song void of expression.

Research on Expression

Researchers have studied several core areas of expression, including students' perceptions, influence of training, and the effectiveness of different instructional strategies. Students re-

ported enjoying learning expressive skills and felt they were essential to a quality performance (Lindström et al., 2003). Students were able to improve their musical expressiveness skills with instruction (Ebie, 2004; Marchand, 1975) and the longer a student participated in musical ensembles and private music lessons, the more likely they were to be expressive when performing (Broomhead, 2001).

Expressive performance pedagogical strategies (e.g., modeling, verbal instructions, imagery, conducting gesture, etc.) have also been empirically tested. Woody (2006) found aural modeling, verbal instruction, and imagery/metaphor were all successful teaching strategies, but each had limitations for college pianists. Aural modeling was consistently effective at creating an imitation of the original model but did not inspire a student's own expressivity or interpretation of a melody. Verbal instruction showed consistency in improving expressive performance from the baseline performance to the final performance but required significantly more practice than the other two strategies, making it less efficient. The imagery and metaphor strategy also produced change in performance but was not always performed in the way the instructor desired. Skadsem (1997) found verbal instructions elicited the most different dynamic response compared to written instructions, conducting gesture, or neighboring singers in high school and college singers.

Broomhead (2006) interviewed teachers and observed rehearsals of high school choirs and found expressive teaching techniques appeared to be spontaneous and did not follow a prescribed sequence. Instruction techniques fell into seven categories: (a) student-initiated input, (b) teacher inquiry, (c) referential (e.g., imagery), (d) demonstration, (e) teacher feedback, (f) detailing, and (g) conducting. Based on Broomhead's findings, expressive teaching strategies appeared to be more instinctive and spontaneous and less prescribed and sequential.

Only a few studies have focused on the performance of musical expression in younger students (Broomhead, 2001, 2006; Broomhead et al., 2012; Woody, 1999). Others have included college-aged participants (Ebie, 2004; Lindström et al., 2003; Skadsem, 1997; Van Zijl & Luck, 2013; Van Zijl, & Sloboda, 2011; Van Zijl et al., 2014; Woody, 2000, 2006) and focused on instrumentalists (Gabrielsson & Juslin, 1996; Meissner, 2017; Van Zijl & Luck, 2013; Van Zijl, & Sloboda, 2011; Van Zijl et al., 2014; Woody, 1999, 2006) rather than vocalists (Broomhead, 2001, 2006; Broomhead et al., 2012; Ebie, 2004; Skadsem, 1997). Furthermore, most studies tested expressive performance on previously learned song material (Broomhead et al., 2012; Skadsem, 1997; Woody, 2006) where participants learned notes and rhythms before learning expression.

Only one study to date has explored the timing/sequencing of introducing expressive elements in song acquisition in young singers (Hurley, 2019). Participants learned songs using an infused-expression sequence (learning the song with expression from the beginning) and post-expression sequence (adding expression after rhythm, text, and pitch). Both sequences were effective at creating an expressive performance. When sequences included directive statements about expression, the infused-expression sequence group scored higher than the

post-expressive group ($p < .05$). However, there were only a small number of participants ($N = 56$) and they were all my own students.

The purpose of this current study was to investigate whether the sequence in which a choir learned the elements of a song (e.g., rhythm, pitch, text, expression) influenced the musical expression (e.g., articulation, dynamics) of their performance on an initial and retention assessment. We wanted to replicate (with some variations) the previous study with a larger population of students from different music teachers' classrooms.

Method

We created two different learning sequences (infused-expression and post-expression) to teach the songs *Now All the Woods Are Waking* by Max Exner and *Man's Life's a Vapor* by an Unknown composer. We chose the songs for their length (6-8 measures), their appropriateness for beginning choirs, and for the expressive potential of the text based on our 34 years of combined experience teaching young voices. We added expressive markings based on the text of each piece and balanced the number of opportunities for staccato, legato, forte, and piano in each song. See Figure 1 for specific expressive markings.

Figure 1
Song Examples

Stimulus Creation

To create the learning sequences, we recorded a high school aged treble choir (age in years *M* = 15.38, *SD* = 1.50; years of choir experience *M* = 4.44, *SD* = 1.55; grade *M* = 10.36, *SD* = 1.53) performing *Now All the Woods Are Waking* and *Man's Life's a Vapor* using a Zoom H1 Digital Recorder. We made recordings of the choir chanting and singing both songs with and without expression. We used these recordings as the vocal model for the prerecorded learning sequences. Based on the findings of several studies, we included vocal modeling (Mann, 2008; Woody, 2006) and directive questions (Dunn, 1997; Stamer, 1999) in both sequences.

We created two learning sequences (infused-expression, post-expression) for both songs by combining the choral model with spoken clips of directions (e.g., "Echo sing phrase one with expression") and directive questions about expression (e.g., "Can you make the first part of the phrase separated and second part of the phrase smooth like the model?") using the free software Audacity (Audacity, 2018). Both learning sequences included the same directions, three directive questions about expression, and the same number of models and repetitions. Both sequences were approximately six minutes in length.

Teaching Sequences

We based the post-expression sequence on the common sequence choral directors use to teach a song outlined in several textbooks (Collins 1993; Phillips, 2004; Robinson & Winold, 1976). Because teachers used various sight-reading systems and choirs may be at different music literacy skill levels, melodies were taught by rote with text (while students looked at the musical notation) rather than by using rhythm syllables and solfège. During the post-expression sequence, participants were taught the rhythm and pitches before learning the expressive elements of the song. First, the participants heard the model choir sing the melody with expression. Next, the participants heard the model choir speak the rhythm of each phrase on text with no expression. The participants echoed each phrase twice before moving to the next phrase. Then the participants heard the model choir sing each phrase of the melody on text without musical expression and echoed two times. Once the participants had learned the entire song, they heard instructions about singing each phrase expressively (i.e., "Notice that phrase one begins short and separated and ends nice and smooth. The whole phrase is quiet. Echo after me"). Participants echoed the model choir singing each phrase of the song with expression. Between repetitions for each phrase, the participants heard directive questions about the expression (i.e., "Remember to start the song quietly and make a noticeable difference between the separate and smooth sections"). The participants then listened to the model choir sing the same phrase with expression again and echoed. Once all phrases were completed in the same manner, the participants were directed to "sing the whole song like the model" one more time. To watch and hear the post-expression learning sequences, follow the YouTube links: *Man's Life's a Vapor*

– post-expression - https://youtu.be/YeFoZDPyU-M, *Now All the Woods Are Waking* – post-expression – https://youtu.be/wwe3Jr92c1Q.

We based the infused-expression sequence on the rehearsal techniques of Robert Shaw as outlined by Yarbrough (2002). First, the participants heard an expressive model of the entire melody on text. Before learning each phrase on text, participants heard instructions about expressive quality of the phrase (i.e., "Phrase 3 starts quiet but changes to loud at the end. It also starts short and separated and ends with three strong accents. Echo after me"). Next, the participants heard the model choir speak the rhythm of each phrase on text with expression. The participants echoed two times until all phrases were completed. Then, participants echoed the model choir singing each phrase with expression, followed by a directive question (i.e., "On the third line make sure 'down he, down he, down he, down he' [sung] is short and quiet and then 'down he goes' [sung] is strong and accented"). The participants listened to that phrase again with expression and echoed. Once all phrases were learned, the participants were directed to "sing the whole song like the model" two times. To watch and hear the infused-expression learning sequences, follow the YouTube links: *Man's Life's a Vapor* – infused-expression - https://youtu.be/DABUsxfAufc, *Now All* the *Woods Are Waking* – infused-expression - https://youtu.be/d-ogpMsk9hM.

Participants

Participants included four intact sixth-grade choir classes (female = 110, male = 15; age in years *M* = 11 years, 10 months, *SD* = 2.14 months) from two large middle schools located in the southeast United States. Both schools participated annually in performance evaluations and sent students to area honor choirs. Typical rehearsals at both schools included sight-reading, vocal warm-ups, and choral literature. Both teachers reported that their typical song learning sequence was more like the post-expression sequence. The study took place during regular class time during the 2019-2020 school year. The experimental procedures met all the requirements for human subjects' participation and was approved by the appropriate Institutional Review Board (IRB).

Procedures

To counterbalance and account for song difficulty, choir class one learned *Now All the Woods Are Waking* under the post-expression sequence and *Man's Life's a Vapor* under the infused-expression sequence. Choir class two learned *Now All the Woods Are Waking* under the infused-expression sequence and *Man's Life's a Vapor* under the post-expression sequence. Assigned sequences were alternated at the second school to account for sequence bias.

Participants were taught both songs *Now All the Woods Are Waking* and *Man's Life's a Vapor* in a large-group setting. The sequences were projected on a screen in front of the classroom. Students sat in their normal seating arrangement and sang along with the prerecorded sequences to learn each song. The music notation for each song was visible during

the learning and recording process. After completing the sequence, students spread out and stood approximately one to two meters apart from each other, held an iPad approximately 16 centimeters from their face, and recorded themselves using the IOS app Voice Recorder and Audio Editor (TapMedia Limited, 2018). During a recording prompt, a piano played the chords I, IV, I, V7, I in the correct key, and then the first two pitches. After establishing the key, students were counted in on "one, two, sing." Participants then pressed record and sang the entire melody. All students sang at the same time, but because of the proximity of the iPad and spacing of the students, each participant's individual voice could be heard in their recording. After singing the melody, participants pressed stop, saved their recording, and uploaded their recording to a designated online storage folder following directions projected on a screen. All recordings were performed *a cappella* without a conductor. Participants followed the same procedure for the second song.

One week after the initial learning sequence, participants stood in the same spread-out position. First, participants reviewed the song silently while looking at the music notation for one minute. Then, without practice, the participants recorded themselves singing each song again for the retention recording. The recording protocol and recording prompt for the retention test was the same as in the initial test.

Rubric

We created the rubric to evaluate each participant's recordings in the areas of articulation and dynamics. The original rubric was evaluated by five content experts and was improved upon based on their suggestions. In the final rubric, each phrase was evaluated for correct articulation (i.e. legato, staccato). If the participant sang the entire phrase with correct articulation, they received a three, if the articulation was present for only part of the phrase, they received a two, and if the articulation was not present at all they received a one. Dynamics were graded in a similar fashion. See Supplement 1 for more details.

Raters

A graduate assistant randomly coded all recordings with an identification number so all raters would be blind to the sequence, school, and class period. Due to the performance nature of the task, two content experts, as well as the two primary investigators, were solicited to act as raters. Raters were certified music educators who were current teachers at the elementary school, middle school, or collegiate levels ($M = 13.75$ years teaching experience; $SD = 9.04$; range: 3-27 years). All raters met and discussed the performance assessment rubrics. For training purposes, raters both together and individually evaluated recordings from a previous study to ensure understanding and agreement upon the vocabulary included in the measurement instrument (see Supplement 1 at the end of the article).

Raters listened individually using noise-cancelling headphones for no more than 30 minutes per day over four weeks. Raters were instructed to listen to each recording three times - once to identify the individual voice (within the large-group setting), once to assess articu-

lations, and once to assess dynamics. Raters were also encouraged to relisten to any phrases as needed and to stop between phrases to mark the score.

Ten recordings (five recordings of each song) were doubled in each raters' folder to assess intrarater reliability. To measure intrarater reliability, we ran a two-way mixed model intraclass correlation coefficient using absolute agreement on the 70 articulation and dynamic ratings found in these ten recordings. A high degree of intrarater reliability was found for all four raters. See Table 1 for individual rater results.

Table 1
Individual Intra-rater ICC, 95% Confidence Interval, F-values and p-values (n = 70)

	ICC	Confidence	F	p
Rater 1	.892	.826 - .933	9.265	<.001
Rater 2	.978	.965 - .986	45.692	<.001
Rater 3	.849	.757 - .906	6.617	<.001
Rater 4	.962	.939 - .976	26.177	<.001

An additional 16 recordings were placed in all four raters' folders to assess interrater reliability (eight recordings per song). For *Man's Life's a Vapor* the average measure (absolute) ICC was .945 with a 95% confidence interval from [.926 to .960] (F(111,333) = 18.181, p < .001). For *Now All the Woods Are Waking* the average measure (absolute) ICC was .946 with a 95% confidence interval from [.915 to .967] (F(47,141) = 18.239, p < .001). These results indicate there was little variation between raters.

Results

Man's Life's a Vapor had five articulation scores and three dynamics scores (*n* = 8 scores). Each score ranged from one to three; therefore the highest possible expressive score for *Man's Life's a Vapor* was 24. *Now All the Woods Are Waking* had four articulation scores and two dynamics scores (*n* = 6 scores). Each score ranged from one to three points; therefore the highest possible expressive score for *Now All the Woods Are Waking* was 18 points. Of the 125 participants, 67 experienced the infused-expression sequence for *Man's Life's a Vapor* and the post-expression sequence for *Now All the Woods Are Waking*. Fifty-eight participants experienced the post-expression sequence for *Man's Life's a Vapor* and the infused-expression sequence for *Now All the Woods Are Waking*. There were no missing data sets. The mean expressivity score was calculated by adding the articulation and dynamic scores for each participant on both songs. See Table 2 on the next page for the means by dynamic sum-scores (DSum), articulation sum-scores (ASum), and expressivity scores (Total) for songs combined and alone.

Table 2
Mean and Standard Deviations for Articulation (A), Dynamic (D), and Expressivity by Songs

	Man's Life's a Vapor							
	Initial Recording				Retention Recording			
	Infused-Expr.		Post-Expr.		Infused-Expr.		Post-Expr.	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
A1	1.07	.26	1.03	.17	1.09	.28	1.03	.17
A2	3.00	.00	3.00	.00	2.98	.13	2.97	.17
A3	2.91	.28	2.94	.24	2.91	.28	2.96	.21
A4	2.31	.80	1.66	.83	2.66	.57	1.85	.86
A5	2.07	.62	1.75	.72	2.55	.54	1.88	.69
A Sum	8.36	1.07	7.37	1.25	9.21	.78	7.72	1.14
D1	1.02	.13	1.18	.49	1.17	.46	1.04	.21
D2	1.53	.65	1.21	.54	1.40	.65	1.12	.41
D3	2.64	.64	2.06	.90	2.64	.67	1.51	.77
D Sum	5.19	.98	4.45	1.45	5.21	1.20	3.67	1.11
TOTAL	13.55	1.55	11.82	2.89	14.41	1.37	11.39	1.63

	Now All the Woods Are Waking							
	Initial Recording				Retention Recording			
	Infused-Expr.		Post-Expr.		Infused-Expr.		Post-Expr.	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
A1	1.51	.76	1.12	.33	1.52	.64	1.21	.41
A2	2.96	.27	2.98	.13	2.97	.17	2.98	.13
A3	2.45	.50	2.60	.53	2.55	.53	2.53	.50
A4	2.73	.48	1.98	.78	2.82	.39	2.40	.77
A Sum	9.64	.98	8.69	1.14	9.87	1.01	9.12	1.14
D1	1.48	.42	1.12	.46	1.54	.80	1.17	.50
D2	1.43	.66	1.22	.50	1.33	.61	1.26	.44
D Sum	2.91	1.28	2.34	.83	2.87	1.25	2.43	.68
TOTAL	12.55	1.77	11.03	1.50	12.73	1.63	11.55	1.38
ALL	13.02	1.74	11.46	1.99	13.51	1.73	11.46	1.52

Note: see Figure 1 for music notation to determine A1, A2, etc.

We conducted a three-way mixed analysis of variance (ANOVA) to determine whether there was an interaction between the sequence group, song, and time (initial recording to retention recording) on the expressivity score. In this study, sequence group (between-subjects factor), song (within-subjects factor), and time (within-subjects factor) were the three independent variables. The dependent variable was the expressivity score. Since there were differences in the number of ratings between songs, we took the individual participants' expressivity score and divided by the total number of articulation and dynamic scores to find their mean score.

The main effect of sequence showed a statistically significant difference on the mean expressivity scores between the infused-expression sequence ($M = 2.11$, $SD = .30$) and post-expression sequence ($M = 1.85$, $SD = .29$); $F(2, 247) = 142.94$, $p < .000$, partial $\eta^2 = .23$. However, there was no statistically significant main effect for time on mean expressivity scores between the initial test ($M = 1.96$, $SD = .29$) and the retention test ($M = 2.00$, $SD = .27$); $F(2, 247) = 1.00$, $p = .06$, partial $\eta^2 = .01$, or on song between *Man's Life's a Vapor* ($M = 1.96$, $SD = .27$) and *Now All the Woods Are Waking* ($M = 2.00$, $SD = .29$); $F(2, 247) = 1.00$, $p = .32$, partial $\eta^2 = .00$. These findings suggest that learning a song through an infused-expression sequence improved expressivity on performance for these students compared to students learning through a post-expression sequence but there were no differences on expressivity scores depending on the song or test. No matter the sequence, participants maintained their expressive performance after a week's time for songs and the scores were consistent across sequences (see Figure 2).

Figure 2
Averaged Expressivity Scores by Sequence
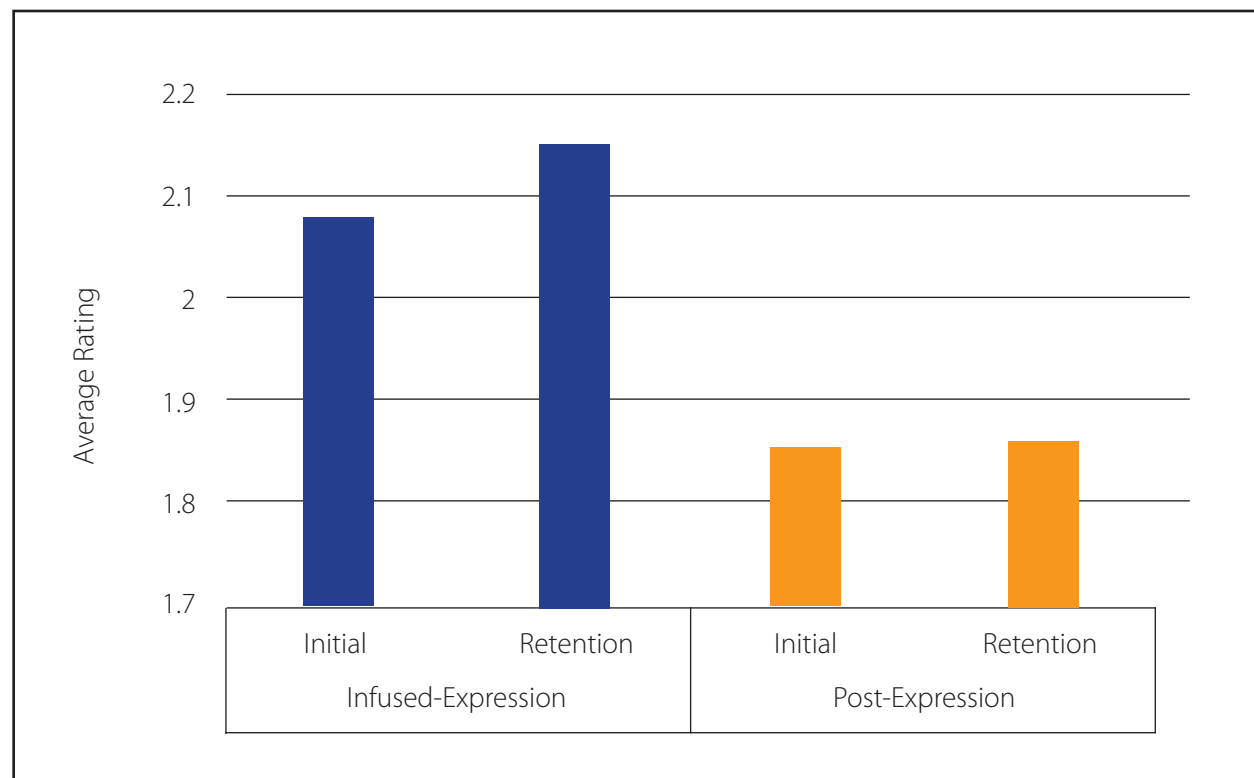
There was a small significant three-way interaction between sequence (infused-expression and post-expression), song (*Man's Life's a Vapor* and *Now All the Woods Are Waking*), and test (initial test and retention test) $F(2, 247) = 6.32$, $p = .01$, partial $\eta^2 = .02$, but no significant interaction between sequence and the song ($F(2, 247) = 2.81$, $p = .10$, partial $\eta^2 = .00$), between song and test ($F(2, 247) = 1.49$, $p = .22$, partial $\eta^2 = .00$), and sequence and test ($F(2, 247) = 1.50$, $p = .22$, partial $\eta^2 = .00$). These results suggest participants performed in a similar manner on both the initial test and retention test for both songs, with little improvement or decline in performance, depending upon the sequence with which they learned the song.

Discussion

We explored the effects of rehearsing expressive elements throughout the song-learning sequence (infused-expression) compared to rehearsing expressive elements after learning rhythm, pitch, and text (post-expression). We also investigated how various sequences affect expressive retention over time. In this experiment, singers learned two songs through two different sequences. The infused-expression sequence introduced the song's expressive elements while learning the rhythm, pitch, and text. The post-expression sequence introduced the song's expressive elements after the singers had already learned the rhythm, pitch, and text. Participants who learned a song under the infused-expression sequence scored significantly higher on the expressivity score than participants who learned the song under the post-expression sequence. This finding supports the effectiveness of an infused-expression sequence as recommended by Jaques-Dalcroze (1967), Leck and Jordan (2009), and Robert Shaw (Yarbrough, 2002).

We were also interested in whether the learning sequence influenced the retention of musical expression. In this experiment, all participants returned after a week and recorded each song again after reviewing the music silently for one minute. The overall results suggest that expressive elements demonstrated in the initial recording were retained and demonstrated again on the retention recording, some with slight improvements, more often in the infused-expression sequence recordings. Neither sequence appeared to be better or worse at improving expression retention.

Though both sequences had the same number of repetitions, participants in the infused-expression group had more opportunities to perform expressive elements as expression was embedded in each repetition. Furthermore, the directive questions and vocal models in the infused-expressive sequence encouraged participants to perform expressively from the very beginning of the sequence. For the post-expression sequence group, directive questions and vocal models did not include expressive elements until late in the post-expression sequence. Consequently, participants practiced without expression then were expected to change the way they performed midway through the learning sequence. This change mid-sequence may have been more difficult than learning the articulations and dynamics

from the very beginning because there were fewer opportunities to practice the expressive elements and because learning a melody two different ways (without and with expression) can be challenging. When expression is rehearsed in each step from the beginning of the song learning sequence, rhythm, pitch, text, and expression all have equal numbers of repetitions and opportunities for mastery.

In this study, we anticipated many students would sing off-pitch even though we strategically picked music and planned sequencing that would ensure successful acquisition. Interestingly, no child performed incorrect rhythms except when the first entrance of the song was late (fewer than five participants). Furthermore, raters only wrote comments about off-pitch or speaking voice for two students. Though quite a few students had intonation issues in some parts of each song, the raters mentioned being pleasantly surprised so many students used their singing voice and sang mostly in tune. In general, participants who learned expression from the beginning performed more expressive elements on initial and retention tests compared to participants who learned expression after rhythm, pitch, and text.

Limitations and Further Research

All participants were members of intact sixth-grade non-auditioned middle school treble choirs predetermined by school and class period, making it impractical to balance groups based on singing ability, expression skills, or previous choral experience. For the song *Man's Life's a Vapor* there was no significant difference between schools for average mean for expressivity score. However, for the song *Now All the Woods Are Waking*, school one's mean score was significantly higher than school two's mean score for the expressivity score. Though all participants at both schools experienced both an infused-expression sequence and a post-expression sequence (counterbalanced), teacher influence and differing ability levels between teachers and students could have influenced the results. Further research could balance groups based on previous choral experience and vocal ability or randomly assign participants within each class.

Students in this study experienced the song-acquisition sequence in a group setting. Participants recorded themselves individually while singing with other choir members. How much or little a participant influenced other participants was not accounted for in this study. We chose to have students rehearse and be assessed in a group setting because we were interested in how students behave in a typical choral rehearsal rather than as a solo singer. In one of the classes at one school there was a participant who sang the final phrase of *Man's Life's a Vapor* rather loudly in a heavy chest voice. This participant could often be heard in the background of other participants' recordings. Results may have been different if students learned the sequence individually and were recorded without others singing with them. Further research could assess singers individually rather than in a group setting.

We observed that staccato markings that occurred towards the beginning of each song scored much lower than staccato markings towards the end of each song. These lower scores occurred in both sequences and on both recordings. This same phenomenon occurred with

dynamics in the song *Man's Life's a Vapor*. Students may have become more accustomed to the prerecorded learning sequence by the later phrases of the song, resulting in more articulation and dynamic accuracy. Or, students just did not remember on their own to start with articulations or dynamics. No conductor was present for the initial or retention recordings and therefore no preparatory conducting gestures were given. The lack of a conductor might have influenced the performance of the initial expression articulations and dynamics. Further research could mix the order of staccato and dynamic changes to explore this result.

The difference in the number of times the infused-expression sequence group heard an expressive model may have resulted in a more accurate performance compared to the post-expression sequence group (Woody, 2006). During the infused-expression learning sequences, participants heard an expressive model throughout the entire sequence a total of seven times. During the post-expression learning sequence participants heard the expressive model in the beginning and towards the end of the sequence a total of four times.

Based on our own teaching experiences, observing other teachers, and textbook methodologies (Collins 1993; Phillips, 2004; Robinson & Winold, 1976), many teachers typically introduce a song without expressive elements, waiting to model and give feedback on expressive elements until after the rhythm, pitches, and text are learned. Therefore, we chose to create the post-expression sequence in this way to represent a real-world classroom more accurately. Further research could use an expressive model throughout the post-expression sequence to determine if the higher scores for the infused-expression group were a result of the model throughout the sequence or the extra repetitions with expression.

Future studies could also explore how learning sequences affect other expressive criteria besides articulation and dynamics. There are many other musical characteristics that help create an expressive performance, such as phrasing, various articulations, beat stress, facial expressions, and body expression (Leck & Jordan, 2009). Furthermore, sequences in this study lasted around six minutes and used a simple unison melody. Future research could explore how an infused-expression sequence and a post-expression sequence influence expressivity using a longer learning sequence, with a more complex song, with multiple parts.

Conclusion

The results showed an infused-expression sequence was the more effective process for teaching students the expressive elements of a song in this study. Learning a song expressively from the beginning resulted in these students singing with expression that was more accurate on both the initial test (immediately after learning the song) and on the retention test (one week later). An infused-expression sequence might have been effective because it drew the students' attention to the expressive details of the song repeatedly. Focusing on the expressive elements of a song earlier provided students additional opportunities to practice and receive feedback regarding expressive elements.

Some teachers may be concerned that focusing on expression from the beginning would

hinder students' abilities to perform rhythms and pitches accurately. Performing more than one task at a time (i.e. rhythm, pitch, and expression) can create a highly challenging environment. Without adequate support from the teacher, performing multiple tasks concurrently can cause anxiety and frustration (Mariani, 1997). Therefore, teachers should pick appropriate level repertoire, assess often, understand each individual student's abilities, and only add the next smallest step that all students can complete successfully. Planning appropriate level musical tasks and repertoire, sequencing and scaffolding rehearsals to ensure success, and allowing multiple successful repetitions creates positive habits of expressive singing.

Additionally, teachers could consider focusing on smaller sections of music and teach expression plus one element (i.e., rhythm, pitch, text) rather than long sections teaching only one song element. For example, students could learn the rhythm and expression for eight measures rather than learn only the rhythm for 16 measures of a song during a rehearsal segment. Mastering smaller chunks of a song may help students feel more successful and not feel as overwhelmed. Often expressive skills learned in one section can be transferred to similar sections in other parts of the song, accelerating the learning process.

Choral pedagogy textbooks have differed on when to introduce and rehearse expressive elements in a song-learning sequence, weighing heavily on pitch and rhythms first. However, the results of this study show an advantage to learning expression in conjunction with rhythm, pitch, and text, thus providing support for introducing expressive elements early and often in music learning. Considering these findings with young voices, teachers should evaluate their song-learning sequences and explore introducing expressive elements early in the song learning process.

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Supplement 1 :
Rubrics

Now All the Woods Are Waking				
Articulation	**3**	**2**	**1**	**Notes**
A1 "Now all the woods are waking"	100% of the notes were sung staccato	Some of the notes were sung staccato	None of the notes were sung staccato	"wak" & "ing" is not scored
A2 "the sun is rising high"	100% of the notes were sung legato	Some of the notes were sung legato	None of the notes were sung legato	
A3 - Wake up now!, Get up now!	100% of the notes were sung legato	Some of the notes were sung legato	None of the notes were sung legato	"now" to "get" must be connected for a 3, the last "now" is not scored
A4 - "Before the dew is dry."	100% of the notes were sung staccato	Some of the notes were sung staccato	None of the notes were sung staccato	"dry" is not scored
Dynamic	**3**	**2**	**1**	**Notes**
D1 "high" to "Wake"	Singer sang louder on the word "wake" than on the word "high" and the dynamic lasted the entire phrase	There was a change in dynamic level at some point in the phrase, but it was not present for the entire phrase.	There was no change in dynamic level.	Compare D5 in measure 3 against D5 in measures 5-6
D2 "now" to "be"	Singer sang quieter on the word "be" than on the word "now" and the dynamic lasted the entire phrase	There was a change in dynamic level at some point in the phrase, but it was not present for the entire phrase.	There was no change in dynamic level.	Clear difference than previous phrase

Man's Life's a Vapor				
Articulation	**3**	**2**	**1**	**Notes**
A1 - Man's Life's a Vapor	100% of the notes were sung staccato	Some of the notes were sung staccato	None of the notes were sung staccato	If only the "por" of "vapor" is sung staccato than it is still a 1
A2 - full of woes	100% of the notes were sung legato	Some of the notes were sung legato	None of the notes were sung legato	

A3 - He cuts a caper	100% of the notes were sung legato	Some of the notes were notes were sung legato	None of the notes were sung legato	Compare and contrast A1 and A3 - they should be sung differently. If the "per" of "caper" is clipped it is a 2.
A4 - down he goes	100% of the notes were sung staccato	1 of the 2 notes were sung staccato	0 notes were sung staccato	"goes" is not scored.
A5 - Down he, down he, down he, down he	Notes are obviously separated	Strong "D" and "H"'s gave the impression of separation	Phrase is sung slurred and smooth.	
A6 - down he goes.	Do not score articulation	Do not score articulation	Do not score articulation	
Dynamic	**3**	**2**	**1**	**Notes**
D1 "woes" to "he"	Singer sang louder on the word "he" than on the word "woes" and the dynamic lasted the entire phrase	There was a change in dynamic level at some point in the phrase, but it was not present for the entire phrase.	There was no change in dynamic level.	
D2 "goes" to "down"	Singer sang quieter on the word "down" than on the word "goes" and the dynamic lasted the entire phrase	There was a change in dynamic level at some point in the phrase, but it was not present for the entire phrase.	There was no change in dynamic level.	
D3 "he" to "down"	Singer sang louder on the word "down" than on the word "he" and the dynamic lasted the entire phrase	There was a change in dynamic level at some point in the phrase, but it was not present for the entire phrase.	There was no change in dynamic level.	

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(Re)building the Secondary School Choir Program: An Organizational Perspective

Justin J. West[1] and Jason P. Bowers[2]

Abstract

The purpose of this qualitative inquiry was to understand secondary school choir program (re)building through an organizational lens. Participants were two music teachers who respectively founded or restored middle school choir programs in the last 10 years. Primary data included individual teacher interviews and group interviews with selected students. Secondary data came from field observations and documents. Using instrumental case study methods, we analyzed the programs as voluntary associations, a type of organization in which members (in our case, students) participate by choice and for nonremunerative reasons. Findings showed that to (re)build, the teachers adopted philosophies of open access and cast their choirs as socially rich, emotionally safe, and musically challenging. Students' motivations for persisting in choir were primarily affective and normative (e.g., to develop singing skills and to be with friends) rather than utilitarian (e.g., choir as an easy A). (Re)building was situated and phased, with school culture, policy, administrator relations, and program age emerging as salient factors. We advance teacher profiles, practical implications, and suggestions for further study.

Keywords: music programs, choral music education, recruitment and retention, organizational theory, secondary schools

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(Re)building the Secondary School Choir Program:
An Organizational Perspective

Large ensembles are mainstays of school music in the United States. Choir, band, and orchestra remain far and away the most popular high school music courses (Elpus & Abril, 2019), and the majority of K–12 music teachers lead at least one performance group (Matthews & Koner, 2017). Beyond the classroom, ensemble experiences provide pathways into postsecondary musical engagement (Isbell, 2019; Madsen & Kelly, 2002). Seventy-six percent of respondents to a national survey by Chorus America (2019) credited primary and secondary schools for introducing them to singing. Despite their prevalence and influence, however, empirical research on building or rebuilding secondary school ensemble programs—hereafter (re)building—lacks in the literature. Scholars have instead focused on broader concerns such as expanding curricula (e.g., Williams, 2011) and advocating culturally relevant policy (e.g., West & Clauhs, 2015). No doubt these tasks are vital, but if thriving music programs are going to be available to as many students in as many schools as possible, understanding the on-the-ground efforts of teachers who (re)build them is essential.

Related Literature

Ensemble programs with records of success are well represented in extant literature. For instance, Adderley et al. (2003) profiled choir, band, and orchestra programs within a "healthy…well-supplied and valued" high school music department (p. 192). Bannerman (2019) selected a school "with a reputation of a successful choral program and quality instruction based on the recommendation of local music teachers" (p. 47). Parker (2016) sampled choral teachers that "received positive verbal recommendations from families, colleagues, and administrators" (p. 224) and whose programs enrolled at least 100 students. Although one of Parker's participants founded the choir program when their school opened, building was not the prime focus of the study. In the community music literature, the same is true; participating directors and programs are often at their pinnacles (e.g., Bartolome, 2013, Kennedy, 2009).

New music teachers have often preferred working in schools like those they attended—suburban, higher-income, and with robust music programs (Kelly, 2003). To the extent such settings feature higher pay and more support from parents or administrators, this tendency mirrors long-standing explanations for why music teachers join, persist in, and sometimes leave the profession (Gardner, 2010; Hancock, 2008). That said, at least some scholarship suggests that apprehensiveness toward (re)building could play a role in keeping new teachers away from jobs in schools serving more diverse and lower-income student populations. In a national survey, Robinson (2012) found preservice teachers preferred suburban contexts and rated "program sustainability" over socioeconomic conditions or racial/ethnic makeup when deciding where to work. Bruenger (2010) studied why preservice choral teachers—after participating in a "substantial field practicum program that stressed cultural diversity" (p. 36)—applied or declined to apply upon graduation for positions in urban schools. Eight

of 11 teachers opted against urban jobs, citing their belief that competitive choir programs were less likely to be built in these settings. Tellingly, four of the teachers instead accepted jobs in *midurban* schools located on the urban fringe of better-resourced suburban districts. Despite serving similar populations (low-income and at-risk), they assessed midurban schools more favorably than urban ones. These findings suggest that the prospect of (re)building can impact teachers' employment decisions, but much more data and understanding are needed.

Absent explicit accounts of (re)building, researchers have examined the conditions under which choral programs tend to thrive, specifically highlighting the role of social care and community. Choirs often constitute cultures unto themselves, with shared language, customs, and values (Morrison, 2001) and defined social identities (Bartolome, 2013; Parker, 2014). Parker (2016) found that care, trust, and belonging enriched teacher–student relationships and created community within two middle and two high school choral programs. Directors wanted their students to become "absorbed in shared experience" (p. 233), so even as they cared for students individually, they scrupulously tended to social dynamics. Relational frictions were settled by refocusing on group needs and group musical development, with interdependence and mutuality as key goals. Kennedy (2002) similarly identified "love of singing, influence of the teacher, and the company of friends" (p. 29) as prime motivators for adolescent boys who joined and persisted in choir; social benefits were "by far" (p. 33) the most persuasive. Aggregate evidence tells a similar story. Researchers have found students of color and low-income students are no less likely to enroll in high school choir as compared to their White, more affluent counterparts (Elpus & Abril, 2019). Choir students have also largely reflected the general population on other metrics such as family structure (one/two-parent household) and academic achievement (Kinney, 2019). Stark gender disparities persist, with girls outnumbering boys two to one (Elpus, 2015), but overall, quantitative and qualitative findings suggest social inclusion is a central contributor to choral participation and program success.

Purpose of the Study and Research Questions

(Re)building is arguably at the heart of music education. Making music programs more accessible, robust, and resilient has and will continue to be a core aim of music and arts education advocates (Shorner-Johnson, 2013). Yet direct empirical evidence on music teachers who (re)build is scarce, even as many hold positions where that work is required. Indeed, while our data collection predated this period, the sweeping impact of the COVID-19 pandemic on music education (Hash, 2021; Shaw & Mayo, 2021), where many programs thought strong and well populated before 2020 were suddenly in jeopardy, reinforces the need for documenting and theorizing (re)building. Our purpose in this multiple-case study was to provide an initial account. We asked the following questions:

1. What were the experiences of two music teachers who recently (re)built middle school choir programs?

2. How did the teachers' backgrounds and career trajectories, school settings, relations with stakeholders (e.g., students, parents, administrators), and other contextual factors impact program growth?

Theoretical Framework

We applied organizational theory—specifically Knoke and Prensky's (1984) framework for voluntary associations—as an analytic lens. Even though it typically relates to firms (e.g., corporations, bureaucracies, other large complex institutions), Knoke and Prensky argued that organizational theory was also relevant to voluntary associations, which they defined "organized named groups, most of whose participants do not derive their livelihoods from the organizations' activities, although a few positions may receive pay as staff or leaders" (p. 3). Rather than profit or government service, voluntary associations are normally oriented towards affective, moral, or political ends; members continually weigh the costs and benefits of persisting in the association and can, without the specter of losing pay or breaching a formal agreement, decide to separate at virtually any time. Examples of voluntary associations include charities, political parties, churches, and professional societies. For the purposes of this study, and as we further explain below, we view secondary school music programs as voluntary associations.

Knoke and Prensky (1984) delineated voluntary associations by five characteristics:

- *Formal Structure*: Voluntary associations tend to be smaller and less structurally complex than formal organizations (Knoke & Prensky, 1984). They exist chiefly to "aggregate and coordinate the expression of political or socioemotional values of their participants, functions that require neither complex nor technically esoteric processes" (p. 7) and have a "simple division of labor" (p. 14).

- *Incentives and Commitment*: In voluntary associations, when incentives are compelling, members grow in commitment, subordinating their individual interests to those of the group. When costs are too high, members detach from the association. Incentive types are delineated as normative (calling on members' values and convictions), affective ("interpersonal relations and the symbolic, emotion-laden attachments of persons to their groups"; p. 5), and utilitarian (material benefits such as wages and salaries). Knoke and Prensky stipulate that in voluntary associations, utilitarian incentives are "clearly denigrate[d]" (p. 6) compared to normative and affective incentives.

- *Leadership and Authority*: Undergirded by an "ideology of democratic participation" (Knoke & Prensky, 1984, p. 8), voluntary associations "severe[ly] restrict…leaders' autonomy to act without consulting or taking into account the interests and preferences" (p. 9) of their members. Leaders, though often paid and increasingly professionalized, are primarily motivated by "ideological, collective-good, life-style, and other nonutilitar-

ian benefits" (p. 9). They view themselves as advocates and managers of the association's broader mission.

• *Environmental Conditions*: Unlike large, structurally complex firms which are "buffered from external environmental complexity, uncertainty, and changes" (p. 11), voluntary associations are particularly susceptible to "actors and events lying outside…formal organizational boundaries" (Knoke & Prensky, 1984, p. 10). Support for organizations is finite and competition often fierce; to survive, voluntary associations form "protective alliances with powerful allies" (p. 11).

• *Organizational Effectiveness*: In voluntary associations, effectiveness typically means "satisfying members' demands for services (including socioemotional needs for sociability) [and] achieving recognition and legitimacy from the public and community elites" (Knoke & Prensky, 1984, p. 13).

Scholars have used Knoke and Prensky's framework to explore voluntary associations in various domains (e.g., food banks, Torres et al., 1991; youth sports organizations, Caldwell & Andereck, 1994; Kim et al., 2010). Ours is a novel application in a school context, but there is recent precedent in music education with Mantie and Tan's (2019) study of community wind bands in the U.S. and Singapore. The decision to apply an organizational lens in the present study turned on two factors: (a) that secondary school choir teachers could be understood as leaders of organizations rather than "just" teachers and (b) that secondary school ensemble programs generally, and choir specifically, are voluntary associations. We address each factor in turn.

Alongside artistic, educational, and social missions, choral teachers in many respects have organizational mandates too. Program leadership is multifaceted. Choir teachers are conductors, voice instructors, arrangers, and pianists; they interface with policymakers and administrators; and they oversee public relations, budgets, recruitment and retention, advocacy campaigns, and in some larger programs, multimember staffs (e.g., assistant director(s), accompanist, private voice teachers). Effective teaching and musicianship are necessary, but establishing or regenerating a program is often a long-term, encompassing commitment. As Ryan (2009) observed in a handbook on program building for preservice and novice teachers, "While musical skills and pedagogical knowledge may be in place, [new teachers] often lack an understanding of the multiple roles of today's music teachers" (p. xi). Ballantyne (2007) emphasized that music teachers were often "one-man band[s]" whose workloads and roles extended "beyond that of other classroom teachers" (p. 185). Apfelstadt (1997) maintained a similar view: "[M]any [preservice] students work diligently to meet course demands without functioning very effectively on the podium" (p. 23). Missing, she contended, were leadership skills, an "extramusical" responsibility within the "comprehensive whole" (p. 26) of choral teaching. To understand (re)building, we adopted this embracive lens, common in many choral methods texts (e.g., Holt & Jordan, 2008; Phillips, 2016; Ward-Steinman, 2018)

if mostly missing from empirical work.

We also analyzed the choir programs as voluntary associations, a type of organization in which members (in our case, students) participate by choice and for nonremunerative reasons (Knoke & Prensky, 1984). School itself may be compulsory, but beneath that high-level mandate lies substantial discretion, especially for middle and high school students deciding whether to enroll in music. Only 22 states and the District of Columbia require arts credit for high school graduation (National Center for Education Statistics, 2018). Moreover, even as music courses are available in at least 90% of U.S. secondary schools (Abril & Gault, 2008; Parsad & Spiegelman, 2012), student participation endures at between one-fourth and one-third (Elpus, 2014; Elpus & Abril, 2019). Students choose whether to join ensemble programs, and critical to (re)building, whether to remain in them after the initial enrollment year. Although structural factors curtail students' discretion (e.g., parental support, course availability, minor status of children) and certain features may imply a formal agreement (e.g., grades, arts-credit requirements), on balance we find secondary school music programs are best categorized and studied as voluntary.

Method

Design and Sampling

In this multiple-case study (Stake, 2003, 2006), we focused on two teachers who (re) built secondary school choir programs. We examined their experiences in-depth, but the main goal was to "pursue the external interest" (Stake, 2003, p. 137) of understanding (re) building broadly, making our case study instrumental rather than intrinsic. We purposefully sampled teachers who had (a) built or rebuilt a middle or high school choral program in the 10 years prior to 2019, (b) experienced substantial growth in student enrollment in that program, and (c) demonstrated achievement as indicated by some external measure (e.g., adjudicated festival/contest results). Considering these criteria, we met to discuss participants, preliminarily identifying Calli and Kaylen, two middle school choral teachers in the southern U.S., as possibilities. Kaylen had conveyed her (re)building story informally to Justin after he led a clinic with her choirs a few months before the study began. Jason had worked in the same district as Calli (different schools) several years ago and knew of her (re)building efforts. We contacted them to gauge their interest and to determine if their programs could be considered (re)built under our definition. With support on both fronts, we then sought approval of school and district gatekeepers and had the study sanctioned by our Institutional Review Board. To safeguard privacy, participants and entities in this report are referenced pseudonymously. See Table 1 on the next page for participant contextual data.

Table 1

Participant Contextual Data

Name	Teaching Experience (current school/ total)	School	Grades	Enrollment*	Setting	Race/ ethnicity	Free/ reduced-price lunch eligibility*
Calli	8/10	Southeastern Middle School	7–8	840	Suburban, public	< 1% Asian 52% Black 2% Hispanic 42% White 4% two or more races	45%
Kaylen	6/15	Fields Middle School	6–8	920	Suburban, public	3% Asian 25% Black 6% Hispanic 64% White 3% two or more races	30%

Note. National Center for Education Statistics public school data, 2019–2020 school year. Percentages do not add to 100 due to rounding.

*Rounded to nearest 5 to preserve anonymity

Data Generation

We used multiple data sources to develop holistic accounts of Calli, Kaylen, and their programs (Yin, 2018), with collection occurring between November 2019 and March 2020 (before the onset of COVID-19-related school closures). Primary data included three individual interviews with each teacher as well as group interviews with selected students. In the first teacher interview we surveyed participants' full musical and professional paths, from their upbringing and preservice preparation to their current work in the programs they (re)built. In the second teacher interview we delved into prior teaching positions, which for Kaylen included a previous (re)building experience. In the third and final teacher interview, we explored in greater depth participants' present positions, the (re)built programs that qualified them for this study. Each interview lasted between 45 and 60 minutes. Justin interviewed Kaylen, and Jason interviewed Calli.

For further perspective, we had participants recommend a few current students who were in at least their second year in the choral program. After receiving parent consent and child assent forms, eight students were interviewed, five from Calli's program in groups of three and two, respectively, and three from Kaylen's program in a single group. We asked students about the reasons they joined choir, the benefits and challenges of being in the program, their relationships with their teacher and peers, and their perceptions of how choir is viewed

by others (e.g., non-choir friends at school, parents). Student interviews lasted 30 minutes on average. Demographically, the student panels reflected the racial-ethnic makeup of the schools at large (see Table 1). Four of Calli's students were Black, and one was White. Two of Kaylen's students were White, and one was Black (see supplemental materials for semi-structured teacher and student interview protocols).

Secondary data came from field observations and documents. We twice visited selected classes for each participant: Calli's seventh and eighth-grade girls' choirs, and Kaylen's seventh-grade boys' choir and eighth-grade girls' choir. Overall, we accumulated about 12 hours of fieldwork across four visits. Both researchers were present for all observations. The goal was to understand how the live teaching setting reflected participants' perspectives on (re)building. Our fieldnotes included descriptions of activities and interactions in the classroom as well as reflections on happenings most pertinent to the research questions (Merriam & Tisdell, 2016). During class breaks, we informally conversed with participants. These ad hoc interviews were not audio-recorded or transcribed, but we summarized them in fieldnotes. We debriefed after each visit, discussing what we had observed and outlining preliminary judgments. Finally, we requested documents from participants (e.g., choir handbooks) that they thought would provide insight into their (re)building process and their programs as organizations.

Data Analysis

Teacher interview transcripts, student interview transcripts, and observation fieldnotes yielded 156, 102, and 64 pages of double-spaced text, respectively. We received nine representative documents from Calli (i.e., recruitment flyers, contest adjudication forms, fundraising receipts, concert programs, local newspaper feature) and seven representative documents from Kaylen (i.e., new course proposal, choir handbook, recruitment flyers, concert programs). Analysis commenced in two stages. First, we independently combed the data to construct a high-level, inductive understanding of participants and their programs, working "from the 'ground up'" (Yin, 2018, p. 169). In the second stage we narrowed our lens, this time applying the five analytic categories of Knoke and Prensky's (1984) theory of voluntary associations. We met repeatedly via videoconference throughout both stages to discuss emergent themes.

Trustworthiness

To boost credibility, we applied triangulation procedures (Denzin, 1978; Patton, 1999). We collected evidence from interviews, observations, and documents (methods triangulation). Our interviews were conducted over the course of three (Kaylen) to five months (Calli). With at least two months between the first and second interviews, participants were able to reflect back and harden (or amend) initial impressions (data triangulation). Finally, as a two-person team, each of us independently and then collectively examined the full dataset, negotiating meanings until we reached thematic agreement (investigator triangula-

tion). Other credibility enhancers included our manual, word-by-word transcription of each interview. We also did two waves of member checking, the first with raw data (sending verbatim transcripts to participants for accuracy checks) and the second with abstract meanings (sending theme descriptions to ensure our impressions were fitting). Participants affirmed our interpretations without requests for revision, a sign we were accurately reflecting their experiences.

Positionality

As former high school choral directors, we both had (re)building experience. We also knew the participants professionally prior to the study. These relationships provided access and enabled us to quickly build rapport with participants. Nevertheless, we took steps to minimize any undue influence. In interviews and observations, we set our experiences and connections aside and strove to remain open to different perspectives and practices. We also conducted observations together, comparing our impressions to ensure they converged. Through memos, debriefings, and independent-then-joint analyses, we developed confidence that our conclusions were reasoned and evidence-based.

Limitations

(Re)building is a years-long, often fitful, process. By necessity, the findings that follow are progressive and linear, and may make (re)building appear simpler than it is in practice. Furthermore, participants recounted their (re)building experiences retrospectively, that is, after the period of acute growth and into a phase of maintenance. Observing in real time how teachers conceptualize and implement program development, before they know whether their efforts are going to pay off, would yield insights we necessarily leave out here. Even though our study focused mainly on teachers and students, we recognize the influence of other organization stakeholders (administrators, parents, community residents) and recommend a wider scope in future scholarship. Finally, while our two cases provided some diversity of setting and perspective (e.g., Title I vs. non-Title I school, building vs. rebuilding), the data we present were situated and may not generalize to other middle or high school choir programs.

Findings

We begin with teacher profiles to explicate the "unique vitality…[and] particular situation" of each case (Stake, 2006, p. 39) and position participants' (re)building experiences within their broader personal and career trajectories. Each profile opens with a vignette reconstructed from observation fieldnotes. We then discuss participants' stories of (re)building. Following this is a presentation of seven themes we developed according to Knoke and Prensky's (1984) theory of voluntary associations: choir as an open system, choir as a social and musical haven, parental engagement, student agency, micropolitical maneuvering, public performance achievement, and long-term musical engagement.

Teacher Profiles

Kaylen

Seventh-grade boys enter the choir room in somewhat of a frenzy. "Eat fast," Kaylen tells them as they unpack granola bars and potato chips. Asked why she allows snack time in middle school—her remedy for student lethargy in mid-morning—Kaylen replied that she's "all about meeting needs." While students eat, she takes roll and fields a few inquiries about an ongoing cookie fundraiser. Then, about three minutes in, she starts warm-ups. The boys, many seemingly in the throes of adolescent voice change, have trouble distinguishing head and chest voice. They are also at times antsy and talkative, but overall, rehearsal unfolds smoothly. A White woman in her late 30s, Kaylen maintains a genial disposition even as she alternates between instances of reprimand and moments of praise. The students take it all in stride—singing, enjoying themselves—evidence of healthy teacher–student relations and a hospitable choir culture.

Kaylen founded the choir program at Fields Middle School (FMS) three years ago; before this, the only music offering was band. Of nine middle schools in its suburban district, FMS was the only one with a choir program. In fact, when Kaylen began her FMS tenure, she taught math, not music, attributing her hiring to the "school's desperation" to fill an unexpected vacancy. Kaylen had moved states in late summer for her husband's job and sought any open teaching position, even if it was not music. Despite a lack of relevant experience and credentials, Kaylen adjusted well. "I enjoyed teaching math," she said, "It was satisfying." After two years, however, she missed teaching music, so she suggested an afterschool choir.

In a written proposal to administration, she described the "Choir Club" as an "engaging opportunity to participate in a music education program that will enrich their overall curriculum and boost self-confidence." She included information about program financing (a $10 per-student "copyright fee"), logistics (they would meet in FMS's band room), and membership eligibility (no audition, but students would need to maintain passing grades). With the principal's assent and an initial membership of 25–30 students, the FMS Choir Club began meeting once a week. They performed a joint middle school–high school Christmas concert in the fall and a concert on their own in the spring. Near the end of that year, the principal asked Kaylen if she wanted to teach choir during the school day, an offer she enthusiastically accepted: "They had an elective position to fill [when another teacher retired] and since I was doing the afterschool Choir Club, I guess…it just made sense to offer choir as an elective." The school purchased a digital piano and assigned her a permanent space (the former art room), with "everything else [coming] from fundraising and hand-me-downs." She taught choir and typing the first year; then, with participation exceeding 80 students, she transitioned to full-time choir. At the time of this study, FMS had six choirs overall: two gender-separate ensembles for each of grades six through eight.

Kaylen was not new to (re)building. At Chesterton Middle School (CMS), her post prior to FMS, the choral program had once thrived under a director whom Kaylen described

as a "genius" who was "very well known in the community." However, in the three years between his departure and Kaylen's arrival, the program had been hollowed out, enrollment now insufficient for full-time choir. To fill her schedule, Kaylen had various non-music duties, including assisting the theater director and even being the school's person "in charge of sound equipment." Over six years, Kaylen grew the choir program from 80 to 270 students. When asked whether rebuilding was intentional, Kaylen demurred, saying she was "not highly ambitious in personality" and that the growth was due more to outside pressures than to anything she did. CMS faced competition from nearby magnet schools, to which it responded in part by offering a robust slate of arts programs. In this context, high enrollment meant job security: "I guess I did work at growing the program, [but it was] more out of fear than ambition." "Your full-time position was constantly in danger," Kaylen said, adding, "if you didn't have your numbers high enough, [administrators] would threaten you with bringing you down to .80 time." Despite it all, she concluded, "I loved that school." Indeed, we saw evidence of this when visiting Kaylen at FMS. Five years removed, CMS memorabilia—photos with former students, autographed concert programs—still adorned the wall near her desk.

Calli

It is cold and cloudy in mid-February. "Little chickens in the back, let's move it!" Calli playfully prods seventh-grade girls' choir students to get to their seats at the beginning of the hour. A White woman in her early 30s, Calli is warm and maternal in relating to students. "I think that every aspect of her life is just making sure that we get the best of what we do . . . I really love her," one of her students later told us. Projected on the screen is a preclass writing prompt: "What is something you should listen for as you sing?" Once class begins, students discuss their answers, with Calli affirming and then expounding their points. Shortly thereafter, warm-ups start—stretches and posture checks ("position 1," Calli reminds students) followed by breathing exercises ("Engage that core"), vocalises, and then sight-singing. "We cannot create a great sound without air," Calli instructs. She tells students that air and confidence are all they need, joking that she might even get these words tattooed on her forehead for students' easy reference. Calli overhears one student singing an octave below the rest of the ensemble and asks if she is feeling sick. The girl says yes and Calli says it is okay for her to sing down the octave "as long as it isn't hurting her vocally." Interactions like these are a common occurrence throughout Calli's rehearsal, likely one of the reasons her students express feelings of love and care when discussing their connection with her: "I like everything about [Calli]," one student said. With annual festival only a few weeks away, students are serious, attentive and well-adjusted to Calli's rehearsal routine and expectations—no doubt an outcome of the years spent rebuilding.

When Calli started teaching at Southeastern Middle School (SMS), nine years before this study commenced, the choir room looked like any ordinary classroom, complete with seated student desks. Now, when one enters, the choral risers, posture-enhancing chairs, solfege

signs, and back wall lined with trophies from recent festivals and competitions tell a story of music—and achievement. Calli's tenure began with 60 students enrolled and peaked at over 115. In recent years, she said, participation wavered between 60 and 80 in three choirs (two beginning, one advanced). The school restructured as a 7–8th grade campus (from 6–8th), and it added an orchestra program, which siphoned some music-curious students from choir. Calli also recounted high teacher turnover and "inconsistency" at the elementary feeder program. Nevertheless, SMS's program was active and highly regarded, earning top marks at regional and national festivals and producing annually in conjunction with the theater department well-received schoolwide musicals.

Prior to SMS, Calli taught music and art for three years at Spruce Stream Elementary School (SSES), her first post-college job. She left SSES for SMS not for any particular interest in (re)building but because she wanted to teach choir. Nevertheless, navigating various challenges at SSES—insufficient resources, lack of school and district support, bans on fundraising, performances, and travel—informed Calli's approach to leadership at SMS. She became more adaptable, improved her class structure and design, and learned to rely on support through friends, colleagues, and previous teachers. She also drew inspiration from her former middle school choir director: "I learned everything from [her]. I mean, she is absolutely amazing. I direct like her; I teach like her." Calli's philosophy of music education was tripartite: (a) developing student confidence and independence was her main goal; (b) increasing musicianship through notation reading skills, vocal technique, and performance opportunities was a close second; and (c) encouraging her students to learn to apply and transfer the first two concepts to their future lives were also important to her. This philosophy informed every aspect of her teaching and spoke to her desire for students to "grow in their musicianship and apply those things . . . in and outside of the classroom."

Themes

Formal Structure

Like most voluntary associations, the choir programs at SMS and FMS were structurally noncomplex. Each was led by a single director; all other members (e.g., students) were volunteers. One theme relating to formal structure emerged: choir as an open system.

Choir as an Open System. Kaylen and Calli structured their programs as open systems. Any interested student could join. One of Calli's students stated, "No matter how old or young you are, you can always go and be in choir. It's not like a thing where you have to have a certain amount of experience to be in it." Still, both teachers implemented (or wished to implement) intraprogram hierarchy (e.g., beginning, advanced choirs). Calli retained authority to decide who was placed in the top eighth-grade choir at FMS. But she eschewed formal auditions: If a student had been in choir the prior year, they were automatically enrolled in the advanced group. FMS's six ensembles were separated by gender (boys, girls) and grade (sixth, seventh, eighth) but not by achievement or experience. This structure had evolved during the (re)building process, starting from the Choir Club, which

was a nonauditioned mixed choir, to the six gender-separate choirs. At the time of the study, Kaylen was still working toward establishing a merit/experience-based hierarchy:

> I would like to be able to have hand-selected levels of choir [at FMS]. I'd like to be able to choose an advanced choir, intermediate choir, and beginning choir. And choose who's in each of those groups. I'd love to have more control over the classes' schedules.

Incentives and Commitment

When asked why they joined choir, the students we interviewed alternated between normative ("I just really like singing") and affective incentives (their friends said, "it's really fun and you should join"). They credited utilitarian incentives much less (e.g., field trips, choir as an easy A). Kaylen and Calli recognized this rational calculation: If students perceived choir as more taxing than enriching, they would decamp for other electives. One theme relating to incentives and commitment emerged: choir as a social and musical haven.

Choir as a Social and Musical Haven. To gain students' favor and enhance students' commitment to their programs, both teachers cultivated choir as a social haven and as a place for substantive musical growth. These purposes were not inherently oppositional, but during (re)building it took effort to preserve equilibrium, particularly at FMS. Kaylen said that FMS's school culture was "anti-authority" and rife with "negativity and disrespect." Students did not hold the classical music in high esteem:

> There's not already an appreciation of music in place with the kids. There's not a culture of appreciating…more fine art styles of music. In that case, it's more about getting the kids more involved, more enthusiastic, motivated, confident…There's really low confidence [at FMS].

Earlier in her career, working for schools with robust music education supports, Kaylen stressed the "integrity and perfection of the performance." To build at FMS, she undertook a "total adjustment of [her] standards" and challenged herself: "Is it more about the music or more about the kids you're teaching?" Once she moved from a product to process orientation in her teaching, she said, "rehearsals got a lot more fun, but [students] also performed much better." Furthermore, she tackled students' low confidence head-on:

> I was on [students] for weeks about being professional and about pride and about representing yourself [and] about how to behave at the [first] concert…And they killed that. They were so well behaved, and they were so professional on stage. And they got such good responses from parents and teachers and stuff…Then the next school day, some of the kids who are usually very immaturely behaved…kind of difficult for their teachers and stuff—I mean, they walked differently. They had so much pride that next day after that first concert, it was so obvious….they just sat

taller, they walked taller, they acted more mature, it boosted their morale; it gave them something to be really proud of.

Like Kaylen, Calli saw performance achievement as a byproduct of social and emotional care. She did not, however, express as much tension between her social and musical goals, perhaps as a function of being further along the (re)building process. Overall, to boost student commitment, Calli tried to "create a culture of encouragement in the room" and "shut down disrespect in any form." She elaborated:

> [T]he biggest thing for me is that I feel like if I can connect with my kids and en-courage even the one that sits there with their head down the entire time to find the strength within…even if it's not a solo, even if it's just to sing out in their part. [I] really praise them for that, [to] help them to feel a part of something… [T]hey'll do anything after that. I mean they will, they'll perform for you [if] they know that you're there for them.

Calli described her program as a "little choir family." She endeavored to create a "safe" experience for students. SMS students seemed to concur, with social solidarity and vul-nerability arising as themes in interviews. On "rough days," one student said, "I come [to choir] and I can just sing. And no one [is] judging, no one's mean to you or anything like that." Another student chimed in: "Letting my emotions go and not having to hold back anymore" was a compelling feature of choir membership. Mutual interests and compatible personalities enriched the social fabric. It was not just about relationships; it was about the right kind of relationships. "I think my choir friends are really quirky like me…just as weird as me," one student described.

Leadership and Authority

Formal leadership was vested in the teachers. Calli and Kaylen were responsible for set-ting and assessing their programs' goals (e.g., student participation and learning) as well as carrying out their programs' core functions (e.g., teaching). Despite this, to (re)build, both teachers understood parents and students as essential partners. Two themes emerged: pa-rental engagement and student agency.

Parental Engagement. As the SMS and FMS choir programs matured and Calli and Kaylen coul no longer personally execute every task, they relied increasingly on parental delegation. Calli contrasted her SMS parents with those at her previous school, SSES, whom she was "afraid to call." Over time at SMS, she said she developed "thicker skin" and learned not to take personally the "rare" criticism she received from parents, acknowl-edging that in the aggregate they were "very supportive" and "always willing to help." She reported "constantly get[ting] volunteer slips" from parents to assist with transportation, costuming and makeup, and other tasks. Asked whether this was always the situation at

SMS, Calli said no, explaining that she "definitely had to cultivate 'Choir Parents'":

> There was really no program when I got there. [SMS was] all about theater and…
> there were "theater moms, theater moms, theater moms," and before I knew it—it's
> taken some years—but finally we have "choir moms."

Kaylen conveyed that, although FMS choir parents were generally supportive, they had not yet shown they would back music over sports.

> I've never been a big fan of doing after-school stuff for middle schools. Because [stu-
> dents] can't drive, and it's just such a hassle with parents. For whatever reason, it's so
> much easier to get parents of students involved in sports to find [transportation] for
> them to do after school stuff. There seems to be no objection to that. But after school
> for choir stuff is just, I don't know, they're not into it.

To compensate, Kaylen implemented "rehearsal field trips" to the performance venue during the school day. This was the only way she could practice with the full 7th-and 8th-grade choirs, which were respectively split between two class periods on the schedule.

Student Agency. Both teachers allowed for student input and discretion. For instance, Calli appoints students to lead rehearsal "pods." In class after a performance trial, but prior to providing feedback, Calli has students separate into their pods to interdependently define and remedy vocal and musical issues. Then, the choir would reconvene to discuss recommendations. By decentering herself, Calli gave students personal stakes in musical problem-solving. Even more, since she made appointments on a rotating basis, every student had a turn as pod leader. One student cited the pods as a context in which she made friends in choir: "We're all helping each other. It makes [choir] like 10 times easier."

For her part, Kaylen spoke of how she privileged students in the repertoire selection process, at least to an extent:

> I don't want to force them into having to perform stuff. I want them to want to
> perform. And so far, that's been happening. But it happens only with a carrot…you
> know, like with having them sing "Glory"…they've been wanting to do that song and
> wanting to do that song…It's probably going to be so-so with a middle school choir
> doing it. But they're just so enthusiastic about it. And that's when they're going to
> sound their best is when they're very enthusiastic about the song they're doing and
> want to do it. They always sound…ANY choir sounds best on the songs they like the
> most. I've been giving them a lot more influence on that.

Neither program had defined mechanisms for student leadership (e.g., officers). Kaylen and Calli instead conveyed informally that they valued students' perspectives and that students' interests were forefront in shaping program outcomes. One SMS student said of Calli,

"She works so hard for us."

Environmental Conditions

Calli and Kaylen understood the give-and-take power dynamics of their school contexts (i.e., the environment). One theme relating to environmental conditions emerged: micropolitical maneuvering.

Micropolitical Maneuvering. Participants navigated stakeholder relationships with strategy and care, working to influence various constituencies toward what they believed would boost (re)building. Campus administrators were key actors. They decided if trips were approved, new risers bought, and master schedules made more accommodating—determinations that facilitated and, at times, hindered (re)building. For instance, when Kaylen asked for gender-separate choirs, the structure she thought best suited to her adolescent students, FMS's principal balked. He was concerned about the collateral impacts on the master schedule (e.g., imbalanced enrollments in physical education). Kaylen moved to solve the problem for him, explaining:

> I did beg and beg and beg and I had to bug him a lot. The last two months before the break that year, I got a bunch of research support. I got all the supporting evidence of why it's best…I went to the P.E. department and got their numbers and kind of configured it in two different ways, which days it would make sense to have all the boys on one day and the girls on another day for each grade level. And, anyway, he got frustrated a few times, but…he eventually gave me the nod and I was able to switch them over.

Kaylen said she learned to never advance a request "without asking other people in the office what kind of day [the principal] was having." "The motto around here is you just have to catch him in a good mood." This strategic maneuvering—though "not consistent with any principal" for whom Kaylen had worked—proved shrewd. Her appeals were seldom denied.

Calli was similarly conscious of how to craft a persuasive case for (re)building, or more precisely, with whom to ally to advance that case. Of her campus leadership, she said:

> It's always been me going to my principal. I think if I were to go to the district, they would absolutely say no. It's been my principal's voice to [the district], saying, 'I have an ask for this, and we need it, so we're getting it.'

Calli said she "got to know [the principal] and what appeals to [her]." She knew that the principal was sensitive to unfavorable comparisons between SMS and other schools: "She doesn't like to hear that [the neighboring districts'] programs have this, and we don't." Thus, in developing her arguments, Calli would assemble "examples of other programs

that were successful."

More broadly, Calli made sure to put on quality performances from the beginning of her tenure, repeatedly citing the need to "produce good shows" that satisfied the district's "high standards." To the extent she couched her propositions to decision-makers in these values, she was more likely to prevail. Calli was also often at pains to conspicuously link any resources she received to program outcomes. She explained her thinking in reference to a successful petition for new uniforms:

> [T]hat was the first thing I got. Buddy, I still have 'em! I'm still using them. I am taking care of them. I perform in them… I handled it well. I took care of it. I utilized it to its fullest and [the principal] saw how—she was able to come and view and see the things improve and then, slowly, it was like step by step, then I asked for the next thing and then I asked for the next thing. I don't bombard. You never bombard anybody with a zillion things, because Lordy knew I had a list when I got here. But, at the same time, I was like, 'nope, this is a process.'

Organizational Effectiveness

Calli and Kaylen defined program success both narrowly and broadly. Two themes representing these poles emerged: public performance achievement and long-term musical engagement.

Public Performance Achievement. While Calli and Kaylen addressed students' psychological and musical needs in day-to-day instruction, to (re)build, they also acknowledged the importance of developing and sustaining public profiles for their programs via concerts, community performances, and adjudicated festivals. Calli made sure her choir students were active in local events:

> It's fun to take my eighth graders [to the annual community Christmas festival]. They wear the little silly hats, and they love it because they can hang out, eat at the food trucks and different things. The community gets to see them, and lots of times, they'll put it in the paper…and so I really do think that the community is very supportive of the arts.

In spring 2019, one year after the program's founding, Kaylen's FMS choir students earned top scores at the annual choral festival. Kaylen described FMS's program as "very beloved right now by administration and teachers," noting that "student engagement, morale, [and] pride" had increased markedly. The SMS program was similarly decorated. In their most recent contest appearance, one adjudicator wrote about one of Calli's choirs: "Best of the festival. How can I comment?"

Long-Term Musical Engagement. In addition to proximate performance goals, Calli and Kaylen also prioritized the development of lifelong musicianship. They understood

their programs as but single stops on students' musical journeys, stressing the need for them to be autonomously and persistently engaged in high school and beyond. Long-term membership, maturation within the program, and continuity between years were core effectiveness themes. Kaylen talked to her 7th-grade boys about goals for the following year, teaching them that choir was a multiyear endeavor. She spoke of establishing a culture of growth in the FMS program:

> [Students are] excited about performing. That's there. They like to sing. They like to perform. They like the attention it gives them. They like the pride that they feel from it. But I want the desire to improve to be just as natural as that is...I want that to be part of the culture as well as well as the desire to perform and the expectation that they're going to sing, but I want to add the expectation that they are going to sing and that they're going to open their ears and listen to what I'm saying so they can get better at stuff and really refine it. That's still missing from about half of them.

Calli described SMS choir as a "good well-rounded choral program." She elaborated on the benefits she hoped her students would gain:

> I really do think that they learn the ins and outs of music, not just how to read it, but also how to connect with it on a personal level and emotional level. I think that that brings them a lot of joy. And learning how to not only read the music, sing the music, but perform the music well…my goal is that if they can learn how to sing and learn how to perform the music well and relate to it, I think that's really all I can ask of my middle schoolers.

Discussion

In this inquiry, we sought to understand secondary school choir program (re)building through an organizational lens (Knoke & Prensky, 1984). Findings showed that (re)building was situated and phased, with school culture, policy, administrator relations, and program age emerging as salient factors. Participants adopted philosophies of open access and cast their choirs as socially rich, emotionally safe, and musically challenging. Students' motivations for persisting in choir were primarily affective and normative (e.g., to develop singing skills and to be with friends) rather than utilitarian (e.g., choir as an easy A). With some caveats, which we discuss in what follows, our data mostly reinforce Knoke and Prenksy's (1984) theoretical insights on voluntary associations.

Incentives and member choice were central to (re)building (Knoke & Prensky, 1984). The FMS and SMS choir programs were, and their directors understood them to be, fundamentally voluntary. This impression, though present in most elective music programs, seemed to take on added weight because of (re)building. Recruitment, for instance, is top

of mind for virtually any ensemble director (Luethi, 2015). For Kaylen at FMS, however, the issue rose from imperative to existential. Enrollment governed how many choirs she had, if they could be gender-separate, and ultimately, whether there would be a choir program at all. FMS's recent history was one without choir; to the degree student interest waned, the school could easily revert to its band-only status. Teaching against such a backdrop—where program growth and student participation are tantamount to job security—is a sobering reality for many teachers who (re)build. Optimizing enrollment is in a sense a core professional competency.

For Kaylen, Calli, and their students, normative and affective incentives superseded utilitarian incentives. Students were keen on being engaged and challenged musically (normative), and they sought acceptance within the choir community (affective). These findings reinforce long-held notions about the social value of choir (Adderley et al., 2003; Kennedy, 2002), but they also support more recent scholarship linking psychological needs satisfaction to students' persistence in music. Freer and Evans (2018, 2019) demonstrated that in addition to teacher and peer relationships, music students valued competence. "Fun" but otherwise nonsubstantive classrooms, the authors held, were unlikely to grow participation in school music. In the current study, we reveal a further nuance. Compared to Calli, Kaylen struggled to keep her musical and social aims in balance, needing more proverbial "carrots" to sustain student engagement. This difference is possibly attributable to the age of Kaylen's program (3 years) compared to Calli's (9 years). Prior research has shown tradeoffs between group cohesion and artistic excellence even in established choral communities (Parker, 2016), but further inquiry is needed on how these tensions affect (re)building, whether they dissipate as programs mature, and how teachers should properly respond.

Our findings partially echoed Knoke and Prensky's (1984) description of voluntary associations as characterized by an "ideology of democratic participation" (p. 8). To (re)build, Calli and Kaylen cast their programs as open systems, enabling any interested student to join. Reducing or eliminating entry barriers has been linked to growth in school music participation (Hawkinson, 2015; Pendergast, 2020). However, the NMS and FMS choirs did not operate as full-throated democracies (Allsup, 2003), and neither program had formal student leadership structures (e.g., officers). The teachers instead took lesser steps to center students and decenter themselves. Examples included Calli's student-led rehearsal pods and Kaylen's more inclusive, student-friendly view of repertoire. These efforts were sufficient to generate student buy-in, but they could hardly be construed as "severe restrictions" (Knoke & Prensky, 1984, p. 8) on teacher authority; Kaylen and Calli retained final say on program matters. This divergence from the purely voluntary association—in degree if not in kind—provides a possible avenue for future inquiry. Student age and maturity may be determinants; we studied middle rather than high school programs. Length of program history could also matter. In the beginning phases of (re)building, power may necessarily be more centralized until students are taught to lead. More research on these and other questions would be useful.

Although the FMS and SMS programs were structurally noncomplex (Knoke & Prensky,

1984), Kaylen and Calli still carefully considered program design, especially as enrollment climbed. Kaylen expressed interest in instituting merit-based ensemble placement. Calli, further along in (re)building, already employed such a scheme: SMS students were eligible for the premier choir after one year in the training group. Structure can come with benefits and downsides. On the one hand, tiered ensembles (e.g., beginning, advanced choirs) are a common means of inducing multiyear retention. Returning singers often value placements commensurate with their experience and commitment. Furthermore, as Kaylen found, physiological differences between adolescent males and females often make gender separation the pedagogically optimal arrangement (Sweet, 2020).

On the other hand, hierarchical structure could undermine open access. Students may be disheartened if intermediate (Major, 2017; Major & Dakon, 2016) and treble ensembles (Wilson, 2012) are viewed as less capable and prestigious than their mixed choir counterparts. Unfettered entry for new students (NMS and SMS) along with advancement for returning students (SMS) was adequate for (re)building in this inquiry, but questions remain. Conventional tiering and gender separation may not always be appropriate. For instance, in programs with one or two choirs, within-ensemble distinctions could be more effective. All students would sing in the same ensemble, but the more experienced students would get increased responsibilities (e.g., solos, section leader duties). To counter perceptions that single-gender choirs are less valued, Palkki (2015) recommended a somewhat atypical structure: an entry-level mixed choir that feeds into premier treble and tenor-bass groups. Meanwhile, discourse continues on possible tensions between choir's social and pedagogical aims vis-à-vis gender and sex (e.g., Freer, 2019; Palkki, 2015). Additional inquiry and practical experimentation would shed much-needed light on how structure impacts student learning, motivation, and more broadly, program (re)building.

To (re)build in schools with finite resources, Calli and Kaylen relied on administrator and stakeholder support, "protective alliances" that proved critical (Knoke & Prensky, 1984, p. 11). They learned how to calibrate engagement with decision-makers. Calli forged strong ties with SMS's principal, trusting her to advocate to district leaders on the program's behalf. She also submitted requests incrementally so as not to overwhelm. Kaylen was not close to the principal at FMS, transacting as needed and only after considering his disposition. If the principal was in good spirits, according to his assistant or other support staff, Kaylen would move forward her appeal; if not, she would defer. These findings echo recent inquiries that showed music teachers deal strategically with administrators, forming strong or weak bonds as circumstances dictate (Shaw, 2020) and understanding where to bring and how to frame their requests to secure favorable outcomes (Major, 2013).

Establishing a large ensemble program requires mediation of varied stakeholder interests. For instance, community support may be chiefly driven by public performances and competitions. Parents, certainly not indifferent to performance quality, nevertheless may focus more on whether their child is safe, contented, and productive in the program, assessments that may or may not track performance outcomes. Administrators have cross-cutting concerns including the program's relative fit within the school's operations and culture, public

regard, and teacher professional competence, among others. Discerning and responding to these complex interests requires an understanding of micropolitics, how power is shared and wielded at the local level (Kelchtermans & Ballet, 2002). Micropolitics has been used to examine music teacher practice broadly (e.g., Conway & Hibbard, 2018) but not with respect to (re)building, where our findings suggest it plays a significant role. Kaylen rightly sensed the principal's disapproval of gender-separate choirs was rooted more in operations than in substance. In drafting and proposing a new schedule that preempted any P.E.–choir enrollment imbalance, Kaylen advanced a policy solution instead of merely raising a policy problem. She was able to "talk back to and shape policy" (Schmidt, 2020, p. 4), and she got her gender-separate choirs.

Policy deference, resources, and administrator cooperation—all vital in (re)building—were obtained in large measure through micropolitics. Kaylen and Calli knew how to frame and time their requests, with whom to ally, and who to avoid. They cultivated micropolitical literacy, or the "capacity to understand, navigate and influence the micropolitical realities" of their schools (Kelchtermans & Ballet, 2002, p. 756). Availability of music programs in schools is often observed as binary: Some schools have music programs, and others do not (Parsad & Spiegelman, 2012). Our findings reveal a more complicated picture. Over three years, FMS progressed from no choir, an afterschool-only choir club, half-time choir, to a comprehensive six-ensemble program. We cannot establish definitively that Kaylen's micropolitical prowess caused this trajectory. It is true, however, that FMS is musically richer for her efforts. Thus, to the extent micropolitics explains music program availability, even partly, it could be a generative lens for future research.

Conclusion

For some teachers, as Kaylen and Calli's experiences illustrate, (re)building is a core element of their work. While general principles of program leadership are well enumerated in the literature (Ballantyne, 2007; Phillips, 2016; Scheib, 2003), missing until now were explanations of how these notions apply in the (re)building context. This study provides both an initial account and a foundation for future scholarship and action. We do not resolve questions of what constitutes success or what determines when a choir program is (re)built; these are best settled situationally. Nevertheless, our findings show that (re)building is a compound process, transcending routines of rehearsal and performance to involve broader concerns such as micropolitics, program structure, and student incentives. As future work commences in practice, advocacy, and especially empirical arenas, we encourage use of the wider, organizational perspective we employed here.

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Bivocational Music Teaching: Liminal Spaces Between Church and School

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Abstract

The purpose of this qualitative descriptive study was to explore the intersecting landscapes of five public school music teachers who also served as church choir directors. A specific focus was placed on how bivocational participants performed dual roles in two different contexts, and how they called upon their own preparation in music and pedagogy to guide their work. Research questions were (a) How do bivocational music teachers make sense of their religious and professional crossroads? (b) How do bivocational music teachers negotiate the musical and pedagogical underpinnings of church and school? and (c) How do bivocational music teachers' perspectives shape their work with students and congregations? Turner's (1977) concept of liminality served as the theoretical framework for this study. Data sources consisted of semi-structured interviews, digital artifacts, and performance recordings. Overall, participants identified instructional, musical, intrapersonal, and religious crossovers as the most pertinent aspects of their dual roles in church and school, although personal spirituality was more nuanced. Participants appeared to live and work between various endpoints, along a liminal continuum, gliding between roles and identities associated with ritualistic practices in Christian churches and public schools. Implications include meeting diverse learners' needs, identifying mentors in church music pedagogy, cultivating healthy church- and school-based networking, and assembling pedagogically-sound music resources for churches.

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Introduction

School music teachers often assume multiple musical roles in their communities. Out-of-school opportunities can range from personal music-making endeavors to community ensemble participation (Bell, 2004, 2008), where music teachers can serve as either performers or directors and can employ the artistic skills they espouse during the school day. One community music-making path includes leadership opportunities in Christian churches, particularly in the choral setting. As Rohwer (2010) maintained, church choirs "can serve as a model to understand more completely the gestalt concept of community music" (p. 2). In-service music teachers who accept additional responsibilities as church music directors can serve dual roles in two different contexts; however, the musical and pedagogical underpinnings of school music education could stand in contrast to those found in church settings. In the case of church music, the relationship between music pedagogy, music performance, and spirituality can be complex (Hawn, 2007; Kroeker, 2016), as these elements often are reconfigured in school settings (Clark, 2021; LaMontagne, 2019). The current study represented one such exploration of the intertwined notions of music teaching in Christian churches and public schools. To situate the context of this research, it is important to consider operational definitions in three broad areas of scholarship: (a) bivocational music teaching, (b) music education and church settings, and (c) liminality.

Bivocational Music Teaching

The term *bivocational* has been associated most closely with Christian ministry (Stephens, 2021a; 2021b). While researchers (Bentley, 2018; Brenneman, 2007; MacNeil, 2020; Stephens, 2021a) generally have applied this expression to pastors who maintain a second paid job inside or outside of the church, Stephens (2021b) noted that definitions are ambiguous and range in scope. Stephens (2021a) also referred to bivocational ministry as a "multi-vocational, covocational, dual career, partially funded, or tentmaking ministry" (p. 1). In some cases, bivocational pastors have accepted additional work or other church engagements out of financial necessity (Bentley, 2018); in other cases, churches have sought bivocational pastors due to institutional budgetary constraints (Smith, 2014; Stephens, 2021b). As bivocational ministry has grown over time, especially in North America (Smith, 2014; Stephens, 2021a), researchers have continued to explore ways of addressing challenges in under-resourced churches (Brenneman, 2007), fostering congregational missions that can assist time-strapped bivocational pastors (MacNeil, 2020), and responding to the increased need to prepare and support theology students' entry into an expanding bivocational landscape (Stephens, 2021b).

Music teachers also engage in bivocational pursuits. While school music teachers' motivations for securing a supplementary teaching position might differ from pastors' motivations for securing a supplementary preaching position, dual vocations subsist nonetheless. Given the contextual landscapes they occupy, music teachers who work in both churches and schools could be considered bivocational. For the purposes of the current study, *bivocational*

will be used when referring to school music teachers who also hold positions as church music leaders. Such terminology could be useful in denoting music teachers' explicit connection to church ministry.

Music Education and Church Settings

Music teachers encounter numerous boundary crossings between church and school. Aside from negotiating their own identities as musicians and teachers (Dolloff, 2007; Froehlich & Smith, 2017; Wagoner, 2021), music educators also navigate larger issues that shape music programs and student involvement. Principles of inclusivity (Benedict et al., 2015; Hess, 2019), ensemble participation (Elpus & Abril, 2019), repertoire selection (Abril, 2006), and responsive teaching practices (Bond, 2017; Korthagen et al., 2013; Lind & McKoy, 2016; Sweet, 2016) abound, as do the intersectionalities of age, race, class, gender, and sexual orientation, among others (Beagan & Hattie, 2015; Benedict et al., 2015; Garrett & Palkki, 2021; McBride, 2016). Myriad sociological boundaries in churches (Clarke, 2011) and schools (Froehlich & Smith, 2017) require music teachers to consider various gestures, particularly in choral settings.

Choral teachers' responsibilities in churches and schools can be distinct. While choir directors' roles in both settings typically involve selecting repertoire, leading rehearsals, developing singers' vocal skills, organizing services and performances, recruiting members, and overseeing program details (Clark, 2021), church choir directors often are charged with fulfilling additional expectations. Most notably, Rohwer (2010, 2011) emphasized the importance of church choir directors' ability to serve as spirit-filled leaders who can facilitate worship and engender fellowship. Kroeker (2016) furthered this notion, maintaining that the relationships church choir directors create are "defined by a faith that demands selflessness, service, and a commitment beyond personal goals and ambitions" (p. 11). Given the contextual differences between churches and schools, as well as the sacred and secular backdrops that can frame them (Clarke, 2011; Froehlich & Smith, 2017), examining overlapping characteristics between both environments could be fruitful.

Communal music-making is a primary attribute that church music and school music contexts share. Inclusive community-building in music settings has received increased attention and holds promise for sustaining empathetic learning spaces (Benedict et al., 2015; Henricks, 2018, 2021; Talbot, 2018). Closer examinations of race, access to music, repertoire selection, and long-standing teaching practices also have led to growing calls to enact anti-oppressive music education (Benedict et al., 2015; Bernard & Rotjan, 2021; Hess, 2019; Koza, 2008, 2021). Hendricks broached these topics through the lenses of compassionate music teaching (2018) and authentic connection in music education (2021), views that could be applied to both church and school settings. Hendricks (2021) highlighted how music, spirituality, and wellbeing could transform music teaching and learning:

> Authentic connection can flourish between humans in spaces of radical openness and hospitality. It thrives where compassion is less about pity and more about shared experience…where empathy is less about imagining others' needs from one's own perspective and more about attunement to another person's values and worldviews…when inclusion is an act of common sense rather than a quota, and where diversity and difference are viewed as welcome opportunities for everyone to grow and learn from one another…Authentic connection is the essence and backbone of communal music-making. (pp. 249-250)

Because communal music-making occurs in churches and schools, learning how choir directors operate in dual contexts could clarify the pedagogical, musical, and spiritual factors they encounter regularly.

Related research has shown patterns in the religiosity of school choral directors (Clark, 2021), choir directors' preparation for church ensembles (Hawn, 2007; Kroeker, 2016), and church choirs as learning environments (Rohwer, 2010, 2011). Clark (2021) examined school choral directors' repertoire selection practices and found that the more religious the teachers, the more likely they were to program religious repertoire, the overwhelming majority of which was Christian in nature. Clark (2021) also highlighted the subsequent tensions between secular and sacred content in public school music classrooms. From a church music perspective, Hawn (2007) stressed the importance of preparing well-versed church choir directors through reevaluating the conventional church music canon and reexamining the place of choral ensembles in worship. Similarly, Kroeker (2016) noted the worthiness of fostering church music participation and emphasized that church music directors can become valuable servant leaders in congregations and communities. From a pedagogical standpoint, Rohwer (2010, 2011) acknowledged that church choir settings have not been viewed necessarily as learning environments, where members have specific instructional needs that must be met alongside social and spiritual needs. Rohwer (2011) elevated the notion that church choirs, like other community ensembles, are educational enterprises that require sound pedagogy amid the amalgamation of roles that church music directors perform. While church choirs may be more complex because of the augmented strata of worship and liturgy, pedagogical concerns remain. As Rohwer (2011) concluded,

> The job of a church music director is a challenging one; the director must be musician, teacher, liturgist, motivator, organizer, God-loving individual, and all-around good person. In order to be as prepared as possible, directors should consider how to develop these skills while also keeping at the forefront the gestalt idea of the joy of church music in the community. (p. 56)

Rationale and Purpose of the Study

Researchers have chronicled church musicians' instructional and spiritual needs (Rohwer, 2010, 2011), school choral directors' repertoire selection (Clark, 2021; LaMontagne, 2019),

and practical considerations related to music and Christian worship (Hawn, 2007; Kroeker, 2016); however, it is unclear how bivocational music teachers make sense of their pedagogical, musical, and spiritual dualities. Furthermore, there is a lack of empirical evidence from church choir directors' perspective, particularly those who also serve as school music teachers and must navigate bivocational teaching. Music teachers and ministerial leaders stand to benefit from additional narratives surrounding these overlapping contexts.

Therefore, the purpose of this qualitative descriptive study was to explore the intersecting landscapes of public school music teachers who also served as church choir directors. A specific focus was placed on how these individuals occupied dual roles in two different contexts, and how they called upon their own preparation in music and pedagogy to guide their work. Research questions were (a) How do bivocational music teachers make sense of their religious and professional crossroads? (b) How do bivocational music teachers negotiate the musical and pedagogical underpinnings of church and school? and (c) How do bivocational music teachers' perspectives shape their work with students and congregations? Liminality, the theoretical framework for this study, is described below.

Theoretical Framework

Liminality is a concept that originated with van Gennep's (1960) work on anthropological rites of passage. Turner (1977), who further adapted the theory through an examination of rites of passage in tribal systems, defined liminality as the process by which individuals move from one fixed point (e.g., context, role, ritual) to another. It is an ambiguous place of "inbetweenness . . ." where individuals are "neither here nor there; they are betwixt and between the positions assigned and arrayed by law, custom, convention, and ceremonial" (Turner, 1977, p. 95). Through a similar perspective, Brown (2007) described liminality as a blurring and crossing of thresholds and boundaries as well as the fluidity and hybridity of identities. In essence, liminality can be viewed as the transition from one state to another (Turner, 1977).

Researchers have used liminality as a theoretical framework when examining societal issues of power and place. Examples have included the status of performing musicians (Brown, 2007), the friction in beginning teachers' career induction (Pierce, 2007), the transformational qualities of musicking (Boyce-Tillman, 2009), the dissonances between urban and suburban music education (Emmanuel, 2011), and the leisure and recreational practices of collegiate a cappella singers (Mantie, 2015). A common element among this body of research encompasses the fluidity of self, in which individuals are "caught" between contextual worlds and must make sense of and navigate their surroundings.

Given the ritualistic complexities of churches (Clarke, 2011) and schools (Froehlich & Smith, 2017), bivocational music teachers could be regarded as "threshold people" (Turner, 1977, p. 95) who repeatedly must negotiate an array of social, cultural, musical, and religious norms. Viewing liminal spaces as junctures where teachers move between contextual thresholds could be useful in understanding the fluidity and hybridity (Brown, 2007)

of music teachers' personal and professional identities. Because music teachers can enter and exit these junctures on a daily basis, applying the concepts of liminality to bivocational music teaching could illuminate the intersecting and potentially reliant qualities of school music teaching and church music teaching. Such a lens could highlight possible tensions and resolutions that surround teaching in dual contexts.

Method

Design

This study encompassed a qualitative descriptive design, which Sandelowski (2000) described as "the method of choice when straight descriptions of phenomena are desired" (p. 339). In this model, researchers attempt to acquire and verify facts related to surface-level data as well as the meanings that participants provide. Interviews, content analyses, and theoretical frameworks are common features of qualitative descriptive studies (Hyejin et al., 2017; Merriam & Tisdell, 2016), although methodological choices can vary and can be borrowed from other qualitative traditions (Creswell & Poth, 2018; Sandelowski, 2000, 2010). While the qualitative descriptive method is less transformational than other qualitative designs such as grounded theory and phenomenology, it can provide a comprehensive summary of events in everyday terms (Sandelowski, 2000) and can "translate findings into practice" (Sullivan-Bolyai et al., 2005, p. 129). Given the exploratory nature of the current study, particularly due to the combined tenets of church and school music, a qualitative descriptive method provided a suitable approach for garnering preliminary assumptions about bivocational music teaching. Finally, this research was an outgrowth of a separate project on Christian congregational music-making; consequently, the scope of the current study was limited to a Christian perspective as a result of that original focus.

Data Collection and Analysis

After receiving Institutional Review Board approval and participant consent, I collected primary and secondary data sources over the course of 10 weeks (June-September 2021). Primary data sources consisted of semi-structured individual interviews that I conducted with five public school music teachers who also held positions as adult church choir directors. Interviews lasted between 41 and 65 minutes and were conducted and transcribed through Zoom. As Kvale and Brinkmann (2009) noted, semi-structured interviews are useful in obtaining participants' descriptions of everyday life and are used widely in qualitative descriptive studies to elicit "the viewpoint of the person(s) 'in the midst' of the experience" (Sullivan-Bolyai et al., 2005, p. 128). Thus, interviews became the primary means of capturing participants' experiences as bivocational music teachers. Secondary data sources included online artifacts (e.g., participants' professional websites, choral concert programs, video recordings, audio recordings) and e-mail correspondence. I used professional artifacts and choral recordings to confirm and supplement interview accounts. E-mail correspondence with the participants served as a practical and dependable means for corroborating and

adjusting research protocol and emergent findings as they occurred.

I analyzed the data iteratively for emergent meanings (Saldaña, 2021), employing in vivo coding (Miles & Huberman, 1994; Wolcott, 1994) to catalog topics within the data, then pattern coding (Miles & Huberman, 1994) to assemble the overarching themes. This process allowed me to move from a summative approach to a holistic interpretation of the data. This progression also bolstered reflexivity as I examined emergent findings alongside the subjective nature of my roles as researcher, church musician, and community ensemble director. Consequently, I worked to strengthen trustworthiness through member checks, peer review, and the triangulation of primary and secondary data sources (Patton, 2001). Two faculty experts in music education and church music reviewed the initial findings for dependability. The peer reviewers suggested minor alterations for repositioning codes, renaming categories, or reducing inadvertent redundancies, and I rearranged the findings accordingly. I verified the findings further through an additional round of member checks with the participants, to maintain the integrity and cohesiveness of the final themes.

Participants

I selected the five participants in this study – Meredith, Mark, Simon, Will, and Fiona (pseudonyms) – through purposeful stratified sampling (Patton, 2001). I recruited participants after consulting three professional contacts in the field who recommended school choir teachers in their respective regions who also served as church music directors. Of the nine potential participants I contacted initially, each of whom held varying backgrounds, teaching experiences, and church appointments (e.g., adult choir, children's choir, praise band), five individuals responded and agreed to participate. At the time of this study, all participants were mid- to late-career P-12 public school music teachers who held concurrent positions as adult church choir directors in Roman Catholic or mainline Protestant denominations (e.g., Episcopal, Lutheran, United Church of Christ). Ultimately, this form of sampling supported an intersectional approach (Carter, 2014; Crenshaw, 2019), whereby participants' overlapping social identities were represented (e.g., age, race, gender, location, career stage, musical background, sexual orientation, religious denomination). Participants were located across the eastern, midwestern, and southwestern United States, and represented urban, suburban, and rural settings.

Meredith was an accomplished vocalist and pianist who held previous experience as a pre-school teacher and a middle school choral and instrumental director. Later, she became a rising Kodály specialist and taught K-5 elementary music in a rural community. She also directed the adult choir at a Lutheran church, having accepted the position after responding to a flyer on a university bulletin board. She had 11 years of teaching experience.

Mark was a quick-witted teacher and organist who began playing at a Christian Science Church while he was still a teenager attending a Methodist high school. As an adult, he was in demand as a vocal soloist and led an Episcopal church choir comprised of both amateur and semi-professional singers. He taught high school choir in a large, urban area and had

taken his high school and church choirs on U.S. and European concert tours. He had 17 years of teaching experience.

Simon was obsessed with the pipe organ as a child. During his preschool graduation, Simon's peers announced they wanted to become doctors, lawyers, and firefighters when they grew up; Simon announced that he wanted to become a church organist. He became an interim organist at the age of 12 and has been a choir director in the Lutheran church for years. He maintained an active and visible high school choir program in a suburban school district. He had 20 years of teaching experience.

Will became a church organist at the age of 15. At 16, he became the music director at a small Catholic church, but moved to a Methodist church temporarily before returning to another Catholic church to rebuild a floundering music program, which he did successfully. He taught at a large metropolitan high school with an extensive choral program. He had 21 years of teaching experience.

Fiona had the most teaching experience of the five participants and taught choir at a mid-sized, suburban middle school. She described herself as a staunch anti-racist, and was an advisor for a diversity and anti-bullying support group for school students. She had been a church choir director for decades in the United Church of Christ, although she was raised Presbyterian and was married to a Presbyterian pastor. She had 35 years of teaching experience.

Findings

Based on the analyzed data, four overarching themes encapsulating 14 codes emerged: *Interchangeable Collectibles* (teaching, rehearsal techniques, vocal pedagogy), *Musical Justice* (repertoire selection, social justice, educational freedom, role conflicts), *Blended Selves* (identities, incorporation, boundaries), and *Manifested Spirituality* (faith, religion, integration, separation). Overall, participant accounts coalesced around instructional, musical, intrapersonal, and religious crossovers. These themes are described below and include supporting material from participant interviews.

Interchangeable Collectibles

The first theme embodied the idea of pedagogy and the teaching techniques that participants used interchangeably with teen and adult singers. Participants acknowledged the numerous "tricks" they collected over the years as well as the swift-footed, improvisatory approach they adopted during rehearsals. Mark spoke of the "mental Rolodex" he kept in his head that was full of various warm-ups, teaching approaches, rehearsal strategies, and classroom activities that he "flipped through" while teaching, including the holy trinity of teaching cycles: instructions, work, and feedback. Mark's mental Rolodex was similar to Meredith's "toolbox" and Simon's "bag of tricks," which they employed with a variety of ages and used as inspiration for other ensembles. In one example, Will compared his instructional approach with youth and adults:

Rehearsal technique is probably the same for both. You know, breaking the piece down and teaching it. That's going to be the same no matter where I am…I find the most parallels between the freshmen and the adults. If something works with the freshmen, it's going to work with the church choir…but I'm going to be more patient with the students, because I expect the adults to move quicker and work more on their own.

Similarly, Meredith acknowledged,

I find myself using things from my middle school teaching days when I taught choir from behind the piano. Visualizations like sprinkles on a cake or cheese on nachos work for balance issues, and the Tootsie Roll analogy works for vowels. Those visualizations work with students as well as adults.

Fiona, like Will and Meredith, reinforced the notion of a consistent teaching approach across teens and adults, and, like all five participants, relied less on vocal pedagogy with adults. Fiona also read research voraciously and constantly searched for new ways to improve her teaching:

I'm not sure that my rehearsal technique and rehearsal persona are all that different [between church and school]…I do a lot more vocal pedagogy with my school students, obviously, because they need it. The adults are kind of tired (laughs), so I don't always make them stand up and do all that (mimics kinesthetic movement), but I try to enlarge their vision, too...I keep reading articles about how to work with the aging voice and what happens when those ladies can't hit the high notes anymore, when they start getting that wobble thing going on. But I wouldn't know anything if I didn't study it myself.

Finally, Mark reflected on the pedagogical and technical strides that his choirs made prior to the COVID-19 pandemic, and considered how best to move forward in terms of safeguarding vocal health:

I appreciate the momentum that both of my programs made [pre-pandemic] and the skill-building that happened. Now we have to recalibrate and rebuild in a way that is supportive of everyone's needs…I think that's a big one for me at both school and church – how to get back on the horse in a way where we don't injure ourselves as we're trying to rebuild. That's a big one.

Musical Justice

The second theme exemplified the repertoire choices that participants made with their respective groups, with Christian underpinnings either explicitly or implicitly in view. Participants' musical choices also reflected their individual and contradictory journeys in navigating broader issues of social justice, educational freedom, and teacher role conflict. All participants advocated for programming diverse music, even at church, but were intentional about its purpose and quality. Participants' repertoire considerations spanned a variety of composers (e.g., Bach, Brahms, Duruflé, Mozart), stylistic genres (e.g., Baroque, Classical, Romantic, Contemporary, Broadway, American Folk), and performance themes (e.g., Lessons and Carols, collaboration concerts, intergenerational choir concerts, universal topics). However, participants also noted the challenges in selecting age-appropriate classical repertoire for developing voices. For example, Will commented that the extended ranges and vocal athleticism required to perform some Western Classical repertoire can leave choir students "huffing and puffing across the finish line." He also was in favor of providing well-rounded repertoire for his school students, but took his church choir role quite seriously because of the focus on the liturgy:

> Everything we do at church is in service to the liturgy, so it's all about high quality, whatever the style. It has to be good. At school, I don't have that constraint. It's in service to what the kids are doing and what's best for them. At church, it's whatever is best for the liturgy, even if it's not necessarily best for the choir – and that sounds kind of weird to say out loud – but that's really what it comes down to. It's much bigger than any of us and bigger than the choir. It has to be focused on what's happening on the altar.

Simon noted that he strives to program diverse music at his school, not only to reinforce representation, but to honor the diversity of his students:

> I do try to be conscious when I'm programming music at school, to make sure we have different genders, identifications, cultures, or styles of repertoire represented. I try not to overprogram the "Jesus music" (gestures with air quotes) at school, just because that's not who my students are…90% of my students are Jewish. Whether we're singing a piece that's clearly Christian in nature or a piece with text by Langston Hughes, I approach them the same way and want to provide equal validity to both pieces.

Mark also set up a distinction between the majority-classical repertoire he selects for church and the latitude he practices at school, stating, "I don't know that the church repertoire I select necessarily overlaps with school. At school, I cover a breadth of music in terms of world music by composers of color, music by women composers, or music by rap poets." Further, Will commented that

the dead White guys have their place, but it becomes smaller and smaller every year as I become more aware of what I want to use for [school] concerts…That awareness comes from me realizing how Eurocentric my repertoire has been in the past, and working hard to diversify that to better reflect the students in front of me.

Fiona took an activist approach toward repertoire selection, citing its humanizing impact on her students, who may need it more than her adult church choir. She wanted to make her students better people for the world and to help them look outside themselves more than they did before. However, she described her struggle with conservative mindsets in her community, in that they had the potential to impact negatively her freedom to determine the direction of her classroom instruction:

There are opinionated people in our area coming to school board meetings who are misinformed about the content and breadth of diversity education. I'm pretty sure that if they came into my class, they would have a problem with the way I teach. For instance, I cannot teach an apartheid freedom song without talking about what apartheid was and the anguish it inflicted on people, and to help students understand its origins and the government's involvement. I have to do that, but I'm guessing those people [community members] would have trouble with anything that could possibly involve guilt.

Fiona's narrative further shed light on the growing racial and socio-political movements she championed, and highlighted the tension between her in-school and out-of-school effectiveness as a change agent:

I quietly lurk on our city's Black Lives Matter Facebook page, but I really don't comment because I'm a teacher. I really feel we're teaching in a challenging time where it's our responsibility as music educators to help children see more of the world than what's right in front of them.

Blended Selves

The third theme represented lingering intersections where school and church worlds merged and ran alongside each other, and where participants named their dual identities. According to participants, learned patterns in deportment, teaching, repertoire, and soft people skills (e.g., adaptability, problem-solving, organization, planning) transferred naturally from one context to the other, allowing them to feel like parallel experiences. In one example, Meredith recalled the frequency with which her school and church worlds "collide" in public or social settings, and how these "collisions" create unexpected opportunities for extended professional or musical networking. From an intrapersonal standpoint, all five participants generally felt they were the same person at school and at church. Mark, for

example, stated, "I don't see much of a difference [in myself] between school and church… (laughs) although I filter more with the kids at school than with the adults at church." Simon encapsulated the participants' overriding sentiments when he affirmed,

> This sort of intersection has played out in my life for a very long time…It's so hard for me personally to parse out "school Simon" and "church Simon," because I think it's all one in the same in my brain. I am who I am, and I'm just going to be that person wherever I am and will meet everybody where they're at and get them to be slightly better.

For one participant, however, there was one identity that was expressed openly in one context but not in the other. As an openly-gay teacher, Will has remained closeted at church, lest he be fired for being a member of the LGBTQ+ community. His narrative was rife with numerous contradictory thresholds that he has elected to cross or avoid, depending on the context and the cast of characters around him. He disclosed his efforts in separating his two worlds:

> I try to be as authentic and real as I can, and am probably more authentic at school because I'm out at school. I'm not out at church, so that's a big wall that gets put up a lot and shields [me]. In my mind, there's not a lot of overlap, because I purposely separate them. I have to keep them separated if I want to keep my church job. I have to be careful what I talk about. You know, this very liberal Democrat has to be very, very careful at church, because the Roman Catholics are very conservative and very Republican. So that's probably the biggest difference. I can talk to my school principal about anything, but I tread very lightly with my pastor and don't touch hot-button issues or attempt to discuss anything or advocate for those things at church, because I can't. It's exhausting having a double life, especially at 26 years in, because I'm so open and free in the rest of my life, and then I drive 5 minutes [to church] and it's like it's 1950, and I pretend I'm straight and everything is all fine and dandy.

Conversely, Will also acknowledged that in some church settings, he wields a degree of power as a change agent because he blends in unassumingly:

> But I also see my role as being sneaky, because I'm kind of like a spy in there, especially in [church] staff meetings. I'll let my opinion slip in and I'll get them to pull their focus away from where they wanted to go, and it's like, alright, I'm being that undercurrent pushing them in the right direction and getting them to not be so, you know, discriminatory.

Manifested Spirituality

The fourth and final theme encompassed participants' spirituality and the degree to which it permeated their work at church and school. In hearing the participants discuss their particular outlooks, two distinct perspectives emerged: delineated spirituality and integrated spirituality. Participants appeared to choose one of two paths – separation or connection – for situating their spirituality within the confines of secular and sacred spaces. While the following interview excerpts in no way represent a complete picture of participants' spiritual lives or personal faith formation journeys, they are included below simply to illustrate the range of responses between two opposing yet related perspectives.

With regard to delineated spirituality, Will, Meredith, and Mark acknowledged that they purposefully detach from their spiritual selves while at school, in order to preserve their role as a neutral, impartial school employee. According to the participants, adopting such a stance has allowed them to demarcate clearly their pedagogical and spiritual identities. Will, Meredith, and Mark each described a discrete, personalized form of spirituality at church and school:

> [My spirituality] is really, really separate for me. I don't think about religion or my faith much at all at school. When I'm at church, of course, it's the focus. My faith is involved in planning music, but then it takes a back seat when I'm at school. (Will)

> Personally, I try to keep my spirituality separate, even though I'm in a small school district out in the country, where before football games, those boys are praying, and before choir events, those kids are praying. That's maybe a little different than other school districts, but I do try to keep things fairly separate…I personally pray for my classroom and students, but working in public school, I do not openly express those things in the classroom. (Meredith)

> If I weren't doing church services on Sunday, the likelihood of me being in church is probably very low…I don't think I've received communion anywhere since 2001, so I don't see that as a necessity for me…My going to church has always been a part of my life, but I don't necessarily affiliate myself with any particular denomination. (Mark)

In contrast, Simon and Fiona described an integrated spirituality at church and school. Both participants acknowledged that their faith emerges at school and informs their interactions with students, and, by extension, their professional and instructional decision-making. According to Simon and Fiona, adopting such a reconciled stance has allowed them to perform their pedagogical and spiritual identities simultaneously:

For me, the church piece is more than just the job or the music. It's the spiritual end of things. It always has been, which is also interesting, because I'm so far to the left, I make Bernie Sanders look conservative. But I'm also a very faith-filled person. My students know that I'm a liberal human being but that I'm also religious, so I feel pretty comfortable. (Simon)

I have a different sense of who I am when I'm at church…I truly feel like God has called me to do this work in the church, and that I'm kind of like a vessel to help the congregation get to the music, that I'm just sort of invisible. At school, there are far more behavioral issues. I look at that child who is so difficult and think, "I can see the face of God in this child somehow." I have to look really hard, but I can find it, and it makes me behave differently with that child. So that would be my church-self emerging at school. (Fiona)

Discussion

The purpose of this qualitative descriptive study was to explore the intersecting landscapes of public school music teachers who also served as church choir directors. A specific focus was placed on how participants made sense of their bivocational responsibilities and called upon their own preparation in music and pedagogy to guide their work. Turner's (1977) concept of liminality served as the theoretical framework for this study. Findings included several bivocational attributes that assumed fluid orientations within and across liminal spaces.

First, with regard to religious and professional crossroads, participants believed they were the same teacher at both church and school, and that they received inspiration, creativity, and balance from the opposite context. Participant accounts appeared to epitomize the blurred boundaries and hybridized identities that Brown (2007) and Boyce-Tillman (2009) described, and might have stemmed from participants' long-standing connection to church music. It is possible that participants constructed parallel identities as church and school musicians early on, which could have cultivated bivocational dispositions in adulthood. According to participant accounts, the connection to church music was a prime motivator for pursuing bivocational work, rather than the supplemental income, which stands in contrast to bivocational ministry research (Bentley, 2018; Stephens, 2021a; Stephens, 2021b). Participants also maintained varying opinions as to how spirituality played a part in their teaching lives, although much of this had to do with the participants' diverse student body. Given that participants' school students held assorted religious backgrounds – or none at all – participants were cognizant about reaching all students while not proselytizing or being overtly Christian. LaMontagne (2019) and Clark (2021) raised similar concerns about the relationship between music, teaching, and school choir directors' religious perspectives. Additionally, Fiona and Simon acknowledged intertwining their two worlds successfully, while Will

disclosed choosing which parts of himself to reveal in each context. At church, he pushed his authentic self to the background; at school, he relegated his spirituality to the periphery. It is possible that participants' spirituality played a larger role than they initially indicated, at least in terms of their approach with students, colleagues, and supervisors. Reflecting on the overlapping intricacies of secular-sacred dualities appeared to be a novel and perhaps elusive undertaking for some participants, and may not be a relationship that bivocational music teachers consider regularly. These composite notions speak to the friction between teacher identities (Dolloff, 2007; Froehlich & Smith, 2017; Wagoner, 2021), LGBTQ+ narratives in churches (Beagan & Hattie, 2015) and schools (Garrett & Palkki, 2021; McBride, 2016), and how religiosity plays a role in music teachers' decision-making (Clark, 2021; LaMontagne, 2019).

Second, in terms of musical and pedagogical underpinnings, participants employed similar pedagogical practices and rehearsal strategies with youth and adult singers; however, they focused on vocal technique more with school students, mostly because they had additional rehearsal time, and because students' instruments were still developing (Sweet, 2016). All participants endeavored to program a variety of Christian and non-Christian music in a variety of styles – except for praise and worship songs – although it was clear that participants wanted their school students to experience a wider range of repertoire by diverse composers on timely topics, in order to challenge, expand, and shatter students' societal assumptions. While Western Classical music had its place in their choral curricula, participants described their dedication to programming repertoire that confronts injustice and teaches students of any age about unfamiliar histories. The participants' intentional actions speak to culturally responsive teaching practices (Bond, 2017; Lind & McKoy, 2016), informed repertoire selection (Abril, 2006), compassionate music teaching (Hendricks, 2018, 2021), and a reimagined church music canon (Hawn, 2007). Further, participants' activist dispositions could be initial steps in addressing structural inequalities in music teaching and learning (Benedict et al., 2015; Bernard & Rotjan, 2021; Hess, 2019; Koza, 2008, 2021; Talbot, 2018).

Third, participants reported that they used the same soft people skills with church and school stakeholders. They believed that adaptability, organization, problem-solving, attitude, and leading and following when appropriate transferred from one context to the other and helped them to negotiate productive relationships with numerous stakeholders, especially school administrators and clergy. Participants attributed these people skills to their music teacher preparation programs, where the tenets of working collaboratively, redirecting behavior, and planning for instruction were reinforced. These notions align with the qualities of successful church music directors (Clark, 2021; Hawn, 2007; Kroeker, 2016; Rohwer, 2010, 2011) and might warrant further explorations of core reflections (Korthagen et al., 2013), or the focus on inner strengths and beliefs that can impact teaching and learning positively.

Given the liminal spaces that participants in this study often occupied, it is important to

highlight some of the dichotomous tensions about which participants spoke. Participants seemed to live and work between various endpoints, along a liminal continuum (Brown, 2007; Turner, 1977), gliding between youth and adult learning tendencies, conservative and liberal bookends, private and public relations, and tradition and change. Participant accounts appeared to reflect and reinforce Turner's (1977) notion of "threshold people" (p. 95) who move between ritualistic settings; however, the centers around which many of these liminal spaces gravitated were the learners themselves. Whether they were school students or church adults, the learners seemed to drive participants' instruction, approach, and repertoire choices. As Simon frankly stated, "It's geared to whoever's sitting in front of me." The one exception might have been Will, who was taught that in the church setting, even the liturgy can supersede the choir's needs. Still, among the fluidity and hybridity of identities (Brown, 2007) that participants claimed to inhabit, the teacher role emerged as the predominant, most consistent character in each context. Maintaining an educative teacher-student relationship appeared to surpass other identities that participants occupied along their liminal continua (e.g., musical, personal, professional, political, social, spiritual). In this way, participants' teacher persona served to anchor, moderate, and deflect dichotomous tensions they might have encountered. Future investigations could show additional patterns in the junctures that music teachers navigate between professional and religious rituals, as well as how music teachers approach their change of status in the moments before a context transition occurs (Brown, 2007; Emmanuel, 2011; Turner, 1977). Over time, the liminal spaces that bivocational music teachers inhabit could become the "spaces of radical openness and hospitality" that Hendricks (2021, p. 249) envisioned.

Finally, it is important to note that the findings in this study could have been shaped by some limiting factors, particularly with regard to size and scope. First, the small-scale qualitative descriptive design and single interviews might have restricted the level of data required to create more comprehensive assertions. Additional data from observations or multiple interviews could have revealed broader meanings. Second, while the participants held a variety of social identities (e.g., age, race, gender, location, career stage, musical background, sexual orientation, religious denomination), their primary work was as classically-prepared choral directors, and from a Christian perspective. Exploring other faith-based worship styles (e.g., folk, gospel, contemporary) as well as other religious or spiritual traditions (e.g., Jewish, Islamic, Hindu, Buddhist, West African/Latin American) could generate further connections between music teaching and worship. Additionally, the views that participants in this study shared may not represent fully the positions of their respective denominations or of individual churches within those denominations. Still, the current study showed, in part, how in-service music teachers have negotiated liminal spaces between and within Christian churches and public schools. Researchers could explore further the role that spirituality plays in the lives of school music teachers, the process of self-actualization as music teachers untangle their dual roles at church and school, and the ways in which church and teacher identities are constructed, maintained, and modified over time.

Implications

Bivocational music teaching in churches and schools is an underexplored area. While the views depicted in this study may not be fully transferable to other individuals or contexts, they could provide insight for music teachers who are interested in pursuing bivocational teaching opportunities or who are engaged in them currently. Future considerations for pre-service music teachers, in-service music teachers, and church music leaders are addressed below.

First, participants in this study acknowledged numerous pedagogical practices and musical considerations that they used interchangeably with teen and adult singers. Acquiring the expertise to recognize and apply such connections early on could expedite bivocational readiness. Thus, for preservice music teachers who feel called to church leadership positions, preparation in working with diverse learners (e.g., age, ability) is fundamental. School students and church musicians likely hold a variety of pedagogical, social, and emotional needs. In many instances, responding to these factors can be more nuanced than musical considerations, especially in volunteer church ensembles where skill levels vary. A well-placed focus on lifespan learning theories and human development throughout teacher preparation programs could be helpful in this regard, and could highlight further the liminal spaces (and stages) that music learners face across their lifetime (e.g., graduation, marriage, family, career changes, retirement, health changes).

Preservice music teachers also might benefit from working with a mentor (e.g., music education professor, church music director) to explore best practices and pedagogical transfers between school and church. Mentors could facilitate discussions in applying lesson planning, repertoire selection, and rehearsal strategies from music education coursework to church settings. Explicit applications could assist preservice music teachers who might be familiar with the fundamentals of teaching, but may not be familiar with how liturgical elements shape worship and musical choices. As Rohwer (2011) acknowledged, church ensembles are perhaps more complex because of the added layers of worship and spirituality. Mentorship could prepare students more fully for working within church organizations, examining other faith traditions, considering repertoire in relation to its difficulty and situational appropriateness, and envisioning the delicate balance between worship, music, and fellowship.

Second, participants in this study were in-service music teachers who experienced varying degrees of overlap between church and school. Determining how to negotiate these context-laden landscapes – and the personal, dispositional inventorying that accompanies them – may require collaborative discussion with reliable confidants. For bivocational music teachers who find themselves in church leadership roles, continued support and mentorship could elucidate practical and spiritual considerations in both contexts, particularly if there are theological or musical differences among church leadership. Sometimes, church structures can be less intuitive than school structures. Thus, cultivating trusted networks of individuals inside and outside of church and school could help to illuminate cross-patterns

in both contexts, providing some clarity to the blurred thresholds that in-service music teachers might encounter.

Third, the participants in this study built productive relationships with numerous stakeholders, from school administrators and clergy to students, parents, and congregations. Participants believed that their background in pedagogy expedited networking opportunities, strengthened church music-making, and allowed them to make lasting connections with community members. For church music directors who may not have a background in pedagogy, clearer and more abundant resources could be useful (e.g., denomination-based, state MEA-based). Online tools, workshops, or professional development opportunities could be created or updated in collaboration with stakeholders who have first-hand experience in worship music and pedagogy. In this way, appropriate, vetted materials could foster musical growth and self-reflection among church music leaders. Additionally, music leadership resources could be especially advantageous for churches that find locating and attracting qualified music candidates challenging. Given that some churches face difficulty hiring music worship leaders who are well-versed in all areas, well-curated resources could be helpful.

School music teachers can occupy multiple liminal spaces throughout their careers. Bivocational teaching in churches and schools can afford music educators additional opportunities for pedagogical refinement, community engagement, and spiritual growth. Continued explorations of these intersecting landscapes could provide additional lessons for confronting and enacting change, repairing relationships within and across communities, and re-imagining church music participation in the decades to come.

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Keynote Address

Utilizing Multiple Research Methodologies to Examine the Intersections of Music, Race, and Food in Brazilian Culture: Applications to Research in Choral Music

Elisa Dekaney

Good afternoon. Although this is a virtual symposium and we are scattered across the US and abroad, I am geographically located in Syracuse, New York. Therefore, I will begin today with an acknowledgement we say every time we are gathered in community on our campus: **We acknowledge, with respect, the Onondaga Nation, firekeepers of the Haudenosaunee, the Indigenous people on whose ancestral land Syracuse University now stands.** Perhaps you too can take a minute to acknowledge the first nations who inhabited the land upon which you stand. (Silence observed).

I would like thank Patrick Freer and Bryan Nichols for inviting me to be the keynote speaker for the 2022 ACDA Symposium on Research in Choral Singing. I am extremely honored to be here today.

I want to congratulate all of you who are attending and presenting at this conference. Some of you are currently investigating teacher identity and development, and culturally responsive teaching. Others are addressing the challenges of selecting, performing, and teaching a choral repertoire that is representative of multiple cultures and musical traditions. Others are determined to understand the complexities of the human voice not only in children and teenagers but also in adults who have transitioned or are transitioning into their preferred gender. I am inspired by the scope and quality of your work and grateful that our organization, the American Choral Directors Association, is committed to embracing and disseminating a broad range of choral research methodologies and topics that permeate all aspects of our work.

To say that I am extremely excited to share some thoughts and ideas with you today is an understatement. Frankly, I was surprised with the invitation. Although I have spent years perfecting the art of choral conducting under the guidance of beloved mentors Eph Ehly, André Thomas, Judy Bowers, Rodney Eichenberger, Chuck Robinson, and Elza Lakschevitz, I feel a bit removed from the choral profession mostly because of my administrative responsibilities.

This distance from the choral field has led me to focus on other questions. I am interested in the intersections of music performance and the cultural context upon which it happens, interested in which repertoire is being performed, why it is being performed, and how the performance elevates and humanizes composers, performers, and listeners. Some of my most recent studies are broad in scope. But that is not arbitrary; I have always been interested in multidisciplinary connections. My most cited article (Dekaney, 2008) is not exclusively about music, but a case study dedicated to unpacking interdisciplinary music and art experiences for students studying abroad.

Interdisciplinary approaches to teaching and researching have always been at the center of my work. A few years ago, this was intensified when I joined a multidisciplinary group of researchers—physicians, psychologists, educators, speech pathologists, and social workers—from the Developmental Disorders Graduate Program at Universidade Presbiteriana Mackenzie in São Paulo, Brazil, with whom Syracuse University has a partnership. I am the only musician in a group of researchers who work collaboratively to facilitate educational, personal, and emotional experiences of historically excluded individuals due to invisible and visible disabilities, gender, race, and socio-economic status. Among the work we have produced are a book chapter, *Culturally relevant pedagogy: An interdisciplinary approach to developing cultural fluency about the Sateré-Mawé Indians* (Dekaney & Macedo, 2020) and two book chapters in press: *Culture, dance, and music as a form of socialization and belonging in quilombola communities* (Morais et al., in press) and *The quilombola communities and their representations in the scientific community: An analysis of peer reviewed research output* (Sarmento et al., in press). As a point of clarification, quilombolas are Afro-Brazilians who live in communities that reclaim their African heritage through cultural immersion. Yes, it looks like I am a bit removed from the choral world.

My beloved mentor, Clifford Madsen, would always say: "Everything relates to everything." Let us find ways to relate what I do to choral research. I hope to highlight the research methodologies I utilized, along with my co-author Joshua Dekaney, to examine the intersections of music, race, and food in Brazilian culture aiming to provide a holistic understanding of Brazilian music. This work led to the publication of *Music at the intersection of Brazilian culture: An introduction to music, race, and food of Brazil* (Dekaney & Dekaney, 2021). I hope our conversation today will generate additional ideas and possible avenues for future research in choral music.

Our goal with this book was to primarily elevate the contributions of Indigenous and African groups, women composers, performers, and impoverished communities. And we did this by utilizing quantitative and qualitative methodologies such as autoethnography, data census, primary and secondary sources in Portuguese, English, and Spanish, interviews, photographs, visual journals, and field notes. We also drew from multiple disciplines: history, geography, social studies, anthropology, nutrition science, cultural studies, and others. We sought to unpack issues of race relations, colonization, and sustainable development, and aimed to disrupt stereotypical notions of what it means to be Brazilian by intentionally including narratives and perspectives that were excluded from other sources.

It was crucial to highlight important aspects of Brazil's history, geography, demographics, and culture to support our statements. For example, by acknowledging both the existence of over five million of Indigenous peoples who inhabited Brazil prior to the arrival of the Portuguese in 1500 and the institution of African slavery, we provided a contextualized foundation upon which we can build an understanding of Brazilian music. We tied this overview to the development of urban music such as *modinha, lundu, maxixe, samba, choro,* and *bossa nova* considering class divisions and race relations. Additionally, through field

notes, interviews, and photographs, we documented the work of several communities and musicians. The members of these communities acted as co-researchers by providing input and checking our notes for historical, musical, and contextual accuracy.

To better understand the contributions of the Indigenous peoples in Brazil, we purposefully addressed their fight against acculturation. We discussed the historical destruction of Indigenous populations and the effects of colonial oppression. Using data from the 2010 Brazilian census (the 2020 census was postponed to 2021 due to the global pandemic), we looked at current Indigenous population and existing languages while considering the unsurpassed contributions they have made to Brazilian culture and society. Extinction of more than 500 diverse ethnic groups resulted in the loss of thousands of years of cultural heritage. Despite this, Indigenous groups have demonstrated resilience and resistance to the dominant group by preserving their own cultural, social, economic, and belief traditions. This refusal to accept domination is worthy of our attention because it exemplifies the resilience of Brazilian Indigenous peoples.

Drawing specifically from the knowledge we gain from storytelling, we attempted to develop cultural understanding through Indigenous stories, which often reflect the values, moral principles, and cultural and culinary traditions. The *Tupi* people, for instance, use stories to explain the origin of elements embedded in the fabric of Brazilian culture, such as the creation of the Amazon River, *manioc* (one of the most important ingredients in Brazilian cuisine), *guaraná* (an ingredient in several energy drinks available in the US), and *curupira* (the mythical figure that guards Brazilian forests). The acknowledgement of Indigenous contributions to Brazilian culture sets the stage for the understanding of a vast and rich Brazilian Popular Music (MPB) repertoire that centers on food.

An historical overview of African slavery in Brazil is mandatory if the goal is to develop a meaningful appreciation for Brazilian music. Despite many forms of cultural, religious, and physical resistance, displaced Africans were unable to defeat slavery. Furthermore, society at that time believed strongly in the pseudo-scientific theories of social Darwinism, in which black people were considered socially inferior, of low intelligence, emotionally unstable, and biologically designed for subjection to whites. Beginning with whitening policies in the 1800s and through the teachings of Gilberto Freyre in the 1930s, Brazil considered itself to be a racial democracy, without overt racist practices. We provided data that dismantle the myth of racial democracy and underscore efforts to disrupt this status quo. It is only through the critical examination of African slavery that we can begin to understand *capoeira, samba,* and *maracatu,* music and art forms that reside at the intersection of music, dance, food, and Afro resistance.

Our collaboration with Professor Irene Coutinho de Macedo, chair of the nutrition department at Centro Universitário Senac in São Paulo, allowed us to provide an overview of Brazilian food patterns, identifying dishes that have risen to national prominence. If we draw a map of the Brazilian food pattern, we will see it overlap with Brazil's music pattern; the north and northeast regions are less Eurocentric than the east and south regions in their cuisine and music. The examination of this pattern has helped us to recognize the intersec-

tion of Brazilian Popular Music with food, which may explain how some national dishes have been immortalized in songs. Some of the most renowned musicians in Brazil, such as Chico Buarque, Dorival Caymmi, Adoniran Barbosa, Djavan, Gilberto Gil, Paulinho da Viola, and Zeca Pagodinho, have composed and performed popular music about food. These poet-composers have written and recorded songs about everything from instructions for making traditional dishes to artisanal processing of ingredients to etiquette around food consumption. Considering the kitchen as a central folk space in Brazilian culture, we analyzed over 35 songs and highlighted their importance in the Brazilian music scene as they introduce dishes of national prominence.

In sum, our book provides a broad context for the understanding, appreciation, and performance of Brazilian music. Let's see how this information can be useful to the performance of choral music using *Três Cantos Nativos dos Indios Krahô* as an example. After centuries of acculturation, Indigenous groups have desperately tried to preserve their cultural traditions. In music, Marlui Miranda's groundbreaking and longitudinal work - researching and studying the musical traditions of Amazonian Indigenous peoples- deserves exclusive attention. A singer and ethnomusicologist, Miranda has adapted and arranged songs and traditional chants from various Indigenous groups. As a musician, she has performed and toured the world and collaborated with titans of Brazilian music. She has written music for documentaries, television, plays, and movies and worked as music supervisor in feature films.

Miranda's work was not well received initially. She recalled being booed in 1979 when she performed an Indigenous song at the prestigious Teatro do Amazonas (Amazonas Theater) in Manaus. At that time, she had just begun her research on Indigenous music. When she started singing a song from the *Suruí* Indians of Rondônia using a traditional interpretation, the audience began to curse in a very aggressive manner. Tears fell from Miranda's eyes when she realized that the Teatro Amazonas, built in the nineteenth century in the middle of the jungle for the performance of opera, was only a place for the performance of Western European music. Apparently, there was no place in Amazonas for music performance of their Indigenous peoples.

Miranda's 1979 debut recording, *Olhos D'água* (Nagi, 2015), included the track *Grupo Krahô*, which combines traditional chants of the Krahô with an introduction depicting sounds of the forest. The song was later popularized by Marcos Leite (1996)'s choral arrangement. Miranda's original *Grupo Krahô* track (Anji Nagi, 2015) begins with the ambient sound of water, birds, and other animals in the forest. Her vocal tone is simple and reverent. After an introductory chant, she introduces two of the songs later arranged by Leite: *De ke ke ke korirare He* and *padzo parareha djozire*. The accompaniment showcases a rhythmic guitar, hand clapping, and other light percussion.

In the notes published in the score (Leite, 1996), the editor wrote that "The meaning of the text is not known; it was treated by the composer as a group of phonemes" (p. 6). However, Miranda, who originally collected the songs, translated the text from the Krahô lan-

guage into Portuguese (Santos, 2010), which I translated here into English. The first chant, *De ke ke ke korirare He* describes a heron flying over a lake. The hungry heron sees a fish swimming in the lake and dives to get it. The heron goes "aham, aham." The second chant, *padzo parareha djozire*, describes a macaw sitting on a branch and asks, "is the macaw smiling or crying?" And the final chant, *kamarera kideri kema*, arranged by Leite but not recorded by Miranda, describes a young man's invitation to his girlfriend to join him in the forest in search of honey. Switching from vocables to the Krahô language with specific meaning greatly impacts the way we perform this song.

While this song has become a concert pleaser in the US, it seems that very little effort has been dedicated to elevating the Krahô people, an almost extinct culture currently with less than 3,000 individuals. Choral conductors, arrangers, and performers may be tempted to disseminate certain repertoire inappropriately and without contextualized information. We add movements and choreography to the performance of music of a people of whom we know nothing about. There is an added educational dimension that is lost when the music repertoire is introduced without its meaningful context. What a rich learning experience we would have if we could get to know the Krahô people by visiting their village in Brazil. Not all of us can travel to Brazil to learn about the Krahô, but members of the Italian choir Cantosospeso did just that. The Milan-based choir traveled to a Krahô village during the 2006 summer. Upon returning to Italy, they performed a collection of Krahô songs including *Três Cantos Nativos dos Indios Krahô* (Fabioturone, 2017). They added a slide show to the performance with videos and images collected during their trip that documented their interactions with the Krahô. They used no percussion instruments to accompany the songs and produced a distinct nasalized sound while singing in Krahô. The tempi of the songs were quite contrasting and much faster than Miranda's recording. The vocal vitality Cantosospeso singers employed was enhanced by the visual scenes presented in the slide show. They elevated the Krahô people, their customs, culture, and language by learning from and with them, and by producing a performance that humanized the Krahô.

What are some implications for the future? Not all our choirs can take trips to Indigenous villages across the world. How is it possible for us to better understand the cultural context upon which a certain repertoire was generated and performed when we cannot travel there? We have relied upon cultural bearers and people in our community to learn how to pronounce words of unfamiliar languages or understand the cultural context of a folksong or traditional melody. Access to these resources is not always easy. Regardless of the difficulties in retrieving information, when learning a new piece from cultural contexts with which we are unfamiliar, we should use the same rigor we utilize when preparing a score study for any Western European music. Score analyses, developed through the lenses of multiple disciplines, should inform our understanding of the cultural context upon which a certain song was composed and performed. Choral conductors, embracing choral humility, will engage in score study in a way that leads to cultural understanding. Perhaps a first step would be to identify a particular historical period, or a certain group of people living in specific geographic areas and establish the relevance of this information to the performance of the repertoire. While the

information may not be clearly outlined and contained in a book, article, or critical edition, it is possible to construct a robust context for the performance of any repertoire.

I remember when I programmed *Ne Sedi, Djemo,* a Bosnian folksong (Sametz, 2004). My knowledge of Bosnia was limited, but I began to seek relevant information. I learned that in 1995 in Srebrenica, eight thousand Bosniaks (Bosnian Muslims) were killed by the Bosnian Serbs. It was an ethnic cleansing that used, among its most cruel tactics, the rape of women and girls. Since the 1990s, the suffering of the Bosnian Muslims evokes strong sympathies among Turks. Turkey played the largest humanitarian role in reconstructing Bosnia and Sarajevo. After this initial search, I understood the humorous relationship between Bosnians and Turks outlined in the text: "Don't just sit there, Djemo, so comfortably under that tiny pear tree. It is time to pull yourself together. Pull yourself together, Djemo, the Turks are stealing the girl! The Turks are stealing your sister Fatima" (Sametz, 2004). Although it seems that the Turks are the enemies for taking Fatima, when you understand the larger cultural and historical landscape, you can appreciate the humor in the song. Additionally, I found *Zlata's diary: A child's life in* Sarajevo (Filipović, 1994), which is comparable to Anne Frank's diary. Throughout the semester, the choral singers and I read selected excerpts of Zlata's diary so we could better understand the siege of Sarajevo and the important role Turkey has had in reconstructing the region. During the concert, a student read an excerpt of the diary providing a broader context for the music performance and humanizing Zlata's experience by giving her a voice, by sharing a little of her story. This historical, geographic, social, and cultural context greatly enhanced the music performance of *Ne Sedi Djemo* for singers and audience alike.

As we move forward with our research agendas, which are generally connected to the performance of music from around the world, we will need researchers who can help us critically examine our practices and provide a multidisciplinary context upon which audiences and performers can have a meaningful music experience that humanizes every aspect of that performance.

Thank you.

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ABSTRACTS

Kari Adams (**Florida State University**)
"We Are All Teachers Here": Identity Development in a Four-Year Lab Choir

Peer teaching is a common practice in teacher education. Preservice teachers may value the ability to develop skills in peer teaching, but find the context to be inauthentic (Powell, 2011). Some researchers have discovered that preservice teachers find peer teaching to be more stressful and challenging than field experiences (Butler, 2001; Paul, 1998). Powell's (2011) preservice teacher participants regarded fieldwork as a more authentic setting for skill and identity development. Many music teacher educators (MTEs) consider field teaching a vital component of preservice teacher preparation, yet issues with scheduling, curriculum, and school access make peer teaching a more readily available option. Therefore, it may be advantageous to explore varied peer teaching structures to learn how we can aid our students in identity development during peer-teaching experiences. Participants were seven preservice music educators involved in a unique lab choir at a large Southwestern university. All choral music education majors participated in this lab choir every semester in their undergraduate career—as singers only for their first and second years, then as teachers following the completion of their conducting coursework. During their rotation, they taught four 15-minute segments, conducted a concert, and received feedback from peers and faculty members. Data sources included interviews, journals, teaching reflections, and observations. I began the coding process using *possible selves* (Markus & Nurius, 1986) as my theoretical framework. Three themes emerged from the data. *Finding the teacher self* refers to the ways in which participants experienced the lab choir as a more authentic environment than other peer-teaching experiences and therefore as a place to apply concepts to their emerging teacher selves. *Interaction with coursework* indicates the importance of the lab choir as a glue that aided participants in building meaningful structures from disparate knowledge and skills in their classes. Participants would learn about a concept or skill in a course then see their peers putting those same concepts and skills into practice. *Peers as future selves* denotes the role that peers play in shaping a teacher self. This theme contained the subthemes *value in relationships, peers as ideal self,* and *peers as feared self.*

Kari Adams (**Florida State University**)
Jessica Nápoles (**University of North Texas**)
Effects of Transitional Elements on Listeners' Aesthetic Responses to a Choral Performance

Choral pedagogues have argued that applause in a live performance may serve as a distractor that reduces both audience engagement and aesthetic experience (Bjella, 2017; MacMullen, 2021). These practitioners advocated for the use of continuous musical transitions rather than applause breaks to connect pieces and increase the emotional engagement of listeners. However, these claims have not been examined empirically. The purpose of this study was to investigate the effect of transitional elements on listeners' aesthetic responses. The following research questions guided this study: (a) What is the effect of transitional elements (applause or continuous transitions) on listeners' aesthetic responses to a choral performance? (b) What factors are most salient in listeners' aesthetic responses to a choral performance? (c) Is there a difference in peak aesthetic responses between the applause and continuous transitions groups? Participants ($N = 81$ undergraduate and graduate students enrolled in a choral ensemble) viewed an excerpt of a choral performance while manipulating a Continuous Response Digital Interface (CRDI) to record their aesthetic responses. We chose to use the CRDI as a measurement tool in order to assess participants' responses across time rather than summatively, congruent with our research questions. In one condition, participants viewed an original choral performance of a university ensemble, which included two purposeful transitions and no applause between pieces. In the other condition, participants viewed the same choral performance but with applause added between pieces. Participants then answered a series of open-ended questions to indicate the features of the performance most salient to their aesthetic response. There were differences between the transitions as well as between groups. Additionally, there was a significant interaction between transitions and groups. Mean aesthetic responses during each transition were higher for the continuous transition group compared to the applause group. In response to the open-ended question "What factors contributed the most to your aesthetic response?", the most commonly cited factor was ensemble musicianship (*musicality, $n = 37$*) followed by compositional elements such as harmonic, melodic, or rhythmic material (*compositional elements, $n = 36$*), performer engagement (*engagement, $n = 34$*), and song choices (*programming, $n = 26$*. In response to "What factors contributed the most to your engagement?", participants mentioned programming most frequently (*programming, $n = 47$*) followed by the use of instruments (*instrumentation, $n = 29$*), compositional elements (*compositional elements, $n = 29$*), and ensemble musicianship (*musicality, $n = 28$*).

Patrick Antinone (Southeastern Oklahoma State University)

The Effect of Individual Sight-Singing Assessment on Motivation, Self-Efficacy and Performance of High School Choral Singers

The purpose of this research is to examine the effect of assessment on the sightreading accuracy, motivation to practice and self-efficacy of choral singers. Events related to the COVID-19 pandemic and subsequent shift to remote learning suggests an increase in individual assessments related to music (NAMM, 2020; NAfME, 2020). Resources available to support instruction and assessment in a remotely are numerous (ACDA, 2020; NAfME, 2020; TCDA, 2020) whereas research to support their effectiveness is relatively lacking. Although a positive relationship has been suggested between individual assessment and sight-singing performance (Demorest 1998; Henry 1999; Mayhew & Coker, 2020), research reveals the time devoted to these practices is often limited (Armstrong, 2010; Demorest, 2010; Szabo, 1993).

High school singers ($N = 135$) sightread four melodies from notation preceded by a practice period over an eight-week period. Tests were administered via online software in a non-controlled environment. Students were individually assessed based on prior performance into five graded levels that increased in difficulty from 1 (novice) to 5 (expert). A student advanced in level for subsequent tests upon mastery (score of 100) of a test melody. Raw data consisted of student performance outcomes as well as practice interactions tracked by online software between assessments. Additionally, students responded to the following two questions related to sightreading self-efficacy: 1. At the beginning of the school year, as a sightreader, I would have rated myself…: 2. Today, as a sightreader, I would rate myself… Students were provided a four-point Likert scale anchored by (1) No matter how hard I try, I just can't sightread and (4) Strong, a leader. I rarely miss, even with difficult music. For the beginning of the school year, only 54% of students self-identified positively as "Solid…" (3) or "Strong…" (4) and 8% of students identified very negatively as "I just can't sightread…" (1). Following the eight-weeks of assessment, teachers saw a +26% swing to 80% of students who positively self-identified as "Solid" (3) or "Strong" (4) with only a single student who still self-identified as "I just can't sightread…" (1). Following assessments, most students had mastered at least one assessment. Online software indicated ≤15 weekly practice interactions per student. Moreover, student self-perception of their identity as sightsingers was overwhelmingly positive, as all but a single student self-identified as capable of sightsinging in an ensemble setting.

Andrea Asztalos (University of Szeged)
Choral Conductors' Beliefs and Practical Experiences about Warm-Ups in the Children's Choir Rehearsals

Background: There are numerous ways of warm up procedures in choral rehearsals, according to the individual conductor's intention. Although there are many warm up rehearsal methods for choirs in previous studies, there is no certain way of warm up components for elementary school chorus. The goal of choral warm-ups is bring together the individual singing voices in order to create a choral group sound (*Smith & Sataloff, 2006*). The choral conductors should address body alignment, breathing mechanisms, phonation of the vocal chords, and resonance while cultivating healthy singing mechanisms through a variety of warm-up exercises (*Ehmann & Haasemann, 1981*). The choral conductors come from a variety of musical backgrounds and qualifications. Their musical background, training, beliefs, and practice can influence the success of the warm-up (*Olesen, 2010*).

Objectives: The aim of the research was to explore the choral conductors' beliefs and practical experiences about the warm-ups in the children's choir rehearsals; and examine the correlation between choral conductors' beliefs and musical background, musical / choral conducting training, teaching practice.

Methods: At the process of research participated 268 children's choir conductors. The research methods employed were questionnaire and semi-structured interviews. Data were analyzed using qualitative and quantitative analysis protocols (Likert scale, descriptive statistics, Pearson correlation, Factor analysis, ANOVA).

Results: Singing exercises and already learned songs were also used during the warm-up phase of the children's choir rehearsals, but the proportion depends on the children's musical education and age. Structure and proportion of warm-up exercises and songs were variable and depended on type of the schools, and age and musical qualifications of children. There was a significant correlation between choral conductors' beliefs about the frequency and methods of warm-ups and teachers' musical training. The length of choral singing practice of choral conductors was significantly correlated with their beliefs about the structure and purpose of the warm-ups (p<0,001).

Conclusion: All children's choir conductors should address body alignment, breathing mechanisms, phonation of the vocal folds, and resonance while cultivating healthy singing mechanisms through a variety of warm-up exercises. It is important for children's choir conductors to acquire theoretical and practical knowledges and experiences of the mechanisms

of children's vocal training and the structure of warm-ups during their university education. All children's choir conductor should be taught how to plan warm-ups that cultivate healthy singing and aid in developing a choral sound.

Mark A. Bailey (Brazoswood High School)
Examination of the Effect of the Covid-19 Pandemic on Socioeconomic Representation in State Level Performing Groups

The purpose of this study was to examine the relationship between socioeconomic status (SES) and student representation prior to and during the Covid-19 pandemic. The author of this study will examine the schools represented by members of the large school Texas All-State choirs (Mixed, Tenor/Bass, and Treble ensembles) from 2015 to 2022 ($N = 4032$). The Texas Music Educators Association (TMEA) presides over the Texas Music Educators Association All-State choir auditions, clinics, and performances. Each year, high schoolers from across the state of Texas compete for placement in an All-State choral ensemble. The majority of these auditions are in-person and judged by a panel of professional musicians and/or educators. It is to be noted that the 2021 auditions were virtual and students sent in recordings of themselves performing prepared works (Texas Music Educators Association, 2021c). The schools represented by members of these All-State ensembles from 2015 to 2022 and the percentage of economically disadvantaged students found at the represented schools of All-State members will be used in this study. Previous studies indicate that there is currently an under-representation of socioeconomically disadvantaged students in the TMEA All-State Choirs (Bailey, 2018) and that socioeconomic status does affect student music achievement (Dame, 2010; Speer, 2014). For analysis purposes, schools will be categorized into three separate groups based upon a school's socioeconomic status (SES), which will be measured as the percentage of economically disadvantaged students from each school, according to publically available data from the Texas Education Agency (Texas Education Agency, 2021). A school's percentage of economically disadvantaged students will depend upon the percentage of the student body that were eligible for free or reduced lunch (Texas Education Agency, 2015). The representation in the TMEA All-State choirs will be as follows: high SES group (0% - 33% economically disadvantaged), medium SES group (34% - 66% economically disadvantaged) and low SES group (67% - 100% economically disadvantaged). Raw data will include the representation by percentage of each socioeconomic group from 2015 to 2022 in the Texas All-State Choirs. Results will be discussed in terms of representation of each SES group and what effect the pandemic may have had on that representation. Preliminary findings indicated a 6.59% decrease in the representation of the high SES group, an increase of 2.51% in the mid SES group representation, and an increase of 3.48% in the low SES group representation between 2015 and 2021.

Sarah J. Bartolome (**Northwestern University**)
Sam Bullington (**University of Colorado, Boulder**)

Phoenix Rising: Empowerment, Advocacy, and Activism in a Transgender Community Choir

The purpose of this ethnography was to examine the culture of a transgender community choir, with particular attention to the way the choir functions in the local community and in the lives of the singers themselves. Over three years, the research team (consisting of the choir's conductor and a research partner) completed over 100 hours of observation, conducted interviews with 14 members, and examined material culture including social media posts, concert programs, and choir-composed musical repertoire. For singers, the choir served as a safe community in which to explore aspects of their gender identity, experiment with their voices, and interact through music in a queer community. The choir also emerged as a strong force for community activism related to gender diversity, racial justice, and environmental justice. The choir culture is forwarded as an embodiment of trans-sensibilities, featuring fluidity, multiplicity, innovation, and self-direction as core values reflected in the structure and routines of the choir. Findings are also examined through the lens of social capital (Farr, 2004; Putnam, 2000), considering the ways the choir generates bonding social capital among members and linking social capital, connecting singers to community members and policy makers throughout the state. The potential for choral communities to serve as generators of bonding and linking social capital for historically marginalized individuals is discussed, highlighting both the personal and communal empowerment that emerged as central features of the lived experience of choir members.

Cat Bennett (Oakland University)
Culturally Responsible Music Teaching in California and Oregon: An Exploration of Choral Educator Practice

In this age of change, globalization and cultural complexities, choral educators are called to re-think and expand music pedagogies beyond traditional norms and systematic limitations. While progressive and 21st-centuryrelevant pedagogies have been theorized especially in recent years, particularly in music education at large, research is needed on the breadth of practices existing in choral classrooms today. The purpose of this study was to describe the ways in which six choral educators working in various formal settings in California and Oregon implemented a culturally responsible choralmusic education. "Cultural responsibility" is a concept that emerged from a related, large scale research study (Author 1, 2021), which is here defined as teaching and learning that (1) connects with students' cultural frames and lived experiences (Villegas & Lucas, 2002), (2) empowers students in their own construction of knowledge and art, and (3) opens students to multiple viewpoints and perspectives on the world and music (Abril, 2013) so that students will have meaningful music experiences and a more meaningful life due to music. I selected a case study research design for this inquiry. Case study methods are useful for the study of an individual or individuals (i.e., the case or cases) within a real-life context or setting (Yin, 2014). Beginning with select professor recommendations, I used a purposive, maximum variation sampling method (Creswell & Poth, 2018) to find choral educators who worked full time, were certified to teach in the United States, and self-identified as implementing relevant pedagogies that empower diverse learners. Data for this case study came from multiple semi-structured interviews with each participant. Teaching artifacts were also collected and analyzed to corroborate findings. I used grounded theory analysis processes and a constant comparative method, moving from initial coding to focused coding to the illumination of analytic themes. This presentation will center on how choral educators described cultural responsibility: in terms of (1) inviting, (2) relatable, (3) reachable, (4) interactive, (5) active, student-driven, (6) creativity-based, (7) musically diverse, (8) interdisciplinary, (9) multi-modal, (10), enjoyable, (11) heartfelt, (12) crafted, and (13) determined teaching and learning. Participants described engaging students in such processes in various, distinct ways, most commonly emphasizing relatable, interactive, active and student driven, and determined elements. Some participants described challenges in implementing culturally responsible pedagogical elements and barriers and gaps in practice were also apparent. Two participants engaged in cultural responsibility as "traditionalists," whereas I identified the other four as "evolutionists."

Emily Pence Brown (Bowling Green State University)
Adam Zrust (Northwest Missouri State University)
Pre-service Choral Music Educator Self-Perceived Rehearsal Feedback

Verbal feedback is a valuable component of a music teacher's lesson plan and is often associated with teacher effectiveness (Forsythe, 1975; Goolsby, 1997; Madsen & Alley, 1979; Standley & Madsen, 1991, Zrust, 2017.) Frequency and type of teacher feedback is widely reported in the literature (Duke, 2000) and researchers suggest that expert teachers give more frequent (Goolsby, 1997) and specific feedback (Goolsby, 1997; Siebenaler, 1997) than novice teachers. Although training pre-service teachers to provide verbal feedback can lead to teaching an effective lesson, self-perception of teaching behaviors may differ from actual frequency (Legette, & Royo, 2021; Nápoles & Vázquez-Ramos, 2013.) Research efforts have demonstrated that pre-service teachers' perceptions have become more accurate with accountability instruments, including video reflection (Moore, 1976) and self-evaluation forms (Legette, & Royo, 2021; Yarbrough, 1974). Based on these findings, it could be inferred that pre-service teachers' perceptions of verbal feedback type and frequency could become more accurate over time with the aid of video and self-reflection. Therefore, the researchers of this investigation sought to answer: (a) what is the difference between perceived feedback and actual feedback in pre-service music teacher demonstrations? (b) does perception of feedback improve in subsequent teaching demonstrations? (c) which category of feedback was most frequently given throughout the teaching demonstrations? To answer these questions, two choral music education instructors at mid-sized American universities asked their pre-service undergraduates enrolled in a choral methods course ($N = 14$) to participate. Each student taught and video recorded a seven-minute micro-teaching demonstration. Immediately following each teaching demonstration, the student estimated the type and frequency of teacher feedback. The student then watched and recorded their actual feedback frequency. This identical process was repeated four weeks later in order to observe if estimates were closer to actual feedback than the first teaching demonstration. Estimated and actual feedback data will be analyzed to determine if students become more aware of their feedback after self-analysis over the course of two teaching demonstrations. Frequency and types of feedback will be discussed. Implications based on these findings in regard to pre-service teachers' self-awareness and use of feedback will be provided.

Whitney Covalle (Temple University)
Three Black Gospel Music Experts on Preparing, Teaching, and "Being" in the African American Aural-Oral Tradition

Extant literature on Gospel music exists in the areas of history (Burnim, 1983), Gospel ensembles in college and church choirs (Chadwick, 2011; Parker, 2017), performance practice and the values of Black church (Shelley, 2019), the musical contributions of Black Americans (Southern, 1997, Boyer, 1973, 1979, Burnim & Maultsby, 2006), and how music is a manifestation of Black culture (Williams-Jones 1970, 1975). Gospel music in choral music education and the teacher/conductor context remains under-researched. The problem of music teacher/conductors receiving limited training in the multiple tiers of knowledge required to teach in the aural-oral tradition remains sparse (Turner, 2009). The purpose of this multiple case study was to gather musical and nonmusical perspectives from three experts on teaching Black Gospel music in the African American aural-oral tradition. Research questions included: (a) What is the process expert Black Gospel music pedagogues engage in when preparing for and teaching Gospel music in the aural-oral tradition? (b) In the view of Black Gospel music experts, how does race intersect with the preparation, teaching, and performance of Gospel music? (c) How do Black Gospel music experts advocate for incorporating Gospel music into school public school vocal music programs? Experts were purposively selected, and data collection included observations, researcher singer participation and immersion, and multiple interviews. Expert agreement emerged regarding teaching processes as a nonmusical "state of being" deeply infused with cultural, community, and spiritual values. Rehearsals were uninterrupted musical experiences with limited nonverbal instruction made possible from robust aural-oral immersion preparation. While participants insisted race was not a prerequisite for engagement in Gospel music, they agreed race plays an active role, citing the proliferation of antiblackness in the academy as foremost among the barriers to rigorous preparation to teach Black Gospel music. Experts advocated for teaching Gospel music in schools to offer students the opportunity to participate in the accessible, inclusive, participatory, and communal experience available in Gospel music. Induction in the pedagogy of Gospel music, a cultural art form important to African-American communities, must improve for music teachers in schools and community organizations to effectively serve all students. This research intends to center a marginalized and silenced music and method of teaching (aural/oral tradition) towards to more equitably including the aural/oral tradition alongside other practices in music teacher education preparation and choral music curricula. Implications for teacher education and ongoing professional development will be proposed.

Katrina A. Cox (**University of Nebraska Omaha**)
Amy L. Simmons (**The University of Texas at Austin**)

No Podium Necessary: The Characterization of a Shared Leadership Approach to Ensemble Rehearsal

Calls for the expansion of music education to include collaborative learning experiences are increasing in the US and around the world (e.g., Cangro, 2016; Hallam et al., 2017; Hogle, 2018); research has suggested that activities such as peer-monitoring in the choral setting can help to foster positive emotional and musical experiences for singers (e.g., Brandler & Peyrincioglu, 2015; Kirrane et al., 2017). While a few studies suggest that a variety of social and musical benefits can be gained from shared leadership (Biasutti, 2013; Boerner & von Streit, 2005; Hogle, 2018), we do not yet have a model for a collaborative rehearsal approach. With that in mind, we chose to explore collaborative choral rehearsing by observing experts at work. We video-recorded the professional vocal chamber ensemble Cantus as they completed an entire rehearsal cycle in preparation for an album recording and virtual performance, and we conducted a systematic content analysis of this footage using SCRIBE software in order to document the social and musical behaviors they employed. Preliminary results suggest that the members of Cantus, both separately and collectively, demonstrated many of the same rehearsal behaviors observed in the work of expert choral conductors (Cox & Simmons, 2020; Yarbrough, 2002). In this presentation, we will describe how leadership was shared among the singers, how goals were set for each rehearsal, how feedback was delivered, how musical information was conveyed, and how individual and group behavior brought about changes in performance. Our presentation of results includes video clips that illustrate the social and musical behaviors we observed in this successful collaborative rehearsal process, including examples of overt mentoring, the development of cohesive expressive ideas, the use of gross kinesthetic movement in cuing, and the demonstration of affirming team-like attitudes (e.g., shifting parts to assist other members). This characterization of a shared leadership approach suggests a model that could be applied in a variety of ensemble contexts to foster cooperative learning that engages all musicians fully and meaningfully in the process of preparing musical performances.

Peter Cunningham (**The Pennsylvania State University**)
Barbershop Harmony Performance Practice: The Treatment of Rhythm and Tempo Rubato

The use of tempo rubato, and at times singing without any discernible tempo, is a well-established tradition in barbershop harmony performance practice. The extent and attitudes towards this practice, however, have evolved throughout its history. The Barbershop Harmony Society (hereafter referred to as 'the Society'), has held annual conventions since 1939, a central aspect being a quartet contest. Documentation on the adjudication of this contest has a wealth of insights into how barbershop harmony would be defined. It is also imperative to the study of how performance practices, such as rhythm and tempo rubato, have changed throughout the Society's history. The present study seeks to answer two questions: Firstly, how has the treatment of rhythm and tempo rubato changed throughout the history of barbershop harmony? And secondly, to what extent did the contest and judging system affect these practices? The evolution of barbershop harmony performance practice can be seen as both a reaction to and an influence on its judging system. As the documentation of its contest and judging system adapted, so did its contestants set the standard for what was considered "the best" in performance practice. The starting point for research pre-dates the Society, and includes books published by Sigmund Spaeth in 1925, as well as Lynn Abbott's research into the African American roots of the style. A comparison of handbooks for the Contest and Judging Committee of the Society going back into the early 1940's will provide further context. Additionally, the official newsletter for the Contest and Judging Committee (Directions, later New Directions), the Society's official publication "the Harmonizer", judges' training materials and position papers, and recordings of Barbershop Harmony Society contest winners will provide further insight into attitudes and approaches to rhythm and tempo rubato in barbershop harmony.

Caron Daley (**Duquesne University**)
Gregory Marchetti (**Duquesne University**)

Musculoskeletal Pain/Discomfort in Conductors: Functional Limitations and Use of Personal and Curricular Prevention Strategies

    Playing-related musculoskeletal disorders will affect up to 90% of professional musicians and 80% of collegiate music students (Steinmetz, 2012; Silva et al., 2015). Of the available studies and case reports on injury in musicians, conductors and music educators are generally not included (Kok et al., 2016). Conductors may be uniquely at risk for playing-related musculoskeletal disorders (PRMDs) due to their use of repetitive free vs. fixed movements, changing environmental stressors, and the implicit leadership aspects of the role (Daley, Marchetti, & Ruane, 2020). The purpose of this study was to survey school and collegiate-level conductors to ascertain the a) the incidence of pain-discomfort associated with conducting, b) types of personal and environmental factors that contribute to pain/discomfort, c) preventive behaviors used to avoid pain/discomfort associated with conducting, and d) prior knowledge of topics related to injury prevention. Collegiate conductor-educators were additionally surveyed to ascertain a) what percentage report teaching body wellness, embodied methodologies, and/or injury prevention in undergraduate and graduate conducting instruction, and b) the availability of information about injury prevention for undergraduate and graduate conducting students. Preliminary findings (*n*=102) indicate a significant prevalence of musculoskeletal symptoms in conductors and a relative lack of prevention strategies integrated into formal conductor training. Upon completion of sampling, statistical analysis will evaluate the associations between self-reported conditions and factors such as age, gender, career length, frequency of conducting, and awareness/use of self-management and prevention strategies. Implications for prevention, intervention, and integration of injury prevention instruction into conductor education will be discussed.

Rhonda Vieth Fuelberth (**University of Nebraska-Lincoln**)
"I've always wanted to sing in an honor choir, just like my sister:" Festival Choir Participants'
Perspectives on Inclusion, Disability, and Identity

The American Choral Directors Association has a long history of offering honor choir opportunities to school age and community choral musicians. Recent efforts have been made to focus on recognizing past practices that "have not always been open, affirming, accepting, and embracing," and visioning organizational practices that reflect "a new paradigm, a better way, and a concept of choral excellence encompassing musical artistry and the principles of inclusion and radical hospitality." (ACDA, 2021). To reflect and promote inclusive values, a recent ACDA regional conference offered a festival choir experience for high school- and college-age singers. The festival choir was part of a pre-conference professional development day focused on inclusion, access, and equity. Members of the festival choir included individuals who applied to participate in cross-ability pairs of singers, one of whom needed to be a singer who experiences challenges related to disability. The focus of the festival choir was to sing in a choir made up of individuals who had a variety of specific needs, with special emphasis on creating meaningful connections between singers with varying abilities. ACDA member/directors were encouraged to seek out and submit applications from singer partners who wanted to sing with, and support family members and friends with a variety of physical, sensory, communication, and cognitive challenges. Collegiate students preparing to work with school and community choirs also participated in the experience as independent collaborators. The purpose of this study was to the examine the multi-faceted impact of this unique festival choir on partcipants' perspectives on inclusion, disability, and identity. The secondary purpose was to examine conductor-teacher expectations, experiences, perceptions, and beliefs following the festival experience. Data were collected through semi-structured interviews with singer partners, independent collegiate singer collaborators, and festival choir conductor-teachers.

The research questions that guided the study were:

1. What impact does participation in an inclusive festival choir have on individual perspectives on inclusion, disability, and identity?
2. How do singer participants, collegiate collaborators, and conductor-teachers describe their expectations, experiences, perceptions, and beliefs following the festival choir experience?
3. Does participation in the festival choir experience impact attitudes toward including individuals with disabilities in future festival or honor choir experiences?

Through the examination and analysis of interview data, this study explores a variety of issues related to diversity, access, and inclusion, with a focus on the unique opportunities and challenges presented to choral conductors who work with singers with a variety of disabilities.

Melissa Grady (**University of Kansas**)
Sheri Cook-Cunningham (**Washburn University**)
Effects of Choral Warm-ups With and Without Singer Gestures on Mature Singers

Choral conductors recommended using movement and /or gestures in the choral rehearsal for a variety of reasons including improving the choir's rhythm and internal pulse, helping singers feel the connection to the breath, and to improve phrasing and musicianship (Benson, 2020; Mack, 2020). Authors of choral methods textbooks suggested starting a choir's warm-up with some type of physical activity e.g., stretching, arm circles, shoulder shrugs, etc. to relieve tension, to reduce fatigue, and to sharper singers' focus (Brinson & Demorest, 2014; Collins, 1999; Hylton,1995; Phillips, 2016). Benson (2020) suggested that using consistent hand gestures for each vowel could improve tone quickly. Jordan (2005) devoted an entire chapter in his warm-up textbook, to physical gestures he used during the warm-up process. The gestures each had a specific purpose and were directed at promoting specific aspects of good vocal technique. In a previous investigation, we tested the efficacy of a choral warm-up sequence with and without singer gestures on four collegiate choirs. Results indicated an amplitude boost for two of the choirs, the only "in-tune" singing was after the *with* singer gesture warm-up and no choir sang "in-tune" after the *without* gesture, and singer participants preferred the *with* singer gesture warm-up. As conductors of community choirs, we also work with adult populations (ages 32 - 83) and wondered if the warm-up w*ith* singer gesture would have the same positive effects. Singer participants ($N = 51$) constituted an established community choir. Participants watched a video-recorded conductor leading the warm-up segment (either with or without singer gestures) at the beginning of two regularly scheduled choir rehearsals. Participants also completed a personality test. Data analysis included acoustic analysis, pitch analysis, participant perceptions, and correlations of personality and preferences. Results indicated an amplitude boost after the warm-up with singer gestures, no difference between with and without singer gesture on pitch analysis, the majority of participants preferred the warm-up with singer gesture, and correlations were prevalent between perceptions of the usefulness of gesture and personality traits. Although the majority of the results of this investigation complement those of the previous investigation with collegiate singers, it seems age may be a factor. The majority of younger singers readily accepted and enjoyed the addition of singer gestures while warming up for rehearsal. The older singing population in this current investigation mostly enjoyed the addition of gestures, but with much more apprehension.

Stephanie Gregoire (**Northwestern University**)
You Belong Somewhere You Feel Free: An Exploration of Social Identity in a University Women's Ensemble

Background. Previous research on social identity development in choral music education posits that singing together can generate strong social function, including approval, acceptance, and a sense of belonging (Parker, 2014; Major, 2017). Conversely, when choral ensembles lack cohesive identity, they may perceive themselves or their group in a more negative light (Major and Dakon, 2016). Major and Dakon (2016) coined the term ensemble identity, and their survey of choral singers provided a list of seven effective conductor strategies for building strong ensemble identity in midlevel choirs. While a focus on identity formation in choral ensembles has become a trend in music education research, there is a dearth of research on women's ensemble identity formation outside the adolescent women's choir.

Purpose. The purpose of this pilot study was to investigate social identity within a university women's choir. Specifically, what experiences contribute to women's ensemble identity from the perspective of its members?

Method. This study was bound by one university women's ensemble in an urban Midwestern city. I conducted 20–30-minute interviews via Zoom with six members of the ensemble and one 45-minute Zoom interview with the conductor. Additionally, I observed and field-noted one 90-minute rehearsal and one virtual concert and collected material culture such as concert programs, syllabi, sheet music, video footage, and audio files. Analysis consisted of three rounds of coding both by hand and using MAXQDA computer software. To ensure trustworthiness, I employed member checking, an external peer audit, peer debriefs, and researcher reflexivity through journaling.

Findings. I identified three themes significant to the formation of this university women's ensemble identity: conductor strategies, maintaining and enhancing singer-self, and social-musical interactions. Although the individual singer's self-concept and their social-musical interactions with one another contributed to the ensemble identity, the conductor's strategies to empower the members of the women's ensemble was the most salient factor from the singers' perspective. In particular, honoring cultural knowledge and pushing gender boundaries were highly influential strategies in cultivating this women's ensemble identity.

Discussion and Implications. This study supports prior findings that ensemble identity development within exclusively-female singing spaces may differ from a mixed voice choral context (Parker, 2018). Music educators working with women's choirs might consider employing specific strategies to cultivate a cohesive ensemble identity tied to female identity and empowerment.

Julie K. Hagen (University of Hartford)
Tiger Robison (University of Wyoming)
Joshua A. Russell (University of Hartford)
The Career Plans of In-Service Choral Music Educators in the United States: A National Survey.

   The purpose of this study, currently in data collection but to be completed by March 1, 2022, is to examine factors that may influence the projected career plans of in-service choral music educators in the United States (i.e., their current intentions). Based on previous research (Luekens, Fox, & Chandler, 2004; Russell, 2008, 2012), the current researchers wish to identify characteristics of projected "stayers" (people who indicate they will stay in their positions), "movers" (people who indicate they will stay in the profession but teach elsewhere), and "leavers" (those who intend to leave the profession). As a secondary purpose, the researchers wish to identify what roles music teachers may take outside of PK-12 programs to examine their possible effects on intended career paths. We distributed the "Music Educator Career Questionnaire," to all choral music educators who are current members of the American Choral Directors Association (ACDA) via the ACDA newsletter. The questionnaire is a researcher-created and reliable instrument used in multiple studies about other music teachers (i.e., elementary teachers) that are published in top-tier scholarly journals. However, to date, no such studies exist for choral music educators.

Jonathan Harvey (**Fitchburg State University**)
"Real Talk" in the Choral Rehearsal

This presentation explores ways that we as choral educators can make the experience of our ensembles resonate ever more powerfully and intimately with our singers. Specifically, we will examine ways to implement Paul Hernandez's "Pedagogy of Real Talk" in the choral rehearsal. The Pedagogy is a way to reach students traditionally classified as "at-promise" or "at-risk"—a framework for developing meaningful rapport while creating learning experiences that are immediately relevant, giving voice to marginalized students. It is originally designed for use in the classroom, but can be adapted to serve the choral rehearsal. The Pedagogy consists of two primary instructional pillars. The first is "Real Talks," wherein we as instructors make ourselves vulnerable and human by sharing intentional stories from our own lives on a "universal theme," and giving students a space during rehearsal to share their stories on that theme, as well. By doing so, we gain insight into the ways that our singers experience the world, and allow them to bring their individual expertise and worldview into the rehearsal. The second pillar is "Alternative Lessons," wherein we as instructors design learning experiences that directly leverage the understanding of our singers' worlds that we gathered during the "Real Talks." The shape of these "Alternative Lessons" is limited only by the instructor's imagination, and the connections to singers that we have developed. These two tools, when combined, allow students to feel heard and seen, and help us as educators to make what we do in ensembles as relevant as possible to our students' lives.

Craig Hurley (**Clayton State University**)
Rebecca L. Atkins (**University of Georgia**)
The Effects of Learning Sequence on the Musical Expressivity of Young Voices in a Solo Online Learning Environment

Choral method textbook authors disagree, and few empirical studies have explored the optimal time to introduce expressive elements (i.e., dynamics, articulation) when learning a song. Some authors suggest teaching rhythm, pitch, and text prior to introducing expressive elements while others recommend teaching expressive elements alongside rhythm, pitch, and text. In one study, participants who were introduced to expressive elements early in a song-learning sequence performed those elements more accurately than those who learned them at the end of a song-learning sequence. In this study, the participants learned and recorded their individual performance in a choral group setting. Therefore, the purpose of this study was to investigate whether the sequence in which a solo singer learns the elements of a song (e.g., rhythm, pitch, text, expression) influences the musical expression (e.g., articulation, dynamics) of their performance in an online setting. Participants included 58 fifth through eighth graders from three elementary schools and three middle schools located in the southeast United States. Participants learned two different songs at home from a digital recording under two different sequences (infused-expression, post-expression). During the infused-expression sequence, participants learned expressive elements alongside rhythm, pitch, and text. During the post-expression sequence, participants learned the rhythm, pitch, and text first, followed by expressive elements. All participants learned both songs and experienced both sequences, but sequence-song combinations and order were randomized. Sequences included the same instructions, an equal number of repetitions, the same questions about expression, and were approximately the same duration. Immediately after learning each song, participants recorded a performance and uploaded their recording to the Flipgrid website. We coded each recording for blind review and then evaluated using a rubric (rater reliability = .91). Results showed that when students learned a song using an infused-expression sequence they performed more expressively than students who learned a song using a post-expression sequence ($p = .43$) in a solo online setting. Whether learning songs in a group or alone, introducing expressive elements early resulted in a more expressive performance. Implications for the use and benefits of infused-expression sequencing as well as future research will be discussed.

Janice N. Killian (Texas Tech University)

Topics and Trends in Choral Music Research: An Examination of Titles Presented at Texas Music Educators Association Research Poster Sessions 1978-2020

What topics are explored by choral researchers and do topics change over time? I examined choral research topics based on 42 years of research poster sessions at the Texas Music Educators Association (TMEA) state conference in search of trends in choral research. Titles of all posters (1393 titles) archived in TMEA conference programs 1978-2020 were examined (Killian, In Press). For this study, "choral research" was defined as posters involving singing whether in choir, classroom, or private voice settings and resulted in 282 titles (20.2% of all titles presented). Titles were categorized and collapsed into themes (Merriam & Tisdell, 2015). Clarification of title meaning was verified for the 92 titles (48.4%) which were subsequently published in *Texas Music Education Research* (Tast, In Press). All remaining categorizations were based solely on information provided in the titles. Resulting themes arranged by frequency of mention included: Pedagogy (40), Pitch Accuracy (40), Repertoire (27), Sight Singing (25), Changing Voice (19), Choral Directors (18), Singing Attitude & Participation (17), Acoustic (14), Other/Idiosyncratic (13), Applied Voice (12), Choral Contest & Adjudicating (12), Historical (11), Preference (10), Infant (9), Male Teacher Voice (6), Conducting (5), Music Education Research (3). Categories were then examined across decades to examine possible trends. Frequency of choral research compared to total studies presented varied by decade ranging from 1980s (10.3% choral, 21/204), 1990s (30.5% choral, 80/262), 2000s (21.4% choral, 76/355), and 2010s (18.5% choral, 105/567) and confirmed increased interest in choral research. Overall, the five most frequently studied topics (Pedagogy, Pitch Accuracy, Repertoire, Sight Singing and Changing Voice) comprised 53.5% of all topics. Recategorizations allowed examination of such topics as Multicultural/Ethnicity/ Diversity/SES. A single study appeared in 1998 but 9 were presented in 2009-2020, clearly demonstrating a trend toward interest in this issue. Similarly, the topic of Inclusion included 2 studies prior to 2009, but 8 in 2009-2019. Trends were also apparent when specific categories were unpacked, e.g., Changing Voice resulted in 14 involving male voices, 4 involving female voices and 1 involving both. Of further interest were choral researcher demographics. Eighty-six percent had Texas affiliations (14% out of state). Total authors (202) produced 206 solo studies (73%) and 76 collaborative studies. Productivity varied from 1-19 posters over 42 years with 13 researchers (6.4%) presenting 5-19 times while 74.3% (152) presented only once. The study concluded with further details about choral studies across time, speculation about meaning of such changes, and ideas for future research.

Christopher Loftin (**Auburn University**)
Emotional Embodiment Standards: Director Knowledge, Value, and Comfort Level

The National Association for Music Education (NAfME) and state large group perfor-mance assessment rubrics (LGPA) provide the two main sources of objectives to assess choral students. After examining the disparity between the 2014 NAfME choral visual engagement standards ($\overline{x}$ = 24%) and the individual states' LGPA rubrics ($\overline{x}$ = 9%, Max = 16%, Min = 0%), I next sought to determine individual choir director beliefs about the same compari-son. The purpose of this study was to examine teacher beliefs about the NAfME emotional embodiment standards and his or her state's LGPA rubric. I created an IRB-approved pilot study to examine current choir directors' perceptions about their knowledge, comfort, and value teaching emotional embodiment to their students. Cronbach's α for reliability = .906, which indicated a high level of reliability for the survey. Several choir directors, not official-ly participating in the study, completed the study to check for validity. Twenty participants answered Likert-scale questions on a 1-7 scale, where 1 was "Strongly Disagree", 4 was "Neutral", and 7 was "Strongly Agree". Additionally, many directors provided supplemen-tary comments. Choir directors were unsure if NAfME ($\overline{x}$ = 4.55, *SD* = 1.15) and LGPA ($\overline{x}$ = 4.15, *SD* = 1.73) valued visual engagement. Further, choir directors value teaching emo-tional engagement ($\overline{x}$ = 6.46, *SD* = .57) and feel somewhat confident teaching emotional engagement ($\overline{x}$ = 6.01, *SD* = 1.19). The most frequent comment from directors was a desire for professional development relating to teaching basic acting, lyrical communication, and emotional embodiment skills.

Paul J. Mayhew (**University of Central Arkansas**)

Preservice Music Teachers' Perceptions of Peer-Teaching, Student Leadership, and Student Agency in the High School Choral Classroom

This research project-up has been approved by the Institutional Review Board at the primary investigator's university. A pilot test of the questionnaire will be conducted in December of 2021, and data collection will take place during January and February of 2022. The second portion of the study includes follow-up interviews to be conducted in February and early March of 2022. Participants will be recruited from NASM (National Association of Schools of Music) accredited colleges and universities in Arkansas, Colorado, Kansas, Missouri, New Mexico, Oklahoma, and Texas. Music education faculty at each institution will be asked to share the questionnaire link with their choral/vocal students. Participants in this study will respond to an online questionnaire regarding their previous experiences with and perceptions of peer-teaching, student leadership and student agency in high school choral ensembles. Respondents with peer-teaching experience during their high school choir years may also be asked if they are willing to engage in a 15-minute follow-up interview via Zoom. Participants for follow-up interviews will be randomly selected from the pool of respondents who volunteer to take part. All data will be collected, and all interviews will be completed by March 15, 2022.

The research presentation will address recent research on agency and student leadership in high school music ensembles and present the findings from the current study. The purpose of this study is to examine preservice vocal music teachers' experiences with and perceptions of student leadership and agency in the high school choral classroom. Specific research questions include:

1. What experiences do preservice vocal music teachers have with student leadership, peer-teaching, and student agency during their high school choir experience?
2. What perceptions do preservice vocal music teachers have regarding the value of student leadership, peer-teaching, and student agency in high school choirs?
3. Do preservice vocal music teachers intend to provide student leadership, peer-teaching, and student agency experiences in their own choirs when they begin teaching?
4. What experiences inspired preservice vocal music teachers to pursue a career in teaching?

For preservice vocal music teachers with peer-teaching experience during their high school years, potential follow-up interviews will examine the following topics:
- Specific leadership and peer-teaching responsibilities held
- Amount and types of guidance received from the high school choral director
- Perceptions of benefits and challenges related to the peer-teaching experience
- Impact of peer-teaching experience on teacher-identity and career choice

Note. The abstracts printed in these pages are the versions accepted by peer review prior to the symposium which took place April 29-30, 2022.

William McLean (**University of North Texas**)
A Study of choral literature performed by all-state choruses of 50 states in 2000-2020

The purpose of the study was to index and examine the repertoire selected for the All-State mixed high school choirs across the country between the years 2000-2020. With these data, I compared individual states' repertoire history with that of the rest of the country. Research questions included:

1. Which composers/arrangers were performed by All-State mixed choirs most frequently?
2. Which individual piece of music was programmed most frequently by All-State mixed choirs?
3. Which guest conductor appeared most frequently with All-State mixed choirs?
4. What percentage of composers/arrangers and conductors were women?

I collected data from all 50 states, directly from All-State festival organizing bodies, official concert programs, and available licensed recordings. Johannes Brahms was the most performed composer, followed by George Frideric Handel, Moses Hogan, Wolfgang Amadeus Mozart, and Eric Whitacre. Of the 906 individual compositions that appear in the data set, "John the Revelator '' arranged by Paul Caldwell and Sean Ivory was the most performed work, followed by David Dickau's "If Music Be the Food of Love" and Morten Lauridsen's "Sure on This Shining Night." André J. Thomas was the individual with the most occurrences as a guest conductor. The next most frequently occurring conductors were Z. Randall Stroope, Jo-Michael Scheibe, Edith Copley, Anton Armstrong, and Jerry Blackstone. Of the 945 All-State mixed choir conductors, 23% were female. Of the 906 unique composers/ arrangers, 8.9% were female; 6.7% of the 6217 programmed compositions were composed by females. The findings of this study provide an objective view of programming trends for All-State mixed choirs nationwide. These data provide choral directors and organizing bodies with information that may inform future programming policies, identify additions to standard repertoire for high school singers, and illuminate underrepresentation in choral repertoire and conductors chosen for All-State events. Continued research is warranted, especially in regards to adding data indicators. Relevant indicators to consider would be era, genre, and language of composition, and nationality of composer/arranger. Future researchers may also consider critical theory as a lens for understanding what changes may be needed as music students consider the choral canon. Given the many ways that All-State programs impact students' experiences, it is important to continue examining best practices for being more inclusive with repertoire selections.

Carmen Meissner (University Mozarteum Salzburg/Austria)
The Vienna Boys' Choir from 1955 up to the Present: A Study of the Performances in the Viennese Court Chapel. A Repertoire between Historicity and Zeitgeist

Founded in 1498 under Habsburg Emperor Maximilian I, Viennese Imperial Court Boys' Choir was responsible for providing and shaping the music of the Viennese Court at masses, private festivities and state occasions. Many changes have affected the activities, but also the size of the choir. With the end of the Habsburg monarchy in 1918, the church music institute with its imperial court music and the court choirboys also came to an end. There were only ten boys left. The foundation of the present-day institution of the Vienna Boys' Choir took place in 1924, at which time the former Court Boys' Choir became *The Vienna Boys´ Choir*, an association with 100 *Wiener Sängeknaben* under private law. In order to bring the knowledge and practice of choral singing at this 523 years old institution as investigation into the perspective of musicology and to find out, in how far a centuries old tradition has shaped the present practice an investigation into the documentation of The Vienna Boys' Choir's repertoire at the Viennese Imperial Chapel, from 1955 to the present was made. Statistics will provide information on the frequency of work, composer, venue, conductor and year of performance as well as conclusions on the development and possible breaks in the repertoire. 1707 Performances have taken place since 1955 to the present. My research will mainly be based upon a study of handwritten primary sources like concert programmes, to be found in the archive of the Viennese Court Chapel. Interviews with Erwin Ortner, appointed artistic director of the Viennese Court Chapel, as well as founder and artistic director of the Arnold Schoenberg Choir, Uwe Christian Harrer, former artistic director from 1986 until 2009, Gerhard Track, former conductor (*Kapellmeister*) of the Vienna Boys' Choir and Dr. Otto Biba, former archive director of the Gesellschaft der Musikfreunde provide a further perspective and help to clarify selective decisions of repertoire. Additionally, they offer an insight into individual artistic approaches. Evidence of the influence of the respective artistic directors on the repertoire as well as their recognizable strategies and emphasis will be discussed in the research presentation and critically evaluated within the musical focus of the work.

Evan P. Montemayor (**Hofstra University**)

A Gift and a Curse: Pedagogical Challenges Faced by Collegiate Choral Conductors with Absolute Pitch

Characterized as the ability to name or produce a musical pitch as easily as one might name a color, absolute pitch (AP) is frequently considered the mark of an exceptionally gifted musician. However, when considering musicality beyond note-naming alone, it may prove disadvantageous; absolute pitch can interfere with the development of relative pitch (RP)—the ability to understand relationships between musical notes regardless of specific pitch names— which may arguably be more useful in music study and performance. Furthermore, musicians with AP may develop their own music-learning strategies centered around their abilities, but are rarely able to teach these strategies to typical hearers, nor can they personally relate to the specific struggles faced by musicians without AP.

It is in the teaching of sight-singing, a practice that relies heavily on the internal organization of sound, that AP possessors often struggle most. As undergraduate programs receive more and more students who lack essential music literacy skills, educators at the undergraduate level are taking on the responsibility of promoting music literacy through sight-singing, and collegiate choral conductors with AP now face a unique set of difficulties when teaching ensembles who are musically "color blind" in comparison. By examining the intersection between current best practices in choral pedagogy methods with current research on the phenomenon of absolute pitch, the author 1) challenges preconceived notions of absolute pitch related to musicianship and 2) provides a theoretical framework of what specific challenges may be posed to collegiate choral conductors who possess this unique gift—or curse.

Jessica Nápoles (University of North Texas)
Jamey F. Kelley (University of North Texas)
Thomas Rinn (University of North Texas)
Burnout and Perceived Agency Among Choir Teachers

The purposes of this study are to: (a) examine demographic variables that contribute to choral teachers' burnout and (b) to determine how teacher agency impacts choir teachers' experience of burnout. Although the topic of teacher burnout has been well-researched overall, there are relatively few studies directly related to music teacher burnout (Brown, 2020; Hamann & Daugherty, 1984; Hamann, et al, 1997). There is ample reason to study teacher burnout and teacher agency in combination, especially in the context of secondary choral teaching, where performance demands and pressures can often be high stakes through competitive structures.

We devised our questionnaire in three sections: demographic information, questions related to perceived teacher agency, and questions related to teacher burnout. Utilizing Tucker's (2020) definition of music teacher agency, "the decisions and actions music teachers make and take on behalf of their students, programs, and selves in areas of music teaching practice such as curriculum, instruction, repertoire selection, and performance" (2020, p.6), we posed questions related to these areas of music teaching practice. This portion of the instrument was pilot tested with choir teachers ($n = 5$) in the state, ensuring that terminology was appropriate in describing policies and events. It was also validated by music education researchers ($n = 2$) who had expertise with the topic of music teacher agency. We made appropriate adjustments to terminology, wording, and clarity resulting from this feedback. For questions related to music teacher burnout, we utilized the Maslach Burnout Inventory Educators Survey (MBI-ES) (Maslach, et al., 1996). The MBI-ES addresses the three general scales of emotional exhaustion, depersonalization, and personal accomplishment among educators. A 22-item survey which uses 7-point Likert-type scales for responses, the MBI questions are written in the form of statements about personal feelings and attitudes (e.g., "I feel burned out from my work" and "I don't really care what happens to some students") and answered in terms of frequency, ranging from 0/never to 6/every day. We created the questionnaire using Qualtrics software, beginning with the informed consent as approved by our university's IRB, then sent our questionnaire to all choir teachers in the state through a master list of teachers in the state provided to us through the state music education organization. Though preliminary findings are inconclusive, we anticipate final results to be completed in early December, providing us with sufficient time to draw more definitive conclusions and implications for the choral field.

Bryan E. Nichols (The Pennsylvania State University)
Defining "Happy" in Happy Birthday: Singing Accuracy as a Construct Based on Task-Dependent Features

We explored the patterns of performance of a familiar song grounded in previous research indicating that ascending intervals higher in the range were more difficult for children in a study of pitch interval and pattern performance (Wolf, 2005). We were guided by the following question: How does performance by individuals vary by interval type and position in the song? The main objective was to explore whether an adult population can be expected to perform in predictable ways to make suggestions for children's singers. The purpose of this study is to explore the patterns of performance in one song, *Happy Birthday*. The research questions were:
    1. How and how often is the large 14th interval sung out of tune?
    2. Can initial interval performance be used to predict overall performance?

We chose to evaluate a subset previously reported data from two studies in which the song Happy Birthday was used (Greenspon, et al., 2017; Pfordresher & Brown, 2007). We examined data from 37 individuals on 25 sung pitches in the song. We report pitch performance as note values based on each individual's first pitch, on which the subsequent 24 pitches were assigned a value. The biggest ascending interval preceding the large ascending octave interval is the best predictor for performance on the ascending octave. Further, the two unison intervals were not often sung in-tune, and performance on these intervals were also significant predictors for the ascending octave.

Stephen A. Paparo University of Massachusetts Amherst
Somatic Choral Pedagogy Professional Development

The purpose of this intrinsic case study (Stake, 1995) was to investigate a choral music teacher's experience in discipline-specific professional development (Koner & Eros, 2019) geared to develop understanding of somatic choral pedagogy (SCP). Developed by the researcher, SCP is based on the following: (1) Somaesthetics (Shusterman, 2008), that focuses on the appreciation and cultivation of the body; (2) Neurodifferentiation (Doidge, 2015), alternations of the brain's neural connections and improved somatic awareness; (3) the Feldenkrais Method (FM) (Feldenkrais, 1972) that develops awareness through mindful movement; (4) Vocal pedagogy, the art and science of voice instruction. The integration of elements from these domains offers a unique perspective on how to teach singing in a choral setting. Vocal pedagogues have recognized the FM as a means to improve self-awareness and vocal efficiency (e.g., Sataloff, 2017; Titze & Abbott, 2012). Research suggests that somatic pedagogy can provide a means of self-discovery that results in individualized benefits for singing (Author, 2016; 2021). The participant was an experienced high school choral music teacher who took part in somatic pedagogy instruction and microteaching experiences as well as classroom observation and coaching by the researcher. Multiple forms of data included participant blogs, researcher journal and field notes, structured interviews, and participant reflections. At the time of submission, the study is currently in progress and will conclude in February 2022. Data will be analyzed using Emerson, Fretz, and Shaw's (1995) guidelines for coding. Trustworthiness measures will include data triangulation and peer review. It is anticipated that this research will shed light on the possible benefits and challenges of implementing somatic choral pedagogy as well as provide further evidence for best practices in professional development for experienced choral music teachers.

Lucy Poole (University College London, Institute of Education)
Perceptions of the Changing Adolescent Female Singing Voice.

Male voice change is more widely recognized and researched because it is more outwardly noticeable and therefore, much research has been conducted regarding the male adolescent changing voice. The effects of female voice change are also important but, by comparison, this area is still under-researched in the UK, and few studies exist which investigate voice change in the female adolescent. Although this disparity is being addressed, there are shared experiences which need exploring. This research seeks to use semi-formal interviews to gain an understanding of how individuals experience voice transformation through the adolescent years. There has been an increase in the amount of information available regarding female adolescent voice change (Gackle, 2019). Gackle suggests that the lack of research may be because is has been widely assumed that girls' voices develop rather than change during adolescence (Gackle, 2006). Her research has found evidence suggesting that changes which girls experience are more than a development: that they go through clear stages, influenced by the growth and changes to their larynx and vocal apparatus. Another possible reason for the paucity of research may be linked with the social position of female singers within the hierarchy of choral singing in the UK, with specific reference to singing in a religious setting. 'Cathedral music has been all male in performance since its inception in Canterbury' until Salisbury Cathedral welcomed its first female choristers in 1991 (Welch, 2010: 227). Alongside these changes in the UK, there is a larger body of research developing into the vocal changes experienced by female adolescents (Howard and Welch, 2002; DeCoster et al. 2008; Sweet, 2015). In this research, semi-structured in-depth interviews have been used to gain insight into and understanding of the perspectives and experiences of participants. Five adults and six teenage choristers have been interviewed. Participants have all sung through adolescence. Initial findings suggest that participants do indeed experience changes to their voice, with some being traumatic for the individual; particularly when there is a lack of understanding of vocal development either for the individual or for the teacher/choral director. Participants discuss key specific, memorable events in their singing which have had an impact on them throughout their singing. In many situations, these experiences seem likely to be linked with voice change, however, participants often blame themselves, and are often critical of how they felt treated by those around them.

Jennifer M. Rodgers (**Iowa State University**)
A Voice in the Choir: Modernizing the Language and Practice of Vocal Pedagogy in the Choral Culture

Advancement and language in contemporary voice pedagogy have shifted significantly in the twenty-first century, and practitioners have raised concerns about updated understanding and application in the choral setting. Additionally, solo and choral voice professionals have regularly identified and deliberated over areas of divergent sound ideals and technical demands. Correspondingly, the research presented is in two parts: first, a study of contemporary pedagogical practice compiled from the last decade of prominent vocologists. With a focus on terminology and semantics, the study closely examines understanding in the areas of respiration, phonation, and resonation. This lens of language offers a unique way to frame areas of common understanding/practice and areas of deliberation. The study is then applied to the choral environment both to shed light on outdated practices and conversations in choral voice pedagogy, and to offer methods and resources for updating those practices.

As the study progressed, two significant findings emerged: (1) aligned understanding and use of contemporary voice pedagogy is consistently found among academic choral conductors and in contemporary choral pedagogy sources; and (2) this shared understanding only partially addresses the needs and technical demands of choral singing. In response, the author defines choral and solo singing as parallel music cultures within "studied voice." As such, further research and resources dedicated to choral voice pedagogy are defined and recommended.

Elizabeth Scott (University of Sydney)
Helen Mitchell (University of Sydney)

Fine Tuning: Developing and *Trialing Annotated Scores to Achieve Just Intonation in A Cappella Choral Repertoire*

Singers have a natural tendency to tune chords in just intonation, but convention dictates that choirs rehearse with the aid of a piano to tune their chords. This use of equal temperament often results in out of tune *a cappella* singing. The challenge for choral conductors is to rehearse without a piano, promote awareness of just intonation and how to apply it to *a cappella* repertoire. This study aims to develop and evaluate annotated scores to enable choristers to sing *a cappella* repertoire in just intonation. Choristers trialed colour coded annotated scores with a just intonation keyboard to learn and perform *a cappella* repertoire. Scores prompted the adjustment of thirds and sixths in chords at static points in the music. Choristers completed a series of questionnaires to report how their understanding of just intonation improved and a sub-set of choristers participated in interviews to discuss their experience of using annotated scores to learn repertoire. The project culminated in a public performance of *a cappella* choral music using just intonation. Choristers found singing in just intonation challenging but agreed the annotated scores provided essential guidance to support their tuning. Annotated scores ensured choristers focused on vertical harmonies across the ensemble rather than just their own horizontal line. Annotations offered new insights into score reading and the majority of choristers were cognizant of improvements in their understanding of the score and capacity to tune effectively. Score annotations provided a visual cue to alert choristers to the location and direction of necessary intonation adjustments in repertoire. Annotated scores were critical to the just intonation training program and complemented intonation-focused warm-ups using a just intonation keyboard as a pitch reference to hone their intonation skills. Choristers' intonation skills improved quickly and effectively, and these results confirm choral directors can achieve just intonation in *a cappella* singing. Score annotations are a vital component of intonation training and provide practical tools for choristers to realise just intonation successfully. Future studies should expand these innovative strategies to expedite chorister independence in applying just intonation to *a cappella* repertoire.

Donna Thomasson Smith (**University of Alabama**)
A Retrospective of the Children's Choir Movement in the Choral Journal, 1979-1999

In 1979, Dr. Doreen Rao was asked to enlist a group of choral music educators to form the first American Choral Directors Association (ACDA) children's choir committee. This research examined the development of the children's choir movement as evidenced in the first two focus issues on children's choirs in the *Choral Journal,* the professional journal for members of ACDA. The first focus issue was published in 1989 and the second in 1993. Authors in these special focus editions represented choral music educators around the country who were actively involved with children's choirs, who were like-minded in their desire for choral excellence among young singers capable of performing challenging repertoire, and who were dedicated to the idea that children's choirs should be acknowledged as a designated and respected ensemble. The goals of the early children's choir movement included educating choral music educators on the child's singing voice, identifying and cultivating quality repertoire for young singers, and promoting collaboration opportunities between children's choirs and adult and professional choral organizations. This research supports the leadership's impact during the span of 1979-1999. The two ACDA special focus issues on the children's choir movement encapsulated the growth and strides made that propelled and solidified the children's choir movement.

Jim Watson (**Choral Artists of Michigan**)
The Pitch Project

The purpose of this study was to compile rehearsal strategies related to pitch elements by studying prevalent themes provided by mentor conductors. At the start of the semester, I interviewed 12 distinguished choral conductors, asking them to describe their first steps in rehearsing pitch elements. I interviewed the following mentor conductors: David Schildkret of Arizona State University, Donald Nally of Northwestern University, Earl Rivers formerly of the University of Cincinnati, College-Conservatory of Music, Edward Maclary of the University of Maryland, Eliezer Yanson of Jacksonville State University, Eric Stark of Butler University, Hilary Apfelstadt, the Interim Executive Director of the American Choral Directors Association, Kristina MacMullen of University of North Texas, Mark Munson of Bowling Green State University, Robert Ward of The Ohio State University, Terees Hibbard of St. Olaf College, and Tim Seelig of San Francisco Gay Men's Chorus and the National LGBTQ Center for the Arts.

Four questions guided these interviews: When introducing a new work, how do you teach pitch elements? When intonation issues arise, how do you address those issues? When singers are concentrating on intonation, do you ever notice vocal tension? Do you have any exercises you'd like to share with this project? I analyzed the transcripts, and submitted them to a mentor conductor for a check on descriptive validity. I submitted a first draft to several mentor conductors for a check on interpretive validity. I then listed the mentor conductors' rehearsal strategies, and reported those strategies shared by multiple conductors. Five themes emerged: constructing exercises related to the intonation pitfalls, developing pitch accuracy, exercises in vowel unity, harmonic tuning procedures, and strategies for freeing vocal tension. I provided a list of the most recommended rehearsal strategies, and I discussed ways to incorporate these strategies into the mixed chorus rehearsal with application to the literature. Various conductors, including educators, community chorus directors, and worship artists, can develop rehearsal plans by applying these strategies in their own settings.

Adam G. White (Northern Kentucky University)
The Effects of Feedback on Sight-singing Achievement

A primary goal of education is to help students develop the confidence and knowledge necessary to develop into independent learners. The development and instruction of sight-singing skills, singing a written melody without the aid of an instrument, is such a challenge. Individual sight-singing assessment was found to be effective (Demorest, 1998) and necessary (Nolker, 2006) though choir directors lack sufficient time to assess students individually (Goss, 2010; Myers, 2008; Nichols, 2012). Advances in technology may offer effective and time-saving alternatives (Henry, 2015; Petty & Henry, 2014). The purpose of this study was to investigate the effects of feedback on sight-singing achievement, both within a sight-singing assessment session and following a series of five sessions, and to compare the accuracy of the feedback available through the *SmartMusic* assessment feature when compared to an expert human rater. The following questions guided this inquiry:

1. Does the presence or timing of feedback provided by the SmartMusic interface affect student sight-singing achievement after an initial attempt or following a five-week treatment period?
2. Does regular sight-singing assessment using the features of the *SmartMusic* interface transfer to an assessment when those features are unavailable?
3. What is the reliability of the feedback provided by the *SmartMusic* interface when compared to human expert ratings?

Participants ($n = 78$) were placed in one of three matched groups (within-session feedback, post-session feedback, and no feedback) and were assessed on their sight-singing abilities for 9 weeks. Results from a five-session repeated measures ANOVA of participants' initial weekly attempts revealed a significant main effect $F(4, 292) = 33.637$, $p < .001$, hp2 = .315, suggesting students made significant improvements during the treatment period. However, results did not differ by condition. Additionally, while students made significant improvements on melodies following a sight-singing attempt, those improvements were also unaffected by feedback condition. Posttest scores were not significantly higher than pretest scores for any group. These findings suggest that though feedback may be an important component in the development of sight-singing skills, the computerized feedback provided in this study was no more effective than receiving no feedback at improving sight-singing achievement. Furthermore, students did not transfer learning from practice with a click-track and note indicator to performance without these features. These findings suggest that this technology may be best utilized to supplement good teaching but is not designed to replace a quality teacher.

Note. The abstracts printed in these pages are the versions accepted by peer review prior to the symposium which took place April 29-30, 2022.

The Impact of Manual Mimicry Gestures on the Learning of Sung German Phonemes

Caron Daley,[1] Heather L. Rusiewicz,[2] James Schreiber,[3] and Julianna Grabowski[4]

Abstract

The integration of embodied pedagogies has a long history in music education, and especially in choral singing (Benson, 2011; Ehmann, 1968; Jaques-Dalcroze, 1921). Manual mimicry gestures are hand movements that mirror the spatiotemporal attributes of speech sounds with an analogous gesture (Rusiewicz & Rivera, 2017). The present study investigated the effects of manual mimicry gestures on the articulatory accuracy, vocal technique, and expressive artistry of non-native German speech sounds in singing. Twenty-four college-aged voice majors were assigned to three groups, each with a different instructional mode (i.e., no gesture, viewed gestures, viewed and produced gestures). Four German sounds were tested in isolation and in the context of a musical phrase (fricatives ichlaut /ç/ and achlaut /x/, and mixed vowels /y/ and /Y/). Expert listeners rated the participants' singing at three time points (baseline, immediate post-instruction, and 48-hours post-instruction) using visual analog scales. Results revealed improved articulatory accuracy and vocal technique for all sounds in all training conditions as perceived by the raters. Individuals who produced gestures during training were not rated significantly higher than the groups trained without gestures or by viewing gestures only. Implications for vocal pedagogy and related professions are discussed, as well as future directions for research.

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The Impact of Manual Mimicry Gestures on the Learning of Sung German Phonemes

Singing requires a range of embodied competencies, such as the efficient coordination of parts of the body, the integration of ideas with actions, and the pronunciation and expression of text. Soloists and choral singers sing in diverse languages, and as such, vocal instruction must address the articulation of individual speech sounds and sound combinations not found in the vocalist's first language (Mahaney, 2006). The International Phonetic Alphabet has been a common tool to help singers pronounce non-native sounds but does not substantially relate to the physical actions of singing, including the spatiotemporal configurations of the vocal apparatus. Other common instructional methods have included listening to audio and video pronunciation recordings, rote teaching, or learning from culture bearers and native speakers (Chris, 2019; Sieck, 2013).

This investigation was motivated by two separate but related lines of scholarly work in the disciplines of choral pedagogy and speech-language pathology. In the choral setting, physical gesturing and body movement have been a primary mode of communication for the conductor and an effective choral pedagogical tool (Benson, 2011; Hibbard, 1994; Wis, 1999). Speech-language pathologists (SLPs) have integrated gestural cues into many structured therapeutic approaches for speech sound disorders and accent modification (DeThorne et al., 2009; Hammer, 2006; Square et al., 2014). Choral conductors instruct singers how to pronounce non-native phonemes, a process that Daley & Rusiewicz (2021) have suggested is akin to learning speech sound targets in a speech-language pathology setting.

Movement and Gesture in Vocal Learning

The roots of kinesthetic teaching and learning in music can be traced to Émile Jaques-Dalcroze (1865–1950), who theorized that the human body was the primary instrument of musical instruction. Dalcroze Eurhythmics is designed to cultivate mind-body connection through the integrated development of hearing, moving, and feeling in music learning. It has served as a type of double education, strengthening perception of movement and spatial awareness while also generating a vocabulary of movement for use in playing and singing repertoire (Caldwell, 1995; Dutoit, 1971).

Applied to choral music learning, several authors have noted the benefit of body movement activities on musicianship, including the development of inner pulse and sense of rhythm, precision in intonation, vocal balance within the ensemble, and group interpretation of a musical score (Crosby, 2008; Daley, 2013; Liao & Davidson, 2016; Shenenberger, 2008). The use of movement has also facilitated vocal technical development by assisting in the coordination of various structures of the vocal mechanism for optimal sound production (Galván, 2008; Nafisi, 2013). Movement has likewise been applied to expressive goals in performance to support phrasing, text declamation and tone of voice, and stylistic decision-making (Caldwell, 1995; Galván, 2008; Pierce, 2007). Oney (2017) asserted that Dalcroze Eurhythmics developed singers' confidence and lowered performance anxiety,

while several studies have indicated the benefit of movement instruction in choirs on student engagement, motivation, and enjoyment of learning (Manganello, 2011; McCoy, 1986; Wis, 1993).

A guiding principle of Dalcroze Eurhythmics is that sound and gesture exist in a reciprocal relationship, such that any sound has an analogous gesture and any gesture has an analogous sound (Jaques-Dalcroze, 1921). This relationship is often a feature of choral teaching and performance gesture, but it also occurs spontaneously in the rehearsal setting. Mimicry arises between the conductor's bodily movement (including conducting gestures) and the singer's bodily movements, suggesting that conductors' gestures affect singer's production of sound (Manternach, 2016). Daugherty and Brunkan (2013) discovered that choral singers responded nonverbally to conductor's lip shaping while singing, mimicry that resulted in a change in vocal tone and acoustical spectra. Grady (2014) indicated that conductors' gestural vocabularies had a direct impact on choral singers' use of spectral energy while singing, and that similar types of conducting gestures elicited similar sound results in choirs.

Manual Mimicry in Speech-Language Pathology

Physical gestures have been frequently employed during intervention for speech sound objectives in the discipline of speech-language pathology. These movements included tapping out syllables, pointing to a vocal articulator, using a gesture that is specific to a phoneme but not similar in shape or movement to the phoneme (e.g., handshapes used with Cued Speech; Krause et al., 2011), using the hands to manipulate the articulators (e.g., clinician closing the lips to facilitate lip closure) as an oral placement technique (Bahr & Rosenfeld-Johnson, 2010), and myriad other functions. Most hand gestures used in therapeutic contexts are arbitrary and although they may spark a visual mnemonic, they do not capitalize on underlying interactions of the speech and hand motor systems. Manual mimicry gestures (i.e., hand movements that mirror the movements and characteristics of speech sound and voice targets), by contrast, are entrained (i.e. coordinated) with the underlying motor processes of the speech mechanism (Rusiewicz & Rivera, 2017) (see Figure 1). In additional to behavioral

Figure 1

Starting and ending position for the manual mimicry gesture for /ç/.
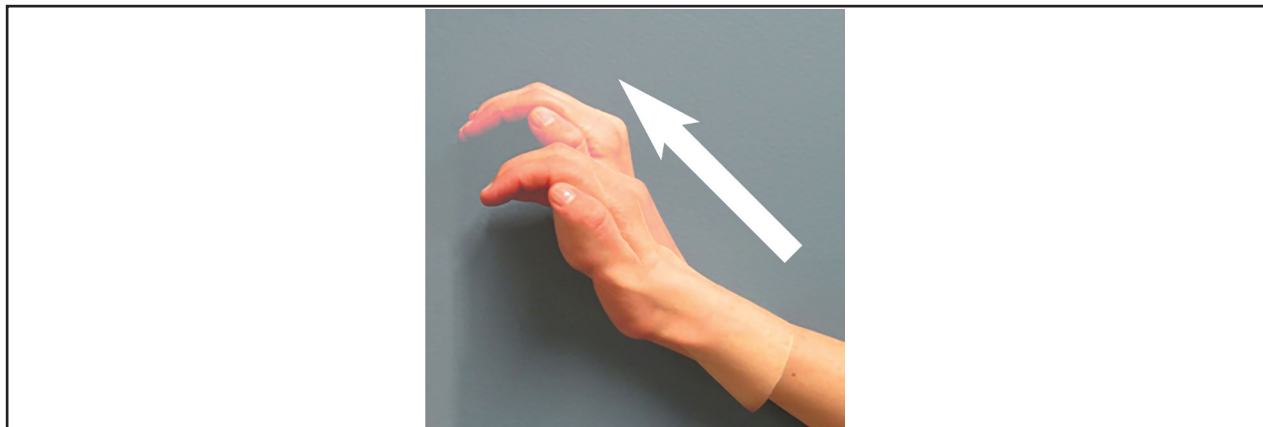
(e.g., Smith et al., 1986), and kinematic evidence (e.g., Gentilucci et al., 2001), the entrainment of movements of the vocal apparatus and hands has been hypothesized to arise from shared neuroanatomical substrates including areas such as the lateral perisylvian cortex, supplementary motor cortex, premotor cortex, cerebellum, and Broca's area (e.g., Heiser et al., 2003; Rizzolatti & Arbib, 1998).

In speech-language pathology, manual mimicry gestures can represent three aspects of the targeted sound. These parameters include:

> (1) the spatiotemporal configuration required for the accurate production of a segmental target (e.g., using the hand to mirror the articulators in space, time, and tension for /r/); (2) the perceptual quality of a suprasegmental target (e.g., using the hand to represent a desired intonation contour), and (3) the physiological and/or perceptual characteristics of a voice target (e.g., moving the hands open and forward to cue key movements and sound quality for forward resonance). (Rusiewicz, 2020, pp. 9–10)

Manual mimicry gestures can also represent other prosodic features of speech, such as pulsing or tapping the hand to mark prosodic prominence or moving the hand in time to mirror the desired rate of speech.

Previous investigations supported the effect of manual mimicry gestures on the accuracy of /r/ produced by a college-aged woman with persisting childhood apraxia of speech and distortions of the /r/ phoneme in five vowel + /r/ combinations (e.g., /ar/). Using only manual mimicry gestures and minimal verbal instructions as cues, the participant increased accuracy of /r/ from an average 11% at baseline to 90% after the second phase of treatment in this ABAB withdrawal design according to judgments made by 28 naïve listeners (Rusiewicz & Rivera, 2017). Additionally, case study data of two children with CAS indicated that manual mimicry gestures facilitated more accurate speech production (Koshut et al., 2016).

There is also evidence of the impact of hand movements for pronunciation training for non-native sounds in Japanese (e.g., Hirata et al., 2014). Most recently, Xi et al. (2020) found that viewing hand movements that mirrored the phonetic characteristics of Mandarin consonants (e.g., burst of air for aspirated plosives) resulted in higher pronunciation accuracy for these sounds produced by fifty Catalan speakers as rated by five native Mandarin speakers. Importantly, increased accuracy was related to the appropriateness of the gesture to the desired phonetic characteristics. The effects of participants producing gestures while learning non-native speech skills was not studied by Xi et al.

Purpose

The purpose of this study was to examine the impact of simple hand gestures that mirror the movements of the speech articulators in terms of spatial configuration, timing, and tension (i.e., manual mimicry gestures) on the immediate learning and retention of

four German phonemes sung by college-aged voice majors. More specifically, the aim was to study the effect of training with and without the integration of manual mimicry gestures on the following parameters of vocal performance: (a) articulatory accuracy, (b) vocal technique, and (c) expressive artistry. These vocal variables were measured across three time points (baseline, immediately following training, and 48hr +/- 8 hours post training) to assess immediate learning and retention of knowledge. The following research questions guided this investigation:

1. What effect does training (No Gesture, View Gesture, or View+Do Gesture) have on articulatory accuracy and vocal technique of sung German consonants and vowels immediately following training and 48-hours after training?

2. What is the impact of training for German consonants and vowels on the transfer to sung phrases immediately following training compared to 48-hours after training according to ratings of articulatory accuracy, vocal technique, and expressive artistry?

Method

Study Design

A 3 (learning condition) x 3 (time of assessment) factorial design was used for the study. The participants were assigned to one of three learning condition groups: (a) no gestures during instruction or *No Gesture,* (b) gestures viewed during instruction or *View Gesture,* and (c) gestures viewed and mimicked during instruction or *View+Do Gesture.* This design was chosen to control for confounding variables and practice effects. The times of assessment were (a) pre-testing (baseline), (b) immediate post-instruction, and (c) 48-hour post-instruction (+/- 8 hours) to assess immediate learning and retention of knowledge. Participants were pseudo-randomized to one of three groups based on their class standing (freshman, sophomore, junior, senior, or graduate) to ensure equal numbers of students in each year of undergraduate and graduate study in each group. Four speech sound targets were tested for articulatory accuracy and vocal technique, the voiceless palatal and velar fricatives spelled with "ch" (/ç/ and /x/) and the mixed vowels spelled "ü" (/y/ and /ʏ/). The gestures used for the View Gesture and View+Do Gesture condition groups can be seen in Figure 2. Expert listeners perceptually rated the sung phrases for (a) articulatory accuracy, (b) technical accuracy, and (c) expressive artistry using a 100 mm visual analog scale by three expert raters. Transfer of learning was also explored using a phrase sung by each training group immediately and 48 hours after training.

Institutional Review Board approval for human subject research was obtained in August 2018 and participants were recruited through live invitation and posted flyers. Twenty-four college-aged students (18 women and 6 men) between the ages of 18 and 25 who were majoring in voice completed the study. Students were excluded from participation if they

had concerns about their vocal health or if they spoke German fluently or had previously studied German for two or more semesters. All procedures were video-recorded and audio-recorded.

Following informed consent procedures, the participants completed baseline pretesting. Participants were seated in an armless chair approximately 18 inches away from a mounted iPad. The instructions, stimuli, training, and assessments were presented via PowerPoint on an Apple iPad Air with a 12.9 inch display. Participants listened to the training via Sennheiser RS120 headphones. An AKG C520L condenser microphone and Presonus AudioBox USB Preamplifier recorded their sung productions. The microphone was kept at a consistent two inch distance to the left of participants' mouths. Participants were instructed to sing five repetitions of each of the target consonants and vowels following a sung model by the instructor for these initial baseline data (on F3/F4). Training began immediately following these baseline procedures.

Training and Testing

Study participants received instruction via video recordings of an instructor presented on the iPad (i.e., No Gesture, View Gesture, View+Do Gesture) in a counterbalanced manner across the two training units (i.e., palatal and velar fricatives, and mixed vowels; see above). The principal investigator was the instructor in all videotaped segments. The instructor was videotaped with a view of torso, arms, and face. A script was followed for all conditions to equate language structures, general content, and speech intonation characteristics of the sessions. Each training session lasted approximately 10–12 minutes, regardless of condition. Participants received verbal instruction and modeling of the target phonemes in all training conditions, with the number of models consistent in each of the three training units. For each sound, participants were instructed to sing the sound five times on a single sung pitch (F3 or F4 depending on voice type) and told that their fifth production would be be used for rating and analysis.

For only the View Gesture and View+Do Gesture groups, the instructor used manual mimicry hand gestures that approximated the spatiotemporal positioning and movement of the vocal articulators while performing the target phonemes (see Figure 2 on the next two pages). For the palatal and velar fricatives, a one-handed gesture indicated the movement of the air toward the hard palate (/ç/) or the velum (/x/). For the mixed vowel targets, one hand represented tongue advancement and tension, and one hand represented the rounding of the lips (a high and tense tongue combined with tightly-rounded lips for /y/ and and slightly lower and more lax tongue and slightly less-rounded lips for /ʏ/). These gestures were developed by the authors. For the View+Do Gesture groups, participants were instructed to produce the hand gestures simultaneously with their sung productions.

Immediately following instruction, the same assessment procedures were conducted as in the pre-test/baseline procedures. In addition, the participants were instructed to implant the target sounds into a model phrase, "Ich bin so müde, aber es ist ein Glück, dass die

Figure 2, Parts a, b, c, & d

Screenshot of instructional video demonstrating a manual mimicry gesture for /y/.
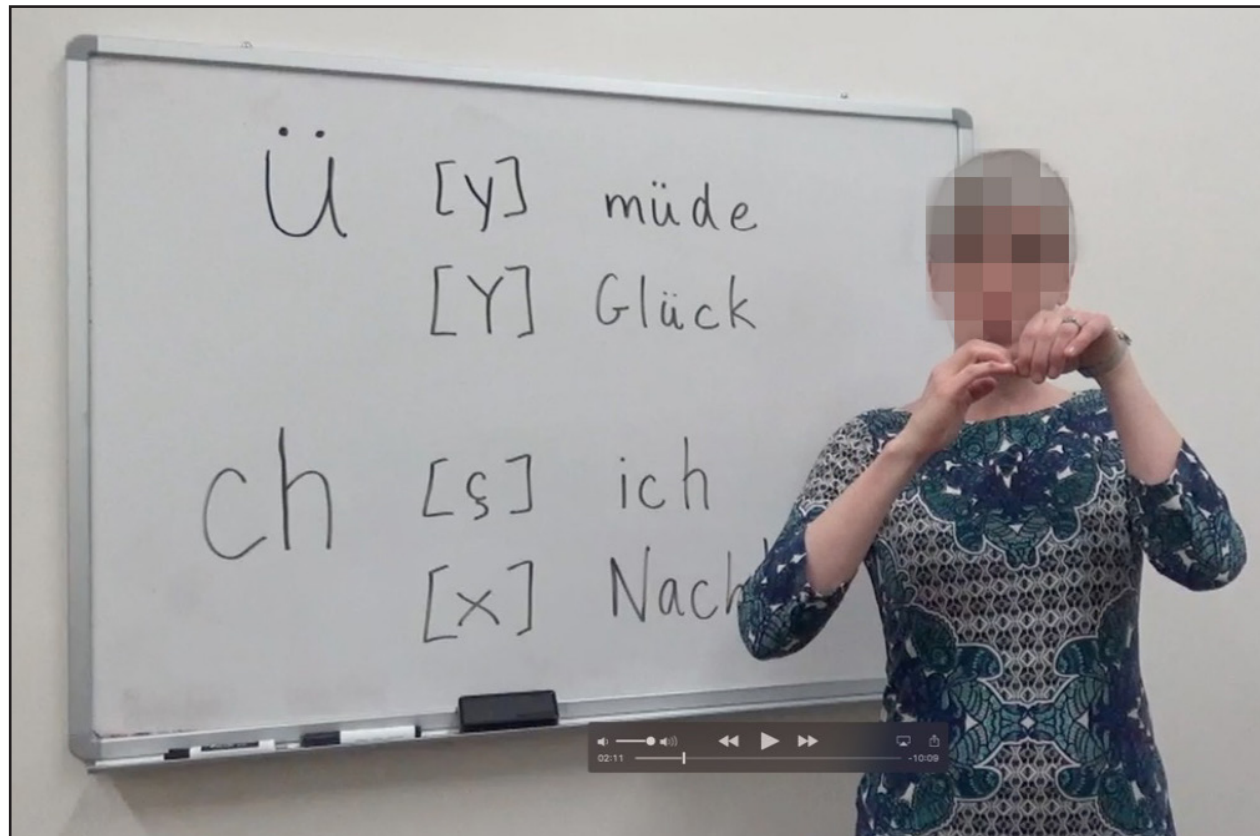
Screenshot of instructional video demonstrating a manual mimicry gesture for /Y/.
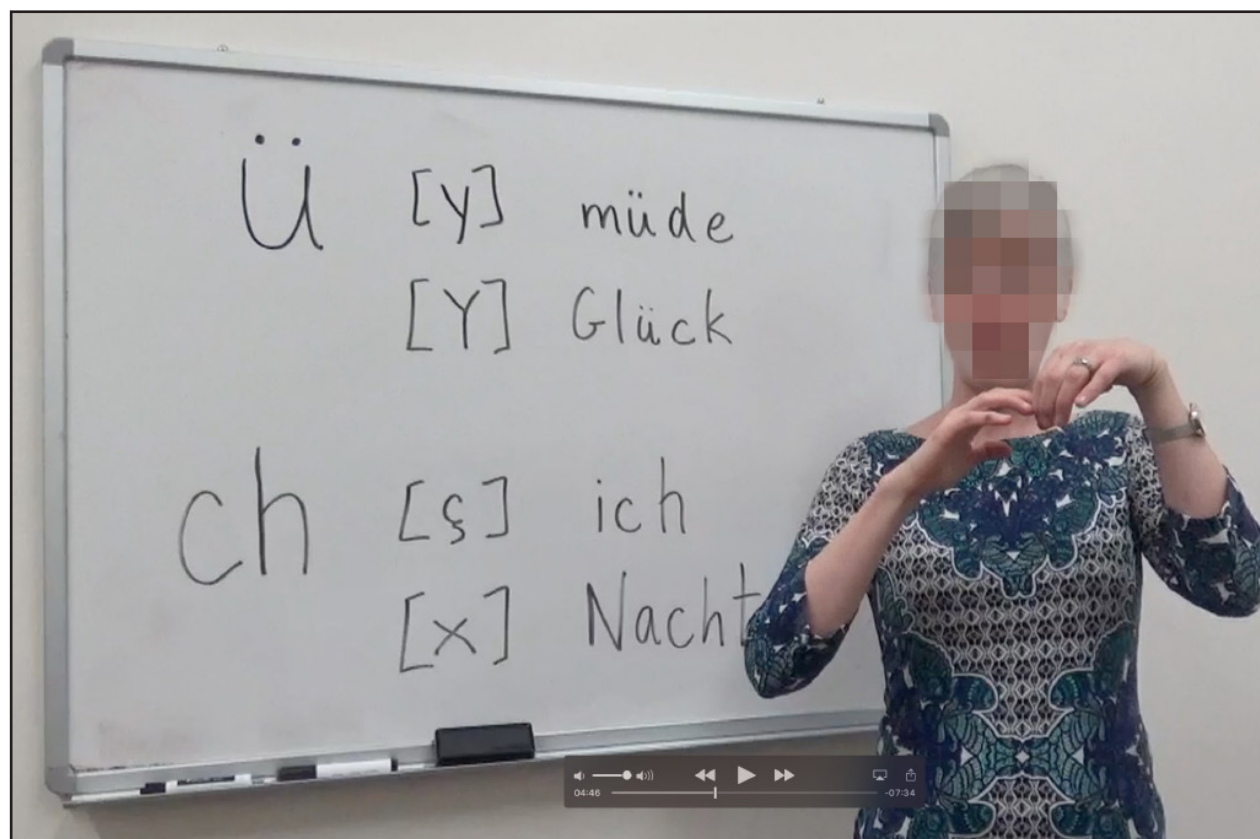
Screenshot of instructional video demonstrating a manual mimicry gesture for /ç/.
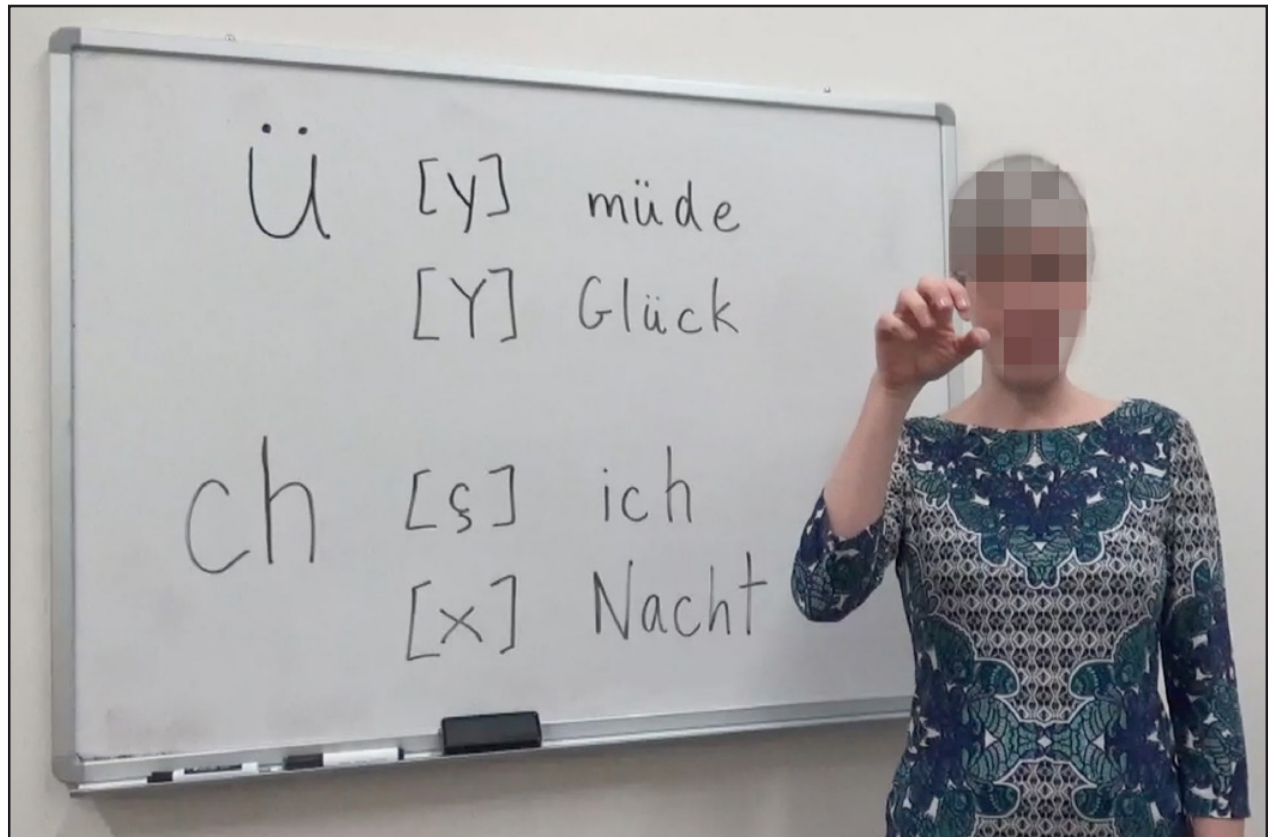
Screenshot of instructional video demonstrating a manual mimicry gesture for /x/.
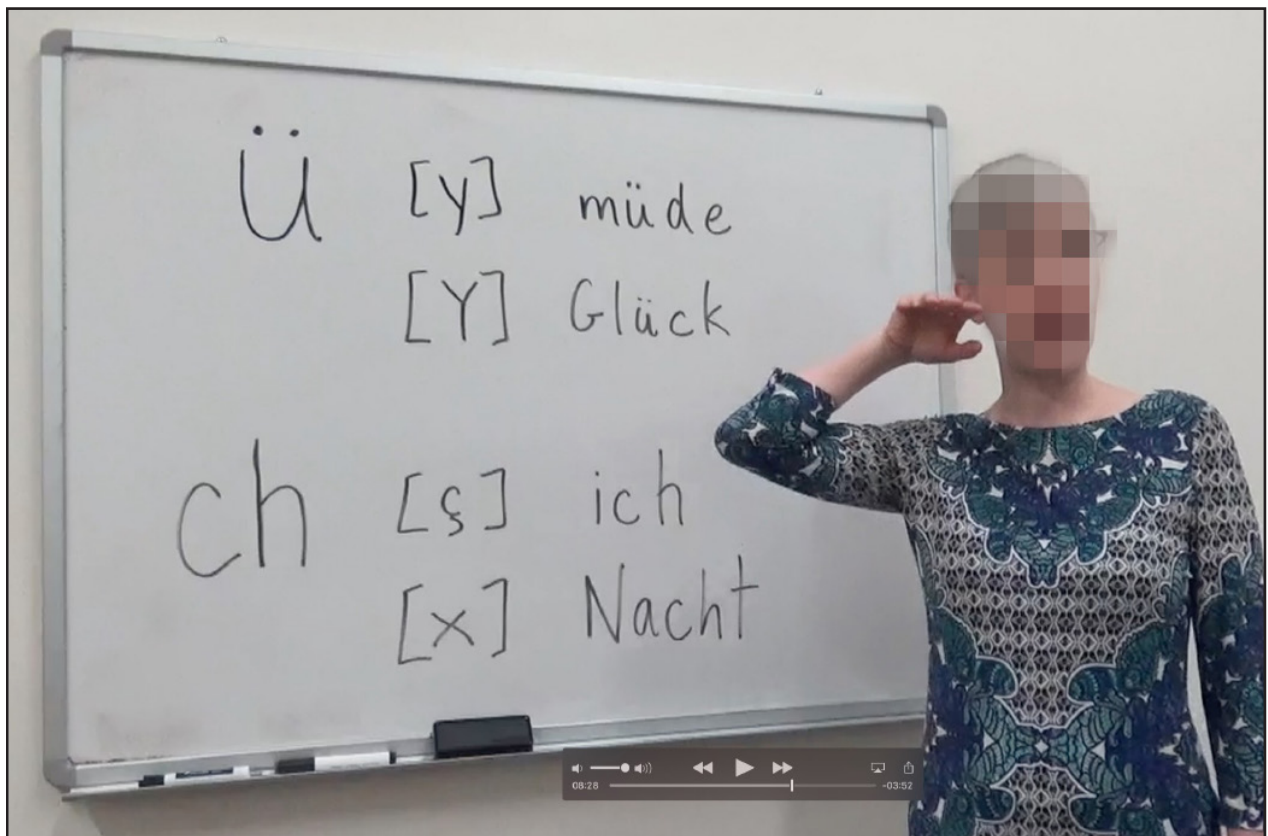
Nacht kommt" (Figure 3). The words and music for this phrase were composed by the first author. This phrase was modeled in a speaking voice by the instructor. The participants then viewed musical notation and heard the model phrase played three times on a piano. They were instructed to sing the phrase five times and told that their fifth production would be used for rating and analysis.

The participants returned for a follow-up session (48 hours +/- 8 hours) to assess consolidation and retention of learning at 48 hours post-instruction (e.g., Cook et al., 2013). This second and final session lasted approximately 20 minutes. Participants recorded each of the four sounds and the phrase in the same manner as in immediate post-instruction.

Figure 3
Sample musical phrase with sounds embedded


Data Reduction and Analysis

A total of 1,584 sung productions were recorded across the 24 participants. The final production of each trial was extracted from the audio signal using Audacity software and saved as an individual .wav file, for a total of 336 targets (288 individual phonemes and 48 phrases). Task fidelity was assessed for all trials for all 24 participants by a trained student research assistant who was blinded to training conditions and the purpose of the study. This research assistant viewed each video and coded if the participant gestured. As expected, 100% of the participants in the View+Do gesture condition produced gestures for all productions during training, while 100% of the participants in the No Gesture and View Gesture training conditions did not produce gestures during the training.

Collegiate vocal instructors with doctoral degrees served as expert raters for the data. None of the voice instructors were familiar with study participants. The participants' productions were presented via PowerPoint in the following order: [ʏ], [x], [y], [ç], and the musical phrase. Each sung production was embedded as an isolated .wav file into a single slide. The presentation order of the trials was randomized across the time of assessment. Ratings were inputted into QualtricsXM software using a continuous 100 mm graphical/visual analog scale. Raters slid the scale to mark their perception of skill for each dependent measure for each production. These ratings were converted to quantitative data between 0 and 100 and then averaged across the three raters. Data for the individual sounds were analyzed using a 3 (Group: No Gesture, View Gesture, View+Do Gesture) x 2 (Sound: Consonants, Vowels) x 3 (Time: Pre-Training, Immediate Post-Training, 48-Hours Post-Training) repeated mea-

sures analysis of variance (ANOVA; Schreiber & Asner-Self, 2011). Phrase data were analyzed using 3 (Group: No Gesture, View Gesture, View+Do Gesture) x 2 (Time: Immediate Post-Training, 48-Hours Post-Training) repeated measures ANOVA.

Results

Research Question 1: Articulatory Accuracy and Vocal Technique of Consonants and Vowels

Articulatory Accuracy

The mean ratings for articulatory accuracy were averaged across the three expert listeners and analyzed for each of the three training conditions (No Gesture, View Gesture, View+-Do Gesture), the three time points (baseline/pre-testing, immediate post-testing, 48-hours post-testing), and type of sound (Figure 4). Means and standard deviations for articulatory accuracy ratings for all variables are found in Table 1 on the next page. A repeated measures ANOVA yielded several significant results. First, the data revealed differences between the ratings of articulatory accuracy between the three groups with a moderate effect size $F(2, 282) = 6.65$, $p < 0.001$, $\eta_p^2 = 0.045$, such that the View+Do Gesture training group

Figure 4

Mean Ratings of Expert Listeners for Articulatory Accuracy (AA) and Vocal Technique (VT): Consonants and Vowels for No Gesture (NG), View Gesture (VG), and View+Do Gesture (DG) Groups

Note. Error bars show standard deviations.
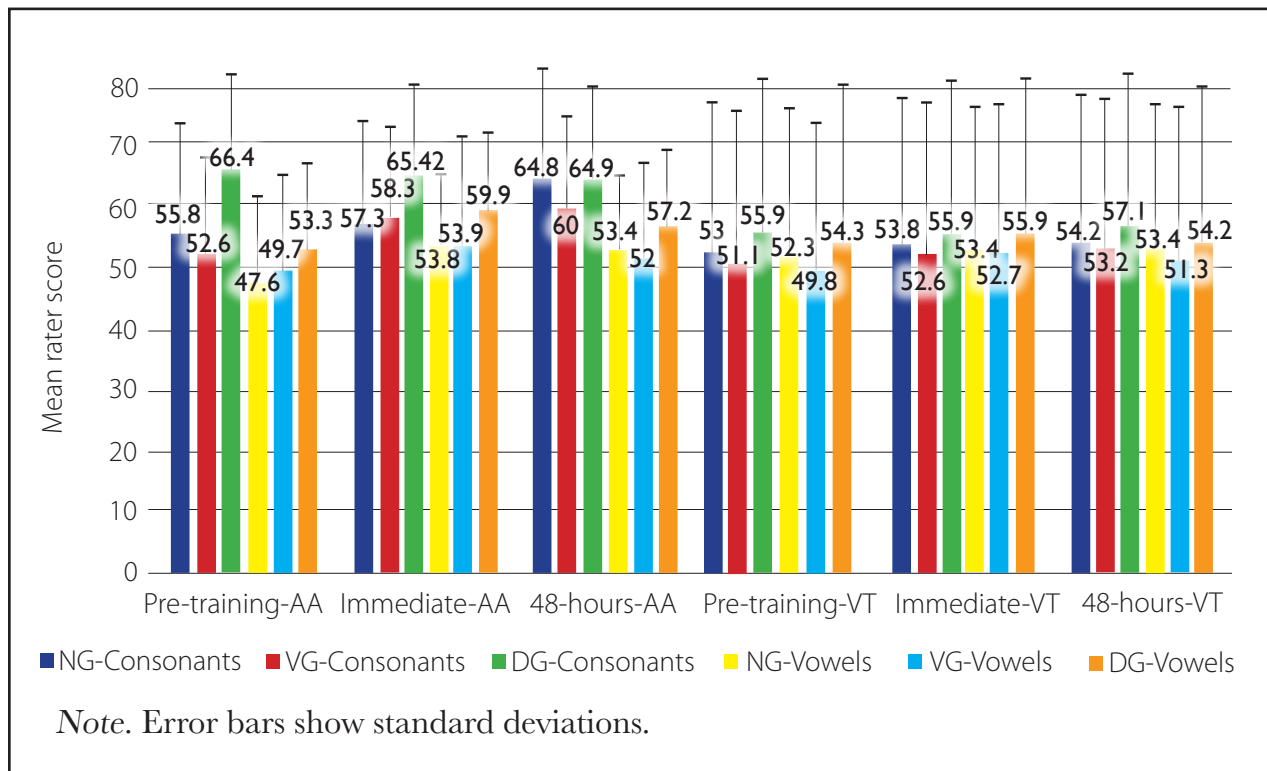
Table 1

Articulatory Accuracy Descriptive Data (Means and Standard Deviations) for All Training Conditions, Sounds, and Time Points

			M (SD)
Baseline/Pre-training	Vowel	No Gesture	47.58 (14.24)
		View Gesture	49.73 (15.81)
		View+Do Gesture	53.33 (14.06)
		Total	50.22 (14.81)
	Consonant	No Gesture	55.77 (18.12)
		View Gesture	52.60 (18.44)
		View+Do Gesture	66.38 (15.67)
		Total	58.25 (18.32)
	Total	No Gesture	51.68 (16.73)
		View Gesture	51.17 (17.14)
		View+Do Gesture	59.85 (16.19)
		Total	54.23 (17.11)
Immediate Post-training	Vowel	No Gesture	53.83 (11.65)
		View Gesture	53.90(17.77)
		View+Do Gesture	59.90 (12.47)
		Total	55.88 (14.41)
	Consonant	No Gesture	57.27 (16.73)
		View Gesture	58.31 (16.87)
		View+Do Gesture	65.42 (14.74)
		Total	60.33 (16.43)
	Total	No Gesture	55.55 (14.44)
		View Gesture	56.10 (17.38)
		View+Do Gesture	62.66 (13.86)
		Total	58.10 (15.59)

48 hours Post-training	Vowel	No Gesture	53.40 (11.93)
		View Gesture	52.00 (16.04)
		View+Do Gesture	57.23 (12.45)
		Total	54.21 (13.68)
	Consonant	No Gesture	64.81 (15.17)
		View Gesture	60.02 (18.11)
		View+Do Gesture	64.88 (15.06)
		Total	63.24 (16.22)
	Total	No Gesture	59.10 (14.74)
		View Gesture	56.01 (17.48)
		View+Do Gesture	61.05 (14.27)
		Total	58.72 (15.65)

had the highest observed scores. Second, there was a significant difference in the ratings of articulatory accuracy for vowels and consonants, such that consonants had higher overall accuracy scores $F(1,282) = 19.36$, $p < 0.001$, $\eta_p^2 = 0.064$. There was no interaction between group and sound. Third, all three groups (No Gesture, View Gesture, View+Do Gesture) significantly improved their articulatory accuracy ratings following training according to the within analysis $F(1,282) = 36.67$, $p < 0.001$, $\eta_p^2 = 0.11$. There were no significant interactions between training group conditions with time point or sound, indicating that the presence of gesture did not differentially impact ratings of articulatory accuracy.

Vocal Technique

The mean ratings for vocal technique were averaged across the three expert listeners and analyzed for each of the three independent variables, with data for these variables displayed in Figures 4. Means and standard deviations of vocal technique ratings for all variables are found in Table 2 on the next page. A repeated measures ANOVA revealed a main effect for group (No Gesture, View Gesture, View+Do Gesture), with ratings of vocal technique significantly improved following training according to the within analysis $F(1,282) = 21.28$, $p < 0.001$, $\eta_p^2 = 0.07$. There were no other significant main effects for training group or sound. A significant interaction of sound by time point was found such that consonants demonstrated greater improvement over time compared to vowels $F(1,282) = 3.64$, $p < 0.03$, $\eta_p^2 = 0.013$. Aligned with the articulatory accuracy analyses, there were no significant interactions between training group condition with time point or sound, indicating that the presence of gesture did not differentially impact ratings of articulatory accuracy.

Table 2

Vocal Technique Descriptive Data (Means and Standard Deviations) for All Training Conditions, Sounds, and Time Points

			M (SD)
Baseline/Pre-training	Vowel	No Gesture	52.33 (23.99)
		View Gesture	49.79 (24.36)
		View+Do Gesture	54.27 (25.90)
		Total	52.13 (24.66)
	Consonant	No Gesture	52.98 (23.56)
		View Gesture	51.08 (24.95)
		View+Do Gesture	55.88 (25.05)
		Total	53.31 (24.43)
	Total	No Gesture	52.66 (23.65)
		View Gesture	50.44 (24.53)
		View+Do Gesture	55.07 (25.35)
		Total	52.72 (24.51)
Immediate Post-training	Vowel	No Gesture	53.42 (23.25)
		View Gesture	52.67 (24.61)
		View+Do Gesture	55.94 (25.54)
		Total	54.01 (24.35)
	Consonant	No Gesture	53.75 (22.90)
		View Gesture	52.58 (24.39)
		View+Do Gesture	56.88 (24.88)
		Total	54.40 (23.97)
	Total	No Gesture	53.58 (22.96)
		View Gesture	52.63 (24.37)
		View+Do Gesture	56.41 (25.08)
		Total	54.20 (24.12)

48 hours Post-training	Vowel	No Gesture	53.35 (23.75)
		View Gesture	51.35 (25.23)
		View+Do Gesture	54.23 (25.60)
		Total	52.98 (24.72)
	Consonant	No Gesture	54.25 (23.82)
		View Gesture	53.19 (24.61)
		View+Do Gesture	57.10 (24.87)
		Total	54.85 (24.32)
	Total	No Gesture	53.80 (23.67)
		View Gesture	52.27 (24.81)
		View+Do Gesture	55.67 (25.14)
		Total	53.91 (24.50)

Research Question 2: Articulatory Accuracy, Vocal Technique, and Expressive Artistry of Phrases

Similar to the analyses for individual sounds, the mean ratings for articulatory accuracy, vocal technique, and the additional variable, expressive artistry, of phrases were averaged across the three expert listeners and analyzed for each of the three training conditions (No Gesture, View Gesture, View+Do Gesture) and two time points (immediate posttesting and 48-hours posttesting) as displayed in Figure 5. Means and standard deviations for articula-

Figure 5

Mean Ratings of Expert Listeners for Articulatory Accuracy, Vocal Technique, and Expressive Artistry for Phrases Sung Immediately and 48-Hours after Training
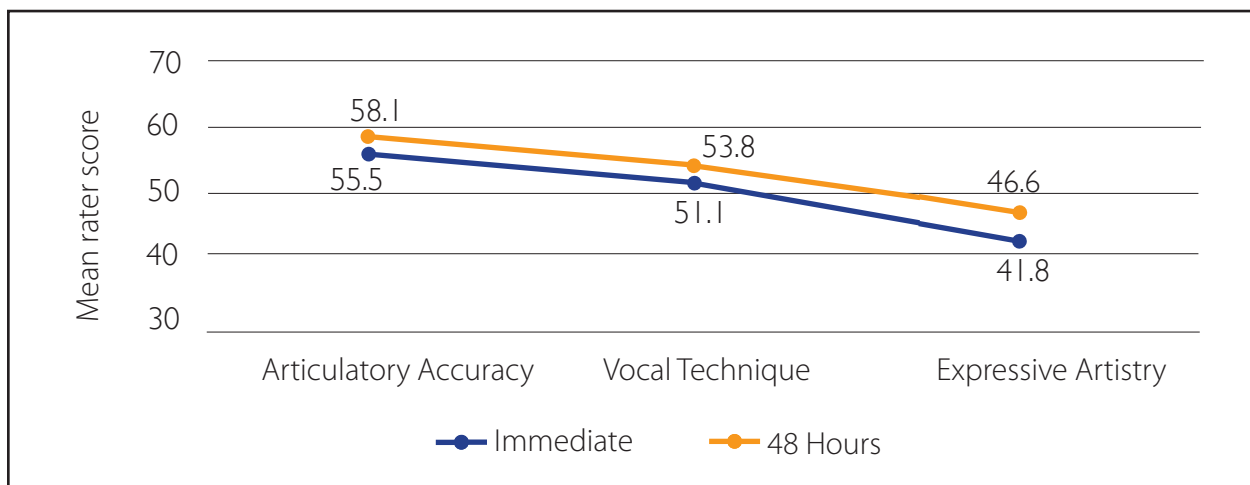
tory accuracy ratings for all variables are found in Table 3. The highest mean ratings were for articulatory accuracy, followed by vocal technique, and then expressive artistry for both immediately and 48-hours following training. Retention was noted for all three dependent variables in improved ratings from immediate post-training to 48-hours post-training. The phrase data show small to large effect sizes from immediate post-training to 48-hour after training with ratings of expressive artistry demonstrating the largest effect size (Table 4).

Table 3
Descriptive Data (Means and Standard Deviations) for Articulatory Accuracy, Vocal Technique, and Expressive Artistry for Phrases Sung Immediately and 48-Hours After Training

	M	SD
Articulatory Accuracy: Immediate Post-Training	55.53	15.522
Articulatory Accuracy: 48-Hours Post-Training	58.08	14.066
Vocal Technique: Immediate Post-Training	51.08	24.945
Vocal Technique: 48-Hours Post-Training	53.85	25.482
Expressive Artistry: Immediate Post-Training	41.85	27.577
Expressive Artistry: 48-Hours Post-Training	46.57	27.479

Table 4
Paired T-test Analysis and Effect Size Measures

	t-value	df	p	Cohen's d
Articulatory Accuracy: Immediate Post – 48-Hours Post-Training	-2.817	71	$p < .01$	0.33
Vocal Technique: Immediate Post – 48-Hours Post-Training	-5.283	71	$p < .01$	0.62
Expressive Artistry: Immediate Post – 48-Hours Post-Training	-6.246	71	$p < .01$	0.73

Articulatory Accuracy

A repeated measures ANOVA, 3 (Group: No Gesture, View Gesture, View+Do Gesture) x 2 (Time: Immediate Post-Training, 48-Hours Post-Training), was used to further examine ratings of articulatory accuracy in the sung phrases. This analysis indicated no meaningful difference between groups $F(2, 69) = 1.22$ and no interaction between groups and time $F(2, 69) = 1.21$(Figure 6). The within-component results indicated all groups significantly improved from immediate post-training to 48-hours after training $F(1, 69) = 38.37, p = <0.001$, $\eta_p^2 = 0.034$.

Figure 6

Mean Ratings of Expert Listeners for Articulatory Accuracy, Vocal Technique, and Expressive Artistry of Sung Phrases Immediately and 48-Hours After Training

Note. Error bars show standard deviations.
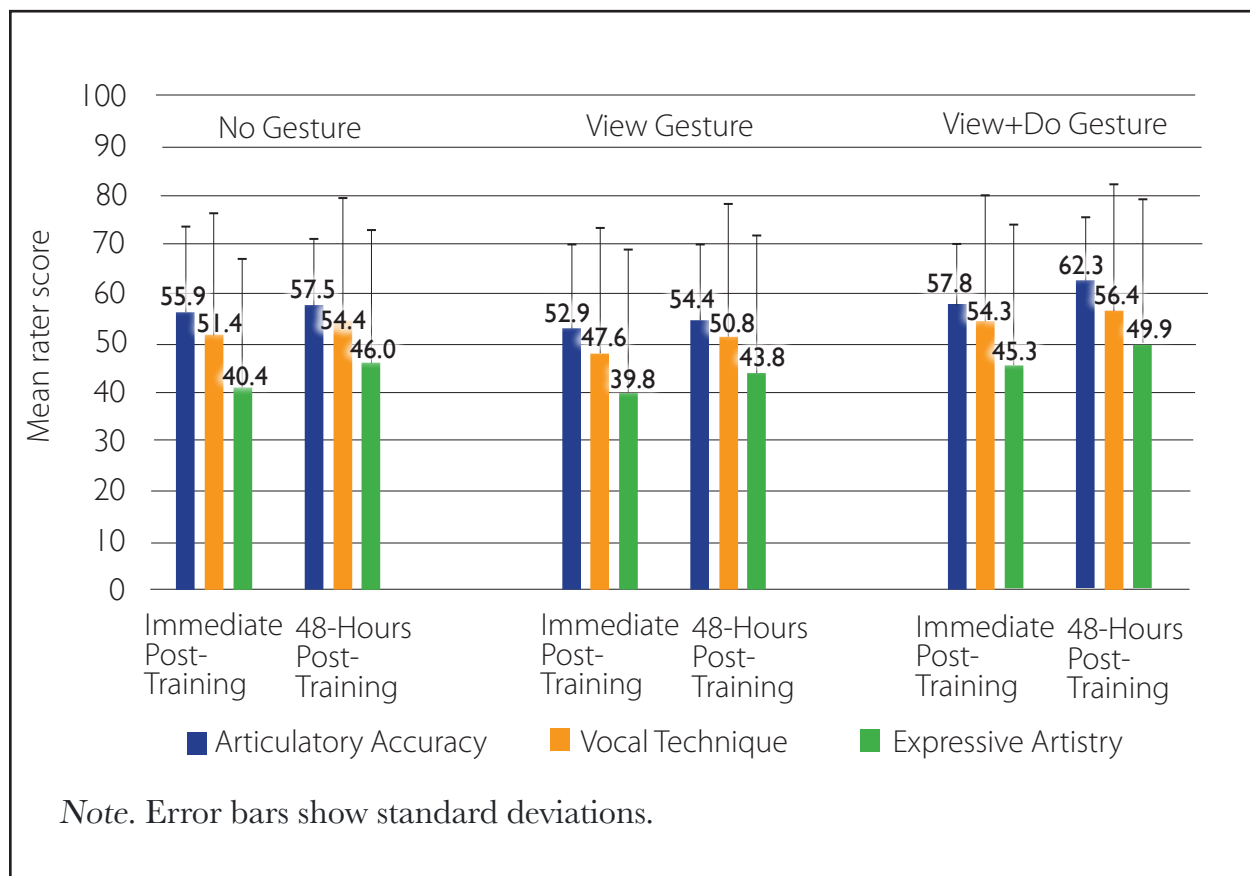
Vocal Technique

A repeated measures ANOVA, 3 (Group: No Gesture, View Gesture, View+Do Gesture) x 2 (Time: Immediate Post-Training, 48-Hours Post-Training), was used to examine ratings of vocal technique in the sung phrases. The between-group results indicated no meaningful difference between groups $F(2, 69) = <1$ as displayed in Figure 6 and no interaction between groups and time $F(2, 69) <1$. The within-component results indicated that all groups improved from immediate post-training to 48-hours after training $F(1, 69) = 27.43, p = <0.001, \eta_p^2 = 0.28$.

Expressive Artistry

A repeated measures ANOVA, 3 (Group: No Gesture, View Gesture, View+Do Gesture) x 2 (Time: Immediate Post-Training, 48-Hours Post-Training), was used to examine ratings of expressive artistry of the sung phrases. As with the other two dependent measures, the between-group results indicated no meaningful difference between groups $F(2, 69) <1$ and no interaction between groups and time $F(2, 69) <1$, see Figure 6. Once again, the within-component results revealed change over time, such that all groups were rated higher for expressive artistry at 48-hours post-training compared to immediate post-training $F(1, 69) = 38.37$, $p = <0.001$, $\eta_p^2 =0.36$. Because a main effect was only found for time, paired t-tests (Table 4) were completed to evaluate the two sets of data (i.e., immediate post-training and 48-hours post-training) for articulatory accuracy ($p < .01$), vocal technique ($p < .001$), and expressive artistry ($p < .001$).

Discussion

The present investigation addressed whether training with and without hand gestures that mimic the spatiotemporal configurations of the vocal apparatus (manual mimicry gestures) affected the learning and retention of German speech sounds in singing. Four German phonemes were assessed, the palatal and velar fricatives spelled with "ch" (/ç/ and /x/), and the mixed vowels spelled with an "ü" (/y/ and /Y/). Additionally, these four sounds were embedded into a sung German phrase to assess implementation in a more naturalistic context. Twenty-four participants were assigned to three control groups: No Gesture, View Gesture, and View+Do Gesture. The four sounds were rated by expert listeners at three time points (pre-testing, immediate post-testing, and 48-hours post-testing) to assess articulatory accuracy and vocal technique. The sung phrase was evaluated at two time points (immediate post-testing and 48-hours post-testing) to assess articulatory accuracy, vocal technique, and expressive artistry.

Participants in all control groups improved their sung production of German vowels, consonants, and phrases after their brief training, as rated by expert listeners. There was evidence of retention of learning for the dependent measures of articulatory accuracy and vocal technique at 48-hours post-training. Similar findings were found across different sounds and dependent measures, which is notable given the randomized presentation of the sung items and the blinded status of the expert raters. The No Gesture and View Gesture groups demonstrated higher perceived articulatory accuracy of the palatal and velar fricatives (consonants) at 48-hours post instruction than for the mixed vowels. For all three groups, vocal technique of the palatal and velar fricatives was rated higher at 48-hours post-instruction than for the mixed vowels.

These findings indicate that the palatal and velar fricatives may be easier for singers to learn and retain than the mixed vowels. Mixed vowels involve the dual coordination of a tongue vowel and a lip vowel, and as such, may be more difficult for singers to replicate initially and to consistently produce over time. The instructor used a two-handed gesture for the

mixed vowels (one hand for tongue, one hand for lips), and this gesture may have proved to be more difficult to replicate than the one-handed gesture used with the fricatives, or caused a multitasking scenario that complicated the task. The impact of different parameters (e.g., one- two-hand, proximity of gesture to the articulators, size and synchronization of the gesture) of manual mimicry gestures on the speech mechanism is an area for future investigations. The largest effect of learning and retention was noted for the additional dependent measure of expressive artistry in the sung phrase. This finding may indicate that once participants developed greater confidence with the pronunciation of German sounds, they exhibited a more natural expression in their singing.

The use of gestures during training did not result in greater ratings of articulatory accuracy and vocal technique for individual sounds. Likewise, ratings of articulatory accuracy, vocal technique, and expressive artistry were not enhanced for sung phrases for individuals who used gestures during training. It is important to note that the participants in the View+Do Gesture group rated higher than the other two groups for all metrics, including at baseline. Participants were randomized to groups with consideration of level of education (year of study and undergraduate/graduate status), however the overall skill of the participants was not a factor for group assignment. The View+Do Gesture group was also at or above the mean ratings for the other two groups at their highest post-instruction ratings. These data were found for both individual sounds and phrases. Thus, it is possible that the View+Do Gesture group experienced a ceiling effect. In other words, there potentially was greater room for improvement in the No Gesture and View Gesture Groups and the individuals in the View+Do Gesture group were collectively performing near the peak of their performance for this task in the current paradigm.

Limitations

The study took place in a constrained experimental context, outside of the naturalistic context of the voice lesson or choral rehearsal, where diction is typically taught. An attempt was made to integrate the single phonemes into a musical phrase to better contextualize participants' learning. In a voice lesson or choral rehearsal, however, singers would have additional supports for learning, such as ongoing aural, facial, and/or gestural feedback from an instructor, and multiple sessions to reinforce text pronunciation. Additionally, in a choral rehearsal, singers have the benefit of aural reinforcement from other singers to adjust and refine their vocal articulation. Future investigations may include lengthier training with more opportunities for practice in multiple word and phrase units.

Singers were excluded from the study if they had formal German language instruction, but prior experience with singing in German was not assessed. Singers enter undergraduate and graduate study with variable levels of experience with German diction, based on their prior choral and solo vocal instruction. For those students with more experience singing in German, baseline ratings may have been higher. Future investigations could choose a language that is less common in choral instruction or increase the number of participants to

reduce the overall variability of participants (e.g., skill level and prior experience). A repeated measures design, with each participant learning to produce different non-native sounds, some with the use of gestures and some without, could allow for participants to act as their own controls and reduce potential variability.

The raters for this study were experts in their field and were distributed across the United States. The three variables, articulatory accuracy, vocal technique, and expressive artistry were chosen as three dimensions of diction pedagogy. Choral directors and voice teachers may focus on a specific phoneme to assist in phonetic accuracy (articulatory accuracy), to improve vocal sound (vocal technique), or to add expressivity (expressive artistry). Definitions for these three variables were not given to the expert listeners to establish a shared understanding of the terms, however the expert's ratings were descriptively consistent for each participant. In other words, if a trial produced by a participant was rated low for articulatory accuracy by one rater, the other raters also tended to rate the trial in a similar fashion. The raters were instructed to listen under headphones in an area free of distractions and to take breaks as needed, but the equipment (e.g., computers and selected headphones) used to listen to the recorded productions and the environments of the raters were not the same. Future investigations should use standardized procedures for perceptual ratings, if feasible. Likewise, testing the raters hearing would reduce any potential confounds of hearing ability. Lastly, although the randomized perceptual ratings were completed by three expert listeners who were blinded to the purpose of the study, future studies may employ acoustical analyses to examine the effect of training conditions on the acoustic parameters of consonants and vowels.

Implications for Choral Practice

Choral educators must find effective ways to teach an ever-increasing range of languages found in the repertoire, including languages that introduce non-native phonemes (Chris, 2019). German introduces velar and palatal fricatives and mixed vowels to non-native speakers. In her survey of collegiate vocal diction instructors, Mahaney (2006) found that mixed vowels in German and French were among the sounds that were consistently difficult to teach and learn. An embodied approach to teaching diction could exploit the benefits of learning with movement, including reduced cognitive load and improved retention of learning (Goldin-Meadow et al., 2001). The use of gestures to teach diction could also capitalize on the conductor's gestural influence, affecting singer's vocalism (Grady, 2014; Manternach, 2016). Gestural experiences in choir can also be translated into the conductor's gesture as a visual reminder of a felt sensation (Chagnon, 2001; McCoy, 1996).

Manual mimicry gestures are a type of physiological gesture that mirror the specific movements of articulators in forming vowels and consonants (Nafisi, 2013). For vowels, they can reflect the height, advancement, and tension of the tongue. For consonants, they can indicate place, manner, and voicing (Daley & Rusiewicz, 2021). Used in the vocal context, the specificity of these gestures may allow vocal instructors to (a) identify and isolate new or non-native phonemes, (b) migrate a phoneme to a neighbor phoneme for improved reso-

nance or projection (i.e., /I/ to /i/ or /g/ to /k/), or (c) assist to unify articulation among a group of singers, as in the ensemble context (Daley & Rusiewicz, 2021). Although this study did not provide a strong rationale for their use in teaching non-native sounds in German in a constrained context, future studies are needed to assess the impact of these types of gestures in a more naturalistic context, such as a vocal lesson or choral rehearsal.

To replicate the work of Xi et al. (2020), assessing the efficacy of the gesture to the desired phonetic target is essential as not all consonantal sounds are accurately represented in hand gestures. A future study might assess the efficacy of various gestures for the same phonetic target (i.e., more than one gesture for /x/). Another important consideration in gestural teaching is the perception of the effect of gestures on the learner, including when gestures are completed by the learner. Future studies could investigate the qualitative response of the learner in producing non-native sounds for singing with gestures. Lastly, gestures that mimic the spatiotemporal configurations of the vocal apparatus could be adopted for use in conductors' performance in a concert, to mirror how the singers close a consonant, for example. A future study could assess the efficacy of implementing diction-related gestures into conducting performance.

Teaching diction is an everyday task for the choral conductor, voice teacher, and vocal coach. The present investigation invites further exploration into the relationship between gesture and vocalism, and specifically, the intersections between hand gestures and non-native text learning in singing. More research is needed on how gestures might facilitate these outcomes for singers and inform best practices in related disciplines like speech-language pathology and pronunciation training, as well as add to the broader literature base on gesture production.

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Focus on Vocal Health

From the Guest Co-Editors

We are pleased to share this focus collection of the *International Journal of Research in Choral Singing* (*IJRCS*) with you. Several years ago we were tasked with compiling a collection around the topic of vocal health in choral singing contexts. As the collection neared completion, we thought it fitting to include a foreword by James F. Daugherty, the creator and founding editor of *IJRCS*. We are grateful to Jim for both his mentorship and for his tireless pursuit of sound practice and rigorous research that impact the choral singing profession. This emphasis may lead to a more research-informed, humanistic approach to choral singing for all.

From its inception, this journal has aimed to address the need for choral musicians to share research and knowledge. It is our hope that you will find that the articles offer new insight on a wide variety of topics.

Sincerely,

Melissa Brunkan and Melissa Grady, guest co-editors
IJRCS Special Focus on Vocal Health

Foreword:
Advancing Vocal Health Research and Practice in Choral Singing Contexts

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Studies appearing in this special collection focus broadly on vocal health in choral singing contexts. They do so from a variety of vantage points—singers in various stages of lifespan voice development, teacher-conductors, parents, and professional journal content. Such investigations interest us because choir conductor-teachers serve as the primary voice teachers and main sources of voice care information for millions of singers. Far more people sing in choirs than take private voice lessons.

For reasons logical and ethical, singers and the public at large might assume choir conductor-teachers, especially those with university credentials, have knowledge of how human voices function physiologically and acoustically at various lifespan stages, knowledge sufficient to promote vocal health and to guide singers in optimal, efficient vocal development. Alas, that has not always been an accurate assumption. Not until 1993, for example, did the National Association of Schools of Music (NASM) *Handbook* first recommend that baccalaureate degree students in music education acquire "vocal and pedagogical skills sufficient to teach effective use of the voice" (p. 99). Only with the 2009 - 2010 school year did the NSAM *Handbook* stipulate doctoral students in choral conducting "must have detailed knowledge of vocal technique and pedagogy" (p. 142).

For much of the nineteenth and twentieth centuries, the professional knowledge bases (reflected in publications, methods materials, and higher education curricula) of studio voice teachers and choir conductor-teachers were largely dissimilar when it came to promoting accurate, scientific understandings of how voices work and function. Leon Thurman (1983) framed this matter succinctly: "We choral conductors are least trained in voice use and care . . . Our rehearsal and performances are concerned more with the musical result than what gets us there – the voices" (p. 5). The American Academy of Teachers of Singing (1964) decried the "uninformed leadership" of choir conductor-teachers who do not "have an understanding of the functioning of the voice itself" (p. 1). As recently as 2011, the national ACDA convention featured a session entitled, "Choral Directors are from Mars, and Voice Teachers are from Venus."

Given that training of choral teacher-conductors has had to play catch-up in addressing

more adequately how voices work and function, an investigation by Melissa L. Grady and Melissa C. Brunkan in this issue of *IJRCS* offers some encouraging news. Self-reports of choral teacher-conductors surveyed ($N = 56$) indicate nearly all these teacher-conductors at least talk about basic vocal health (e.g., hydration, not shouting) in choral rehearsals. Most respondents (ca. 80%), moreover, had enrolled in college classes that included vocal health, vocal anatomy and physiology, or lifespan voice changes. A similar percentage had experienced professional workshop or convention sessions that included those matters. Statistical analyses indicated significant, cause and effect relationships between (a) participants' prior education and their reported teaching of vocal anatomy-physiology and lifespan voice changes in rehearsals and (b) participants' prior education and their reported application of healthy voice pedagogy practices in their rehearsals. In another positive indication, Andrew Schmidt reports a notable uptick over the past two decades in scientifically informed vocal pedagogy articles appearing in *Choral Journal*. Schmidt, however, observes a need for more research related to gender identity and non-traditional vocal styles.

Unlike ensemble music-making where people play inanimate, manufactured instruments, choir conductor-teachers work with living, embodied, neuropsychobiological instruments. Human vocal instruments do not cease to function at the end of an ensemble rehearsal or performance. They contribute continually to our survival (e.g., protecting the respiratory system, regulating air flow). We employ the vocal apparatus also for ongoing, everyday communication; we have but one larynx, and we use this organ for speaking, shouting, grunting, and whispering as well as for singing.

These factors raise important considerations for vocal health pedagogy. As embodied instruments, for example, human voices change as our bodies change. This process of change is ongoing throughout the lifespan. Anatomically and physiologically, two of the more dramatic periods of change tend to occur during puberty and menopause. In this issue of *IJRCS*, Patrick K. Freer reports the reflections of collegiate male singers ($N = 49$) in two choirs from two nations as they recollect their experiences with pubertal voice change. Among his findings, over 90% of participants wish that choir teacher-conductors would address vocal health and singing during male pubertal voice change. Jamea J. Sale explores how parents ($N = 54$) of pubertal female singers perceive their daughters' experience of voice change before and after viewing a brief educational video. Results indicate much promise for this approach to parent education, suggesting to us that choir teacher-conductors could well consider reinforcing positive self-identity and perseverance in pubertal singers by addressing parental knowledge and perceptions.

In a follow-up to her groundbreaking study of cisgender women singers in pre-, peri-, and post-menopause, Kathy K. Price surveys women ($N = 23$) a decade after the menopausal event. Her study provides much food for thought, especially in terms of recommending pedagogical protocols and vocal health strategies teacher-conductors might employ for singers in this stage of voice change. The studies by Freer, Sale, and Price remind us of the complexity of promoting efficient singing and vocal health in choir singing contexts. Cho-

ral teacher-conductors often lead ensembles whose membership may exhibit every gradient of change within broader lifespan voice stages. Consequently, fulsome promotion of optimal vocal efficiency and well-being among choral singers may well entail individualizing instruction beyond one-size-fits-all whole group pedagogy.

Also in this issue of *IJRCS,* Dustin S. Cates examines secondary school choral teacher-conductors' ($N = 227$) experiences with gender-inclusive teaching. This timely study reminds us that the well-being of embodied human voices entails social and psychological dimensions as well as physical considerations, for singing voices do not exist in isolation from the whole person.

Matthew Schloneger's well-documented case study of two female collegiate singers during an intensive week of music theatre and choral rehearsals employs multiple dependent measures. Participants wore voice dosimeters during waking hours. They also completed daily surveys related to perceived vocal health and several iterations of the Singing Voice Handicap Index (SVHI), a validated, disorder-specific, self-report instrument. Unlike studio voice teachers, choir teacher-conductors spend a preponderance of their time listening to and working with voices phonating simultaneously in ensemble. Singer self-reports using brief vocal health questionnaires, such as the daily survey employed by Scholonger, could provide individual singer data across time. They could alert the teacher-conductor who does not regularly listen to singers individually that it may be time to do so with a particular student. Incorporating such surveys as a part of choir rehearsals might also serve indirectly to communicate the importance of monitoring and maintaining one's vocal health.

As choral music professionals become more acquainted with voice science and increasingly trained in voice function and care, it is important to remember that we are not equipped by either training or certification to diagnose, much less treat, voice disorders. Yet we *can* dispense factual, scientifically refereed information about voice function and its optimal, efficient maintenance. We *can* introduce lifespan voice-friendly rehearsal behaviors and structures that help our singers understand and care for their unique, built-in instruments. We *can* acquire sufficient, science-based sensibilities to recognize when a singer might benefit from a referral to a certified voice health professional. We *can* avail ourselves of continuing education opportunities.

The multi-faceted array of studies appearing in this issue of *IJRCS* attest to the wide range of matters related to vocal health. I am confident their authors would agree that these studies represent a starting or progress point for subsequent, ongoing research necessary to expand and deepen our professional knowledge base of vocal health pedagogy.

On a personal note, it is a pleasure to see in this issue studies by some of my former students, Drs. Brunkan, Grady, Price, Sale, and Schloneger. Moreover, I am glad to see that all authors found ways to maintain an active research agenda during the understandable restrictions imposed by the pandemic. May their tribe increase.

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IJRCS

International Journal of Research in Choral Singing

Teaching What We Were Taught: A Survey of Choral Music Educators on Vocal Health, Anatomy, and Pedagogy

Melissa L. Grady[1] and Melissa C. Brunkan[2]

Abstract

The purpose of this investigation was to assess if prior education influenced current teaching practices of choral music educators in terms of vocal health, anatomy, and pedagogy. We utilized a four-part online questionnaire to inquire about music educator's a) personal experience in voice education and teaching/conducting practice in b) general vocal health, c) vocal anatomy and function, and d) healthy vocal pedagogy and perceived amount of rehearsal time spent on these topics. All responses were disaggregated by years of teaching and types of choirs taught. In total, 56 choral teachers/conductors of 65 choirs comprised the results. We applied statistical analysis to determine the extent to which participants' prior education explained teaching behaviors. Two of the three regression analyses proved statistically significant. The non-significant results for the regression concerning the teaching of general voice health in the choral rehearsal illustrated the possibility that choral teacher/conductors spoke about vocal health in the rehearsal regardless of their personal education. The two statistically significant regressions alluded to a moderate correlation between the teacher/conductor's prior education and teaching of vocal anatomy and pedagogy in the choral rehearsal. Results are discussed in terms of teaching vocal health, anatomy, and pedagogy in the choral rehearsal and ideas for future research.

Keywords: choir, music education, questionnaire, vocal health, vocal anatomy, vocal pedagogy

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Choral conductors are often expected to serve not only as the leaders of singing groups but also as voice teachers (Davids & LaTour, 2021; Manning & Blanchet, 2014). Therefore, educating pre-service choral music educators in vocal health, anatomy, and pedagogy is essential and encouraged in the literature (Jordan et al., 2018). The voice education singers receive in choral ensembles can have a long-lasting impact on personal singing, choral teaching, and conducting practices. Voice education, also known as vocal pedagogy, is being taught more frequently across degree programs at universities in the United States; however, some training programs for choral educators/conductors do not contain vocal pedagogy instruction (Chism, 2020).

Training pre-service choral educators the delicate balance between creating memorable musical moments and effectively caring for each singer's vocal health is a difficult undertaking. In this regard, Lowell Mason (1852), a leading figure in the 1830s movement to include vocal music in public school curricula, advised "singing often, but not too long at a time" for adolescent voices (p. 5). This type of recommendation has stood the test of time in many ways and can be seen in current writings on choral music education philosophy. Sources on vocal health in choral settings (Olson, 2010) have more recently seen increased interest and incorporation into academic programs such as music education curricula.

Previous researchers in undergraduate music education curricula (Schmidt, 1989) examined a wide variety of pre-service teacher preparation, including music education (Baumgartner, 2014; Mishra et al., 2011), conducting (Boardman, 2000; Hart, 2019; Manfredo, 2008), and choral methods (Chandler, 2012). Interestingly, of all specializations, comprehensive choral music education appeared to be the least often researched (Drafall & Grant, 1997). In a recent study, Chism (2020) analyzed course syllabi specific to undergraduate vocal pedagogy courses at National Association of Schools of Music (NASM) accredited institutions in the southwestern United States. He found variety in the structure and content of undergraduate vocal pedagogy courses. Further, Chism found that institutions that did not offer a dedicated vocal pedagogy course incorporated the content into other curriculum areas such as choral conducting or methods courses.

Although a relatively small number of empirical research studies targeted undergraduate vocal pedagogy courses' content, authors have addressed vocal pedagogy, voice science, and voice health in practitioner journals (Archambeault & Smith, 2019; Galante, 2011, Hansen 2014a, 2014b; Harris, 2019, Manternach et al., 2019, McCoy, 2011, 2012; Naseth, 2012; Nix, 2013, 2014; Weary, 2011). For example, Dorsey (2016) examined the occurrence of vocal pedagogy topics in practitioner articles by finding and reviewing 207 articles on vocal technique, production, and tone. One such article by Corbin (1986) advocated for applied vocal pedagogy in choral rehearsals, stating that "there are procedures and practices that can be incorporated into large group rehearsals to promote vocal health… "(p. 5). Gorham-Rowan et al. (2017) examined specific strategies for improved vocal health in choral singers, including a tapered rehearsal schedule.

In other texts, several well-known teachers of singing wrote extensively on choral conductor knowledge of vocal pedagogy and health (e.g., Jordan et al., 2017; McKinney, 2005). Nix

and Roy (2018) spoke to choral educators' importance as voice teachers, offering specific strategies including spacing for ideal self-to-other ratio. The application of choral and vocal pedagogies in choral rehearsals was surveyed by Schade (2017). Findings indicated choral conductors and voice teachers both aim to maintain good vocal health and technique in singers. Other sources addressed the solo singer participating in choirs and made recommendations concerning vocal health (Olson, 2010). Still other practitioners wrote about the importance of promoting vocal health during choral rehearsals. For example, Webb (2007) stated, "As choral conductors, we can positively affect the voices in our choirs through our instruction. It is our job to teach the choir not only the music, but also healthy ways of singing it" (p. 26).

Conductors and pedagogues have stressed the importance of vocal pedagogy and vocal health in choral education textbooks as well. Some choral methods textbooks (i.e., Brinson & Demorest, 2014) address vocal health with information on group vocal technique and the adolescent changing voice. However, analysis of choral methods texts (Spurgeon, 2004) demonstrated a limited number (9.8%) of choral methods texts address vocal pedagogy topics.

Although vocal pedagogy in choral methods textbooks is limited, researchers have investigated many facets of voice health and choral singing. For example, Tepe et al. (2002) examined the incidence of vocal problems in young choir singers and correlated vocal problems with demographic and behavioral information such as voice lesson experience, vocal habits, existing voice issues, sleep habits, and hydration. Participants ($N = 129$) were members of youth and church choirs in the eastern United States. They completed a questionnaire addressing vocal habits and hygiene such as hydration, sleep, acid reflux symptoms, and medications. Researchers found over half of the participants experienced vocal and physical difficulties, including strain (43%), hoarseness (42.6%), "oversinging" in rehearsals (31%), change in voice range (19.4%), tickling or choking sensation (17%), volume disturbance (16.3%), and breathiness (15.5%). The researchers concluded that voice care professionals should be aware that self-reported voice difficulties are common among young choral singers. They further recommended that laryngologists communicate with choral conductors and singing teachers to identify and treat children with voice complaints and to develop choral educational strategies to decrease the frequency of vocal health issues.

In another study of voice health in choral singers, Daugherty et al. (2011) assessed singer voice use and voice health perceptions during an all-state high school chorus event. The researchers employed daily surveys, phonation duration data, analysis of rehearsal voice use behaviors, and field notes. Results indicated significant declining changes in five of seven voice health indicator statements and in self-perceptions of singing voice quality between the first and last rehearsal surveys. Specific declining changes included difficulty singing in a high range, straining, vocal fatigue, sore throat, and hoarseness. Field notes contained data on voice use and rest time and conductor comments regarding posture, singer spacing, and vocal fatigue. Singer perceptions indicated most singers (78.8%) believed they took good care of their voices, although self-reported sleep hours decreased significantly throughout the rehearsal weekend.

Similar factors were examined in another study of voice health in choral singing. Bowers and Daugherty (2008) solicited beginning and end of week responses to 12 voice health indicator statements from high school singers ($N = 41$) at a weeklong summer choral music camp. They examined several items related to vocal health, including hoarseness, vocal tiredness, dryness, throat pain, straining to sing, and effort to sing/breathiness. All of the factors demonstrated a significant decline between the beginning of the week and end of week reports. Interestingly, most participants reported they had taken good care of their voices throughout the camp.

Some researchers attribute the potentially harmful impact of voice use during choral rehearsals to environmental and instructional factors. They acknowledge that singers may arrive at choral rehearsals with potential contributing factors, including illness, inefficient habits of vocal production, lack of adequate sleep, and varied nutritional and hydration habits. Further, voice disorders, such as vocal nodules or cysts, can be complicated and attributed to various factors, including voice use, sleep, or illness (Colton et al., 2006; Stemple et al., 2000). Therefore, researchers (Rezende et al., 2015; Williams, 2010) examined voice issues in choral singing, while others explored the effects of specific and commonly-used choral rehearsal practices on vocal health. For example, Hixon (1987) and Norris (2006) suggested that chair seat angles that pitch the knees above the position of the hips adversely affect singer breath management. Daugherty (2003) and Ternström (1994) demonstrated that close spacing between and among singers promoted louder singing and self-perceived inefficiencies in vocal production, whereas Cooksey (2000) found that repertoire choices, particularly for adolescent singers, impacted physiological factors as well as musical challenges. Finally, Titze et al. (2007) examined vocal loading (demands on the voice over time). He recommended time to recover from particular instances of vocal loading by balancing voice use episodes and vocal rest opportunities.

Other choral rehearsal practices such as vocal warm-ups (Falcão et al., 2014; Onofre et al., 2017) have been examined. Falcão et al. examined adolescent female singers' vocal practices ($N = 14$) through acoustic spectrographic analyses before and after a specific vocal warm-up program. The warm-up program consisted of a sequence of body exercises, breathing and articulation training, vocal exercises, and ascending and descending musical scales. Researchers performed a spectrographic analysis of a recorded, sustained vowel. Results of the analyses indicated no significant differences. However, there was a negative correlation between harmonics and noise in the high frequencies post-warm-up. Researchers concluded that the employed vocal warm-up produced a richer acoustic spectrum that indicated more glottic closure or vocal tract adjustment.

Choral conductor practices in singer spacing, repertoire choice, and vocal demand can impact singers' voices. Sataloff and Smith (2006) wrote, "It is essential that choral conductors learn to use their own voices well, thereby forming a frame of reference for vocal matters. Posture, quality, and tone of voice, use of language, and the shape and timing of conducting gestures should each exemplify and encourage good vocal habits" (p. 258).

Teachers and students in choral singing should understand vocal health, anatomy and function of the voice, and appropriate vocal pedagogy. It remains vital for choral conductors

to understand these topics for their singers as well as themselves. Some recent investigations (Daugherty et al., 2009; Schwartz, 2009) indicated that choral music teachers were especially vulnerable to vocal health issues. The extent to which these topics were taught in pre-service music teacher training programs has been examined by some (i.e., Chism, 2020). However, no study to date has examined vocal pedagogy background, training, and application of knowledge in the choral rehearsal. Therefore, this study aimed to survey current choral educators/conductors regarding their background and practices pertaining to vocal health and pedagogy in the choral rehearsal.

The purpose of this investigation was to assess if prior education influenced current teaching practices of choral music educators in terms of vocal health, anatomy, and pedagogy. The research questions that guided this online questionnaire included four aspects of participants' choral history and practice: (a) experience in voice health, anatomy, and pedagogy education, (b) teaching/conducting practice in terms of general vocal health, (c) teaching/conducting practice in terms of vocal anatomy and function, (d) teaching/conducting practice in terms of healthy vocal pedagogy and perceived amount of rehearsal time spent on the topics. All responses were disaggregated by years of teaching and types of choirs.

Method

Participant Recruitment

An Institutional Review Board approved the following research method and online questionnaire. In an attempt to elicit information from choral directors in multiple states and with differing types of choral teaching/directing, we created an online questionnaire. Participants were acquired through online choral music educator forums and direct emails to colleagues. We contacted and received permission to post a short recruitment statement and the questionnaire link on multiple choral music education/conducting websites and forums. We posted the link, waited one week, and posted a second request for submissions. We also utilized a snowball sampling procedure and contacted choral music education colleagues through email to participate in the questionnaire. We asked colleagues who were able to forward the email to other choral teachers and graduate students in choral music education and choral conducting.

We collected 66 questionnaire responses and included 56 in this investigation. We excluded incomplete surveys. Of the 56 participants involved in this investigation, 9 completed the questionnaire's optional repeat with a second choir in mind. In total, 56 choral teachers/conductors and 65 choirs comprised the following results.

Participants

Participants ($n = 56$) comprised 37 females (66%) and 19 males (34%) with a mean age of 43 (range = 23-66 years of age). For the majority, the highest degree earned was a master's degree ($n = 27$, 48%), with a close to even divide between doctoral and bachelor's degrees

(*n* = 16, 29%; *n* = 13, 23%, respectively). Teaching experience averaged 10.8 years (range 0-42 years) for solo voice and 12.8 years (range 2-48 years) of choral teaching/directing.

Participants responded to a prompt to select any and all of the six categories of choirs (children's, middle level, high school, collegiate, community, church) that they currently or previously have conducted. The mean number of choirs per participant was 4.3 choir types (range = 1-6). Participants selected the choir type they currently taught/conducted and responded to the questionnaire about their work with that particular choir. Nine participants submitted responses to a second choir, thus we recorded responses for 65 choirs (children's, *n* = 2; middle level, *n* = 10; high school, *n* = 23; collegiate, *n* = 16; community, *n* = 9; church, *n* = 5).

Questionnaire

We used Qualtrics, an online platform that generates and collects questionnaire data, to create the questionnaire for the investigation (Appendix A). We piloted the questionnaire by sending versions and updates to choral music education researchers (*n* = 5) for suggestions and edits. The questionnaire included two sections. Section 1: (a) consent statement, (b) demographic information, (c) types of choirs taught/conducted; and Section 2: (d) personal voice health experiences in education, and teaching/conducting practice during choral rehearsals in terms of (e) general vocal health, (f) vocal anatomy and function, and (g) healthy vocal pedagogy. All questions in Section 2 comprised a 5-point Likert-type scale from *strongly agree* to *strongly disagree.* We further inquired about a percentage of choral rehearsal time utilized to address the topics of general vocal health and vocal anatomy and function. As countless choral educators/conductors wear "many hats" and work with multiple ensembles, we allowed participants the option to respond about more than one choir.

Data Analysis

We disaggregated responses for each part of the questionnaire, first according to years of choral teaching, and then by types of choir that each participant conducted. We selected year delineations according to Gumm et al. (2011) to establish four groups of years of choral teaching experience. Participants comprised: 1-4 years, *n* = 6; 5-10 years, *n* = 19; 11-20 years, *n* = 10; and 20-up years, *n* = 21.

We analyzed the results by completing three linear regressions to determine the extent to which prior education explained vocal health, anatomy, and pedagogy teaching behaviors. All four assumptions for linear regressions were met prior to analysis.

Results

We calculated the three linear regressions by creating composite scores for each of the four variables: prior education as the independent variable and the three dependent variables (teaching vocal health, anatomy and function, and pedagogy in the choral rehearsal).

Lickert responses were scored $1 - 5$ from *stongly agree* to *strongly disagree.* Means, standard deviations, and ranges of the four composite scores were: prior education ($M = 1.67$, $SD = 0.56$, range $= 1.00 - 2.83$), teaching vocal health ($M = 1.18$, $SD = 0.51$, range $= 1.00 - 4.00$), teaching anatomy and function of the voice ($M = 1.99$, $SD = 0.72$, range $= 1.00 - 3.20$), and vocal pedagogy ($M = 1.45$, $SD = 0.46$, range $= 1.00 - 2.67$).

Personal Experience – Voice Education

The first part of Section 2 of the questionnaire requested information about the participants' educational experiences in voice health, anatomy, and pedagogy. Questions also elicited responses concerning where teachers/conductors learned that information. Table 1 shows questions and participant responses according to the 5-point Likert-type scale and years of choral teaching experience. For all voice education questions posed, the large majority of participants either *strongly agreed* or *somewhat agreed* that they had received voice health, anatomy, and pedagogy education through schooling, professional workshops, and previous educators.

Table 1

Personal Voice Education Questions and Participant Responses
(Number and Percentage) According to Years of Choral Teaching Experience

		Strongly Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Strongly Disagree
I have experienced education in voice health.	1-4 years	3	3	0	0	0
	5-10 years	14	5	0	0	0
	11-20 years	5	4	0	1	0
	21-up years	12	8	1	0	0
	TOTAL	n=34, 61%	n=20, 36%	n=1, 2%	n=1, 2%	n=0, 0%
I have experienced voice education in vocal anatomy and physiology.	1-4 years	3	3	0	0	0
	5-10 years	12	7	0	0	0
	11-20 years	5	4	1	0	0
	21-up years	11	7	0	2	1
	TOTAL	n=31, 55%	n=21, 38%	n=1, 2%	n=2, 4%	n=1, 2%

I have experienced voice education in healthy vocal pedagogy.	1-4 years	4	2	0	0	0
	5-10 years	12	7	0	0	0
	11-20 years	6	3	0	1	0
	21-up years	15	6	0	0	0
	TOTAL	n=37, 66%	n=18, 32%	n=0, 0%	n=1, 2%	n=0, 0%
I enrolled in classes that included vocal health, anatomy, and/or pedagogy as part of my college degree(s).	1-4 years	3	1	0	1	1
	5-10 years	11	7	0	0	1
	11-20 years	5	3	0	0	2
	21-up years	9	6	1	3	2
	TOTAL	n=28, 50%	n=17, 30%	n=1, 2%	n=4, 7%	n=6, 11%
I enrolled in classes/training in vocal health, anatomy, and/or pedagogy at a professional workshop or convention.	1-4 years	1	1	0	2	2
	5-10 years	10	6	2	0	1
	11-20 years	5	3	1	1	0
	21-up years	12	6	1	2	0
	TOTAL	n=28, 50%	n=16, 29%	n=4, 7%	n=5, 9%	n=3, 5%
I learned about vocal health, anatomy, and/or pedagogy from a private voice or choral teacher.	1-4 years	5	1	0	0	0
	5-10 years	12	4	0	1	2
	11-20 years	4	3	0	2	1
	21-up years	11	9	0	1	0
	TOTAL	n=32, 57%	n=17, 30%	n=0, 0%	n=4, 7%	n=3, 5%

Teaching/Conducting Practice

The following three parts of the questionnaire inquired about teaching/discussing voice health, anatomy, and pedagogy within the choral rehearsal. Participants responded on the same 5-point Likert-type scale from *strongly agree* to *strongly disagree,* as well as selecting a percentage of rehearsal time dedicated to the first two topics. Results are presented first by years of choral teaching experience and then by choir type.

General Vocal Health

Table 2

Teaching/Conducting Practice in Terms of Vocal Health Questions and Participant Responses (Disaggregated by Years of Choral Teaching Experience, Total Number, and Percentage)

		Strongly Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Strongly Disagree
I talk to my singers in choral rehearsals about basic voice health (i.e., drinking water, not shouting at sporting events)	1-4 years	4	1	0	1	0
	5-10 years	17	2	0	0	0
	11-20 years	8	2	0	0	0
	21-up years	19	2	0	0	0
	TOTAL	n=48, 86%	n=7, 13%	n=0, 0%	n=1, 2%	n=0, 0%

Table 3

Teaching/Conducting Practice in Terms of Vocal Health Questions and Participant Responses (Disaggregated by Choir Type, Total Number, and Percentage)

		Strongly Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Strongly Disagree
I talk to my singers in choral rehearsals about basic voice health (i.e., drinking water, not shouting at sporting events)	Children's	2	0	0	0	0
	Middle Level	7	2	0	1	0
	High School	21	2	0	0	0
	Collegiate	13	3	0	0	0
	Church	4	1	0	0	0
	Community	8	0	0	0	1
	TOTAL	n=55, 85%	n=8, 14%	n=0, 0%	n=1, 2%	n=1, 2%

Responses to teaching/discussing basic vocal health during the choral rehearsal were similar when comparing years of teaching and types of choir. The majority of participants (86%, 85% respectively) in this investigation responded: *strongly agree.* We requested participants submit a "percentage of rehearsal time spent" on basic voice health topics. Overall participant responses ranged from 0-80% ($M = 12.67$, $SD = 15.97$) of rehearsal spent on the topic. After removing the extreme outliers (0%, 70%, 80%, 80%) the range reduced to

2-32% of rehearsal time with a mean of 9.72% (SD = 7.38). When disaggregated by years of teaching, results showed: 1-4 years, M = 8.33%; 5-10 years, M = 11.63%; 11-20 years, M = 10.3%; and 21-up years, M = 13.76% of rehearsal time spent on topics concerning general voice health.

A linear regression was calculated to predict the teaching of vocal health topics based on prior education. Prior education served as the independent variable, and teaching voice health was the dependent variable (1 of 3 DVs). We found a non-significant regression equation [R^2 = .010, $F(1,54)$ = .551, p = .461]. See Appendix B.

Vocal Anatomy and Function

Table 4

Teaching/Conducting Practice in Terms of Vocal Anatomy and Function Questions and Participant Responses (Disaggregated by Years of Choral Teaching Experience, Total Number, and Percentage)

		Strongly Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Strongly Disagree
I talk to my singers in choral rehearsals about vocal anatomy and function.	1-4 years	2	3	1	0	0
	5-10 years	9	10	0	0	0
	11-20 years	6	3	1	0	0
	21-up years	8	10	2	1	0
	TOTAL	n=25, 45%	n=26, 46%	n=4, 7%	n=1, 2%	n=0, 0%
I talk to my singers about the structure of the larynx (i.e., cartilages, location).	1-4 years	1	1	0	3	1
	5-10 years	3	8	2	6	0
	11-20 years	3	5	0	1	1
	21-up years	6	5	4	4	2
	TOTAL	n=13, 23%	n=19, 34%	n=6, 11%	n=14, 25%	n=4, 7%
I talk to my singers about the movement of muscles involved in singing.	1-4 years	2	3	0	1	0
	5-10 years	5	11	2	1	0
	11-20 years	4	4	0	2	0
	21-up years	6	10	2	3	0
	TOTAL	n=17, 30%	n=28, 50%	n=4, 7%	n=7, 13%	n=0, 0%

Continued on the next page

I talk to my singers about life voice changes (adolescent voice change and/or aging voice).					
1-4 years	2	4	0	0	0
5-10 years	11	7	1	0	0
11-20 years	5	5	0	0	0
21-up years	11	6	3	0	1
TOTAL	*n=29, 52%*	*n=22, 39%*	*n=4, 7%*	*n=0, 0%*	*n=1, 2%*
I talk to my singers about acoustics of singing as related to anatomy and physiology.					
1-4 years	2	1	0	3	0
5-10 years	9	6	1	1	2
11-20 years	4	6	0	0	0
21-up years	7	8	4	2	0
TOTAL	*n=22, 39%*	*n=21, 38%*	*n=5, 9%*	*n=6, 11%*	*n=2, 4%*

Table 5

Teaching/Conducting Practice in Terms of Vocal Anatomy and Function Questions and Participant Responses (Disaggregated by Choir Type, Total Number, and Percentage)

		Strongly Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Strongly Disagree
I talk to my singers in choral rehearsals about vocal anatomy and function.	Children's	1	1	0	0	0
	Middle Level	4	5	1	0	0
	High School	7	13	2	0	0
	Collegiate	8	6	1	1	0
	Church	2	3	0	0	0
	Community	5	3	0	1	1
	TOTAL	*n=27, 48%*	*n=31, 55%*	*n=4, 7%*	*n=2, 4%*	*n=1, 2%*
I talk to my singers about the structure of the larynx (i.e., cartilages, location).	Children's	0	1	1	0	0
	Middle Level	1	5	0	4	0
	High School	6	9	2	3	3
	Collegiate	4	3	2	5	2
	Church	1	0	1	3	0
	Community	1	6	1	1	0
	TOTAL	*n=13, 23%*	*n=24, 43%*	*n=7, 13%*	*n=16, 29%*	*n=5, 9%*

I talk to my singers about the movement of muscles involved in singing.	Children's	1	1	0	0	0
	Middle Level	4	3	0	3	0
	High School	4	15	3	1	0
	Collegiate	5	7	1	3	0
	Church	1	3	0	1	0
	Community	4	3	1	1	0
	TOTAL	*n=19, 34%*	*n=32, 57%*	*n=5, 9%*	*n=9, 16%*	*n=0, 0%*
I talk to my singers about life voice changes (adolescent voice change and/or aging voice).	Children's	1	1	0	0	0
	Middle Level	6	3	1	0	0
	High School	14	6	3	0	0
	Collegiate	4	10	1	0	1
	Church	1	4	0	0	0
	Community	5	2	1	1	0
	TOTAL	*n=31, 55%*	*n=26, 46%*	*n=6, 11%*	*n=1, 2%*	*n=1, 2%*
I talk to my singers about acoustics of singing as related to anatomy and physiology.	Children's	0	1	1	0	0
	Middle Level	4	2	1	3	0
	High School	9	10	2	1	1
	Collegiate	6	7	2	1	0
	Church	1	1	0	1	2
	Community	4	4	0	1	0
	TOTAL	*n=24, 43%*	*n=25, 45%*	*n=6, 11%*	*n=7, 13%*	*n=3, 5%*

Participants responded about their perceived percentage of rehearsal time spent on vocal anatomy and function. The mean response was 11.63% (SD = 9.75, range 0-50%) of rehearsal time. After removing outliers (0, 40%, 40%, 50%), the mean was 10.26% (SD = 6.77, range 1-32%), When disaggregated by years of teaching: 1-4 years, M = 18.33%; 5-10 years, M = 13.11%; 11-20 years, M = 10.0%; and 21-up years, M = 9.0% of rehearsal time spent on vocal anatomy and function topics. A linear regression established that previous education (IV) could statistically significantly predict teaching of anatomy and function (DV2), $F(1,54)$ = 8.406, p = .005, and previous education accounted for 13.5% of the time spent explaining variability of teaching anatomy and function (See Appendix B).

Healthy Vocal Pedagogy

Table 6

Teaching/Conducting Practice in Terms of Healthy Vocal Pedagogy Questions and Participant Responses (Disaggregated by Years of Choral Teaching Experience, Total Number, and Percentage)

		Strongly Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Strongly Disagree
I aim to apply healthy voice pedagogy practice in my choral rehearsals.	1-4 years	5	1	0	0	0
	5-10 years	18	1	0	0	0
	11-20 years	9	1	0	0	0
	21-up years	19	2	0	0	0
	TOTAL	*n=51, 91%*	*n=5, 9%*	*n=0, 0%*	*n=0, 0%*	*n=0, 0%*
I actively seek out/research vocal pedagogy ideas and practices.	1-4 years	3	0	2	1	0
	5-10 years	8	11	0	0	0
	11-20 years	5	4	1	0	0
	21-up years	13	7	0	1	0
	TOTAL	*n=29, 52%*	*n=22, 39%*	*n=3, 5%*	*n=2, 4%*	*n=0, 0%*
I teach vocal pedagogy pertaining to the choral rehearsal.	1-4 years	2	3	0	1	0
	5-10 years	10	8	0	0	1
	11-20 years	7	1	1	1	0
	21-up years	13	6	0	2	0
	TOTAL	*n=32, 57%*	*n=18, 32%*	*n=1, 2%*	*n=4, 7%*	*n=1, 2%*

Table 7

Teaching/Conducting Practice in Terms of Healthy Vocal Pedagogy Questions and Participant Responses (Disaggregated by Choir Type, Total Number, and Percentage)

		Strongly Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Strongly Disagree
I aim to apply healthy voice pedagogy practice in my choral rehearsals.	Children's	2	0	0	0	0
	Middle Level	8	2	0	0	0
	High School	21	2	0	0	0
	Collegiate	15	1	0	0	0
	Church	4	1	0	0	0
	Community	9	0	0	0	0
	TOTAL	*n=59, 91%*	*n=6, 9%*	*n=0, 0%*	*n=0, 0%*	*n=0, 0%*
I actively seek out/research vocal pedagogy ideas and practices.	Children's	1	1	0	0	0
	Middle Level	5	3	1	1	0
	High School	7	13	2	1	0
	Collegiate	11	4	1	0	0
	Church	3	2	0	0	0
	Community	7	2	0	0	0
	TOTAL	*n=34, 52%*	*n=25, 38%*	*n=4, 6%*	*n=2, 3%*	*n=0, 0%*
I teach vocal pedagogy pertaining to the choral rehearsal.	Children's	2	0	0	0	0
	Middle Level	4	4	0	2	0
	High School	12	10	0	0	1
	Collegiate	10	4	1	1	0
	Church	3	1	0	1	0
	Community	7	0	0	2	0
	TOTAL	*n=38, 58%*	*n=19, 29%*	*n=1, 2%*	*n=6, 9%*	*n=1, 2%*

The majority of participants (91%) selected that they *strongly agreed* that their goal was to apply healthy vocal pedagogy in choral rehearsals. About half of the participants *strongly agreed* that they actively looked for research and new ideas pertaining to vocal pedagogy and taught vocal pedagogy in the choral rehearsal. We calculated a linear regression to predict vocal pedagogy (DV3) discussion in choral rehearsals based on the teacher/conductor's prior education (IV). The teacher's previous education could explain 20% of the variation in the discussion of vocal pedagogy in rehearsal per a significant regression equation [$F(1,54) = 13.511$, $p = .001$]. See Appendix B.

Discussion

This questionnaire-based investigation contributes to a small but essential set of studies concerning voice health and the choral rehearsal. We specifically targeted choral teachers/conductors to ascertain prior vocal health, anatomy, and pedagogy education and to discover if teachers shared and discussed that knowledge in the choral rehearsal. The results and conclusions herein represent a specific population of conductors/educators that responded to the survey and cannot be attributed to the larger population. However, there remain implications for choral music education in school and community choruses and instruction of pre-service collegiate choral music education courses.

As we, the researchers, are choral music education teachers at large universities, we chose our questionnaire categories and subsequent questions according to our own university educations and a reflection of our current teaching practices for pre-service choral teachers. We wanted to know if choral teachers/conductors' prior collegiate education (and thus the types of classes we teach) affected the quantity of vocal health, anatomy, and pedagogy topics incorporated into the choral rehearsal. The questions we decided upon were intended to serve as a "first step" in assessing choral teachers/conductors' current practice. Our objective for future investigations is to discover the subsequent "steps" of how educators in choral rehearsals and pre-service choral music education courses can actively incorporate vocal health topics. Although we revised the questions and categories with choral music educators' assistance, the chosen questions were not comprehensive of choral teaching.

To focus participant responses, we provided examples for each of our chosen categories: general vocal health, vocal anatomy and function, and healthy vocal pedagogy. Although we attempted to clarify our categories through these examples, participants could hold different ideas and definitions of these topics. Future investigators should either provide detailed definitions or investigate how choral teachers/conductors define these terms and categories themselves.

Due to COVID-19 related concerns in our own teaching and lives, we did not pursue nor obtain the number or variety of participants that we intended for this investigation. We acquired our participant pool through online solicitations and personal connections. As many of our personal connections are of a similar educational and philosophical background,

our results should not be transferred to the broader populations of choral music educators/conductors. Within our selected online forums, we advertised our questionnaire as a "voice health in the choral rehearsal" survey; thus, it could be assumed that our online respondents were interested in voice health per our description. Although our intention was a "broad scope" of choral music educators, we have possibly created a specific type of participant population through our personal contacts and online efforts. This is a variable for consideration, but one that we do not feel invalidates the results herein.

These particular choral teacher/conductor participants represented a wealth of experience teaching multiple types of choirs. On average, they had rehearsed four of the six types of choirs that we included in the questionnaire (children's, middle level, high school, collegiate, community, church). We feel our participants' extensive experience in teaching various choirs bolsters our participant population and lends some credence to the results. Along with the types of choirs they taught, we were interested in identifying if those who taught younger and/or older changing voices addressed healthy vocal pedagogy and anatomy more than their counterparts. As it turns out, in this investigation, with this population of teacher/conductor respondents, the age of the choir did not seem to influence the teaching of voice health, anatomy, and pedagogy topics. The participants that reported teaching these topics responded so for choirs of all ages and types. Future researchers could examine if vocal health, anatomy, and pedagogy topics are specifically and intentionally addressed in choirs that include adolescent changing voices and aging voices.

We inquired about the number of types of choirs that conductors rehearsed during their careers, yet we only requested that they respond to the survey for at least one current choir. Less than 20% of the participants responded to the questionnaire with more than one current choir. We are choral conductors who both currently work with more than one choir, and we were surprised that more teachers/conductors did not respond to the questionnaire for more than one choir. Perhaps respondents completed the questionnaire and then decided that they did not want to spend the time to complete it a second time. Future researchers could examine if teachers/conductors rehearse and instruct their "secondary" choirs differently from their "main" choir.

In an attempt to parse out the influence of teaching experience on the inclusion of vocal health and pedagogy topics in the choral rehearsal, we disaggregated all respondents by years of teaching. In considering this particular population of participants, we discovered that years of teaching, in itself, was not a determining factor for whether they taught voice health topics in rehearsal. Future investigators could more closely examine the impact of years of teaching on various choral rehearsal topics.

In the most current research literature (i.e., Archambeault & Smith, 2019; Chism, 2020; Harris, 2019; Hart, 2019; Nix & Roy, 2018) and choral methods textbooks (Davids & LaTour, 2021; Phillips, 2016), voice science, including voice health, anatomy and function of the larynx, and pedagogy, is gaining popularity. Nearly 20% of our participants reported never enrolling in a course concerning vocal pedagogy during their college education. The majority engaged in some vocal pedagogy experiences. It seems that teachers/conductors

recently enrolled in collegiate courses at either the undergraduate or graduate levels have more current education and experience in healthy vocal pedagogy to disseminate to their choral singers.

Almost half of our participants received a master's degree as their highest degree, and another third received a doctoral degree, providing a highly educated population of choral music teachers/conductors. Again, these findings validate our current research, and yet they offer future research questions. We inquired about the degree(s) earned and classes/seminars in vocal pedagogy and voice science topics, but we did not ask when those degrees and classes occurred. Future researchers should investigate if a further connection exists between when choral teachers/conductors completed their most recent education in voice health, anatomy, and pedagogy topics and their reference to those topics in the choral rehearsal.

We utilized a statistical analysis in this investigation to determine the extent to which participants' prior education explained their teaching behaviors. Two of the three regression analyses proved statistically significant. The non-significant results for the regression concerning general voice health teaching in the choral rehearsal illustrate that choral teachers/conductors speak about vocal health during the rehearsal regardless of their personal education. The two statistically significant regressions demonstrate a moderate correlation between the teacher/conductor's prior education and teaching of vocal anatomy and pedagogy in the choral rehearsal. Future investigations into the origins of choral teachers' voice education, be it collegiate courses, or seminars, conventions, and workshops, could inform educational practices at both the collegiate and practitioner levels.

The teachers/conductors we surveyed for this investigation either chose to include topics of vocal health, anatomy, and pedagogy in their rehearsals, or they did not. The deciding factors did not seem to include the number of years they taught choirs, their degrees earned, or the types of choirs they taught. The main factor, per this investigation, was the prior education of the teacher/conductor. Whether in the collegiate classroom or at a convention or symposium, these teachers' most recent learning seemed to influence their classroom teaching and topics. As educators of choral music teachers, we find this result to be of the utmost importance concerning our own teaching of pre-service and graduate choral music educators. Maybe we do teach what we were (most recently) taught (Calderhead & Robson, 1991; Ernst, 1989).

In this investigation, teachers/conductors responded to the questionnaire concerning the voice health topics they included in the choral rehearsal. Still, we did not inquire as to how they incorporated these topics. Future researchers could investigate the best means to include voice health, anatomy, and pedagogy in choral rehearsals. Practical means of adding these topics to choral rehearsals could benefit teachers/conductors, their singers, and overall healthfully-produced choral sound.

Finding an appropriate balance between making memorable music and caring pro-actively for the neurobiological instruments employed for that purpose remains an ongoing task for music educators. Beginning with Mason (1852), teachers of group singing have

touted singing as a healthy endeavor for adolescents. Choral pedagogy textbooks commonly used in pre-service choral music education courses in the collegiate setting have progressed through the years. Whereas most textbooks contain some information concerning teaching adolescent changing voice (Brinson, 1996; Collins, 1999; Phillips, 2004), more recent texts include information about vocal health, vocal function, and healthy vocal pedagogy (Brinson & Demorest, 2014; Davids & LaTour, 2021; Phillips, 2016). These textbooks are used in collegiate classrooms; however, not all of those currently teaching choral music have had access to the information, nor are teaching with these topics in mind. Future investigators should find means to incorporate modern research into established pedagogical environments, including workshops and local, regional, and national conventions to impart current vocal health pedagogy to teachers teaching for a longer tenure.

Educators, and in our case, choral music educators, tend to teach what they are taught (Calderhead & Robson, 1991; Dixon et al., 2014; Ernst, 1989; Friesen & Besley, 2013). With the increased use of texts and articles on the importance of vocal health and pedagogy in university programs, and as evidenced by the findings, some choral directors are utilizing these practices and philosophies in choral rehearsals. Jordan, McCarther, and Price (2018) wrote about the application of voice science and pedagogy in choral ensembles stating, "few choral singers have or will study voice privately; therefore, you (choral conductor) become the source of their knowledge for healthy and beautiful singing. With that responsibility in mind, it makes sense intellectually and ethically that you know as much as possible how to guide your singers' vocal production" (p. xi). To serve the roles of both choral pedagogue and voice teacher is a weight that choral music educators generally expect. It is an expectation that we, the researchers, hope is embraced by choral music educators, within collegiate education, and in workshops and conference sessions. The longevity of healthy singing depends on choral music educators/conductors' continued learning and applying best practices in vocal health and pedagogy for all singers.

Appendix A

Qualtrics Survey

Age: _____

Sex: _____ Male _____ Female _____ Other

Highest Degree: _____ Bachelor's _____ Master's _____ Doctorate

Total years of voice teaching experience: _____

Total years of choral teaching/conducting experience: _____

Select all types of choirs you have conducted/taught in your career:

      _____ Children's   _____ Middle Level   _____ High School

      _____ Collegiate   _____ Church   _____ Community

Select the type of choir you currently conduct/teach (or most recently worked with, if retired). Please respond to the following questionnaire according to your work with this particular choir.

      _____ Children's   _____ Middle Level   _____ High School

      _____ Collegiate   _____ Church   _____ Community

- -

QUESTIONNAIRE INTRODUCTION AND OUTLINE

The following questionnaire is meant to elicit responses about vocal health (including, but not limited to anatomy, physiology, pedagogy) in terms of your background and practice.

Questions will be posed in four main categories:

1) Your personal experience - voice education
2) Your teaching/conducting practice - general vocal health
3) Your teaching/conducting practice - vocal anatomy and function
4) Your teaching/conducting practice - healthy vocal pedagogy

1) Your personal experience - voice education
I have experienced education in vocal health

    ____ Strongly agree   ____ Somewhat agree   ____ Neither agree nor disagree
    ____ Somewhat disagree   ____ Strongly disagree

I have experienced voice education in vocal anatomy and physiology.

             ____ Strongly agree   ____ Somewhat agree   ____ Neither agree nor disagree
             ____ Somewhat disagree   ____ Strongly disagree

I have experienced voice education in healthy vocal pedagogy.

             ____ Strongly agree   ____ Somewhat agree   ____ Neither agree nor disagree
             ____ Somewhat disagree   ____ Strongly disagree

I enrolled in classes that included vocal health, anatomy, and/or pedagogy as part of my college degree(s).

             ____ Strongly agree   ____ Somewhat agree   ____ Neither agree nor disagree
             ____ Somewhat disagree   ____ Strongly disagree

I enrolled in classes/training in vocal health, anatomy, and/or pedagogy at a professional workshop or convention.

             ____ Strongly agree   ____ Somewhat agree   ____ Neither agree nor disagree
             ____ Somewhat disagree   ____ Strongly disagree

I learned about vocal health, anatomy, and/or pedagogy from a private voice or choral teacher.

             ____ Strongly agree   ____ Somewhat agree   ____ Neither agree nor disagree
             ____ Somewhat disagree   ____ Strongly disagree

2) Your teaching/conducting practice - general vocal health

I talk to my singers in choral rehearsals about basic voice health (i.e., drinking water, not shouting a sporting events).

             ____ Strongly agree   ____ Somewhat agree   ____ Neither agree nor disagree
             ____ Somewhat disagree   ____ Strongly disagree

What percentage of overall rehearsal time do you use to address the topic of voice health?
_____

3) Your teaching/conducting practice - vocal anatomy and function

I talk to my singers in choral rehearsals about vocal anatomy and function.

_____ Strongly agree _____ Somewhat agree _____ Neither agree nor disagree
_____ Somewhat disagree _____ Strongly disagree

I talk to my singers about the structure of the larnyx (i.e., cartlidges, location).

_____ Strongly agree _____ Somewhat agree _____ Neither agree nor disagree
_____ Somewhat disagree _____ Strongly disagree

I talk to my singers about the movement of muscles involved in singing.

_____ Strongly agree _____ Somewhat agree _____ Neither agree nor disagree
_____ Somewhat disagree _____ Strongly disagree

I talk to my singers about life voice changes (adolescent voice change and/or aging voice).

_____ Strongly agree _____ Somewhat agree _____ Neither agree nor disagree
_____ Somewhat disagree _____ Strongly disagree

I talk to my singers about acoustics of singing as related to anatomy and physiology.

_____ Strongly agree _____ Somewhat agree _____ Neither agree nor disagree
_____ Somewhat disagree _____ Strongly disagree

What percentage of overall rehearsal time do you use to address the topics of vocal anatomy and function?
_____

4) Your teaching/conducting practice - healthy vocal pedagogy

I aim to apply healthy voice pedagogy practice in my choral rehearsals.

_____ Strongly agree _____ Somewhat agree _____ Neither agree nor disagree
_____ Somewhat disagree _____ Strongly disagree

I actively seek out/research vocal pedagogy ideas ansd practices.

_____ Strongly agree   _____ Somewhat agree   _____ Neither agree nor disagree
_____ Somewhat disagree   _____ Strongly disagree

I teach vocal pedagogy pertaining to the choral rehearsal.

_____ Strongly agree   _____ Somewhat agree   _____ Neither agree nor disagree
_____ Somewhat disagree   _____ Strongly disagree

Appendix B

Table 1
Regression Analysis Summary for Prior Education Predicting Teaching of Vocal Health

Variable	Unstandardized Coefficients		Standardized Coefficients		
	B	*SE*	β	*t*	*p*
(Constant)	1.046	.192		5.455	.000
Education	.016	.022	.100	.742	.461

Note: N = 56. We examined the impact of the teacher's prior education
on their inclusion of vocal health topics in the choral rehearsal.

Table 2
Regression Analysis Summary for Prior Education Predicting Teaching of Anatomy and Function of the Larynx

Variable	Unstandardized Coefficients		Standardized Coefficients		
	B	*SE*	β	*t*	*p*
(Constant)	6.551	1.253		5.228	.000
Education	.409	.141	.367	2.899	.005

Note: N = 56. We examined the impact of the teacher's prior education on their
inclusion of anatomy and function of the larynx topics in the choral rehearsal.

Table 3

Regression Analysis Summary for Prior Education Predicting Teaching of Vocal Pedagogy

Variable	Unstandardized Coefficients		Standardized Coefficients		
	B	*SE*	β	*t*	*p*
(Constant)	2.734	.467		5.850	.000
Education	.193	.053	.447	3.676	.001

Note: *N* = 56. We examined the impact of the teacher's prior education on their inclusion of vocal pedagogy topics in the choral rehearsal.

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IJRCS

International Journal of Research in Choral Singing

Singing Scientifically: A Content Analysis of *Choral Journal* and Science-Based Discussion of the Voice

Andrew P. Schmidt[1]

Abstract

The purpose of this investigation was to determine the number of voice-related articles published in *Choral Journal* that included scientifically researched, evidence-based knowledge. Understanding the voice directly impacts the overall vocal health of singers. A content analysis of *Choral Journal*, the flagship publication of the American Choral Director's Association, yielded 159 scientifically informed, voice-related articles published between 1959 and January 2022. The analysis demonstrated that authors employed three primary fields of science: physiology and anatomy, acoustics, and phonology. They used these areas to inform four broad categories of vocal pedagogy: resonance, diction, blend, and an uncoded category that included discussions of breath and body alignment. Many such articles appeared early in *Choral Journal* history, followed by fewer scientifically informed, voice-related pedagogical articles decade over decade until a notable rebound in the 2000s. The author concluded that more research in the areas of gender diversity, non-traditional vocal styles, and the explicit linkage between breath and body is needed. The author curated 52 previously published works for further reading as well as a QR link to all 159 articles analyzed. Revisiting this research may ameliorate potentially harmful misconceptions regarding the voice and singing as well as encourage further scientifically informed, evidence-based publications..

Keywords: choral pedagogy; content analysis; vocal health; voice science; Choral Journal

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Singing Scientifically: A Content Analysis of *Choral Journal* and Science-Based Discussion of the Voice

In 2017, *Choral Journal (CJ)* published an article by Sharon Hansen, founder, and then-editor of *On the Voice*, celebrating the first 18 years of the column. In *Singing in ACDA's First Fifty Years: Celebrating the "On the Voice" Chai Anniversary (1999-2017)*, Hansen chronicled *Choral Journal's* history of publishing voice-related articles and discussing voice-related issues at ACDA interest sessions, both regional and national, over the journal's first 50 years. Notably, Hansen calculated the percentage of voice-related articles compared to the number of *CJ* issues published during those 50 years. They identified 236 articles as voice-related or approximately 12% of articles published in *CJ* (2017). Two years later, McCoy, associate editor of *Journal of Singing* pointed out that vocal pedagogy's mixed history included false information where teachers assumed certain physiologic functions and more truthful information that relied upon scientifically researched, evidence-based knowledge (2020). Edwin (2020) another associate editor of *Journal of Singing*, affirmed the singing teacher's dilemma, noting a propensity to perpetuate myths, biases, and inaccuracies. This history necessitated the establishment of voice science as the "flag-bearer" of the singing profession (2020). The purpose of the current research project was to ascertain, through content analysis, the number of voice-related *CJ* articles that included scientifically researched, evidence-based knowledge. Investigating how the published authors have contributed to an understanding of vocal practices revealed how the journal supported the development of vocal health.

Many content analyses explore correlations between multiple related or loosely related variables, e.g., analyzing articles about band pedagogies in non-western countries. Authors of these analyses endeavor to draw extrinsic conclusions based upon collected data. Other analyses correlate readily available data to illuminate intrinsic conclusions, e.g., who are the most cited authors in a particular journal. Related to the latter paradigm and germane to this article were content analyses of like-journals. Aside from Hansen's article, no other detailed content analyses published by or about *CJ* exist in circulation. *CJ* published a review of literature about the development of the female adoscent voice in 2016 (Sweet). In Yarbrough's 1984 review of the *Journal of Research in Music Education*, they noted that reflection on past accomplishments provides perspective and helps to establish future goals. For instance, a 1961 article called upon all future authors to utilize the International Phonetic Alphabet (IPA) when writing vocalizations (Cappadonia, 1961). The [u] vowel, containing physiological and acoustical information, informs a potentially different vocal result than the 'oo' or 'ooh' sounds. Authorial reflections in other journals established journal eminence (Hamann & Lucas, 1998), examined citations to determine influences of past research (Hancock & Price, 2020), categorized articles, and tracked methodologies (Killian et al., 2012; Nichols, 2013; Rohwer, 2018; Yarbrough, 1984), and provided context for the development of historical trends (McCarthy, 2012; Volk,1993). The current review analyzed *CJ* for scientifically informed, voice-related articles. Results highlight a wealth of relevant, useful information, scientific areas of focus, pedagogical areas of focus, articles of historical interest, and emerg-

ing research trends. This article concludes with a categorical index of this *CJ* content; readers may both asess past contributions and identify areas needing further investigation.

Method

Hansen's 2017 article lacks an index of the sources included; therefore I identified 398 voice-related articles for initial analysis from three previous indexes completed in 1985, 1993, and 2020 (Butler, 2020; Dorsey, 1993; Hammett, 1993). Those indexes organized *CJ* articles into broad, topical categories. One of the authors, Dorsey, continues to provide an updated index of articles to *CJ* (Dorsey, 2021). In the cases of categories including vocal pedagogy/vocal health, I sourced all articles. In categories including rehearsal techniques and music education, I first examined articles with titles that easily lent themselves to inclusion, such as "Choral Diction with a Phonological Foundation", or "How and Why Vocal Solo and Choral Warm-Ups Differ". Next, I scanned articles with titles that ambiguously referenced vocal pedagogy such as "Practices of Successful Women's Choir Conductors" for voice-related content. Finally, I examined each index for hard-to-identify articles. In the 1970s, for instance, the column "Da Capo" reported on a variety of topics, yet online databases listed all these articles as "Da Capo"; therefore they would be missed in many keyword searches. For the last few years of publication, access occurred through the ACDA website. Similar to Hansen's results, each of the three indexes analyzed revealed approximately 9-11% of articles as voice-related.

Inclusion and Exclusion of Articles

Articles included in this content analysis focused primarily on three scientific areas. Common traits found in articles that included fact-based, scientific descriptions of the body and vocal anatomy through direct observation, laryngoscopes, stroboscopes, and the like established the first area, physiology and anatomy. The second area, acoustics, formed through the identification of articles that included physics of sound and evidence from spectrography. I excluded articles with a focus on room acoustics or studies that moved singers in various formations. The final area, phonology, looked at articles that included mention of the International Phonetic Alphabet (IPA) or other phonemic systems. I did not include non-phonemic systems in this analysis. While the areas of physiology, anatomy, and acoustics more readily mapped to issues of pedagogy and practice, phonology and the use of IPA established standardization. In voice science, standardization of sounds allows for a more precise application of other sciences. For example, the vowel [a] has pitch and associated adjustments of vocal articulators, whereas the vowel in the word *father* can vary widely from person to person. Articles that discussed psychology were not included in this content analysis. Employing inclusionary and exclusionary measures yielded 159 articles for analysis.

Coding

The 159 articles were coded in two cycles using MAXQDA2020. This helped conceptualize and collapse patterns into concepts and sub-categories (Boletto, 2018). By analyzing the results, an explanatory framework emerged that illustrated relationships between concepts and data. I adopted Descriptive and Pattern Coding methods from Saldaña (2009). Descriptive coding is used to assign a code, usually a noun, as the identifier of a topic of a passage of qualitative data. Utilizing pattern coding, a second cycle method, established meta-codes, grouping first cycle codes into sets. The overall approach, therefore, relied upon both inductive and deductive methods.

To achieve rigor, transparency, and inter-coder reliability (ICR), I recruited an independent coder with a doctoral degree in voice and extensive professional choral experience to examine a random sample of the collected articles. Other researchers have disagreed as to the number of required independent coders and sample size to achieve sufficient ICR (O'Connor & Joffe, 2020). For this analysis, the independent coder first analyzed approximately 10% of the articles. The researcher and coder met to discuss the codes created, and after determining procedures for the next round, the researcher suppled a second sampling of approximately 10% of the articles. The independent coder coded and re-coded all their articles. After meeting a second time, Scott's pi was used to calculate an ICR rating of .81 (Stambaugh & Dyson, 2016).

Results

The content analysis yielded 26 first cycle codes and 10-second cycle, or parent codes, as displayed in Table 1 and Table 2 on the next page. To clarify, articles often included multiple first-cycle codes, therefore the parent codes' numerical values could exceed the total number of articles analyzed. The three most used scientific methodologies were acoustics ($n = 79$), physiology and anatomy ($n = 282$), and phonology ($n = 52$). Consult Figures 1, 2, and 3 on page 168 to see how many articles using these methodologies appeared each decade. In all cases, a sinusoidal ebb and flow of articles were published decade over decade with a shared low in the 1990s followed by a sharp rebound in the 2000s. Other areas of scientific discussion were biochemistry ($n = 2$), cybernetic principles ($n = 1$), endocrinology ($n = 5$), and neurology ($n = 6$). Because articles containing these other areas appeared overwhelmingly during the last two decades, it was difficult to determine if they were niche interests or methods of future focus.

Of the three most used methods, authors employed acoustical science to discuss general acoustics ($n = 32$) and harmonics ($n = 30$). Vocal formants ($n = 17$) could have been grouped with harmonics, however; because vocal formants were explicitly mentioned, I separated the code. Authors used the science of physiology and anatomy to discuss the voice most often in terms of anatomical description ($n = 80$), vocal articulators such as the jaw, tongue, velum,

Table 1

Number of Articles Where Specific Scientific Coding Appears

Scientific Parent Codes	Scientific Codes	Number of Articles (*n* = 159)
Acoustics	General acoustics	32
	Harmonics	30
	Vocal formants	17
Physiology & Anatomy	Anatomical description	80
	Resonators	39
	Vocal articulators	85
	Vocal folds	78
Phonology	Bell vowel chart	1
	Declamation	2
	IPA	49
Biochemistry	General biochemistry	2
Cybernetic principles	Brain	1
Endocrinology	Hormones	5
Neurology	Brain	2
	General nervous system	4

Table 2

Number of Articles Where Specific Vocal Pedagogy Coding Appears

Choral Parent Codes	Choral Codes	Number of Articles (*n* = 159)
Diction	Vowels	70
	Consonants	35
Resonance	General resonance	23
	Intonation	14
	Range	41
	Tone	63
Blend	Balance	4
	General blend	14
	Vibrato/Non-vibrato	24
No Parent Code	Breath	70
	Posture/Alignment	34

Figure 1

Number of Articles Coded as Acoustics by Decade
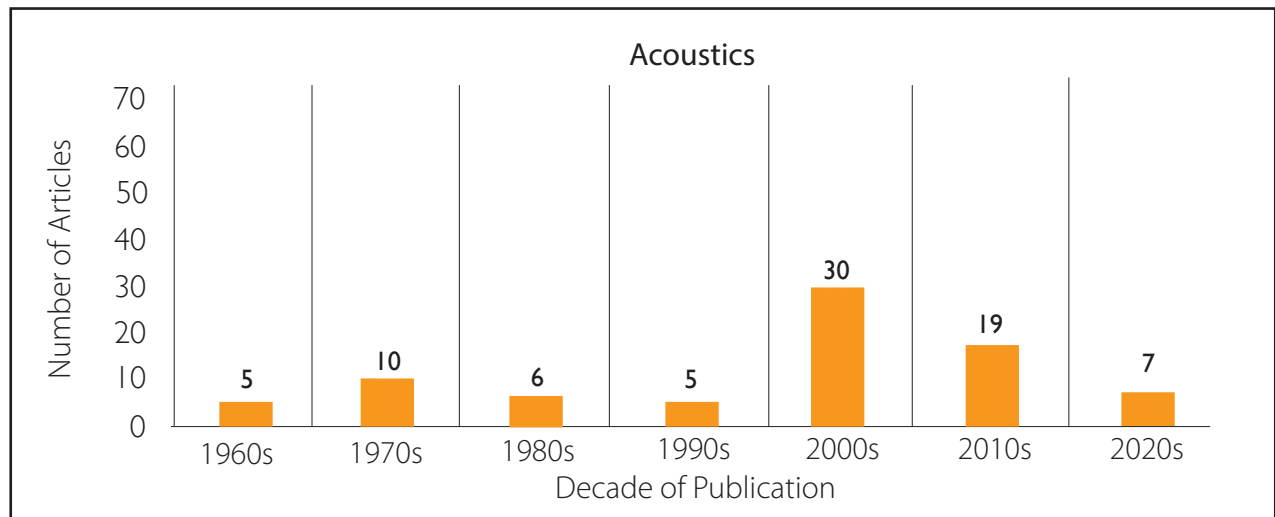
Figure 2

Number of Articles Coded as Phonology by Decade
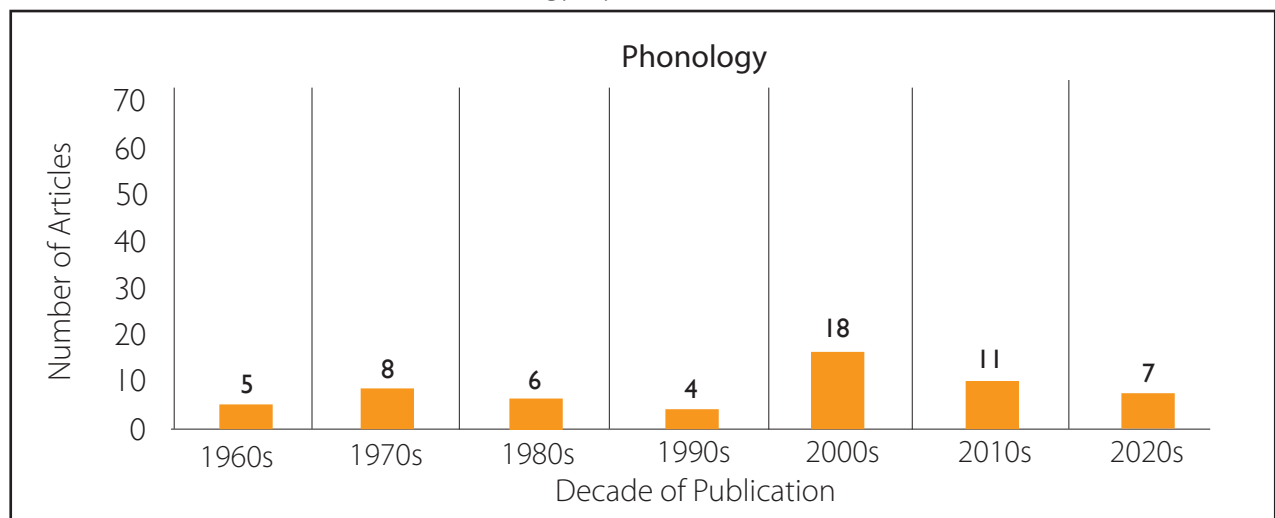
Figure 3

*Number of Articles Coded as Physiology and Anatomy by Decade*
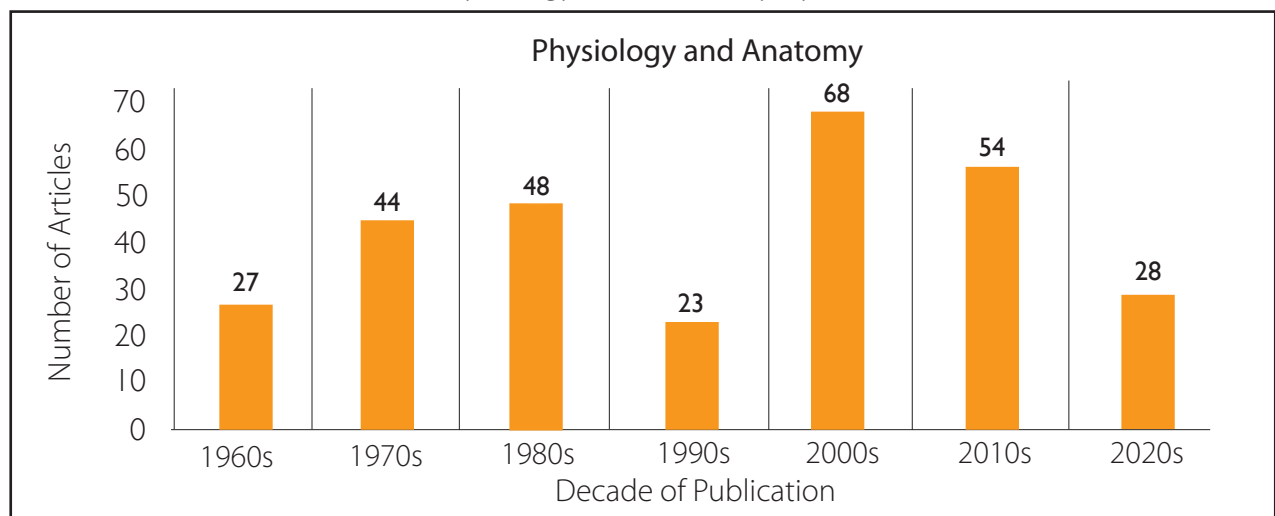
laryngeal position, etc. (*n* = 85), and vocal folds (*n* = 78). Authors used the science of pho-
nology to discuss IPA (*n* = 49).

The three most discussed areas of vocal pedagogy were resonance (*n* = 141), diction (*n* =
105), and blend (*n* = 42). The code vowels (*n* = 70) was difficult to assign to a parent code
because it was often discussed in terms of tone, intonation, range, and resonance. Uniform
vowel production was also established early on as the primary contributor to choral blend
(Wyatt, 1967). Rather than parsing out multiple vowel codes, I assigned it to the parent
code, diction. This illustrated vowels as having a general, rather than a specific function.
Authors discussed resonance most often in terms of tone (*n* = 63). They discussed blend
most often in terms of vibrato/non-vibrato (*n* = 24), though as stated earlier, the code vowel
could have featured prominently in this category.

I did not assign the first cycle, vocal pedagogy codes breath (*n* = 70) and posture/align-
ment (*n* = 34) parent codes. Authors discussed these areas separately, together, and with
blend and resonance. Unsatisfied, a brief search for a possible parent category ensued. In
terms of the power-source-filter model of vocal pedagogy, which was adapted from the
source-filter model of speech pathology, breath and alignment would fit under the category
of power (Estill Voice, 2021). No authors discussed the power-source-filter model in *CJ* so I
did not think it appropriate to use power as a parent code. Articles with methodologies like
Alexander Technique, Feldenkrais Method, and Tai Chi, which address these two pedagog-
ical areas, appeared once each in voice-related articles. Articles mentioning Yoga appeared
twice. Figure 4 depicts the appearance of pedagogical codes by decade. Note that articles
included more than one pedagogical code. The figure reflects the relative density of each
pedagogical focus over time.

Figure 4

Number of Times Choral Parent Codes Appeared by Decade
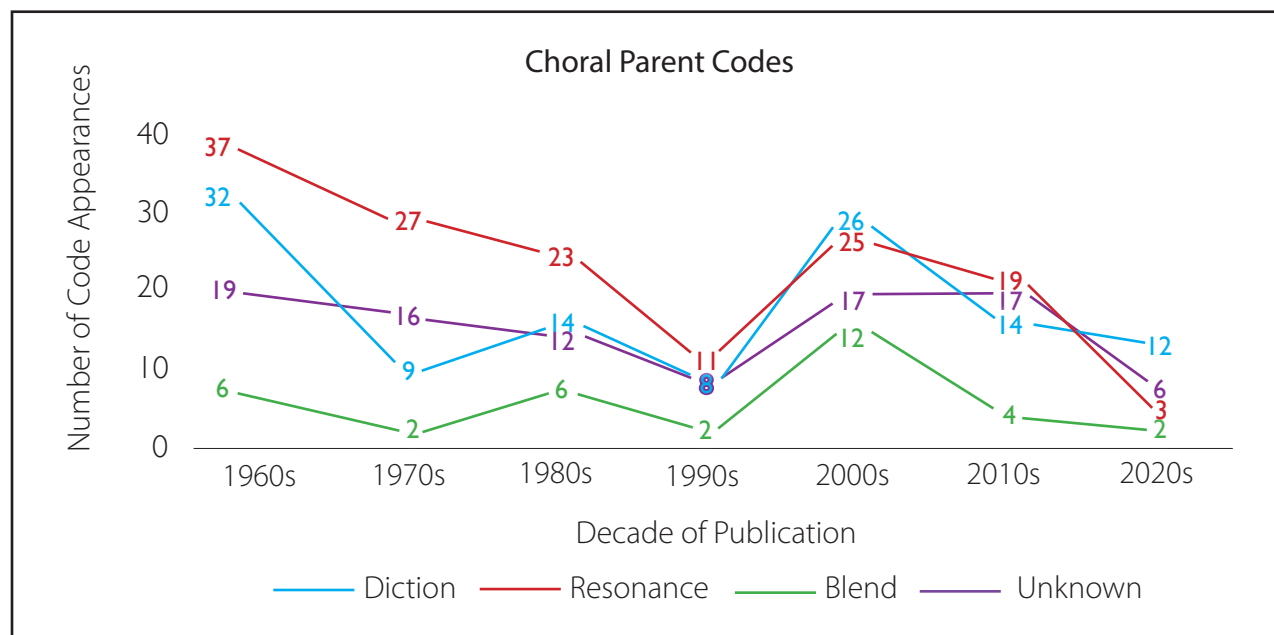
As a reminder, Hansen's analysis calculated the percentage of voice-related articles as related to the number of *CJ* issues and as a percentage of total articles. Hansen reported some difficulty determining what constituted an article as a feature article (2017). The 2020 index for this analysis listed approximately 2400 articles, Dorsey's online catalog had organized approximately 3500 printed items, excluding advertisements and photographs (Butler, 2020; Dorsey, 1993). Based upon this analysis, the number of articles relying upon scienctific methods to discuss vocal pedagogy was approximately 4.5 – 6.6% of all articles, or 159 articles from 580 *CJ* issues.

Discussion

The analysis of the 159 articles illuminated various simple, as well as some nuanced observations. *CJ*'s publication of scientifically-based, voice-related articles occurred in waves of increased and flagging numbers, with a most notable decline in the 1990s and a surge in the 2000s. This pattern perhaps reflected either the editorial board's interests or reflected the general interests of the readership. The related content published in the 2000s may have indicated a decade with very increased scientific output. The volume of related output during the 2020s would determine whether this sinusoidal, or pendulous pattern persists or not.

Data showed that from the 1960s thru the 1990s, *CJ* continuously released fewer vocal-pedagogy-related publications overall. This may have reflected an expansion of content areas found within *CJ* or a change in focus from one matter of interest to others. As subscriptions grew, perhaps the scope of desired interests broadened. It also perhaps indicated a turn towards vocal pedagogy textbooks as the primary vehicle for scholarship. Regardless, published authors in the 1960s demonstrated significant interest in how to sing and how singing worked. Only two years into the 2020s, *CJ* published nearly as many scientifically-based, voice-related articles as were published during the 1990s.

I excluded 46 vocal-pedagogy-related articles from analysis because their authors did not employ scientific or evidence-based information. While the purpose of this article was not to compare one article or author to any other in terms of quality, it is important to point out that authors tackled voice-related issues by other means. Because the language used in many scientifically-informed articles aimed at "setting the record straight," it seems an ambiguously defined campaign against misinformation played out over the decades. A category in Appendix A titled Combating Falsehoods contains some of these articles. It is unclear whether authors directed their "record correction" at other authors or the field at large.

Next, this content analysis found that the discussion of physiology and anatomy overwhelmingly surpassed any other area of scientific interest. How the body sings and how an ever-changing body affects our singing fueled most authors' contributions. The narrative within the pages of *CJ* began with attention to adult voices, and expanded to include children's voices, but mostly those identified as male, with specific interest in those identified as female in the 1980s. This in-depth scholarship sparked reactionary interest in aging voices,

and most recently, the voices of individuals who identify as transgender. While authors expanded the types of voices included in *CJ*, they barely looked beyond Euro-centric notions of singing. Nearly all authors' scientifically-related research reinforced one culture of singing, with vocal jazz as the exception. While *CJ* is an publication based in the United States, singing in a gospel, popular, spiritual, musical theater, barbershop, or folk style received little to no pedagogical coverage in a scientific or evidence-based manner.

Additionally, despite coding breath in 70 out of 159 articles, and posture/alignment in 34, no clear pedagogical parent code linked these areas as diction-linked vowels and consonants, or as resonance accounted for intonation, range, tone, and general resonance. As mentioned previously, the vowels code could have easily appeared under the parent codes resonance or blend, inferring relatively intense pedagogical prioritization upon vowels. Within the pages of *CJ*, there exists a scientific, evidence-based pedagogy of diction, blend, and resonance. Authors tended, however, to silo the study of breath and posture/alignment with the exception of a handful of articles related to Alexander Technique, Feldenkrais Method, Tai-Chi, or Yoga. As many authors mentioned diaphragmatic misunderstandings, this gap in coding may reflect scholars, practitioners and teachers wrestling with pedagogy of breath and posture/alignment in the field at large.

Finally, the *Choral Journal printed* relatively fewer articles on how understanding the physics or acoustics of sound can affect how we make sound. Hansen mentioned that in 2017, after surveying sixty-one universities with music education degrees, less than 40% of the programs surveyed required courses in diction or vocal pedagogy (2017). Hansen made no mention of acoustics-related coursework. That between 4%-6% of articles in *CJ* fit this study conjures the paradoxical question, "Does art imitate life, or does life imitate art?" This collection of statistics revealed how the overall breadth of topics covered in *CJ* (over 3000 articles exist that are not voice-related) reflect the wide-ranging interests of the choral field. They also, perhaps, infer a prioritization of certain topics over others. Unpacking this prioritization requires further research.

Conclusion

Each year, *Choral Journal* releases new scholarship and fresh ideas about the voice, how singing and sound work, and how to teach singing. A content analysis of all voice-related articles, since the journal's inception, yielded 159 scientifically informed, evidence-based articles, approximately 4%–6% of all articles written. In the 2000s, *CJ* released the highest volume of these kinds of articles, perhaps in response to an overall continuous decline in related output through the 1990s. While authors in the first two years of this decade nearly matched the level of publication seen in the 90s, the future will show whether the fervor of the earlier part of this century persisted. Certainly, more scholarship is needed. More articles that explicitly link and explain the breath-body alignment connection would fill a current gap in the literature. With only one *CJ* article about transgender singers, authors

need to explore gender diversity and its many facets. Furthermore, aside from a handful of articles, little instruction exists within *CJ* on how to sing in any other style than a Westernly-conceived, *bel canto*-informed manner. For choristers attempting any other genre, except for Jazz, *CJ* provided no articles with explanation or aids.

Finally, while the three indexes created by Butler (2020), Dorsey (1993; 2021), and Hammett (1985) provided broad categorical analysis, I located only one other content analysis of a specific subset of *CJ* articles (Hansen, 2017). Both Hansen's 2017 article and this analysis focused primarily on voice-related articles. Only a handful of articles contained summaries of previous research related to changing voices. More retrospective and histographic work are needed. Through analyzing the output of scholarly journals, a picture of that journal emerges. That picture may clearly point to gaps in needed research, over and under prioritization of topics, and an esteemed or wanting history of rigorous scholarship. These types of reviews illuminate historical narratives, document achievements, and contextualize changing editorial values. In the case of *CJ*, this analysis focused on 4–6% of the content published. Much of the picture remains unexamined. This portion, however, showed that with regards to scientifically, evidence-based articles about the voice, the range of topics and approaches shared by *Choral Journal* continues to move towards the expansion and inclusion of people and traditions. Any journal's editorial board or editors can only consider for publication the manuscripts submitted for review, a point that seems obvious but that bears emphasis. Readers wishing for more article content related to vocal health need to advocate for—and perhaps write themselves—manuscripts related to vocal health.

By taking a moment to look back, not only does an appreciation of others' work emerge but also a need to keep looking ahead. Readers are encouraged to revisit the articles listed in Appendix A and access all 159 analyzed articles via the QR code provided. By building upon the knowledge therein and allowing science as the "flag-bearer" moving forward, future authors may stave off misleading practices or vocal misinformation. Authors need do more than simply emphasize the maintenance of good vocal habits. Authors can establish the scientific foundations upon which choristers may engage with a multiplicity of singing cultures and traditions in a healthy, informed manner.

Appendix A
A Sample of Articles with Brief Commentary

The remainder of this article includes 52 titles categorized by general area of focus and with limited commentary. These articles were not selected as "the best of the best" as any reader could determine for themselves the qualities and merits of an author's scholarship. For that purpose, a QR link to all 159 articles appears at the end of this article. The selected titles below represent areas of historical context, old, continuing, and new areas of focus, and

a rich presentation of scientific knowledge or the use of science in explaining the practicalities of singing.

 QR link to all 159 articles

Vocal Health

Choral Journal's publication of articles related to vocal health began in 1979 (Thurman). Authors wrote about topics ranging from interviews with medical professionals concerning various surgical procedures to daily health tips on maintaining the instrument. While most authors focused specifically on areas in and around the larynx, others focused on general health and well-being practices.

1979 – *Voices*, by L. Thurman.
      Volume 20, Issue 2, pages 10-11.

1983 – *Vocal Nodules and the Choral Conductor*, by P. E. Ingram and A. L. Keaton
      Volume 24, Issue 3, pages 5-6.

1988 – *Voice Health and Choral Singing: When Voice Classifications Limit Singing Ability*, by L. Thurman, Volume 23, Issue 7, pages 15-21.

2008 – *Getting the Most From the Vocal Instrument in a Choral Setting*, by I. Titze
      Volume 49, Issue 5, pages 34-41.

Combating Falsehoods

Many *CJ* authors noted that certain voice-related myths perpetuate the choral field. Central to the research behind this article has been a desire to detangle ideas and set minds upon a more fact-based course. Fortunately, many authors have taken up this mantle. By interviewing teachers of singing, medical professionals, and voice scientists, authors have endeavored to set the record straight or at least release some steam after navigating years of disinformation and misinstruction.

2008 – *Voice Training in the Choral Rehearsal* by A. H. Jones
      Volume 49, Issue 5, pages 8-15.

2013 – *"You Want Me to do What?": Twenty-First-Century Voice Pedagogy Encounters Pedagogical Fundamentalism* by J. Nix, Volume 53, Issue 10, pages 43-51.

2014 – *Choral Directors are From Mars and Voice Teachers are From Venus: "Sing From the Diaphragm" and Other Vocal Mistructions: Part I* by S. A. Hansen *et al* Volume 54, Issue 10, pages 47-53.

2014 – *Choral Directors are From Mars and Voice Teachers are From Venus: "Sing From the Diaphragm" and Other Vocal Mistructions: Part II* by S. A. Hansen *et al* Volume 55, Issue 11, pages 47-53.

Explaining Singing

Writing about how singing works provided an alternative approach to educating readers about the voice and battling misinformation. Authors of these articles presented scientifically-informed, evidence-based information whereby readers could understand and perhaps utilize new knowledge to inform vocal pedagogy. While there were some suggestions for practice included, authors generally stuck to disseminating information rather than prescribing teaching tools. Readers will note the wide variety of methods with which authors discussed various topical issues. Some articles relied solely upon physiology and anatomy, while others employed acoustic knowledge, biochemical references, and even spectrographic support.

1975 – *What Happens in Singing: Number 1- Breathing* by J. L. Jones Volume 15, Issue 7, pages 5-7.

1975 – *What Happens in Singing: Number 2 – Phonation* by J. L. Jones Volume 15, Issue 9, pages 5-6.

1975 – *What Happens in Singing: Number 3 – Resonance* by J. L. Jones Volume 15, Issue 2, pages 13-17.

1978 – *Da Capo: The Relationship of Phonation and Resonation* by R. Woodward & B. Coffin Volume 19, Issue 3, pages 21-23.

1979 – *Da Capo: The Relationship of Phonation and Resonation* by R. Woodward & B. Coffin Volume 19, Issue 7, pages 34-37.

1983 – *Putting Horses Before Carts: Voices and Choral Music* by L. Thurman Volume 23, Issue 6, pages 5-9.

1984 – *Heads Up!* by B. M. Doscher Volume 24, Issue 10, pages 5-8.

1987 – *Breathing: The Motor of the Singing Voice* by B. M. Doscher
    Volume 27, Issue 8, pages 17-22.

2014 – *Viva La Vagus!* by M. van Mersbergen
    Volume 55, Issue 3, pages 67-73.

2015 – *Pedagogy for the Jazz Singer* by D. Spradling & J. Binek
    Volume 55, Issue 11, pages 6-17.

2019 – *On the Voice: Seven Essential Voice Science Tools for Choral Singing* by D. Harris
    Volume 59, Issue 8, pages 47-58.

Suggestions for Singing

As to be expected, many of the voice-related articles published in *CJ* contained suggestions, routines, and exercises for singing. Though this project identified 46 other articles as 'excluded' due to a lack of fact-based evidence and research to substantiate their claims, there were many that endeavored to wed both science and pedagogy. While the first issue of *CJ* focused mainly on the formation of the journal (Constitution, 1959), the second issue contained the first relevant, voice-related article. The brief article by V. A. Christy included an advertisement for a forthcoming book on singing (Christy, 1960). It contained five rules for legato singing. The articles below offer more depth.

1976 – *Can Your Choristers Sing? Posture* by W. Decker
    Volume 17, Issue 4, pages 15-16.

1977 – *Can Your Choristers Sing? Breathing* by W. Decker
    Volume 17, Issue 5, pages 16-18.

1977 – *Can Your Choristers Sing? Relaxation* by W. Decker
    Volume 17, Issue 6, pages 25-28.

1983 – *Putting Horses Before Carts: A Brief on Vocal Athletics* by L. Thurman
    Volume 23, Issue 7, pages 15-21.

2007 – *On the Voice: Building Strong Voices: Twelve Different Ways!* by S. F. Austin
    Volume 48, Issue 6, pages 55-66.

2008 – *On the Voice: Building Strong Voices: Twelve Different Ways!* (Part II) by S. F. Austin Volume 48, Issue 8, pages 59-73.

2020 – *The Horse Before the Cart: Redefining the Choral Warm-Up* by B. J. Winnie
     Volume 60, Issue 9, pages 28-39.

Changing Bodies, Changing Voices

   Even though early studies looked at all genders, puberty-related information about those singers' assigned male at birth was of primary interest. The published research varied widely in methodology until Cooksey shared their seminal work in 1977. In 1985, Gackle began leading *CJ's* inclusion of studies focused on pubescent changes to those singers' assigned female at birth. The 2010s saw an increase in publications about vocal changes over a lifespan. Inclusion of topics like transgender voices appeared most recently.

1977 – *The Development of a Contemporary, Eclectic Theory for the Training and Cultivation of the Junior High School Male Changing Voice: Part II, Scientific and Empirical Findings; Some Tentative Solutions* by J. M. Cooksey, Volume 18, Issue 3, pages 5-16.

1977 – *The Development of a Contemporary, Eclectic Theory for the Training and Cultivation of the Junior High School Male Changing Voice: Part III, Developing and Integrated Approach to the Care and Training of the Junior High School Male Changing Voice* by J. M. Cooksey, Volume 18, Issue 4, pages 5-15.

1985 – *The Young Adolescent Female Voice (Ages 11-15): Classification, Placement, and Development of Tone* by L. Huff-Gackle, Volume 25, Issue 8, pages 15-18.

1991 – *The Adolescent Female Voice: Characteristics of Change and Stages of Development* by L. Gackle, Volume 31, Issue 8, pages 17-25.

2006 – *Finding Ophelia's Voice: The Female Voice During Adolescence* by L. Gackle
     Volume 47, Issue 5, pages 28-37.

2010 – *On the Voice: The Evolving Voice: Profound at Every Age* by K. Brunssen
     Volume 51, Issue 1, pages 45-51.

2012 – *Boy's Changing Voices: What do We Know Now?* by L. Thurman.
     Volume 52, Issue 9, pages 8-21.

2017 – *One Voice, One Life: Many Changes Throughout a Lifetime of Song* by K. Brunssen
     Volume 57, Issue 7, pages 43-49.

2020 – *Research Report: A Brief Discussion on the Potential Vocal Hurdles for Singers Who are Trans and Suggested Vocalists for Navigating a New Voice* by G. Gurss Volume 60, Issue 9, pages 73-81.

Vibrato vs. Non-Vibrato

Debating the merits of vibrato within a choral setting first showed up in *Choral Journal* in 1961. Yet according to an article published in 1962, this controversy had been in full swing for at least 40 years (Regier et al., 1962). The 2000s saw amplification of this debate and the advent of explaining 'healthy straight-tone,' a controversial term itself. The articles below dealt specifically with this issue. Other mentions of vibrato can be found in articles about vocal health, intonation, blend, and elsewhere.

2006 – *Good Vibrations: Vibrato, Science, and the Choral Singer* by G. Walker Volume 47, Issue 6, pages 36-46

2021 – *Healthy Minimization of Vibrato: An Exploration of "Straight Tone"* by D. Katok Volume 62, Issue 4, pages 8-19

Blend and Tuning

Scholars poured over methods to garner a blended choral sound well before *CJ's* inception. One could argue that the genesis of most voice-related issues eventually circles back to the conductor's desire for a perfect blending of voices. Similarly examined was the need for choirs to sing in tune. The authors below sample myriad solutions and approaches offered. Readers of these articles should start with Wyatt's offerings (1967). Plenty of misinformation persisted in the field despite early scholarship that included such rich material as a starting point.

1967 – *Blend in the Choral Sound: Factors Related to its Achievement: Vowels* by L. Wyatt Volume 8, Issue 1, pages 15-18.

1967 – *Factors Related to Choral Blend: Tone Quality, Vibrato, Intonation* by L. Wyatt Volume 8, Issue 2, pages 7-9.

1967 – *The Individual in the Choral Situation* by L. H. Diercks and E. M. Boone Volume 7, Issue 4, pages 25-29.

1983 – *The Fixed Formant Theory and It's Implications for Choral Blend and Choral Diction* by S. C. Bolster, Volume 23, Issue 6, pages 27-33.

1986 – *Choral Diction with a Phonological Foundation* by R. E. Fisher
      Volume 27, Issue 5, pages 13-18.

1991 – *Exploring the Whys of Intonation Problems* by B. M. Doscher
      Volume 32, Issue 4, pages 25-30.

2005 – *Choral Intonation* by K. D. Skelton
      Volume 46, Issue 3, pages 28-43.

2017 – *Student Times: Intonation* by B. Dalby
      Volume 57, Issue 7, pages 85-90.

International Phonetic Alphabet (IPA)

Cappadonia (1961) wrote the first *CJ* article explaining IPA. They called upon future authors to utilize IPA whenever discussing lyrics or other sung sounds. By the 2010s, consistency of usage was broadly achieved. A brief scan of the 159 articles uncovered that a general IPA primer emerged roughly once per decade. Each decade, however, added new language applications.

1961 – *The Importance of the Clarity of Production of Consonants* by A. C. Cappadonia
      Volume 2, Issue 2, pages 11-12.

1961 – *The Importance of the Clarity and Production of Consonants* (continued)
      Volume 2, Issue 3, pages 15-16.

1962 – *The Formation of Vowel Sounds in Singing* by A. C. Cappadonia
      Volume 2, Issue 5, pages 21-27.

1972 – *Toward a Better Concept of Choral Diction Through the International Phonetic Alphabet* by R. R. Moore, Volume 13, Issue 1, pages 22-23.

1981 – *Building a Sound Basis for Effective Multi-Lingual Choral Diction* by J. Mags
      Volume 22, Issue 4, pages 5-8.

2016 – *The Latin Problem: How much does a singer really need to know?* by L. De'ath Volume 57, Issue 5, pages 20-39.

2021 – *Singing in Hebrew* by J. R. Jacobson
      Volume 62, issue 3, pages 24-35.

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Vocal Health During the Voice Change: Recollections and Recommendations of Collegiate Male Choral Singers

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Abstract

The purpose of this study was to gather the textual and visual narratives of undergraduate males about their singing experiences during the adolescent voice change. Analysis explored these students' reasons for participation (or not) in secondary choral music, their self-perceptions as singers, and of their vocal maturation process. Much current research focuses on the attrition of young males from school choral music education during the middle and high school years. One purpose of this study was to extend the population to collegiate-aged male singers, with a focus on factors related to vocal health.

The forty-nine participants ranged in age from 17 to 35 and represented two university choral programs, one in the United States and one in Ecuador. Participants contributed through written questionnaires, individual interviews, and focus group discussions. Analysis highlighted six thematic categories concerning the role of peers, masculinity, standards of musical excellence, singing versus choral music, perceptions of the voice change, and the longitudinal singing experience of individual singers throughout the span of adolescence into young adulthood. This report focuses on issues related to participants' perceptions of the voice change, vocal health, and pedagogy. Forty-two of the participants (86%), unprompted, recommended that choral teachers of adolescent males offer instruction specific to vocal health and singing during the voice change.

Keywords: vocal health, adolescence, males, narrative, changing voice, choral pedagogy

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Vocal Health During the Voice Change: Recollections and Recommendations of Collegiate Male Choral Singers

This study drew together the narratives of undergraduate males about their singing experiences during the adolescent voice change. Analysis explored these students' reasons for participation (or not) in secondary choral music, and their self-perceptions both as singers and of the vocal maturation process. Much current research focuses on the attrition of males from school choral music education during the middle and high school years (from approximately ages 10 to 17). One purpose of this study was to extend the population to collegiate-aged male singers, with a focus on factors related to vocal health.

Where there was only minimal related research a decade or two ago, the complementary research base now includes narratives from adolescent males drawn from multiple countries across five continents. There has been no comparable study of post-adolescent males about either their adolescent experiences of voice change or their current singing activity. Kennedy's 2002 study with male singers in junior high school was the first formal narrative study relating the perceptions of adolescent male singers about the voice change. Kennedy's study took place in the United States, and many related studies have followed (e.g., Ashley, 2013; Elorriaga, 2011; Hall, 2015). The current study drew participants from the United States and Ecuador. There has not been a study collecting narratives of male singers in Ecuador, where music education is notably lacking the involvement of adolescent male singers in vocal/choral music programs. The narratives generated by this project were analyzed to discern similarities and differences between the self-stories of the post-adolescent participants from the United States and Ecuador, the perceptions of adolescent males in the existing research base, and the "possible selves" framework of identity development developed by Markus and Nurius (1986). The possible selves construct draws on century-old antecedents for its conceptions of hoped-for selves, feared selves, and expected selves (Oyserman & James, 2011). Research about possible selves suggests that adolescent males need to feel that a hoped-for self is both proximal and attainable for there to be any motivational effect (Freer, 2010, 2015; Munro, 2011; Packard & Conway, 2006). Previous research in choral music suggests that a positive perception of vocal skill is necessary for young males to envision a possible self that involves singing and/or choral ensemble participation (Freer, 2010, 2015, 2016).

This study utilized a form of participatory visual research methodology (Chalfen, 2011; Mitchell et al., 2011) in which participants were asked to develop drawings in response to specific prompts directed by the research questions. In this case, participants were prompted to draw images depicting various points in their vocal/choral development. They were then asked to provide written commentary and contextualization about their drawings. The resulting textual and visual data were analyzed for themes, categories, consistencies, and contradictions. This approach was followed in an earlier study of young adult male singers and nonsingers in Singapore (Freer & Tan, 2014). The methodology of the Singaporean

study allowed for the positing of hypotheses, of which two were influential in the development of the current study. First, the study found that high-quality vocal instruction was critical to Singaporean males' personal decisions to remain enrolled. Second, the absence of instruction about how to sing during the voice change led to the decision of some participants to withdraw from choral singing. These two findings relate directly to the elements of proximity and attainability that are keystones of the possible selves framework (Oyserman et.al, 2006). For adolescent male singers, then, the process of voice change needs to be understood by the singer (proximity) and addressed through a continual process of skill development (attainability).

In the present study, participants were not directly asked about their gender, birth-assigned sex, or sexuality. One participant offered a self-identification that they considered themselves to be non-binary. Several participants mentioned that they identified as gay. Topics related to sexuality did not emerge as prominent themes in the analysis. The pronouns they/them/their are used in this article. Except where noted, the word "male" references and assumes birth-assigned sex. Direct quotations were not altered. The study was conceptualized to address two research questions related to proximity and attainability:

1) How do university-age male choral singers recall understanding their adolescent voice change?

2) What recommendations do they have for vocal/choral pedagogy during the period of the adolescent voice change?

Participants and Data

Participants in this study represented two urban university choral programs in different countries. The study participants (N = 49) were enrolled in non-auditioned choirs open to anyone interested in singing. This population represented the total enrollment of undergraduates (n = 37) in the tenor-bass chorus of a university in the southeastern United States and a volunteer group of singers (n = 12) in the choral program of a large university in central Ecuador. I selected the two universities because I had opportunity to teach at both; the institutions were of comparable size and academic scope, and the corresponding choral departments had similar breadth and enrollments. Participants ranged in age from 17 to 35.

Participants each contributed two written questionnaires. Based on the depth and specificity of their responses, I selected six participants from both locations to contribute two 30-minute individual interviews and join a 60-minute focus group. The first questionnaire opened with 24 short-answer, open-ended questions oriented toward self-perceptions of singing and choral music from past, present, and future perspectives. The final item was a request for each participant to draw a picture of themselves as a younger singer and then to explain the drawing through words. The second questionnaire consisted entirely of three

prompts for visual/textual pairings depicting "the singer you are today," "the singer you'd like to be in the future," and "the singer you'd like to avoid becoming." Interview questions followed the active interview format (Holstein & Gubrium, 1995) and centered on the experience of these participants with singing, both in-school choirs and in other contexts.

I collected all data on-site and in-person. I hired a Spanish-English translator who assisted on occasion during data collection in Ecuador. The translator checked the interview transcriptions and questionnaire data for accuracy prior to data analysis. Three Ecuadorian participants were subsequently contacted via WhatsApp to clarify and/or confirm their translated comments. The research integrity bureaus of both universities approved the research protocols and subsequent data handling procedures. Pseudonyms are used throughout this report.

Previous research methods in music education have augmented written or interview data with visual data such as participant-generated drawings (e.g., Freer & Bennett, 2012; Freer & Tan, 2014). The current study was built on the analytical techniques detailed in this existing literature. Analysis of visual data followed a social semiotic method (Jewitt & Oyama, 2001; Kress & van Leeuwen, 2006) while narrative data were analyzed according to the possible selves construct (Markus & Nurius, 1986). The overall analysis utilized principles of a grounded theory approach (Charmaz, 2006; Glaser, 2002), revealing six thematic categories concerning the role of peers, masculinity, standards of musical excellence, singing versus choral music, perceptions of the voice change, and the longitudinal singing experience of individual male vocalists throughout the span of adolescence into young adulthood. Three factors emerged as determinants in these participants' attitudes: (a) the teacher (personality and interest in male singers, appropriate pedagogical techniques, and educational philosophy), (b) the level of musicianship (overall attention to craft, standards, and detail that results in aesthetic satisfaction and pride), and (c) the social component (determined by the strength of peer support for singing and the positive influence of male singing role models).

The next two sections of this report relate the narrative information contributed by two representative study participants, followed by examples from the broader study's data and findings specific to vocal health and pedagogy. The reported data were compiled from the completed questionnaires, individual interviews, and focus group interviews.

Two Singer Portraits

Red

Red was a 20-year-old psychology student in the tenor-bass choir at the participating university in the United States. Red referred to himself as a "boy" and a "man" in the narrative data, hence the use of "he," "his," etc., in this portrait. Red considered himself a singer, but it was not normally something he chose to do. His primary motivation for joining tenor-bass chorus was to make friends. One reason for Red's reluctance to sing more was,

as he stated:

> My voice is still changing. People sometimes think I'm a woman when I talk. It's very embarrassing. In choir, I look forward most to getting a chance to practice and maybe improve my singing skills. Also, a chance of improving my socialization. I'm awfully shy around others.

Red related that skill played a role in the process of socialization: "I'm slowly becoming part of the chorus more and more, in terms of skill and confidence." Red's drawings indicated that he was bothered by what he perceives as a limited vocal range and inability to sing using falsetto. He commented that,

> My drawings just show in general how I feel about singing (good) and my voice (bad) and my perceived issues (shyness). I can continue to improve through self-study and peer support . . . I don't want to hide in the shadows of the choir anymore. I'll stop singing if the evaluation of my voice is very critical or if I feel my abilities are not good enough to be a contributing member of the tenor-bass chorus.

During his interviews, Red offered several consecutive thoughts that led toward realization that his lack of singing confidence began at the time of his adolescent voice change.

> I haven't done any public performance since elementary school. That's quite a long gap from elementary school to college and so I didn't do any, I guess, in-school music education or training or any clubs or any kind of things that would let me really connect to music. I signed up for tenor-bass chorus last fall 'cause my friend kind of goaded me into it. I wanted to join chorus because I wanted to get back into singing music and also because I wanted to improve on self-esteem, confidence and try my hand at socializing a little bit better too.

> So, I guess I've become a little bit better about the singing. I still admit I get fairly shy. Maybe that's why I'm not singing full or high range because I still kinda shy away and maybe I don't wanna be heard by everybody or heard by the others. I'm already on the threshold of adulthood, and so it just feels so late in the game to get good at singing, even though I desperately want to. I've already missed all this time, all these years, from elementary to now . . . how can I possibly … how can I play catch-up time this late in time?

> And that's the difficult thing about voice, I'd say. Yes, it is a type of instrument but it's not the type of instrument that's physical; that you can hold in your

hand; you can constantly practice with your fingers and hands. It's an internal thing. You have to have really good body control. You have to really be able to know and be oneself with your body to be able to do singing. It's not an outside mechanism. I think I lacked in the area of singing technique going through puberty and the voice change, since I didn't have anyone to help me make that transition. My teacher didn't know what to do with the boys, so she just ignored us. So that's probably why it's giving me difficulty now. On the other hand, chorus is like a team effort in a huge group voice class. We work as a group, but then we break down into individuals. I like that.

Andreas

Andreas was a 26-year-old law student at his university in Ecuador who referred to himself as a "man" in the narrative data, hence the use of "he," "his," etc. in this portrait. He was a bass in the university choir and he, like the other members, was fiercely proud of the ensemble's musical accomplishments. He said, "People here in general don't give too much value to arts. It's not a good thing because you might become more 'sensitive' if you practice the arts. People who say those things just can't understand how good we are!"

Andreas was most animated during the focus group interview with several buddies. One participant provoked a loud and boisterous discussion by suggesting that all singers in the choir's bass section needed to sound alike. Andreas disagreed, and spoke about the conductor's relationship to the singing of choral members:

> It is important that the conductor allows you to sing … to make music. Through this, you can find your sense of yourself, you can express the spirituality of the music and what you have inside … not just to sing beautifully or on a specific note in a technical and perfect way. The most important thing is to find our individual and essential sound. As humans, we grow with music since birth. This is how you connect with and transmit music with others. It is all about what can do with your voice. Choral music is all about the singer, and the singer is all about singing.

The Ecuadorian participants noted that choral singing was not widespread in Ecuador's public schools. Most of the participants began their formal music training with the university choir. Andreas recalled singing in civic and church ceremonies as a boy. He said,

> In my family, I always sang. There was one period of my teenager life when I started to notice the crack of my voice, but my family never told me that I was wrong or was a bad singer. So, I always felt free to sing. That's why I never stopped singing at home. It was different in school. I had a choir in school since I was nine years old. I stopped singing when my voice started to change. It was my

decision because I did not feel comfortable singing the high notes that the teacher wanted me to sing. I could only sing middle notes. The songs did not fit my voice anymore and she did not teach me anything about how to sing correctly. I started again when my voice was lower. I felt that I was starting from zero, from nothing, because when I sang as a kid I sang one way, and then I needed to learn all over again.

If I was a music teacher for kids, one of the most important things would be to choose the best repertoire for the boys. Then I would need to be an expert about how to guide the boys and teach them the importance of the changing voice, the muscles, the physical. So, I would need to learn it first, not just speak about my own experience. And, also, the director must be an expert on how to teach kids, specifically, because it's not the same as teaching adults.

Proximity and Attainability of Singing Success

Proximity

Proximity was defined in this study as understanding the process of voice change so that singers know what is occurring, why it is happening, and what they will experience next. In this sense, proximity is related to self-efficacy, or the belief that one has the knowledge and skills to succeed. Several researchers have examined impact of specificity or generality of the hoped-for success in terms of providing the requisite motivation for action (de Place & Brunot, 2020; Oyserman et al., 2004). In this study, proximity referred to both the specificity of "how do I manage my changing voice with the music I need to sing today?" and the generality of "how will my changed voice become part of me and my adult musical identity?"

No Ecuadorian participant could describe the process of voice change or how to optimize the vocal capabilities afforded by the change. Some boys, like Raphael (age 17, Ecuador), attributed the adolescent voice change to cigarette smoking, a common habit begun in adolescence. The participants were asked if they thought more young males would be interested in singing if they knew the anatomy and physiology of the changing voice. All Ecuadorian interview participants (*n* = 6) responded affirmatively, including Gorki (age 17, Ecuador), who stated, "Yes, of course. My voice changed early, at 10 years, and I stopped singing. Nobody could tell me what was happening, really. I had to ask my father." As a result, Gorki was able to confidently state that the voice change occurred "Because we growed up [points to throat]. We got more muscles for singing. Our cords got thicker."

David (age 18, Ecuador) interjected that their mother was a music teacher who specialized in working with adolescent male singers, with an emphasis on encouragement and matching the vocal lines of repertoire with the vocal tessitura of the singers. Gorki responded that it did not matter if the teacher is a man or woman, rather "It's important that the

teacher explains to students how our body works like the muscles and like in an anatomic way, so they could teach them how it works." Patricio (age 22, Ecuador) stopped singing during the voice change and only began again when a friend encouraged them to join the university choir. They had never had any singing lessons. Patricio stated, "It's important to know that, for example, a woman cannot teach or explain the singing technique to a guy and a man director to a girl. Because of lack of familiarity." A furious discussion followed among the participants in Patricio's focus group, with Patricio conceding that their opinion was grounded in a stereotype, and they might be incorrect.

Dirk (age 23, USA) related that they felt well-informed about the forthcoming voice change. Dirk "gradually changed from whatever boys sing in elementary school, to tenor, then to baritone. I felt like it was natural. I knew what would happen, because my choir teachers kept me informed as to the changes that would occur." However, Dirk was unable to provide any specific information about the process of voice change itself. Dirk felt that a general awareness was sufficient. Sam (age 22, USA), however, argued that they "would have been interested in the physiology of singing long before my voice began to change." Sam related being "interested in sports, mostly because they taught me about my body and how to use my new muscles and strength. The same should have been true of singing during adolescence."

At age 17, Juan (Ecuador) was one of the youngest participants in this study. Juan cleared their throat frequently while speaking, commenting, "It is a hurt in my voice since I was 14. The only time it stops is after we warmup in choir practice. I wish I understood my voice and what I could do to help it." Paul (age 19, USA) concurred: "The voice cracks were terrible. I wish I knew what caused them. I've learned about this from my university chorus director. I wish he had been there to tell me about this when I was 12 years old!" Bruce (age 21, USA) agreed that their adolescent voice, "was rough and cracked a lot. Nobody taught me anything about my voice. I thought that's what music teachers were for. It made me both sad and mad."

While many of the participants communicated that they thought the coming voice change was something every prepubescent male knew about and expected, some of the participants expressed being unprepared for their voice change. "After my voice started changing, I decided I would never like the sound of my voice," said Alex (age 19, USA), adding, "I had no idea why my voice had to change from what was probably a decent voice when I was a little boy soprano." Alex continued, "but around age 17, people began complimenting my singing, which confused me. I only recently accepted that I'm not completely untalented." James (age 22, USA) could not figure out why their voice timbre "got deeper but I remained a tenor. That's OK, but I don't know why my pitches didn't change much. I wish my voice had changed more. I hoped I would end up being a baritone. It's more expected of adult men." Chuck (age 24, USA) agreed, wishing they'd had some instruction about the voice change because they kept wanting to switch to "my new octave range" and was frustrated when they did not gain many lower pitches. Chuck wanted a teacher to explain this to them. Saffron (age 28, USA) simply stopped singing and waited until the change process had stopped. They currently sing alto with the university treble choir and baritone with the tenor-bass

choir. Saffron recalled, "I really don't remember when my voice broke – I've always been soft-spoken and used to sing prior to high school, then I stopped for almost 8 years. When I started singing again, I was a baritone." They added, "That was simple, but maybe not a great strategy. A teacher could have helped me know how to make better choices about singing." Dany (age 18, Ecuador) commented from another perspective:

> My case was different. I sang from age five in my church choirs, and then in school. But my voice change was when I was 13 years old. I had a very high voice, and then it was like an extreme change. It was a shock. I was so comfortable on high notes, and I stopped singing when I was 14 and then one year later, I returned to singing because of an older friend. I had a friend who encouraged me to continue singing. He helped me. I then started to sing as a principal vocalist in a band with my friends. The best part was that I could choose the notes for me to sing! But I thought I could still sing the high notes if I just used more muscles in my throat. So, I forced the voice until it hurt me. I lost my voice – I couldn't sing or talk for a while. In that moment, I stopped singing for about six months; I had to quit the band. I couldn't sing in a good way. It was really difficult for me. I suffered from the voice change for several years. I did not have a good teacher to help me. Now I belong to the university choir where there are some teachers who can teach vocal technique. But I needed that help when I was 13!

Thirty-eight (78%) participants spoke about the influence of verbal praise on their sense of musical self-efficacy. Jack (age 23, USA) traced their current level of singing confidence to a single comment from their high school choral director, offered during their freshman year: "Jack, your voice is really coming along, it's really developing nicely, especially your tone quality." Jack added, "he was like a father figure to me, very specific guidance yet very encouraging . . . I was struggling with self-esteem, but he helped me find direction in my singing and my life."

Complimentary comments about the participants' singing often came from teachers, but they also came from family members. John (age 19, USA) related how,

> As a boy in pre-K, my class sang "I Believe I Can Fly" for our parents. I've never been so happy as I was that day, singing for my father's smiling face. He said I had a wonderful voice! Now I sing loud and proud, shining out for everyone. I do it because I love expressing myself through music and helping others feel like I do. I want to sing and make music all my life.

Pedro (age 19, Ecuador) recalled singing with their father: "Yes. It was a beautiful thing. One time, when I was 11, when we traveled from Quito to Loja, it was long trip, over two

hours. We sang the whole time. It was special." Pedro vividly recalled sitting in the back seat of the car, with the songs loaded onto a flash drive and arranged into genre-specific folders of "salsa, retro from 1996, and pop." Pedro described the blue t-shirt and white shorts their father was wearing. When Pedro spoke of this, others in the focus group interjected with similar memories. Jonathan (age 19, Ecuador) once sang a duet with their sister, Imagine Dragons' "Thunder," and the memory became indelible when "she told me that I sounded really good, really beautiful. That's when I decided to sing for my cousins in a family meeting. They loved it. I felt very proud. That's why I sing today."

Attainability

Attainability was defined as understanding that vocal skill development involves the continual determination of singing technique goals and an identified process for achieving those goals. This definition suggests that attainability is related to self-agency, or the ability to take necessary actions toward the achievement of desired goals. Oyserman et al. (2004, p. 132) offered:

> Possible selves and other self-directed goals can serve to guide and regulate behavior, providing a roadmap connecting the present to the future. The more plans connect self-directed goals to specific strategies, the more likely they are to be carried out.

In this study, attainability referred to participants' understanding of the strategies necessary for self-identified vocal success and the steps they may have taken to achieve those goals.

Participants largely equated strategies for successful singing with instruction and pedagogy during the voice change. There was no item on the questionnaires that specifically mentioned instruction; the closest was the question, "what would you have liked your teachers to do differently?" Still, 42 of the participants (86%), unprompted, recommended that choral teachers of adolescent males offer instruction specific to vocal health, the voice change itself, and/or singing during the period of change. Sebastian (age 22, Ecuador) said their teachers "reassured me that it [the voice change] was natural and to just wait and see what would come out of it. I wish they'd taught me something about vocal technique, though. Sometimes I wonder how much knowledge they had about the voice themselves." "I wish I could have learned more about singing techniques and how to practice my voice," said George (age 18, USA), adding, "I want to be a good singer." Seamus (age 18, USA) concurred: "I want to have the complete confidence and control necessary to do my own musical work by myself. I'm currently practicing falsetto so I can do this."

During the interviews, Peter (age 27, USA) asked many questions about vocal skills, such as the development of vibrato, facility with falsetto, and the breath management sufficient to sing long musical phrases. Peter wondered why they had never learned those aspects of singing technique in choir, despite being in choral ensembles for nearly 15 years. Peter felt

that this information would be valuable for male singers before and after the voice change. They said, "Boys need that skill confidence if they're going to continue singing through a rough period in their lives." Barry (age 19, USA) joined the university choir to sing for the first time since withdrawing from singing during the voice change. Barry offered:

> And so, at first, I was kind of, really just, like, struggling and listening to the people around me to try and adjust my pitch. But I don't know. I had, I think I had two lessons with my professor over the first two semesters and those were really helpful and kind of just like understanding how to warm up and how to do certain exercises.

"My voice change happened in the first year of high school," said Jason (age 33, USA). Jason added that they were "frustrated by a blank spot in the vocal range during the change process, but easily navigated around it." Still, Jason said they would have liked a teacher who could have provided assistance. John (age 19, USA) related that their teacher helped by providing "exercises for the placement of my mouth and body so that I could successfully get through the challenging phases of voice change." Aaron (age 18, USA) would have appreciated that instruction, as they desired information during adolescence about breath flow and vocal health: "What can damage your voice and what can't. Most chorus teachers focus on the wrong things, only telling you what not to do instead of what to do." Some teachers clearly lacked basic knowledge about the male adolescent voice change and, occasionally, foundational vocal technique. Bob (age 20, USA) recalled, "I was the only guy in my choir when my voice changed, and my female teacher did not understand that I couldn't hit the notes anymore. I think it was obvious, but she had no idea what to do with me." Huey (age 24, USA) avoided the entire issue, faking extreme pain during chorus class: "I was a funny guy, and it was a convenient way to get out of a situation I found embarrassing."

Archie (age 17, Ecuador) wanted to join a friend's band as lead vocalist but was frustrated with their own (Archie's) lack of vocal skill. Archie independently sought voice lessons from a 20-year-old, widely admired singer in their town. Archie recalled, "I learned lots of nerdy things about breathing and vocalization, rhythm, and other things to improve my vocal technique." Archie explained that they needed voice lessons because their school music teachers "didn't explain about music … they only give the scores, say 'copy that' or 'do this.'" They remembered becoming frustrated when the voice changed: "I was 11 years old, and my voice become very grave [low in pitch]. I thought my voice doesn't work because I could not control, I sing very bad. I wish I'd been taught how to sing in school." None of the participants from Ecuador could recall learning any element of vocal technique they'd learned in music class. They could only remember "notes, rhythms, right, and wrong" (Juan, age 17, Ecuador).

Charlie (age 17, Ecuador) commented that if they could have a music teacher who taught how to use the voice, "It would be incredible. The teacher would give the students tech-

niques and what they need to learn to improve. The teacher needs to make music something beautiful. Not just learning about music but making music." Charlie's image of the ideal music teacher grew from personal perception that their voice "became horrible when I turned 13." In response to Charlie's assessment, Archie offered that "My friend Charlie, he could sing really well because he has a really good pitch. Maybe he only needs vocal coaching. Charlie's voice isn't horrible. The music teacher at school made Charlie's voice horrible because there was no teaching." Charlie added that they would prefer taking a group voice class to solidify their vocal skills before joining a choir. All five members of the focus group agreed, including Pedro (age 18, Ecuador): "In order to start to learn repertoire, your body must be ready to sing it." Jonathan (age 19, Ecuador) was asked if they'd ever learned vocal technique in music class. Jonathan answered, "no, but I want that. All boys and men want that, to be confident singers. Teachers forget what it's like to be awkward and shy. I wish teachers would remember what it was like to be 14 years old."

Bruce (age 21, USA) offered, "I wish I'd learned better breath control and singing techniques before adolescence, so I did not have to learn them in middle school, especially during the change when I had trouble with basic phonation." Bruce had sung in the school gospel choir and in church choir before the voice change. When Bruce's voice began maturing, their teacher told them to simply stop singing. That was unacceptable to Bruce, so they sought guidance from an older friend who secretly gave Bruce voice lessons. Bruce's confidence returned and they rejoined choral singing in high school. Bruce concluded the interviews with,

> And I say, just going through this process of thinking about my voice change and the progress I've made over the years, it made me realize where I've been, what's happening to me now and where I'm going with my singing. If I can continue to improve, I can really do something special with my voice.

Not all these singers' pedagogical experiences were negative. For instance, Tre-Cion (age 22, USA) stated,

> My teacher cared about teaching singing so much that he made me care about it. And it's like, how he cares about it and how he describes it and breaks down how the guy's voice and how he has so much knowledge about the man's voice working it out and different stuff like that. That's amazing! I did not know this affected this, which affected this, which affected that. It makes me feel good because I'm not even ashamed anymore. I was ashamed to sing when I lost my boy soprano voice. Knowledge made me not feel ashamed of my voice or my sound or anything.

James (age 21, USA) concurred, exclaiming, "Voice cracks. Oh my! I wish I had known what they were, why they happened, and what I could do about them. I can't believe I didn't learn about this until being in the college men's chorus!"

Discussion

There is a long tradition of having adolescent males cease singing activity at the time of the voice change, also referenced as the voice break (Ashley, 2013). In the context of the male changing voice, the word "break" can be defined in two ways, as "broken," or as "taking a break." The former is not the case, and the latter is unwise. The voice is not broken during adolescence; rather, it transforms into what will eventually become the adult male voice. As the participants in this study highlighted, choral teachers have a responsibility to provide the supports necessary for young males to sing through and beyond the voice change. Our concept of democratic education precludes us from simply dismissing adolescent male singers during the voice change (Dewey, 1916). Further, this study's participants indicated a desire to sing as their voices changed, with no cessation or break involved.

This study examined how late and post-adolescent male singers reported their knowledge of and experience during the voice change, with emphasis on the impact of teachers' pedagogy toward the enablement of continued singing. Data were viewed through two lenses consistent with the development of possible, hoped-for future selves (Markus & Nurius, 1986): proximity, or an understanding of the voice change process, and attainability, or the skill development necessary to manage the vocal changes associated with male adolescence.

These collegiate singers spoke repeatedly of the desire for voice education beyond the rehearsal of pitches and rhythms in the concert repertoire under preparation. In their view, choral music provides a vehicle for group voice instruction, with multi-voiced repertoire allowing for differentiation between singers with unique vocal ranges and capabilities. These singers wished that their childhood music teachers had prepared them with information about the voice change process before it had begun. They wanted to know the biological and physiological processes of change, the impact on singing, and a sense of what they would next notice at each step of the maturation process. They wanted to know that they could continue to experience vocal success during and after the voice change. However, some of the study participants voiced concern that their teachers did not know the information themselves. This points to the need for teacher preparation programs to include instruction about the male voice change, along with a renewed emphasis on the basics of vocal technique and pedagogy. These participants were driven by a desire to improve their singing skills; they were less motivated by the preparation and performance of choral repertoire itself.

Singing during voice change is an issue of vocal health, as the participants in this study felt they often lacked the basic information necessary to avoid what Aaron referred to as potentially "doing damage to my vocal folds." These singers knew that the voice change was a physical process. They knew that singing during the voice change felt different than singing during childhood, resulted in different sounds, and required a coordination of vocal skills that seemed different than those encountered during childhood. They knew they wanted to keep singing and they knew they needed assistance to ensure their vocal health during the voice change journey. Only a few of the participants learned from music teachers who

provided that support. Most teachers either lacked the knowledge themselves, were unsure of how to convey it to young male singers, or entirely ignored the issue of male adolescent vocal health.

Vocal health and vocal technique were viewed as symbiotic by many of the singers in this study. They desired the knowledge necessary to understand their voices, but they were motivated by the development of skills that would improve the quality and experience of their singing. Not each study participant shared these goals, as some were enrolled in the choral ensemble due to curriculum or scheduling requirements rather than by choice. Those who responded with richly detailed written responses to the questionnaire data were uniformly enthusiastic about singing, particularly when they had noted recent improvement in their singing quality. These singers attributed vocal difficulties not to health, but to deficiencies in personal vocal technique. A few study participants expressed frustration that they did not receive the necessary pedagogy in their choral classrooms. Others sought vocal guidance from friends or from independently hired singing instructors. This emphasis on skill development is consistent with other research with males who view themselves as successful singers (Freer, 2018). The singers in the current study were resourceful, but they were, by definition, the singers who had persisted through secondary school to enroll at the collegiate level. They wondered about the singers who simply stopped singing when their voice changed. Would they have continued singing if their teachers had provided the necessary vocal instruction?

The findings of this study are consistent with the possible selves construct of Markus and Nurius (1986), and they echo elements of flow theory (Csikszentmihalyi, 1990) and attribution theory (Asmus, 1986; Legette, 1998). Flow theory posits that optimal experiences are predicated on a balance between the challenge being presented and an individual's ability to meet that challenge. The participants in this study were keen to increase their vocal skills so that they could sing ever more challenging repertoire, often outside of classrooms and choral settings entirely. They wanted to learn vocal skills that they could then transport to other musical settings and genres. Attribution theory holds that individuals ascribe success to various factors, including ability (unchangeable) and effort (changeable). Singers in this study often seemed determined to increase their effort levels to take advantage of even a small chance to improve their vocal success.

One of the most influential voice scientists and pedagogues in the field of male adolescent voice change was John Cooksey. Cooksey gave an interview in which they provided a succinct rationale for pedagogy that supports young male singers before and during their voice change process. Cooksey said (in Hook, 1998, p. 23):

> If you educate the boys about voice change and take it out of the unknown, they then know this is going to happen. This is a normal thing … the boys are going to trust you, they're going to trust each other. That is a healthy thing.

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"Is Something Wrong With My Daughter's Voice?" Parental Perceptions of the Female Adolescent Voice Change

Jamea J. Sale[1]

Abstract

Adolescent voice change is a developmentally uncertain time for singers when the vocal anatomy undergoes significant growth. Female singers experience a distinctive set of symptoms. Vocal tone that was previously clear and pure becomes breathy and, at times, thick, husky, and hoarse (Ingram & Rice, 1962; Sipley, 1993; Vennard, 1967). Voice ranges that initially widen during puberty temporarily narrow at the height of Female Adolescent Voice Change (FAVC) (Cyrier, 1981; Gackle, 1987, 2000a, 2000b, 2011; Huff-Gackle, 1985; Phillips, 1985; Sweet, 2015). As singing predictability and discomfort vary from day to day, so does the singing experience, leaving adolescent female vocalists to question their abilities (Gackle, 2011; Sweet, 2015). Pubertal adolescents report vocal fatigue, breathiness, and dryness despite taking measures to care for their voices (Bowers & Daugherty, 2008; Daugherty et al., 2011). During this period of change, parental support is vital to singer confidence, perseverance, and positive vocal self-identity. The purpose of this study was to examine parental perceptions of the FAVC before and after watching a three-minute educational video on the topic. Participants were parents (N = 54) of middle and high school female singers in two Midwest treble community choruses who responded to an online questionnaire. Queries explored parental perceptions of the female adolescent singing voice and their understanding of the voice change phenomena. Findings indicated that while they were attentive to their daughters' singing, parents did not possess knowledge of typical FAVC characteristics or accompanying singing difficulties. After a brief educational video, participants described gaining an explanation of their daughter's current voice concerns and a new understanding of developmentally appropriate FAVC singing skills. Parents reported a sense of preparedness and empathy for their daughter's voice change experience.

Keywords: female adolescent voice change, singing, parent perceptions, female voice

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"Is Something Wrong With My Daughter's Voice?"
Parental Perceptions of the Female Adolescent Voice Change

Puberty signals the beginning of adolescence, a transitional time between childhood and adulthood, as evidenced by rapid physical growth, endocrine surges, and profound cognitive and emotional changes (Kipke, 1999). Pubertal females experience menarche and reach reproductive capability (Herting & Sowell, 2017). While age and puberty are highly correlated, individual progression through puberty varies (Herting & Sowell, 2017). Presently, American female puberty begins between 8 to 10 years of age (Sataloff & Kost, 2020), and the onset of menarche averages at age 12.5 (Emmanuel & Bokor, 2019). In the face of such dramatic physical, intellectual, emotional, and social changes, adolescents also undergo fundamental alterations to the nature and quality of the singing voice (Welch, 2012).

The path to successful singing can be steep for adolescents. Female singers experience a distinctive series of voice change symptoms, which remain widely undisclosed to them (Sweet, 2015). Sweet (2015) found that these singers encounter feelings of dismay, not realizing their voice change struggles are not only normal but temporary and beyond their control. Adolescent female singers are developmentally most sensitive to those with whom they spend the most time; thus, parental understanding and support are vital to the female singing experience during voice change (Davidson et al., 1996; Monks, 2003; Shillingford, 2021).

The Female Adolescent Voice Change (FAVC)

The transformation from child to adult voice takes place over many years, initially happening uniformly for male and female children (Monks, 2003). Young children generate high and low sounds before adolescence by raising and lowering the laryngeal apparatus for speech and singing (Trollinger, 2003, 2007). High in the neck at birth, the larynx makes a gradual descent in adolescence, lengthening the vocal tract (Sataloff, 2000). The child vocal folds undergo steady growth as the area between the epithelium and vocalis muscle of the vocal folds called the lamina propria develops from a monolayer of cells at birth to having signs of three layers around seven years. See Figure 1 on the next page. The lamina propria reaches adultlike thickness by age ten, but it is not until children approach thirteen that the formation of the vocal ligament, a structure necessary to prevent vocal injury under strenuous voice use, begins to develop (Boseley & Hartnick, 2006; Gray et al., 2000; Hartnick et al., 2005; Hirano, 1981; Titze, 1996; Trollinger, 2003, 2007). The most significant change to the female laryngeal structure occurs in the height of the thyroid cartilage (Howard, 1898; Kahane, 1982; Sataloff & Spiegel, 1989). Concurrently, the female vocal folds increase 34% in length from their pre-puberty measurements (Kahane, 1982), and a posterior lack of closure between the vocal folds, known as a mutational chink or gap, commonly emerges with the rapid growth of coordinating muscles (Vennard, 1967). With the increase in vocal fold length and mass, sexual dimorphism occurs in adolescent speaking voices. The female speaking voice gradually lowers from birth to adolescence so that by age 12, its average pitch

Figure 1

Schematic drawing of the superficial, intermediate, and deep layers of the lamina propria (Reprinted with permission (Gray et al., 2000).
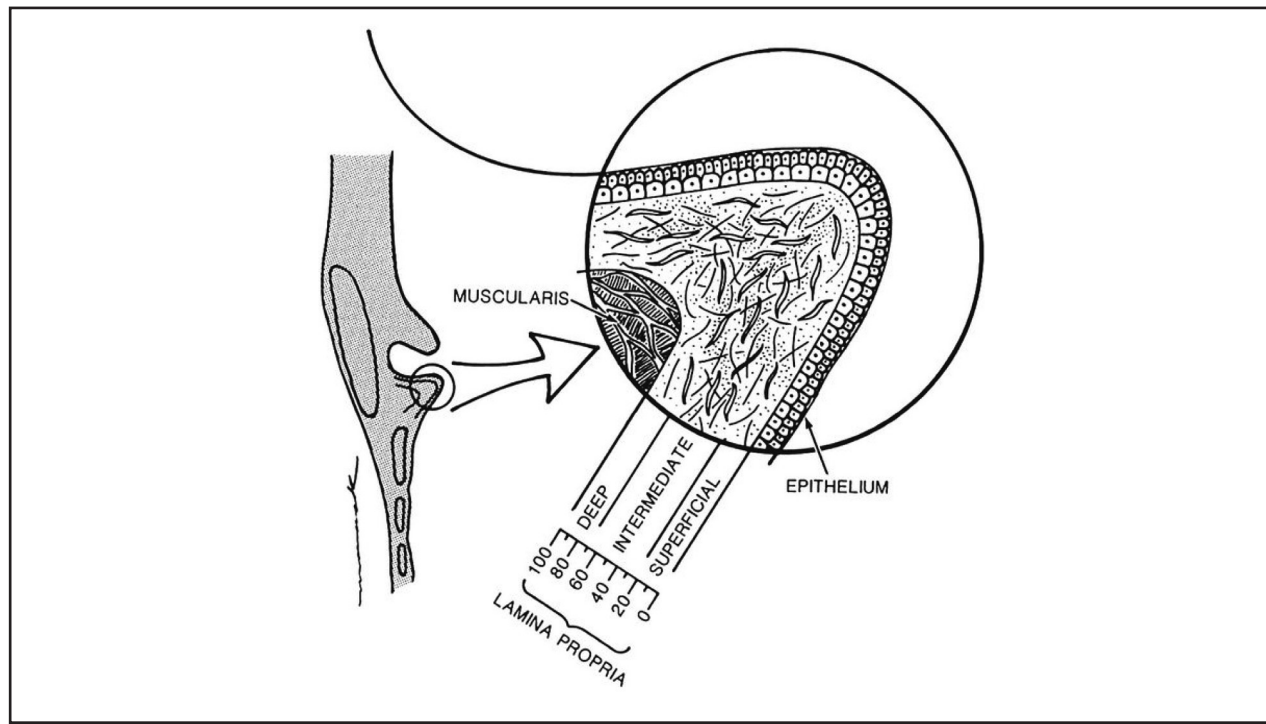
is middle C (260 Hz), descending to around A3-G3 (200 Hz) in adulthood (May & Williams, 1989; Russell et al., 1995; Wilson 1978).

Voice Change Related Concerns

Rapid physical growth and puberty account for the distinctive characteristics of the FAVC singing voice. Upon menarche, pubertal adolescent females may experience cyclical voice quality variations like dry, pressed, laryngealized (creaky) phonation and vocal discomfort as lowered estrogen negatively affects vocal fold tissue and laryngeal function (Amir & Biron-Shental, 2004; Klatt & Klatt, 1990; Raj et al., 2010; Sataloff & Spiegel, 1989; Sherman & Korenman, 1975; Thurman & Klitzke, 1994). Such variations can make the FAVC singing experience unpredictable from day to day (Sweet, 2018). The mutational gap results in air leakage between the vocal folds and the familiar breathy singing tone of the developing female singing voice (Gackle, 2011). With the inadequate vocal fold closure, singers may feel an increased sense of laryngeal dryness or huskiness and as though they do not have enough air for sustained singing (Gackle, 2011). However, Vennard (1967) underscored that the singers should not force the developmental gap closed since growing musculature is being newly coordinated for efficient singing. Thus, a previously clear and pure vocal tone becomes breathy and, at times, thick and husky (Sipley, 1993). The need for recoordination of the growing laryngeal process can lead to voice cracking and intonation problems, while newly accessible singing ranges often narrow temporarily at the height of voice change

(Huff-Gackle, 1985; Ingram & Rice, 1962; Welch, 2012). As singer voices develop, vibrato may appear and should be allowed to develop naturally and without unnecessary muscular engagement (Trollinger, 2003, 2007). In such a formative time of voice development, adolescent female singers should not be classified or restricted to singing one voice part (Thurman, 1988; Thurman et al., 1997). Instead, they should be encouraged to use their entire range for vocal flexibility and sing parts in a comfortable tessitura (Sipley, 1993).

Singers are conscious of voice change symptoms even when they do not understand the reasons behind them (Monks, 2003; Williams, 1990, 1996). In Sweet's (2015) phenomenological study of fourteen female adolescent choristers, participants expressed a wide range of emotions in response to voice change symptoms, describing fear, frustration, and embarrassment around the difficulties, especially when feeling alone in the experience. The findings of Sweet (2018) indicate that negative feelings and experiences of the FAVC manifest as vocal challenges into adulthood. Thus, those who discuss aspects of the voice change with adolescents must be informative, persistent, and, most importantly, sensitive (Cooksey, 1999; Friddle, 2005; Gackle, 2011; May & Williams, 1989; Monks, 2003; Phillips; 1985; Sipley, 1993; Sweet, 2015; Sweet & Parker, 2019).

Parental Support

Adolescents have vulnerability to misjudging their typical FAVC symptoms as indicative of poor or inadequate singing (Schumann, 2014; Sweet, 2018; Welch, 2012). Unfortunately, western cultures propagate a myth that only select vocalists have talent, whereas available research indicates that remediation of the human ability to sing is possible since it is a developmental process (Knight, 2013; Welch, 2001). However, acceptance of the talent myth by parents and valued advisors to adolescent singers can lead them to carry unrealistic expectations of themselves (Whidden, 2008). In this light, a misplaced remark by a parent or valued advisor could "have a life-long detrimental impact on singing behaviors and the realization of musical potential" (Welch, 2012, p. 2).

Some researchers have theorized that progress during vocal development may stall under inaccurate feedback or misunderstanding of the developmental limitations of the singing voice (Knight, 2013; Turøy, 2018; Welch, 2012). Conversely, positive vocal identities have followed when singers arise from family environments where music-making is designed to encourage, match, and extend singing expertise (Sloboda, 1990; Sweet & Parker, 2019; Welch, 2012). As Davidson et al. (1996) found, consistent and significant parental support leading into adolescence encouraged children to identify as high-achieving musicians. Through music activities, developing singers interacted with their culture, expressed themselves, and developed their identity (Knight, 2013). As Monks (2003, p. 243) wrote, the "link between voice and self-image is so fundamental it is often overlooked." Mitchell (2021) noted that recognition of music participation enhanced adolescent confidence and positively shifted their self-narratives. Indeed, adolescents viewed aspects of their music participation as a badge-like reflection of their identity (Gooding, 2010).

Adolescent singers have interest in and benefit from an understanding of their physiological development, and their singing experience is enhanced if they can engage with parents about feelings around the experience (Sipley, 1993; Sweet, 2018). Sipley (1993) insightfully wrote that FAVC "knowledge" induced more favorable attitudes about vocal development, explaining that "since she [the adolescent female singer] is beginning to use her powers of reason, she will respond in an adultlike manner when presented with information which respects her intellectual achievements, and which challenges her to apply her reasoning abilities" (p. 49). Consequently, singers benefit from vocal health and development assessments, especially since each experience is unique. Parent education about the results of such assessments and how to best mitigate vocal fatigue and phonotrauma in their children can also be critical to injury prevention for FAVC singers (Tepe et al., 2002; Trollinger, 2003, 2007).

In sum, female adolescents are subjected to an array of voice change symptoms, many of which are audible in their singing tone and beyond their control. Some can lead to discomfort and self-doubt, especially when the symptoms are unexplained or singers feel alone in the experience (Sweet & Parker, 2019). Parents significantly influence singer motivation, and indeed, the involvement of parents predicts singer participation in the performing arts (Barnett, 2008). While data regarding FAVC symptoms are consistent, and the phenomenon's existence is well-recognized among researchers (Gebhardt, 2016; Kahane, 1982; Sataloff & Kost, 2020; Sweet, 2018), the phenomenon is still widely novel to the general population, and misconceptions about typical female adolescent singing could cause misunderstandings. Thus, advising parents about FAVC characteristics and inherent challenges could positively affect parental perceptions of the developing singing voices of daughters. Further, parents may be more likely to actively encourage and engage with singers about the FAVC process while advocating for healthy voice use.

The purpose of this study was to investigate parent perceptions of their adolescent daughter's singing voice and to understand their knowledge of the female adolescent voice change. The following questions guided this inquiry: (a) What knowledge do parents of female adolescents have of the voice change phenomena? (b) How do parents perceive the singing voices of their adolescent daughters? (c) In what ways, if any, are parents influenced through education of the FAVC phenomenon?

Method

The Institutional Review Board at a large Midwestern university reviewed and approved the study. I sought input from adults whose daughters were active members of a structured choral program and who had daughters in the target age range of 9 to 19. To address the research questions, I chose a mixed-method approach to prime participant reflection on and query about FAVC knowledge and attitudes using open- and closed-ended inquiries mediated by a short educational video about FAVC.

Participants

I was professionally acquainted with the directors of two large Midwestern children's choir organizations from different states, having worked collaboratively with the leader of one group and as vocal coach to adolescent females ages 12-19 with the other. Both organizations enlisted singers from third to twelfth grade after cursory voice placement auditions. They each offered singing opportunities in various leveled choruses, including mixed choirs for unchanged voices and SATB, TTBB, and SSAA ensembles for changing voices. Taken together, the organizations permitted me to contact around 250 parents about the research. Thus, I made information available during rehearsals, announcements at choir meetings, and through choir newsletters. Parents also received personal email invitations to participate in the study.

Volunteer participants accessed consent forms and study materials privately using Psy-Toolkit Version 2.5.1, a research tool for presenting interactive lessons within an anonymous online questionnaire (Stoet, 2010, 2017). Parent volunteers ($N = 54$) identified themselves as mothers ($n = 45$), fathers ($n = 8$), and a female guardian ($n = 1$) who collectively ranged in age from 33 to 62 years of age ($M = 46.56$, $SD = 6.02$). Most participants (61%) reported having some young-adulthood experience singing in choirs. A breakdown of parent choir experience is presented in Table 1. Parents recorded their perceptions of the individual voices of 64 female adolescent singers aged 9-11 ($n = 12$), 12-13 ($n = 16$), 14-15 ($n = 13$) and 16-17 ($n = 23$). Those with more than one daughter were given the educational information once but were to think and respond about their daughters individually. Eight participants had two daughters, and two had three daughters.

Table 1
Parent Demographic Data

Relationship to Daughter ($N = 54$)		
Mothers	Fathers	Female Guardian
45 (83%)	8 (15%)	1 (2%)

Daughters Per Participant ($N = 54$)		
One	Two	Three
44 (81%)	8 (15%)	2 (4%)

Participant Choir Experience ($N = 54$)				
No Experience	6-8th Grade Choir Only	9-12th Grade Choir Only	6-12th Grade Choir	6-12th Grade +
21 (39%)	15 (28%)	5 (9%)	9 (17%)	4 (7%)

Data Collection

I engaged two colleagues with expertise in qualitative research to review the questionnaire for accessibility and to assure it queried the topics of interest. The purpose of the first survey section was to prime participants to reflect on the qualities of what they hear in each of their daughter's singing voice quality whether their child voluntarily sings in front of them, whether she desires to be thought of as a good singer, and whether the parent believes she is a good singer using Likert-type questions. Participants related whether they were aware of the female voice change phenomena and considered whether they thought their daughters' singing voices exhibited common voice change characteristics. Section one concluded with open-ended questions asking for "good" and "not good" qualities of their daughter's singing and for parental advice for the singer.

Section two directed participants to view a researcher-created educational video explaining common female adolescent voice change characteristics and inherent singing challenges. I considered the following objectives when scripting and choosing images for the video: to define (a) the most typical characteristics of the adolescent female singing voice, (b) the anatomical and physiological reasons for those characteristics, (c) the singing abilities and limitations for female singers during adolescence, and to communicate that (d) the symptoms of changing voice are an unpredictable, yet normal and temporary, condition of adolescence for female singers. I asked several colleagues with expertise in the FAVC to review the content before converting the final product to video format and uploading it to a private YouTube link. The resultant educational video was 3-minutes in length. (See Appendix for the video script.)

In the final section of the questionnaire, parents rated whether or not the voice change characteristics discussed in the educational video were novel to them. Parental perception changes were explored through open-ended questions. To close the activity, the participants could opt to write additional thoughts.

Analysis

I analyzed quantifiable data through descriptive statistics, and I studied responses to open-ended questions qualitatively, first using descriptive coding to categorize the data's content followed by structural first cycle open coding to examine and identify data relationships and patterns (Saldaña, 2013). I created diagrams to aid in second cycle coding and to understand patterns, relationships, and meanings of the emergent themes (Creswell & Poth, 2018; Katagall et al., 2015; Miles et al., 2013).

Findings

Priming Questions

I first examined responses to the reflection prompts, which were intended to prime parental thought about each daughter's singing voice. Participants who had more than one daughter reflected separately about each daughter ($N = 64$). The majority of parent responses (98%) reported that *my daughter enjoys singing and that my daughter wants to be thought of as a good singer (95%)*. Similarly, 95% of parents responded, "my daughter is a good singer." When asked, "Do you listen to your daughter's singing voice," 55% of responses were, *Yes, I listen all the time*, and 35% were, *Yes, when she lets me.* To the prompt, "My daughter sings voluntarily in front of me," 53% reported *all of the time*, 42% reported *sometimes*, and the remainder (5%) reported *never* (Table 2).

Table 2
Parent Observation of Daughter (N = 64) Singing

Prompt	Response	
My daughter enjoys singing.		
Yes	63	(98%)
No	0	-
Not Sure	1	(3%)
My daughter wants to be thought of as a good singer.		
Yes	61	(95%)
No	1	(2%)
Not Sure	2	(3%)
I think my daughter is a good singer.		
Yes	61	(95%)
No	2	(3%)
Not Sure	1	(2%)
Do you listen to your daughter(s)' singing voice?		
Yes, I listen all the time	35	(55%)
Yes, when she lets me	23	(35%)
Sometimes I listen	5	(8%)
I never listen	1	(2%)
My daughter sings voluntarily in front of me.		
Yes, all the time	34	(53%)
Sometimes	27	(42%)
Never	3	(5%)

Parental Knowledge of the FAVC Phenomena

I worked with singers at one of the choir organizations. Thus, I anticipated that before beginning the study, many parents in this population would understand that female adolescents experience a voice change. Indeed, 50 participants reported having prior exposure to FAVC knowledge, 69% from me, and 28% from other sources. Only four mothers had no previous understanding of the FAVC. See Table 3. Before the educational video, all eight fathers reported knowing of the FAVC and, after the video presentation, they reported having already known that female adolescents experience a pubertal voice change. However, after the video presentation, 22 mothers indicated that the statement, "Adolescent females experience a voice change as part of puberty," was new information. Scoring of the ten post-learning video FAVC knowledge statements is presented in Table 4 on the next page. The possible occurrence of a vocal fold mutational gap was considered the most novel out of the ten statements, as 67.2% of parents ($n = 43$) reported it was new information. They were most aware prior to education that "adolescent females may experience voice 'cracks' or 'breaks,'" as only 30% of participants ($n = 19$) marked it as novel information.

Table 3

Parent Pre-Learning Video Knowledge of FAVC (N = 54)

"I understand that female adolescent singers experience a voice change."			
	No. No previous knowledge.	Yes. Knowledge from Researcher.	Yes. Knowledge from Other Source.
Mothers and Female Guardian ($n = 46$)	4 (9%)	31 (67%)	11 (24%)
Fathers ($n = 8$)	0 -	6 (75%)	2 (25%)
Total ($N = 54$)	4 (7%)	37 (69%)	13 (24%)

Table 4

Post-Learning Video "New Knowledge" Ratings by Parents (N = 54)

FAVC Knowledge Statement	Characteristics Considered "New Knowledge"
The vocal folds may not close properly for a period.	43 (*67.2%*)
The female larynx grows primarily in height during puberty.	41 (*64.1%*)
Adolescent females may complain of sore throat, dry throat, or "gunky" throat during voice change.	33 (*51.6%*)
The singing voice tends to have a "breathy" quality.	30 (46.9%)
Adolescent females may experience a husky or gravelly sound during voice change.	30 (46.9%)
The singing voice is unpredictable from day to day for adolescent females.	30 (46.9%)
Adolescent females experience voice change as part of puberty.	29 (45.3%)
Adolescent females may sing some notes out of tune or off-pitch during voice change.	25 (39.1%)
The range of notes adolescent females can comfortably sing may shift lower or higher during voice change.	24 (37.5%)
Adolescent females may experience voice "cracks" or "breaks" during voice change.	19 (29.7%)

Parental Perception of Daughters' Singing Voices During FAVC

To analyze parent-perceptions of seven typical FAVC characteristics, I examined parent responses by arranging them into groups by daughters' ages (9-11, 12-13, 14-15, and 16-17). Parents of the youngest singers (9-11) found their daughters' voices most free of common FAVC singing qualities. With few exceptions, parents perceived singer voices in all age groups to be clear and pure, to have no intonation problems, or to not have a husky/gravelly or thick and effortful tone. Breathiness was perceived in the tone of 50% of singers in the 14-15 group, 25% of the 12-13 group, and 22% of the 16-17 group. Light, quiet singing quality was perceived among 33% of the 9-11 group, 37% of the 12-13 group, and 35% of the 16-17 group, but only 15% of the 14-15 group. See Table 5 on the next page.

Table 5

Parent Perceptions of Common FAVC Singing Voice Qualities (N = 64)

	Daughter Age Group											
	9 - 11 (*n* = 12)			12 - 13 (*n* = 16)			14 - 15 (*n* = 13)			16 - 17 (*n* = 23)		
My daughters' singing voice is:	Agree	Neither	Disagree	Agree	Neither	Disagree	Agree	Neither	Disagree	Agree	Neither	Disagree
clear and pure	**8** (67%)	3 (25%)	1 (8%)	**12** (75%)	3 (19%)	1 (6%)	**10** (83%)	1 (8%)	2 (17%)	**19** (83%)	4 (17%)	0 -
breathy	2 (16.5%)	2 (16.5%)	**8** (67%)	4 (25%)	**8** (50%)	4 (25%)	**6** (50%)	2 (17%)	5 (38%)	5 (22%)	4 (17%)	**14** (61%)
husky and/or gravelly	1 (8%)	2 (17%)	**9** (75%)	1 (6%)	2 (13%)	**13** (81%)	1 (8%)	–	**12** (92%)	0 -	4 (17%)	**19** (83%)
light and/or quiet	4 (33%)	2 (17%)	**6** (50%)	6 (37%)	3 (19%)	**7** (44%)	2 (15%)	3 (23%)	**8** (62%)	8 (35%)	5 (22%)	**10** (43%)
heavy and/or loud	1 (8%)	4 (33%)	**7** (59%)	2 (12%)	3 (19%)	**11** (69%)	1 (8%)	2 (17%)	**10** (83%)	5 (22%)	2 (9%)	**16** (69%)
thick and/or as if it takes a lot of effort to make sound	0 -	2 (17%)	**10** (83%)	0 -	3 (19%)	**13** (81%)	1 (8%)	2 (17%)	**10** (83%)	0 -	3 (13%)	**20** (87%)
out of tune	2 (17%)	1 (8%)	**9** (75%)	0 -	1 (6%)	**15** (94%)	0 -	3 (23%)	**10** (83%)	0 -	3 (13%)	**20** (87%)

Note. Numbers in bold represent the greatest quantity of answers by age group for each voice-quality descriptor.

Themes

The coding of responses to open-ended questions revealed two main themes. The first theme, "connection to singing," describes a mutual connection between parents and daughters as the participants described the value of their daughter's singing. The second, "daughter's vocal technique," reflects parent observations, both positive and negative, of their daughter's singing voice and parent advice on managing vocal technique.

Connection to Singing

Parents observed that their daughters enjoyed a special connection to singing, leading them to spend personal time engaging in the activity. One father remarked that singing was an integral part of his daughter's independent play. Thus, participants were supportive of the daughter's singing efforts, suggesting that they seek guidance from qualified voice professionals and significant people (siblings and family members with singing experience) and

to listen "when they give suggestions on how to sing and not hurt your voice." Eventually, singing for enjoyment led to formal study for many daughters as they began singing with choirs (community, church, and school), enrolling in private lessons, and honing music theory skills. Parents advised voice care and regular practice.

Participants described moments with their daughter's singing in which they felt an emotional response while expressing an affinity for their daughter's singing. Parents perceived their daughter's voices as "lovely," "beautiful," and "sweet." Parents took note when some of their daughters produced adultlike singing qualities, "She has a mature voice for her age… [and has] had natural vibrato since she was about 9-years-old." Some participants disclosed their perception of wide or very high or low singing ranges in their daughters' voices as admirable, and there was a tendency to attach voice classifications to the children. For example, a parent of an eleven-year-old wrote, "She already has a good singing range — Alto to Alto+." Receiving compliments about their daughter's singing held value, as one parent reflected, "People are continually astonished by and rave about her voice, often using the words, 'goose bumps.'"

Participants desired their daughters to share their voices with others more willingly, sometimes remarking that their daughter's quiet singing reflected poor confidence. Indeed, advice about singing projection was frequently paired with a perceived lack of confidence or shyness in the singer, as in the declaration, "Sing out; raise your volume a bit. You have a beautiful voice. Believe in yourself." While praising their daughter's voices, some parents reflected negativity on their own singing capabilities, as one wrote, "I personally do not have a good singing voice," and others felt unqualified to offer comments on singing.

Daughter's Vocal Technique

As participants reflected on perceived positive aspects of their daughter's singing, they commended the development of "good" tone, which they described as having "clarity" and "*not* breathy." They credited daughters for developing efficient, healthy singing habits like avoiding vocal "strain" and singing "freely." Parents described wide or exceptionally high or low ranges, which they at times identified by voice classification (low alto or high soprano). They noted characteristics of maturity in the voice (e.g., vibrato, singing smoothly across registers) as favorable singing qualities.

Parents listed their perceptions of breathy and nasal vocal tone as "not good" qualities of their daughters singing while also being aware of their daughters not singing "on pitch" or "maintaining tonal center." They expressed concerns with limited vocal range and inconsistent pitch accessibility. Some participants perceived inappropriate vocal techniques as "goofing off" or not taking singing "seriously" enough. They stated concerns over "forced vibrato" and the imitation of others' voices. Some parents worried that the singers needed improved voice care habits such as not "pushing" or singing with tension. There were mentions of not straining, singing freely, drinking plenty of water, resting the voice as needed, and using good posture. Participants advised daughters to "warm-up" before singing, and

they asserted a need for stronger practice skills.

In sum, parents were aware of efficient singing qualities, encouraging singers to maintain healthy habits. They expressed concern about the vocal technique of their daughters, predominantly advocating to improve breath management and to share the voice through vocal "projection." Many suggested focused singing practice for improved technique. While parents expressed many concerns about vocal production, no one commented on their daughter's vocal characteristics as problematic relative to their age or stage of development.

Parent Perceptions After FAVC Education

Forty-five percent (*n* = 29) of all respondents answered, "Yes," that previously held perceptions about their daughter's singing had altered after viewing the educational material. Participants reflected on their increased awareness and understanding of the power of the voice change. One father stated, "(I)…better understand how her body changes can impact her voice and that some of the symptoms she would complain about were [sic]…just part of the change process." Among the participants reporting a perception change of their daughter's singing voice, some expressed a sense of reassurance about FAVC characteristics noticed in their daughter's singing. "I didn't understand why both of my daughters had breathy singing. Wow! It's just part of the process of change?"

A poignant outcome of the data analysis was that a few daughters appeared at risk of being labeled non-singers at the time of this investigation. In section one of the procedure, three participants (*n* = 3) responded "No" or "Not Sure" to the question, "Do you consider your daughter to be a singer?" Follow-up questions revealed that these adolescents suffered from intonation problems, and for one, a "weird style of singing." However, these three participants all reported a change in perception of their daughter's singing following the female adolescent voice change educational video. In a final comment a mother shared, "Maybe her singing voice will even out with time and growth."

Some participants (*n* = 18) shared thoughts about the FAVC education, expressing appreciation for guidance concerning FAVC and the "future voice" of the daughters. Some found the timing of the learning to be beneficial, writing, "I am really glad to have learned new information about female voice change. I did not even realize it happened. It has also been helpful to relay to my daughter, as she has been noticing her voice cracking recently."

This population of respondents consistently advised their daughters to practice singing before and after the educational video. Written comments tended to shift from focusing on improved vocal technique before education to offering guidance about the normalcy of FAVC developmental changes after education. One parent wrote: "…the change is normal. We all experience this, and it is a part of growing up. Continue to practice and strengthen your confidence with singing." Participants reminded singers to continue enjoying music during the FAVC while exercising healthy singing practices. As they anticipated the future, parents urged singers to honor the voice transformation process by being patient and not being discouraged. One mother wrote, "I look forward to her moving through this process and regaining her pure, clear, though more mature voice on the other side."

In sum, participants wrote that they gained an understanding of developmentally appropriate singing skills and an explanation of their daughter's current voice concerns. Some indicated that the new knowledge created a sense of preparedness for the future development of their daughters' voices. Others found the possibility of applying the educational video information in discussions with their daughters to be transformative.

Discussion

The purpose of this study was to add to the collective knowledge about the female adolescent voice change experience by exploring parental awareness and perceptions of the phenomena. Findings suggest that parents do notice the FAVC singing voice characteristics in their daughters even when they may not understand them to be products of normal vocal development. After a brief educational experience, participants described gaining an explanation of their daughter's current voice concerns and a new understanding of developmentally appropriate FAVC singing skills. Participants expressed empathy for the singing difficulties of FAVC, and some described a sense of being prepared for the symptoms their daughters might experience. Proactive FAVC education is recommended for parents to engage with their daughters about the voice change experience and to help contextualize voice-associated frustrations as a normal part of their singing development.

The data gathered in this study yielded a great deal of information, yet some limitations deserve attention. I designed the study as a brief online, self-paced, and anonymous experience with the convenience of the participants in mind. However, the approach made it impossible to clarify or delve into the deeper meanings of responses by following up with participants. Consequently, exploration of the parent responses generated many questions of interest for future investigations. In this section, I will discuss particular insights drawn from the participant responses and additional directions for future inquiry.

The volunteer recruitment method resulted in some noteworthy participant characteristics that raised possible questions for future research. For example, female parent participants considerably outnumbered males. A possible reason for the gender disparity is that mothers were often the most visible parent at weekly choir rehearsals and meetings and, therefore, had more opportunities for contact with the study invitations. Nonetheless, the responses by the eight father participants were insightful and detailed. Future researchers might differentiate parental perceptions of FAVC by father and mother responses. One could explore parent voice change recollections and how those experiences influence interactions with their children. For example, one father noted that his understanding of his voice change occurred after seeing an episode of the '70's sitcom, "The Brady Bunch," referencing a storyline in which an adolescent male character experiences voice change (Schwartz et al., 1972). The parent comment suggests that voice change, broached through pop culture, could be memorable for children seeking explanations about their development. However, as Sweet (2019, p. 123) pointed out, the sitcom episode capitalizes "…on the frustrations of voice change, keeping negativity as the core of the experience." Pop cul-

ture references could serve as a powerful educational medium for adolescents and parents, though educators should guide and reframe the content into a positive message.

Ten participants in the study had multiple daughters and thus described FAVC perceptions about two or three children. Understanding this was a possibility, I designed the research questionnaire so that parent responses were primed separately for each child, and it appeared that most respondents successfully compartmentalized their answers based on the daughter in mind. Future researchers might seek out families with multiple singing children to explore the dynamics in families where adolescents are at different points in their development.

Some participants disclosed their perception of wide or very high or low singing ranges in their daughters' voices as admirable, and there was a tendency to attach voice classifications to the children. Rather than encouraging adolescent females to self-label as altos or sopranos during voice change, it is advisable to help them think of their part assignments as temporary placements until the voice is mature (Thurman et al., 1997). Indeed, singing multiple voice parts during FAVC benefits a singer's capability to part-sing while encouraging muscular balance and flexibility throughout the voice range. The educational video made for this investigation did not address voice classification, yet it appears this information could be helpful for parents.

Whether developmentally appropriate or not, some children manage to produce adultlike singing qualities. Parents naturally value when their children demonstrate singing expertise. However, researchers and vocal health experts advise that a child's voice is at risk for harm when engaging in habits beyond developmentally appropriate ones. Understanding the types of voice qualities adults value in young singers and how such ideals develop are matters for future research. Another question to be addressed is what motivates children to sing in ways likely to manifest in vocal fatigue and possible injury. Further, it would be beneficial for teachers and voice care experts to understand how FAVC education might influence adult perceptions of children who sing in ways that are risky to vocal health.

I understood that the parent population in this study might already possess a unique sense of FAVC through interaction with me, with other staff members, or with their daughters, and thus, the group had likely entered the study with an understanding of FAVC that other populations may not have. Characteristics of the participants also suggested that the activity of singing held value to them. For example, over 60% of parents reported having taken part in choral singing as a youth. The participants are known to have committed considerable time, energy, and financial resources to enable their child's participation in the involved community choruses. Their responses indicated interest and enjoyment in listening to the daughters' singing. When describing the daughter's voices, it was evident that many participants noticed FAVC symptoms like breathy voice quality, voice cracks, and range changes prior to the educational presentation. Afterward, parents encouraged daughters to be patient with themselves as they move through voice change while encouraging them to continue enjoying music. The sensitivity and interest demonstrated by this population after FAVC education may relate to how they intrinsically value singing. Future research might explore how diverse populations respond to FAVC education. Researchers might investigate

the experience of FAVC educated parents and daughters throughout the duration of voice change.

Female voice change education may deter errant messages of singing incapability. Such identification as a non-singer can impede a child's singing progress and frequently leads to a lifelong perception of lack of ability (Welch, 2012). One female parent reflected about singing during voice change, "[I] deemed myself a non-singer for life," while another wrote, "I wish I had known [about FAVC] …when I was an adolescent." Not only may parents with insight about FAVC encourage their daughters to sing through voice change difficulties, but self-identified non-singing adults may also find renewed interest in voice study for themselves. An exploration is merited to determine whether this is the case and if voice change education could positively impact children and adults identifying as non-singers.

With the understanding that parent engagement is known to encourage adolescent involvement in the fine arts, parental awareness of FAVC could have substantial implications for researchers and educators. Teachers could benefit from instructional material enabling them to facilitate FAVC learning for singers and their parents. Future exploration is recommended to determine when to discuss FAVC with families, how best to disseminate information, and the most beneficial specifics about the phenomena.

In sum, while many questions about the FAVC experience remain to be answered, and continued research in the area is warranted, music educators and singers would benefit from well-considered educational materials to facilitate learning and understanding of the phenomena. Most importantly, adolescent female singers would benefit from a more comprehensive understanding and disclosure of their voice change experience.

Conclusion

Evidence is mounting that the phenomenon of FAVC holds significant repercussions for female singers who experience insecurity of pitch, noticeable register breaks, increased huskiness in the voice, decreased and inconsistent range capabilities, voice cracking, hoarseness, and general singing discomfort (Duffy, 1970; Gackle, 2000a, 2000b, 2011). Researchers are increasingly advocating for adolescent female singers to be aware of temporary developmental limitations as a normal part of vocal development (Sweet & Parker, 2019). Teachers have been encouraged to help female adolescent singers understand the physiological process of voice change (Sipley, 1993). Indeed, singers are receptive to voice change education and express interest in the changes taking place during their adolescent development (Sipley, 1993). Such information reassures them that their voice change symptoms are normal and necessary to their singing development (Friddle, 2005; May & Williams, 1989; Sweet, 2015, 2018). The outcomes of this study suggest that parents of female adolescents are not only interested in their daughters' vocal development, but they also feel moved to engage with their daughters when they understand the developmental experience. As one parent stated, "I can reassure her this is normal and not to let it concern her, but to keep enjoying singing!"

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Appendix

FAVC LEARNING VIDEO SCRIPT

SLIDE 1

Title

SLIDE 2

As children enter puberty, their bodies undergo rapid changes.

SLIDE 3

They grow in height & weight, their limbs grow longer, and their internal organs grow in weight and size. They develop reproductive capability, and experience profound cognitive and emotional changes.

SLIDE 4

Even the voice anatomy undergoes rapid growth.

SLIDE 5

Intricate cartilages, muscles, and tissues of the larynx (or voice box) increase in size and weight. The male larynx grows dramatically in circumference (bigger around) whereas the female larynx grows most significantly in height.

SLIDE 6

Vocal folds which reside inside the larynx and vibrate to make sound grow in length and thickness.

SLIDE 7

This rapid growth causes a child's voice to begin to change. The child must learn new muscle coordination for speaking and singing. The male voice change is a well-known phenomenon. Let's look more closely at the female adolescent voice change.

SLIDE 8

At adolescence, the female speaking voice lowers slightly in pitch, and it may sound husky or hoarse. Occasionally it will even "crack."

SLIDE 9

The singing voice changes as well. Initially, the voice range becomes larger. Girls find they can sing a little higher and a little lower than in childhood. But, around the time of the first menstruation, adolescent females temporarily lose access to some previously comfortable singing notes either in the high OR the low end of the voice. These range fluctuations are unpredictable, and the daily variation can be frustrating to a singer whose voices often feel dry, gravelly, "gunky," and sore.

SLIDE 10

A very noticeable quality of the female adolescent singing voice is a "breathiness" of tone.

SLIDE 11

Breathy tone occurs when vocal folds do not close normally, leaving a developmental gap that cannot vibrate. This gap leaks air causing a hissing or "sh" sound during singing. This opening is a result of rapid laryngeal growth and the subsequent breathy tone is a normal and temporary quality of the adolescent voice change.

SLIDE 12

Females cannot sing very loudly or with much endurance during voice change, and they often feel unable to hold long tones. They may not sing pitches accurately because the voice is variable from day to day. Unlike the phenomenon of male changing voice, there is little scientific data about female changing voice.

SLIDE 14

Researchers have defined developmental stages of female adolescent voice change, but the stages are not sequentially predictable. The duration of voice change extends across multiple years and the symptoms differ for every singer.

SLIDE 15

Voice change symptoms are a normal part of development, and they are temporary. Adolescents are encouraged to maintain healthy singing practices and to keep singing.

SLIDE 16

Thank you for watching. Please return to survey.

Still singing after all these years –
A Perceptual Study of Post-menopausal Singing Voice Behaviors with Implications for Singers, Voice Teachers, and Choral Conductors

Kathy Kessler Price[1]

Abstract

This study examined $N = 23$ post-menopausal singers through a questionnaire that addressed twenty-four aspects of vocal behavior, hormone therapy use/non-use, and typical singing mode, as well as other demographic information. It follows and was prompted by my 2010 doctoral dissertation, which examined $N = 307$ women's voices in pre-, peri-, and post-menopausal lifespan stages. The purpose of this study was to investigate perceived singing voice changes during post-menopause in cisgender women singers a decade or more after the menopausal event. Results included behaviors regarding voice function (loss of high range and loss of vocal stamina, difficulty in singing high and softly, and difficulty with onsets), vocal health (concerns included partial paralysis of the folds, reflux, hoarseness, and several respiratory ailments), and concerns/rewards of singing during the post-menopausal hormonal stage of life as discussed by the participants in narrative responses (52 discrete comments). Limitations of the study are stated. Pedagogical considerations include range and practice protocols and choral rehearsal techniques for promoting optimal vocal health for mature cisgender women singers.

Keywords: post-menopause, vocal health, singing, voice, hormones, rehearsal protocol, practice protocol, vocal aging

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Choirs around the globe are populated with women whose singing voices may have changed as they have aged. The post-menopausal lifespan stage often means diminished hormone levels, stiffer muscles, lessened ribcage compliance for breathing, loss of high (and sometimes low) range for singing with a corresponding lowering of the speaking fundamental frequency, as well as difficulty in singing softly, especially when singing higher pitches, among other complaints (Abitbol et al., 1999; American Lung Association, 2018; Davis, 2004; Ferraz et al., 2013; Gorham-Rowen, 2002; Vigil, 2015). Yet, these women still want to sing and contribute to their choirs with their musicality, musicianship, life experience, and with voices still capable of expressive beauty.

The purpose of this study was to investigate perceived singing voice changes during post-menopause in cisgender women singers a decade or more after the menopausal event. The study surveyed $N = 23$ post-menopausal singers, asking for demographic information, typical singing modes (i.e., soloist, choir member, teacher, a combination of these), and a self-report assessment on 24 different aspects of singing behaviors and qualities.

Review of Literature

Hormonal changes and loss of estrogen, during the menopausal stages of peri- and post-menopause, specifically, impact a singer's voice and can do so dramatically (Abitbol J., & Abitbol B., 1998; Abitbol et al.,1999; D'haeseleer et al., 2011; Davis, 2004; Friedman, 2011). Abitbol et al. (1989) revealed this influence in showing the close similarity between cervical and vocal fold compositions using cytological comparisons. Because the potentially decade-long process of peri-menopause and the subsequent post-menopausal stages result in hormone loss as well as generalized aging, deleterious voice change often accompanies the later decades of a woman's life (Abitbol et al., 1999; Astramowicz & Pajor, 2012; Khare, 2016). As one example of physical change affecting singing, Davis (2004) reported that respiration capacity reduced 40% between the ages of $40 - 80$. With the average age of menopause in the U.S. being 51 years (Mayo Clinic, 2020), the aging process combined with dramatic hormonal changes makes a singer's breathing demands potentially much more difficult.

The vocal mechanism is highly influenced by hormones as can clearly be seen by adolescent male voice change. This male voice change is recognized as remarkable for many with voice breaks, laryngeal instability, hoarse voice quality, and diminished range until the change is mostly complete (Cooksey, 1999). Many peri-menopausal women have a similarly extreme experience, though that fact is not widely known (Abitbol et al., 1999; Bos et al., 2020).

Abitbol et al. showed in their 1989 study that cytological smears of the cervix as compared to the vocal folds showed remarkably similar, if not identical, composition. This discovery expanded how the voice was viewed with the new understanding of the larynx as a mechanism highly influenced by sexual hormones. For women, these were primarily

estrogen and progesterone. Between the years of 1991 and 2002 (Women's Health Initiative [WHI], 2002), a short 11 years passed where hormone therapy (HT) was considered a helpful and relatively safe tool for preserving a more youthful voice quality.

The WHI study (2002), which examined over 161,000 women on hormone therapies, made recommendations regarding the use/non-use of HT and its influences on their general health. This longitudinal study was halted when the older participants (over 65 years of age) began to exhibit some serious health issues relating to heart, stroke, and breast cancer. Brigham Women's Hospital (2012), Lobo (2013), and Bos et al. (2020) have examined the WHI study more recently and have brought into question the wisdom of stopping the study for all participants, rather than only the oldest ones. Brigham Women's Hospital (2012) reported that HT use fell by 70% of previous use after the WHI report was published. The ensuing fear and uncertainty led to the immediate reduction of HT use across ages, though more recent research (Kadakia et al., 2013; Lobo, 2013) suggested that it may be safe and beneficial for many menopausal women. The positive effects of HT use included a reduction in mortality for younger women and those near the start of menopause, as well as protection from coronary disease and osteoporosis (Lobo, 2013). Those effects, which may also help menopausal women speak and sing with greater ease, were disrupted and in a sense, denied for a majority of singers over the past eighteen years.

Though there has been considerable research on general health for post-menopausal women, the effects of this lifespan stage on the singing voice have been underexamined. Current searches of the literature using such keywords as post-menopause, singing, voice, hormones, vocal folds, and vocal aging initially garnered only 31 articles, of which only one (Ferraz et al., 2013) was specifically about hormonal influence on the voice, and this was a speech study, not singing. Further investigation of more databases for articles, dissertations, and books produced 25 entries that focused on either menopause in general or its effects on the voice in the past decade. Those dealing with the speaking voice included, among others, D'haeseleer et al. (2012); Glaser et al., (2016), Rojas et al. (2020), and Sataloff and Kost (2020). Articles, dissertations, and books specifically dealing with the older (not necessarily post-menopause) singing voice numbered fewer than 20 and included Price (2010); Edwin (2012) Prakup (2012); Smith and Sataloff (2012); DeMaio (2013); Richie (2013); Vigil (2015); Elliott (2017); Brunssen (2018), and Bos et al. (2020). Of these, the largest studies in terms of participants were Price with $N = 307$ and Vigil with $N = 249$ participants.

Relatively little research had examined female singing voice in specific hormonal conditions (Abitbol et al., 1989, 1998; Abitbol et al., 1999; Lã & Sundberg, 2010; Lamarche, 2009). Protocols for building vocal health and technique had not been sufficiently developed specifically for female singing voices affected by peri- and post-menopausal phenomena (Stemple et al., 1994; Siarris, 2009).

Due to a paucity of research for female singing voices in various hormonal statuses, my dissertation in 2010 examined $N = 307$ female singers, disaggregating by pre-, peri- and post-menopausal statuses (Price, 2010), making it the largest study on female singing voices in light of hormonal stages with pedagogical considerations. The participants in

this research were all active singers – most singing in choirs, some taking voice lessons, and several teaching voice while maintaining a performing career. Most were choral singers by serious avocation. Their voices were analyzed acoustically by use of *VoceVista,* an acoustical software developed by Donald Miller and his colleague, Harm Schutte, in 1996 (Miller, 2008) and the Computerized Speech Laboratory (PENTAX Medical), which is frequently used in medical and speech/language therapy offices. Perceptually, voices were examined by analyzing three singing tasks: sustained /a/, glided siren from low to high and back, and a phrase of a song. They responded to three questionnaires: The Singing Handicap Index (Cohen et al., 2007) a Vocal Context Survey (Price, 2010) and a Voice Change History (Price, 2010), and they shared their menopausal stories if they were peri- or post-menopausal. An expert listening panel was employed to gauge voice production on a scale of "breathy" to "pressed." A particular focus was the influence of hormones and whether or not these singers were participating in or had participated in hormone therapy.

My 2010 study revealed some significant effects that are also meaningful to the current 2020 study. They include (a) pre-menopausal singers (acoustically and perceptually), who showed a significantly higher mean pitch range (measured in cents) than peri- or post-menopausal singers; and (b) non-HT users, who had a significantly larger overall range than HT users. This counter-intuitive statistic may be explained by the added lower range for most non-HT users with some post-menopausal singers with a low pitch end of A#2. Perceptually, (a) post-menopausal singers commented significantly more on the vocal source (laryngeal) issues with concern than did peri- and pre-menopausal singers; (b) singers on HT had significantly higher mean ratings (ratings closer to a balanced score from breathy to pressed) than those not on HT by an expert listening panel; and (c) choristers expressed a significantly higher number of comments on voice concerns than soloists (Price, 2010).

Based on range testing in the 2020 study for N=307 singers, Table 1 on the next page shows the changes in median high and low pitches for each menopausal status. It is notable that there was a drop in mean high range pitch from C6 in pre-menopausal singers to A#5 for peri-menopausal singers, and then both a return to C6 for post-menopausal singers on HT and a larger drop to F#5 for post-menopausal singers not on HT. Additionally, the non-HRT post-menopausal singers had an increase in lower range to as low as A#2 (overall range, not a mean).

Ten years after this study, I wished to replicate the 2010 study for a small subset of singers facing aging vocal effects in the post-menopausal hormonal stage. Post-menopausal singers are an underserved population in terms of research. However, due to the coronavirus (COVID-19) and subsequent pandemic, meeting with singers personally was not advised. Additionally, very few protocols were set in place in the first months of the pandemic with the resulting societal disarray; and therefore, I determined it was wise to narrow this update to an email questionnaire of the post-menopausal singers. The questionnaire was built upon the review of literature and the concerns and data of the peri- and post-menopausal singers from the previous study. This study investigated post-menopausal singing behaviors a decade or more after menopause to reveal voice behaviors, concerns, and benefits in singing.

Table 1.

Range Means and Modes Given in Pitch for Upper and Lower Singing Limits for Pre-, Peri-, and Post-Menopausal Singers, with and without HT.

Hormonal Status	Upper Means	Upper Modes	Upper Range	Lower Means	Lower Modes	Lower Range
Pre	C_6	D_6	$C^{\#}_5 - B_6$	F_3	F_3	$C_3 - A_4$
HRT Peri	$\mathbf{A^{\#}_5}$	$A^{\#}_5$	$F_5 - C^{\#}_6$	F_3	D_3	$C^{\#}_3 - A_3$
Non-HRT Peri	$\mathbf{A^{\#}_5}$	$A^{\#}_5$	$A^{\#}_4 - G^{\#}_6$	F_3	E_3	$B_2 - C_4$
HRT Post	C_6	D_6	$C_5 - E_6$	E_3	D_3	$C^{\#}_3 - C_4$
Non-HRT Post	$\mathbf{F^{\#}_5}$	B_5	$A_4 - F_6$	F_3	F_3	$A^{\#}_2 - D_4$

Note: Bold type indicates lowered upper-range limits. The red type indicates the high range equivalence between pre-menopausal singers and post-menopausal singers on HT.

Method

Participants

This study was approved by Rider University's Institutional Review Board and all participants consented. The participants were a sample of convenience drawn from singers who were known to the researcher and had participated in the 2010 study. These singers ($N = 23$) were cisgender women with a mean age of 65 years (range 60 –82 years). The mean length of time since the menopausal event was 14.6 years.

Though most participants currently regard themselves as choral singers (see the results below), 100% of these singers have taken or are taking private voice lessons. The mean for years studied is 18, the range is 3 months to 55 years, and the mode is 10 years. The length of time since the last voice lesson for each varied from those still taking lessons to the last lesson having been taken 52 years ago. The mean for that hiatus from lessons was 16.6 years with the median being 11 years. Nearly half (47%) of these participants were either still taking lessons (longest lengths of study: 55, 43, 38, 35, 32 years) or had stopped within the past one or two years. A requirement of participation in the study was that one had to be actively singing: practicing, rehearsing, and/or performing at least twice weekly.

Measures and Procedure

Due to the coronavirus limitations, the current study was conducted as an online questionnaire (see Appendix A) that queried singers about their (a) menopausal status; (b) use or non-use of hormone therapy (HT); (c) their perceptions of their own voice status (soloist, choral singer, voice teacher, choral conductor); (d) voice study; (e) voice description; and (f) voice function behaviors. The questionnaire was emailed to 25 singers and $N = 23$ post-menopausal singers responded. The 2 who did not return the questionnaire stated that they were not actively singing, a requirement of the study. Surveys were returned either via email or through the postal service.

Results

Of these 23 singers, nine participated in hormone therapy (HT) at some point during their peri- and/or post-menopause for an average length of participation being six years (range: .5 – 22 years). One participant, #17, currently 70 years old, only ceased using HT two years prior to the study. Another, participant #1, had to cease HT after 17 years of use due to a recurrence of cancer that was estrogen receptive. As all participants were post-menopausal, it is noted that only four of them had a surgical menopause: numbers 1, 2, 4, and 21. Three of these had an oophorectomy at the same time (removal of ovaries, and therefore a dramatic loss of hormones). Additionally, of the four women who had a surgical menopause, three, or 33% of the 9 HT participants, had used HT.

Of these nine who have taken HT, only one had since returned to hormone therapy for the past year. She had participated in HT during peri-menopause for 5 years, stopped, and resumed at age 63 (nine years after having stopped) due to "viral and hormonal symptoms (that) reduced the quality of my life significantly" (comment of participant #4). Since resuming HT, she had "no concerns." She stated that there was "significant improvement in degrees of dizziness, no more vertigo or migraines, reductions in heart palpitations and hormonal brain fog" (questionnaire comment, see Appendix A).

When those who had used HT previously were asked about their feelings regarding resuming it, the following comments were given:

1. "Would consider it again"

2. "Stopped when report linked it (HT) to cancer"

3. "Dangerous"

4. "I miss it!"

The reference in #2 and likely #3 was to the National Institutes of Health 2002 Women's Initiative (WHI) report that studied more than 161,000 post-menopausal women (50 - 79 years of age, mean of 63). The WHI study concluded that HT (typically at that time, Premarin and Prempro, which were common HT prescriptions) increased risks for post-menopausal women for breast cancer, heart disease, stroke, blood clots, and urinary incontinence (WHI, 2002). The WHI study was impressively large, but results for older participants were assumed for younger women as well (see the above review of literature).

Table 2 shows the types of hormone therapy used by the nine women who had participated in HT and were represented in this study. Length of use is listed in total use rather than specifically by HT type as most participants could not remember exact amounts or length of use for individual types. It is to be noted that six of the nine HT users were on the prescription Premarin, which constitutes 67% of the HT participation.

When asked how they currently describe their singer status, 17 of 23 (74%) chose "Choral Singer," two selected "Soloist," two chose "Voice Teacher," one selected "Both Soloist and Voice Teacher" and one chose both "Choral Singer" and "Soloist," separately. See Figure 1 on the next page for a visual representation of these divisions.

Table 2.
Singer ID# for Each Participant on HT, HT Type, and Duration of Use.

	Premarin	Progestin	Estradiol pill	Estradiol patch	Bio-Identical	Vitamins	"Supplements"	Cannot remember
Singer ID #								
1	17 years							
2								6 months
4			5 years on, 1 year off, now resumed					
10	1 year							
11	6 months							
12					1 year			
13	2 years							
16	4 years							
17	22 years							

Note: Shaded blocks indicate use of that particular HT by that participant.

Figure 1

Singer Status as Self-described, N = 23.
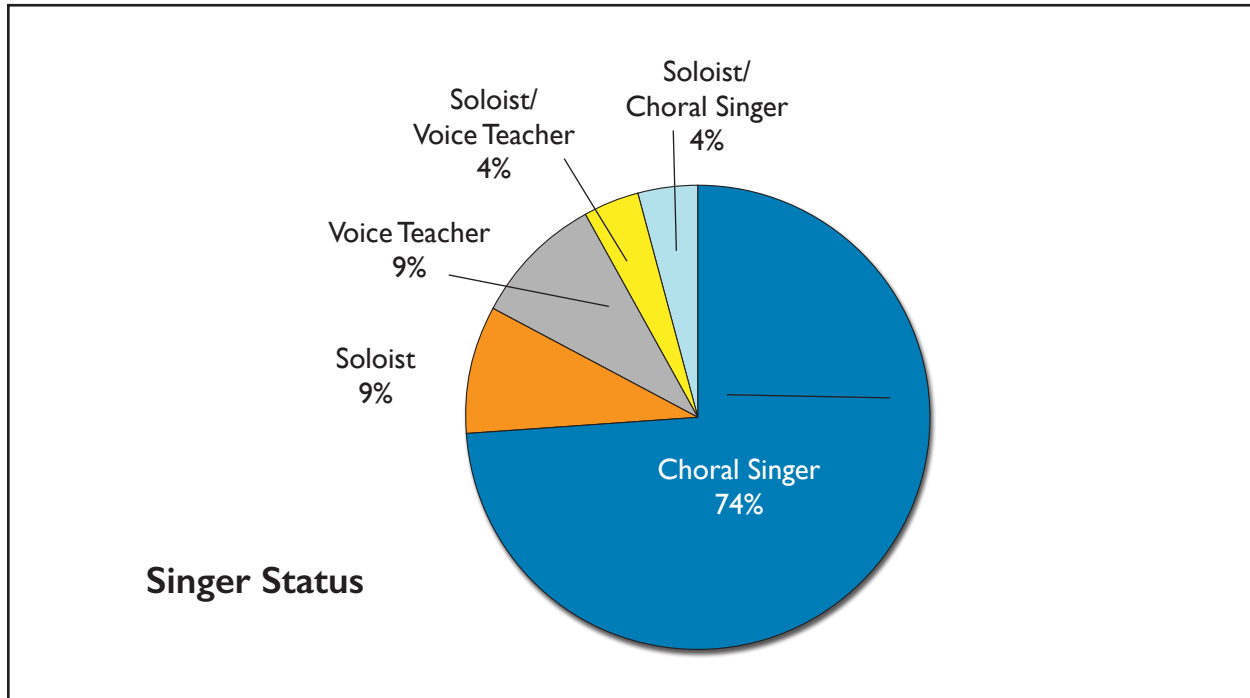
One portion of the questionnaire (see Appendix A) was a series of 24 perceptual descriptors of voice production, function, and quality asking participants about onsets, range, *passaggi* (a range of pitches during registrational transitions), dynamics, stamina and fatigue, hoarseness, phonation, intonation, voice breaks, and speaking voice. There were options to respond about concerns as well as feelings of confidence in voice use. Table 3 shows how participants responded.

Table 3.

Questionnaire Statements of Vocal Health and Function

Statement	# of Responses of 23 Participants
I am not "hoarse" any more now than I was in pre-menopause	15
High range is diminished	14
My speaking voice feels the same in pitch as during pre-menopause and is not uncomfortable	14
Onsets feel easy and balanced	13
Vocal stamina is diminished from what it was in pre-menopause	11

Vocal fatigue is no more common now than pre-menopause	11
My voice never or rarely "breaks"	11
Low range ("chest voice") is easier	11
Passaggi areas (transitions between registers) feel more unstable than in pre-menopause	10
It is more difficult to sing softly, especially high and soft	10
I occasionally have pitches not "sound" or stop sounding after I've begun to sing	10
Achieving or maintaining pitch is no greater a problem than during pre-menopause	10
Onsets can be rough or effortful	9
It is the same or easier to sing softly, especially high and soft	9
I have no problems with phonation (beginning and continuing vocal sound)	9
My voice sometimes "breaks"	9
High range remains intact	8
Passaggi areas feel as stable as during pre-menopause	7
Vocal stamina is the same or better than it was during pre-menopause	6
Vocal fatigue has become much more common	6
Achieving or maintaining pitch is occasionally or frequently a problem for me	6
Low range ("chest voice") is more difficult	3
I am often "hoarse"	2
My speaking voice feels lower in pitch and sometimes uncomfortable	2
Note: Data is shown from greatest to least in number of responses; more negative statements are in bold; the italics statement on range indicates change, but is not negative.	

To summarize, there were 12 positive statements and 12 less positive or, perhaps, negative statements from which to choose. The positive statements outshone the negative ones in a frequency count of 124 to 92 (216 total comments). As Table 2 demonstrates, the statement that was most frequently selected was "I am not any more 'hoarse' now than I was in pre-menopause" with 15 discrete answers. Other positive comments were that the speaking voice remained essentially the same as pre-menopause (14 answers), that onsets were easy

and balanced (13), and that there was no greater vocal fatigue (11) or frequency of voice breaks (also 11) than in pre-menopause. Another positive choice was the statement that the low range (chest voice) was now easier in post-menopause (11). Though one could say from research that loss of estrogen is a contributing factor of that ease, it could still be considered a positive development for the voice.

Negative behaviors that received the most responses include the statements that high range (14 answers) and vocal stamina (11) had both diminished. Participants also reported that passaggi areas felt more unstable than pre-menopause (10), it was more difficult to sing softly – especially high and softly (10), and that pitches occasionally did not sound immediately at onset or stopped sounding after phonation began (10).

One question that required a narrative response asked what descriptive words each singer would use to currently describe their voice. I conducted a content analysis revealing 52 discrete comments with 41 of those dealing with concerns or complaints and 11 being positive comments about voice use. Of those 52 comments, 23 (roughly half) were about phonation with 15 of the 23 being concerns regarding it. This response is particularly interesting as there were nine comments of the 23 in the comparative statement answers above that indicated "no problem with phonation." Of course, there are likely nine participants who feel no problems with phonation. Still, when asked to name for themselves some of their voice descriptors, the following words and phrases were written: "hoarseness," "middle voice hoarse" (two times), "middle doesn't phonate," "middle voice is unreliable," "sustaining hard," "phonation is unreliable," "registration breaks," "hard to overcome," "uneven," "nothing comes out," "more difficult" (two times), "voice breaks," and "warming up is necessary."

The next largest group of comments dealt with vocal health concerns (10 comments, all concerns). The concerns encompassed partial paralysis of the folds, arthritis, bronchitis, reflux, congestion, allergies, asthma, and COPD. The next most populated category was singing range with six of the seven comments stating a loss of high range. The last two categories addressed vocal fatigue/tension (5 negative comments) and breathing concerns (3).

Finally, two questions were asked:

1. Did you begin or return to lessons due to vocal concerns?

2. Do you believe menopause has affected your singing voice?

For the first, six (26%) of the 23 women said they did begin or return to lessons because of vocal concerns during these periods of their lives (peri- and post-menopause). For question #2, 13 (56.5%) of 23 women responded that they did feel menopause affected their singing voice. Seven (30.4%) women believed it did not, and two (8.7%) were not sure of the cause of vocal change (menopause, general aging, illness). One (4.3%) participant did not answer this question. Figure 2 on the next page gives a visual representation of these personal answers.

Figure 2

Responses of N = 23 female singers answering: Did menopause affect your singing voice?
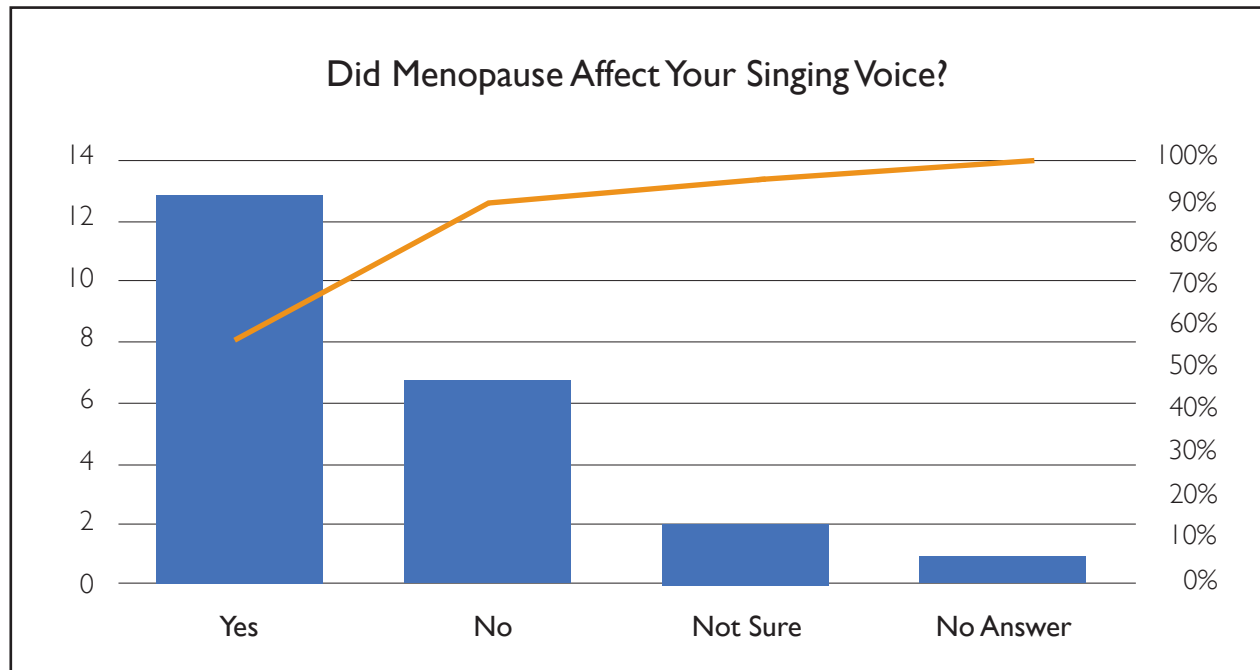
Discussion

Because of the laryngeal response to sex hormones, larynges grow at puberty and female ones decline at menopause with its precipitous drop in estrogen and progesterone. The desire to sing as one did before menopause is compelling as our voices represent a part of our self-identity. For both these reasons, it follows that singers who want to retain as much of their singing voices as possible would consider taking hormone therapy. Though 39% of the participants had used HT, it is revealing that only two (#1 and #17) participants remained on HT for a long period of time (17 and 22 years, respectively). It is also notable that one participant (#4) has chosen to return to HT and is currently very happy (self-report) with her choice. Through conversations by the researcher with singer-colleagues (Bos et al., 2020) and older students, it appears that there are more women considering this option now, after a long hiatus from HT. The reason? Quality of life. The reason for singers? Quality of life and improved singing voice.

Among these 23 singers, 74% of whom self-designate as primarily choral singers, there were 124 (57.4%) positive comments made about their own voice function and health and 92 (42.6%) negative comments. These positive comments are encouraging. It may be that for this cohort of 23 women, much of the instability and dismay of peri-menopausal years has quieted and the joy in singing has reemerged in post-menopause. However, though this statistic represents a majority in terms of positive comments, there are still 92 (over 40%) negative comments, which are not to be ignored.

From the singers' self-described voice characteristics as elicited from the statement "Words I would use to describe my voice production (how easy it feels to phonate/sing) are _____," specific vocal descriptions emerged from these 23 female singers. As in the 24 statements on voice function and health, these descriptors included words such as "easy, smooth, easy onsets, and same as during pre-menopause." They also commented that they worried about "unreliable voice," "hoarseness," "difficulty (in singing)," "hard to overcome," "less high range," and "more fatigue." Again, a disconnect existed between these singers and their perceptions regarding their post-menopausal voice function and health. An understanding among peri- and post-menopausal singers of the role of hormones in their vocal production is long overdue.

Additionally, of these dedicated singers (100% of them have studied or do study voice privately, and 74% of them consider themselves primarily choral singers), 26% began or returned to voice lessons when they felt something amiss vocally in peri- or post-menopause. More than a quarter of these 23 singers sought professional assistance to help them navigate this lifespan vocal stage, whether they identified it as a "stage" for themselves or not. It is particularly impressive to me that 100% of participants have studied or do currently study voice privately.

There were various responses to the question that asked if the participants believed menopause had affected their voices. If the small percentage of women (8.7% of participants) who were not sure what caused the change were combined with the one no-answer participant (4.3% of participants) as well as those who believed in this effect (56.5%), then 70% of the participants felt that menopause, or something in that time frame, changed their voices. Thirty percent said "no," it did not. Yet, despite these vocal changes and the need to adapt once again, 23 of the originally solicited 25 participants reported actively singing. This statement is a tribute to both their fortitude and their love of singing.

Pedagogical Considerations

Range Guidelines

This new study looked specifically at post-menopausal singers. For the participants in the original study, I created a protocol based on ranges of the 307 singers as seen in Table 4 on the next page. These are suggested ranges for singers as they are vocalizing, for voice teachers as they teach post-menopausal singers (and singers in other menopausal stages), and for choral directors during choral warm-ups and as they select repertoire to keep in mind. For repertoire choices, it is advised to recall that these are upper and lower vocalizing limits, and not a range for a solo or choral piece. However, by reducing the upper and lower limits by several semitones, one may find the acceptable singing range. Also, it should be stated that many singers will not be able to sing these high and low limits. It is advised not to go higher or lower than these for most singers. Stay within what is freely and easily produced by any given singer, understanding that physical energy and connection are always needed for healthy and effective singing.

Table 4.

Suggested Guidelines for Vocalizing Ranges for Pre-, Peri- and Post-Menopausal Singers.

Stage	Upper Limits Vocalizing Range	Lower Limits Vocalizing Range
Pre-menopause		
Soprano:	C_6 - E_6 + whistle register	$F^{\#}_3$
Mezzo/Alto:	$A^{\#}_5$ - C_6	F_3
Peri-menopause		
Soprano:	$A^{\#}_5$ - C_6	$G^{\#}_3$
Mezzo/Alto:	G_5 - $A^{\#}_5$	F_3
Post-menopause		
Soprano:	B_5 - D_6	$F^{\#}_3$
Mezzo/Alto:	F_5 - $A^{\#}_5$	D_3

Note: Post-menopausal singers are in bold as they are the focus of the current study.

Rehearsal and Practice Protocols

Rehearsal and practice protocols can be suggested based on the data from the 2010 and 2020 studies. Before the rehearsal begins, repertoire should be chosen with the age and menopausal stage (pre-, peri- or post-) of the choristers in mind. A warm-up routine at the beginning and a cool-down routine at the end of these periods of athletic vocal use are essential.

For post-menopausal singers, singing in a high range is often tiring and, at times, not possible. Singing in the high range constitutes the most difficult vocal demand, especially at soft dynamic levels. These statements are not to say that range must be severely limited (see both Tables 1 and 4). However, high tessitura and frequent, sustained, high pitches are not recommended. A "visit" to a high note or shorter, high passage can be fine.

For long passages on one breath, post-menopausal singers may find the vocal mechanism drying and tiring as reported in questions on vocal fatigue and supported by literature (Davis, 2004). The dry vocal mucosa (hormone loss) requires more frequent respiration to vibrate freely. Therefore, more frequent breaths within a phrase or section are required.

Typical lengths of rehearsals and practice sessions require us to consider their organiza- tion and priorities. Because vocal fatigue/stamina issues are part of peri- and post-meno-

pausal stages, as well as older mature voices in general, the amount of voice use in a practice session or a rehearsal matter. The best practices that I recommend are $10 - 15$ minutes of singing or speaking (speaking text in rhythm, counting aloud, etc.) at a time, interspersed with other non-voice activities. These activities could involve listening to recordings, marking breath and diction in the scores, clapping/tapping rhythm or beats, learning about the historical background of a piece, and discussing interpretive suggestions from the teacher or conductor. Voices in general, and particularly voices in hormonal change, find long rehearsals with consistently sustained voice use challenging. Sixty to 90-minute rehearsals, organized as described, are typically much more productive than a two to three-hour block. More frequent, shorter rehearsals are recommended. The same is applicable of practice and voice lesson duration. Variety is indeed the spice of life that is most conducive to comfortable vocalism.

Two more musical or aesthetic choices need to be mentioned here. Due to hormone loss, voices become less agile and melismas, therefore, become more challenging. The good news here is that agility exercises can help these voices move more effectively. Melismas can be divided into more manageable units with different singers assigned differing groups. Also, the other aesthetic, sometimes considered historically based, is straight-tone singing. Older voices of all sorts find this controlling of their naturally developed vibrato to be tiring since it often involves a restricting of vocal freedom. Just like high, sustained passages, occasional moments or phrases with reduced vibrato can be fine. Entire pieces in this mode are often not conducive to beautiful tone among post-menopausal singers.

Limitations of Study and Future Directions

Limitations of this study included the inability to obtain certain acoustical, airflow, and mechanical measurements due to the COVID-19 crisis during 2020-2021. Because of the pandemic, the study relied on self-report. The small convenience sample size was a limiting factor, and there was a variance in private voice study by the participants, some studying continuously, others taking a hiatus, and still others studying for only a short time. These are confounding variables that are not controllable in this study, nor, indeed, are they customarily controlled in a choral setting.

However, what this study does support is the growing body of literature that has revealed the effects of hormone loss, affecting voice behavior. This awareness of hormonal influence on the voice in middle and later life is critical for singers, teachers, and conductors to embrace. Future directions could focus on testing hormonal levels in singers as well as reassessing the protocols of hormone therapies in light of voice use. Acoustical and airflow assessments should also be resumed.

Conclusion

This generation of post-menopausal singers has been at the center of the reaction to the WHI (2002) study, halted early due to fear of negative health consequences. Though many

researchers now believe the reaction to stop hormone therapy for so many women was too conservative, the reality is that most women did follow doctors' orders and ceased taking HT, or never began, and suffered the full range of menopausal symptoms. These symptoms culminated for many in the loss of the voice's ability to retain its more youthful function for a longer period of time – a gift of HT. For present and future singers, it may be that HT can be considered an optional choice once again.

For this study's 23 participants, loss of high range and loss of stamina ranked first and second in reported issues. Four complaints of voice behavior tied for third place: singing softly and singing high and softly simultaneously, instability at passaggi points, onsets and continuance of phonation, and vocal health concerns. Singers, voice teachers, and choral conductors can address these concerns by selecting repertoire that is kind to the post-menopausal voice: limiting a high tessitura, selecting shorter pieces, requesting "straight-tone" as an ornament, rather than a sustained activity, and encouraging good vocal hygiene for their singers (i.e., sufficient hydration and sleep, practicing frequently in short time spans, etc.). Additionally, practice sessions, voice lessons, and choral rehearsals can all be adjusted to create sessions that promote vocal ease and, therefore, more vocal beauty.

Comments reflected the anxiety these singers feel with their current voices: "unreliable voice," "hoarseness," "difficulty (in singing)," "hard to overcome," "less high range," and "more fatigue." However, there were more positive than negative comments from this group of women with a mean age of 65 years (124 positive to 92 negative), perhaps suggesting that there is a pleasure in singing that was not reported by peri-menopausal singers previously (Price, 2010). Post-menopausal singers may characterize their voices as less reliable, particularly with a loss of high range and stamina as well as more health concerns than previously, but many also feel an easier, freer phonation and greater stability return.

Singers, voice teachers, and choral conductors all benefit from understanding how the voice navigates the hormonal and aging stages of vocal life. Through research we can be aware of protocols that enable better vocal behaviors that make practicing, rehearsing, and singing more enjoyable, effective, and beautiful during this post-menopausal stage of singing life.

Appendix A

(Your ID number will be added by the researcher): #_____

I participated in K.K. Price's dissertation research in 2009/10 (yes or no): _____

Questionnaire for Dissertation Follow-Up Study June 2020

Article Title: *"Still singing after all these years" – A perceptual study of post-menopausal singing voice behaviors with implications for singers, voice teachers, and choral conductors*

Author: Kathy K. Price, Ph.D.

For publication in: *The International Journal of Research in Choral Singing*

Please answer the following questions about your menopausal/hormonal status:

1. My sex is _____ .

2. How would you describe your gender?
   a. Female including transgender women
   b. Prefer to self-describe as _____
   (non-binary, gender fluid, agender, prefer not to say)

3. My birthdate (Month/Day/Year): _____

4. To the best of my knowledge, my menopausal stage is (please choose from the list/ definitions below): _____

   Pre-menopause – The period of early female adult life from the first menstrual period to the onset of peri-menopause

   Peri-menopause – A time when hormonal changes begin to move the body toward cessation of periods. Possible symptoms include irregular periods, hot flashes, mood-swings, and poor sleep. It generally lasts 4 years to ten years, most commonly during one's 40s - 50s.

   Post-menopause - It has been 12 consecutive months or longer since the last menstrual period.

5. If peri-menopausal, how long do you perceive you have been in this stage? (years/ months): _____

6. If post-menopausal, how long have you been in this stage? (years/months):

    _____

7. If post-menopausal, was your menopause surgical? _____ If so, at what age did you have the hysterectomy? _____Did your surgery include an oophorecto-my? _____

8. Have you ever participated in hormone therapies (HT, previously called HRT or hormone replacement therapy)? (yes or no): _____

(If you answered "no" to #8, you may skip question 9 and go on to the next section of questions.)

If yes to #8,

a. What sort(s) of HT have you taken or are you taking? _____

    _____

 (Please include prescription, homeopathic alternative choices, and dietary supplements)

b. How long have you been on (or were on) HT (Years/Months) _____?

c. Are you still on HT? _____ (yes or no)

d. Do you fit the description of someone who has been on HT previously, stopped, and then began again more recently? (yes or no) _____ ? If yes, why did you resume?

    _____

    _____

e. What are your current impressions, concerns, and feelings about resuming HT?

    _____

    _____

    _____

f. If you answered "yes" to question 9d above, would you be willing to have a short phone or Zoom conversation with me about your experience with returning to HT? _____ (Circle one: yes, no, would like more information)

Please answer the following questions regarding your singing:
1. At this point in my life, I consider myself to be:
    a. Primarily a soloist
    b. Primarily a choral singer
    c. Primarily a voice teacher
    d. Primarily a choral conductor
    e. Both a soloist and a voice teacher (mostly 50/50)
    f. Both a choral singer and a voice teacher (mostly 50/50)
    g. Both a soloist and a choral conductor
    h. Both a choral singer and a choral conductor

2. I have _____ have not _____ taken individual voice lessons in my life.
    (Please check one.)   *If you answered "I have" above:*

    a. How many years have you studied? _____

    b. What year did you **last** have a voice lesson or coaching? _____

Please answer the following questions about your voice:

1. Words I would use to describe my voice production (how easy it feels to phonate/sing)
    are: _____
    _____

2. Menopause (whether you are peri or post) has affected my singing voice: (yes or no) _____

3. Please circle the letter on all that apply:
    a. Onsets (how the tone begins) can be rough or effortful
    b. Onsets feel easy and balanced
    c. High range is diminished
    d. High range remains intact
    e. Low range ("chest" voice) is easier
    f. Low range ("chest" voice) is more difficult
    g. Passaggi areas (transitions between registers) feel more unstable than pre-menopause
    h. Passaggi areas (transitions between registers) feel as stable as during pre-menopause
    i. It is more difficult to sing softly, especially high and soft
    j. It is the same or easier to sing softly, especially high and soft
    k. Vocal stamina is diminished from what it was during pre-menopause
    l. Vocal stamina is the same or better from what it was during pre-menopause
    m. Vocal fatigue (larynx "feels" tired) has become much more common
    n. Vocal fatigue (larynx "feels" tired) is no more common now than pre-menopause

    o. I am often "hoarse"

    p. I am not "hoarse" any more now than during pre-menopause

    q. I occasionally have pitches not "sound" or stop sounding after I've begun to sing

    r. I have no problem with phonation (beginning and continuing vocal sound)

    s. Achieving or maintaining pitch is occasionally or frequently a problem for me

    t. Achieving or maintaining pitch is no greater a problem for me than during pre-menopause

    u. My voice sometimes "breaks"

    v. My voice never or rarely "breaks"

    w. My speaking voice feels lower in pitch and sometimes uncomfortable

    x. My speaking voice feels the same in pitch as during pre-menopause and is not uncomfortable

If you do NOT feel you have any vocal concerns or issues due to your menopausal stage, you have finished this questionnaire. Thank you so much for your time and for helping to continue research on the lifespan female voice and menopausal influences.

If you feel you ARE HAVING or HAVE HAD menopausal vocal concerns and issues, please answer the remaining questions as they apply to you.

1. Concerns about my singing voice led me to begin _____ or return _____ to voice lessons (please check one).

2. Because of vocal change, I have changed my choral designation/vocal fach from _____ to _____ .

Thank you so very much for your contributions to this research. As someone who has experienced a lot of vocal change through my life's singing journey, I thank you for helping other women of similar experience understand this life-change and embrace ways to continue singing beautifully and joyfully throughout our lives.

_____

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Key Changes:
Choral Directors' Experiences with
Gender-Inclusive Teaching

Dustin S. Cates[1]

Abstract

As adolescent gender identity has expanded to encompass non-binary forms of gender identity in contemporary social contexts, scholars in music education have begun to examine the music learning experiences of transgender students and the role of the music teacher in fostering an environment that is affirming to gender-diversity. Anecdotal observations of choral music practices in schools in the United States have indicated some changes occurring in the naming of ensembles, the categories used to describe voicing of choral music, the gender terminology used by choral directors during instruction, and program policies and procedures. The purpose of this study was to examine school choral directors' experiences with gender-inclusive instructional practices and their level of confidence in teaching transgender students. A survey consisting of 39 items including questions regarding experience teaching singers who identify as transgender, gender-inclusive instructional practices, and level of confidence in teaching students who identify as transgender was developed for this study. Participants were choral directors ($N = 227$) with experience teaching in secondary schools in the United States. Results indicated that a majority of participants currently engaged in gender-inclusive teaching practices and had moderate confidence in the use of these approaches. Participants reported high confidence in the use of gender-inclusive language and low confidence regarding the impact of medical and non-medical interventions on the singing voice. Results also revealed that choral directors who engaged in formal training experiences reported higher levels of confidence in their ability to teach a singer who identified as transgender.

Keywords: transgender, choral, teaching, gender, school, singing

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The number of students in schools who openly identify as transgender is on the rise (Kosciw et al., 2018). Researchers in 2017 estimated that there were more than 300,000 students who identified as transgender in schools in the United States (Johns, et al., 2019). Many lesbian, gay, bisexual, transgender, and queer (LGBTQ) youth have endured harassment and rejection as they seek to define and express their personal identity with authenticity (Blaise, 2005; Kosciw et al., 2016; Koza, 1994; Nixon, 2010; Roulston & Misawa, 2011; Singh & Jackson, 2012; Trollinger, 1993). As concerns have emerged, researchers have begun to explore how schools might better serve LGBTQ youth (Airton et al., 2016). Much of this inquiry highlights the central role of the teacher in creating a safe, positive, and impactful learning environment for sexual and gender-diverse students (Airton et al., 2016; Howard, 2016).

Gender is a significant factor in the growth, development, and education of adolescents (Bandura, 1977, 2001; Brill & Kenney, 2016; Brill & Pepper, 2008; Canevello, 2016; Kohlberg, 1966). Stereotypes and societal norms related to gender are deeply ingrained in schools (Blaise, 2005; Koza, 1994; Trollinger, 1993). As students who identify as transgender have become more open about their gender identity over time, discrimination and harassment toward these students have been noted in schools (Kosciw et al., 2016; Nixon, 2010). Researchers have found that transgender students have, over time, experienced increased victimization and are at greater risk for self-harm or suicide (Brill & Kenney, 2016; McGuire et al., 2010; Nichols, 2012). For many transgender youth, the complex developmental progression of adolescence is further complicated by coming out, name and pronoun changes, pressure to pass (appearance matches gender identity), developing a network of support, and navigating gender-segregated spaces (Erickson-Schroth, 2014). Kosciw et al. (2016) linked risk factors associated with transgender youth to disparities in their educational outcomes. The authors found that students who identified as transgender had increased absences, lower achievement, and were less likely to attend college than their peers (Kosciw et al., 2016). The social and emotional vulnerabilities and barriers to educational equity that many gender-diverse students experience has illuminated the need for a careful examination of how teachers and schools address gender-inclusivity.

As adolescent gender identity has expanded to encompass non-binary forms of gender identity in contemporary social contexts, scholars in music education have begun to examine the music learning experiences of transgender students and the role of the music teacher in fostering an environment that is affirming to gender-diversity. These efforts have pointed toward LGBTQ representation in music curriculum and content, the use of gender-inclusive language, and changes to administrative policies and procedures that guide music programs (Bergonzi, 2009; Garrett, 2012; Silvera, 2019). As teachers have made efforts to include LGBTQ content into the curriculum and develop strategies to challenge gender bias, scholars have found that educators benefit from an enhanced understanding of the needs and experiences of LGBTQ students to do so impactfully (Jorgensen, 2010; Silveira & Goff, 2016). Garrett and Palkki (2019) posit the use of academic (*sopranos* instead of *girls*) and gender-inclusive language (*folks* instead of *guys*), an awareness and open

discussion of gender bias in repertoire selections, a change in approach to concert attire, reviewing and advocating for reform of state music organization policies that discriminate based on gender, and gender-inclusive over-night trip guidelines, as recommendations for fostering an inclusive choral program. Similarly, Palkki (2020) studied the secondary choral music experiences of three transgender students. Palkki suggested that school policies, administration, norms of school choral programs, and outside music organizations (e.g., state music education or activities organizations) were elements that either challenged or negated the choral music experiences of the profiled students.

Garrett and Sims (2019) underscored many pedagogical considerations for choral directors related to the transgender singing voice. The authors proposed that gender-inclusive singing instruction requires approaching each singer as an individual, free from preconceived gender stereotypes. They also underscored understanding of voice feminization and voice masculinization, the desired voice type of a singer, and the effect of various medical and non-medical interventions on the singing voice as key concepts in teaching singers who identify as transgender (Garrett & Sims, 2019). Further, researchers have noted the importance of individual conversations regarding needed changes to assigned voice parts and a focus on healthy vocal production, particularly if a singer is transitioning (Garrett & Sims, 2019; Saplan, 2018).

The line of research exploring the experiences of singers who identify as transgender is growing. Scholars have noted that gender-based ensembles (men's choirs and women's choirs), male/female concert attire and repertoire that presents gender as binary or reinforces gender-stereotypes, all serve as barriers for full inclusion of transgender singers in secondary choral music settings (Bergonzi, 2009; Nichols, 2012; Palkki, 2017; Roulston & Misawa, 2011; Silvera, 2019; Trollinger, 1993). Researchers have explored the lived experiences of transgender singers and investigated the opinions and attitudes of music educators associated with teaching LGBTQ students (Palkki, 2020; Nichols, 2012; Silveira, 2019; Silveira & Goff, 2016). However, no extant studies were discovered that attempted to quantify and qualify the changes choral directors have made to create more inclusive learning environments for transgender singers and the choral director's confidence in doing so.

The purpose of the present study was to examine the gender-inclusive instructional practices of choral directors in secondary schools and their level of confidence in teaching transgender students. This research was guided by the following questions:

1. What instructional practices do secondary school choral directors report to demonstrate gender-inclusivity in their teaching?

2. What level of confidence do secondary school choral directors report regarding their ability to teach transgender students?

Method

I used a simple descriptive and comparative descriptive design for this study. A simple descriptive approach was used to explore choral directors' self-reported gender-inclusive teaching practices, and a comparative descriptive approach was used to ascertain participant confidence in teaching students who identify as transgender. A University Institutional Review Board approved the investigation and granted an exemption from collecting signed consent from participants. In an effort to reach as many secondary school choral directors as possible, I developed a web-based survey instrument for data collection. I administered a pilot study to ensure question clarity, establish estimated response time, and to explore methods for coding and reporting the survey data. Pilot study participants ($N = 30$) submitted responses and I collected feedback regarding their experiences. As a result of feedback from pilot study participants, I made changes regarding question construction, typographical errors, and the order of questions.

Through convenience and snowball sampling, I recruited secondary school choral music educators with experience teaching in secondary schools in the United States to participate. First, the American Choral Directors Association (ACDA) distributed an invitation to participate, including a link to the survey, in a monthly electronic newsletter sent to the current membership of ACDA. Distribution of the invitation to participate in the ACDA electronic newsletter was sent to approximately 4,000 potential participants and gathered 467 responses. Second, I sent an email to immediate and proximal spheres of colleagues and former colleagues, inviting them to participate and to share the invitation with others. Further, I leveraged social media (Facebook and Twitter) to share the survey link and invitation to participate. Finally, I made direct, in-person invitations by handing out printed materials at a national convention of the American Choral Directors Association.

The inclusion criteria were as follows: (a) submissions with complete responses to all required survey questions, and (b) indication of current or previous experience teaching choral music to students in secondary schools (6th through 12th grades). Additionally, I chose to include responses from participants who worked or taught in settings outside of a physical secondary school (e.g., university, church, community choir) but worked with secondary school aged students on a regular basis. Submitted surveys that failed to meet the inclusion criteria were those that were opened but had no answers submitted ($n = 223$), and submissions that omitted consent to participate ($n = 8$); or no experience teaching secondary school students ($n = 9$). Based on these criteria, 227 surveys were included for analysis in this study. Because participants were not required to answer all survey questions, the total number of responses for each question varied from the total number of study participants.

While the survey for this study was designed to examine choral directors' experiences with gender-inclusive instructional practices and confidence in teaching singers who identify as transgender, the reader should consider the possibility of participant bias. Because participants in this study volunteered to participate, they may have brought pre-existing points of view to the topic of working with students who identify as transgender. The deci-

sion to contribute could indicate that respondents may have previous knowledge or experiences with teaching singers who identify as transgender, and this previous knowledge or experience may have influenced the results of this study.

Participants in this study (N = 227) were choral directors from across the United States[1] with experience teaching students in secondary school grade levels. Thirty-four percent (n = 78) of respondents identified as male and 59% (n = 133) identified as female. Individuals who identified as transgender, non-binary, or some other gender not defined in the prescribed options accounted for 2% of participants (n = 6) and 4% of participants (n = 8) declined to share their gender identity. When indicating sexual orientation, 68% of participants (n = 154) identified as straight, 18% of participants (n = 41) identified as gay, 6% of participants (n = 13) identified as bisexual, 5% of participants (n = 11) identified as a sexual orientation not provided among the prescribed options, and 4% of participants (n = 8) chose not to disclose their sexual orientation.

Participants reported their school setting, secondary grade levels taught, and years of teaching experience. When I asked participants how they described their school setting, 23% (n = 52) indicated rural, 46% (n = 105) indicated suburban, 23% (n = 52) indicated urban, and 8% (n = 18) described their school setting as being comprised of students from a variety of communities. Study participants taught middle school (31%, n = 93), high school (46%, n = 140), or indicated they currently or previously had experience teaching a combination of both middle school and high school (23%, n = 69). Choral directors with ten or more years of teaching experience comprised 59% of participants (n = 133) and 42% of participants (n = 94) reported teaching experience ranging from nine years to one year.

I used Qualtrics, a web-based survey and data collection software, to create the survey for this study. The survey included a total of 39 items: a consent statement; four questions regarding experience teaching singers who identify as transgender; 13 questions addressing gender-inclusive teaching practices, 13 four-point, forced-choice Likert-type scale responses related to confidence in teaching students who identify as transgender; and eight demographic questions. Questions surrounding gender-inclusive teaching practices were based on extant research exploring the topic in choral music settings (Bergonzi, 2009; Moisescu, 2014; Palkki, 2020; Nichols, 2012; Roulston & Misawa, 2011; Trollinger, 1993).

Four of the questions examining gender-inclusive teaching were open-response. These questions addressed successes and challenges with gender-inclusive teaching, reasons a participant may have chosen not to engage in gender-inclusive teaching, and participant descriptions of their approach to gender-neutral concert attire. I chose to quantify participant responses to the questions regarding successes with gender-inclusive teaching, challenges with gender-inclusive teaching, and reasons a participant elected not to alter their teaching to be more inclusive of gender diversity. While reading participant responses to each of these questions, I took notes, recording the sentiment(s) expressed in each statement, and

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[1] Thirty-eight states and the District of Columbia are represented in the sample. Participants from Alaska, Delaware, Montana, Nevada, New Hampshire, New Jersey, New Mexico, North Dakota, Rhode Island, South Dakota, Vermont, and West Virginia are not represented.

based on my notes, established emergent themes. Using my notes, I developed procedural definitions and coding instructions for each theme.

After developing procedural definitions and corresponding themes, I then used them to code each response. I thematically coded participant responses expressing success with gender-inclusive teaching:

- **classroom culture:** Statements pertaining to broad structural or behavioral changes to the choral program or institution, multiple approaches toward gender-inclusive teaching practice, or other similar words, phrases, or ideas.

- **concert attire:** Statements pertaining to changes or accommodations made to the prescribed clothing options that singers wear for performance or other similar words, phrases, or ideas.

- **inclusive language:** Statements pertaining to the language used in rehearsal and/or in print or other similar words, phrases, or ideas.

- **singing considerations:** Statements pertaining to the transgender singing voice or other similar words, phrases, or ideas.

I coded participant statements expressing challenges with a gender-inclusive approach to their teaching:

- **community response:** Statements pertaining to the response or lack of response by educational stakeholders, students, parents, and/or community members related to the individual teacher's ability to be inclusive of transgender singers or other similar words, phrases, or ideas.

- **inclusive language:** Statements pertaining to the language used in rehearsal and/or in print, or other similar words, phrases, or ideas.

- **student support:** Statements pertaining to the individual choral director's ability to offer support or accommodations to singers who identify as transgender or other similar words, phrases, or ideas.

- **teacher knowledge:** Statements pertaining to an individual teacher's knowledge or lack of knowledge related to the singing and non-singing experiences of transgender individuals or other similar words, phrases or ideas.

I also coded participant responses expressing why they did not alter their teaching practices. Coding decisions were guided by the following themes and corresponding definitions:

- **already gender-inclusive:** Statements pertaining to the existence of current gender-inclusive teaching practices, or other similar words, phrases, or ideas.

- **disagreement with gender-inclusivity:** Statements pertaining to a disagreement with practices that are consistent with the inclusion of students who identify as transgender in a choral music setting, or other similar words, phrases, or ideas.

- **no need:** statements pertaining to no effort being made toward gender-inclusive instruction because of the absence of a transgender singer, or other similar words, phrases, or ideas.

- **vocal health:** Statements pertaining to gender-inclusive teaching practice as being in conflict with healthy singing pedagogy, a vocal health approach to singing instruction eliminating the need for gender-inclusive teaching, or other similar words, phrases, or ideas.

A reliability observer reviewed and coded each response using the same coding scheme. Consistent with Lavarkas (2008), intercoder reliability between my coding decisions and the reliability observer remained greater than .90 and were considered "highly reliable" (p. 3). The methodologies I used to establish thematic coding and reliability were in alignment with standard analysis practices for survey-based research (Lavarkas, 2008).

The 4-point Likert-type scale ranged from 1 (*no confidence*) to 4 (*high confidence*). I developed these statements based on existing research regarding teaching practices considered to be inclusive of students who identify as transgender (Brill & Pepper, 2008; Erickson-Schroth, 2014; Hearns & Kremer, 2018; Hershberger, 2005; Krell, 2014; Lessley, 2017; McGuire et al., 2010; Palkki, 2020; Rastin, 2016; Roy, 2015; Sims, 2017a, 2017b). To facilitate subsequent comparisons, themes represented in these statements were the same as those used for questions exploring gender-inclusive teaching practices. I chose a 4-point scale to force a choice between *high confidence* and *no confidence* and remove the option of a neutral response.

To determine internal consistency, I performed Cronbach's alpha reliability analysis on the 4-point Likert-type scale items for the pilot test survey ($n = 15$) and for the final online survey ($n = 13$) items. Overall reliability for the pilot test was high ($\alpha = .91$). Following the pilot test face validity procedure, I removed two Likert-type scale items, and changed the Likert-type scale from *agree/disagree* to *high confidence/no confidence*. Once official data collection had concluded, I performed the reliability procedure on data from the final online survey. Overall reliability for the final online survey was high ($\alpha = .83$), indicating a moderately high degree of internal consistency.

Readers should note that I, as the researcher, identify as a gay, cisgender male. I do not identify as transgender but am a part of the LGBTQ community and an ally of transgender people. I have attempted to conduct and report this research free from my own potential

bias and privilege, but these elements may have influenced this study. Nonetheless, the results of this study remain important in adding to a growing body of research in music education aimed at improving the music learning experiences of students who identify as transgender.

Results

Experiences Teaching Transgender Singers

Participants ($N = 227$) answered a series of questions addressing their previous knowledge of and experiences with teaching singers who identify as transgender. Almost all respondents (93%, $n = 211$) indicated that they had engaged with resources related to teaching students who identify as transgender. Individual participants were able to offer multiple responses using a "choose all that apply" format, resulting in a total of 582 responses. Only 4% of responses ($n = 26$) cited training in college, and 3% indicated training through in-service professional development sessions provided by their school district. Figure 1 presents responses ($n = 582$) showing types of training or sources related to teaching students who identify as transgender.

Figure 1

Participants' Reported Training/Sources
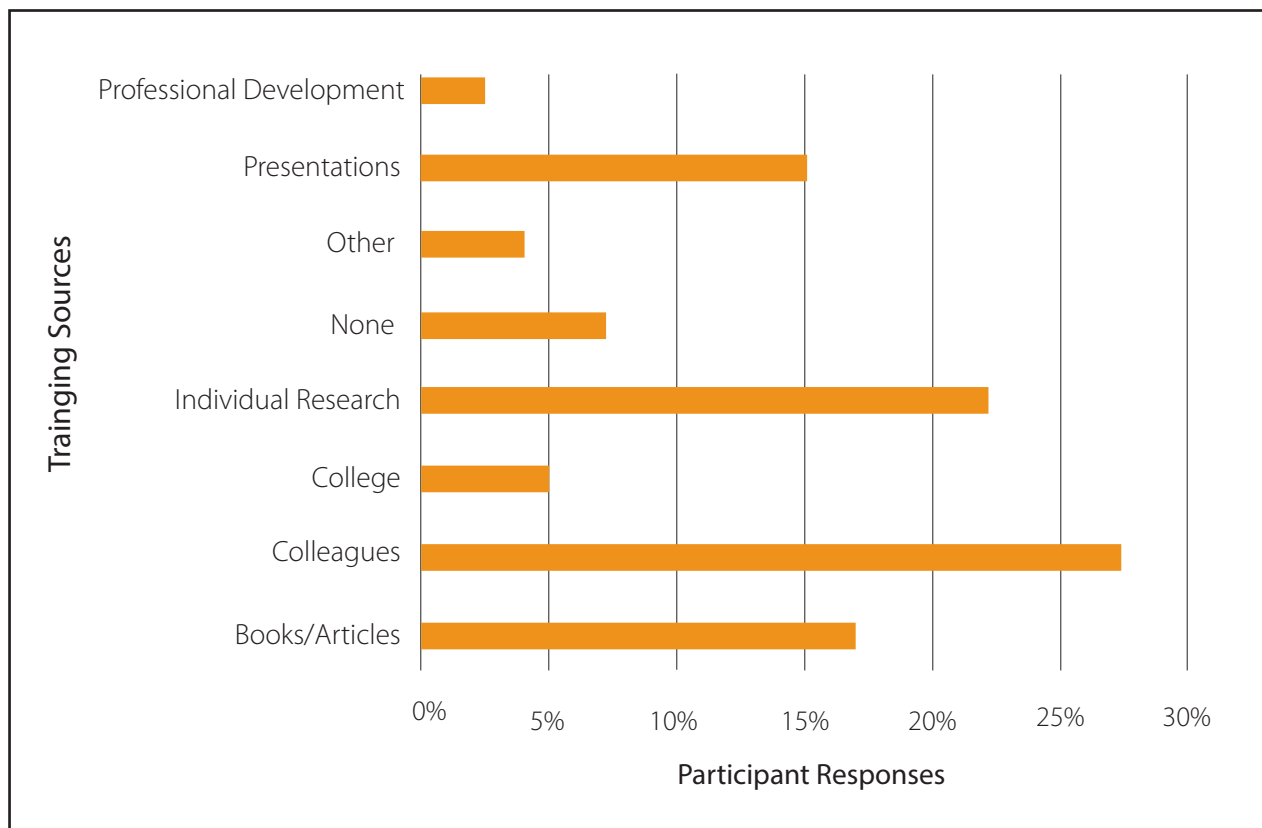
Figure 1. Participants' reported training/sources (n = 582) related to teaching students who identify as transgender.

Participants ($N = 227$) also reported experiences teaching transgender singers. Sixty-eight percent of participants ($n = 154$) indicated they experienced teaching a singer who identified as transgender and 32% of participants ($n = 73$) reported no experience teaching a student who identified as transgender. I asked respondents with experience teaching transgender singers ($n = 154$) a series of questions about those experiences. Seventy-nine percent of these respondents ($n = 122$) reported having taught one to five singers who identified as transgender and 15% of participants ($n = 22$) reported having taught six to ten students who identified as transgender. When I asked how recently they taught a student who identified as transgender 45% of these same respondents ($n = 114$) indicated one to five years ago and 42% of participants ($n = 105$) indicated they were currently teaching a student who identified as transgender. Finally, I asked participants with experience teaching transgender singers how they knew that their singers identified as transgender. The structure of the survey allowed this subgroup of participants ($n = 154$) to offer multiple answers to this question, resulting in a total of 318 responses. Forty-four percent of these responses ($n = 140$) indicated participants became aware that one or more of their singers identified as transgender because the individual student or students told them, and 20% ($n = 64$) indicated that participants became aware that one or more of their singers identified as transgender based on their own observations.

Gender-Inclusive Teaching Practices

The primary research question in this study sought to examine a phenomenon I, as a choral director, had observed anecdotally: some choral directors in secondary schools had begun to change their teaching practices to create experiences that are more inclusive of transgender singers. When I asked study participants ($N = 227$) if they altered their teaching practices or policies and procedures guiding their choral program to be more inclusive of singers who identify as transgender, 78% ($n = 176$) of participants reported having made these changes.

Sixty-eight percent of participants ($n = 154$) indicated that they taught one or more singers who identified as transgender. Experience teaching a student who identifies as transgender may indeed impact a choral director's implementation of gender-inclusive teaching practices. Therefore, I performed a chi-square test to compare use of gender-inclusive instructional practices between participants who indicated having taught a singer who identified as transgender and those who had not. Results showed that participants who had taught a singer who identified as transgender reported use of gender-inclusive teaching practices significantly more often than those who had not, $\chi^2(2, N = 227) = 25.64$, $p = .0001$.

Study participants reported that they taught high school ($n = 86$, 38%), middle school ($n = 41$, 18%), middle school and high school ($n = 50$, 22%), or that they work with secondary school students in some other capacity ($n = 45$, 20%). I performed a chi-square test to examine the participants' implementation of gender-inclusive teaching practices across grade levels taught. Results indicated a significantly different frequency distribution among those

teachers who worked with high school singers and those who worked with younger singers. High school choral directors were significantly more likely than other participants to engage in gender-inclusive teaching practices, $\chi^2(3, N = 227) = 16.11, p = 0.0011$.

Ninety-three percent of participants in this study reported engaging in training or accessing resources related to teaching singers who identify as transgender (see Figure 1). Training or engaging with resources may influence whether or not a teacher chooses to use teaching practices that seek to include singers who identify as transgender. As a result, I performed a chi-square test and found that participants who engaged in training related to teaching transgender students were more likely to report use of gender-inclusive teaching, $\chi^2 (1, N = 227) = 25.05, p = .0001$.

Successes and Challenges with Gender-Inclusive Teaching Practices

I asked respondents who indicated they changed their teaching practices ($n = 176$) to elaborate by reporting one success and one challenge in their efforts to create a more gender-inclusive singing environment. After reviewing responses addressing success with gender-inclusive teaching, I thematically coded these statements: classroom culture, concert attire, inclusive language, and singing considerations. Of these responses, 48% ($n = 84$) of participants indicated success was related to inclusive language, 26% ($n = 46$) attributed success to classroom culture,18% ($n = 32$) experienced success with concert attire becoming more gender-inclusive; and 7% ($n = 12$) were successful with singing considerations.

Choral directors ($n = 176$) who indicated they altered their teaching practice in an effort to be more inclusive to singers who identify as transgender ($n = 176$) were also asked to describe one challenge they encountered in regard to changing their instruction. I reviewed and coded these statements based on emergent themes: community response, inclusive language, student support, teacher knowledge, and none. Twenty-five percent ($n = 45$) of participants found inclusive language to be a challenge, 22% ($n = 38$) of participants struggled with student support, 21% ($n = 37$) of participants cited issues with community response, 17% ($n = 30$) reported they did not encounter a challenge, and 15% ($n = 26$) of participants found *teaching knowledge* to be an obstacle. Table 1 on the next page offers representative participant statements regarding successes and challenges with gender-inclusive teaching for each of the related coding categories.

Primary Factor Influencing No Change

While most choral directors in this study ($n = 177, 78\%$) reported altering their teaching practices to be more inclusive of singers who identify as transgender, 22% ($n = 51$) of participants indicated that they had not made any changes. I asked these respondents to describe the most important factor influencing this decision. After reviewing participants' written responses, I coded them by emerging theme: already gender-inclusive, disagreement with gender inclusivity, no need, and vocal health. Of the participants who indicated that they made no changes to their teaching practices, 65% ($n = 33$) indicated the primary

Table 1

Participant Statement Examples: Success and Challenge with Gender-inclusive Teaching

Coding Category	Statement Example
Success	
Classroom Culture	With my 8th grade students, I was able to have a conversation about labels and allow them to share their feelings to hopefully create a safe, brave space for everyone.
Concert Attire	All the students were happy about the concert-attire change, they liked to have more options to express themselves the way they wanted to. I went with 3 options, one included a skirt (with length requirements), two options included pants, and one option included a tie.
Inclusive Language	Open discussions with a non-binary student allowed me to know that he was less comfortable when I addressed the men as 'gentlemen.' I made a conscious effort to change my language to be neutral (e.g., Ok folks...) and he appeared more at ease.
Singing Considerations	Reviewing voice types at the beginning of each semester to remind students that typical genders can sing voice types that are unexpected i.e., boys can sing soprano.
Challenge	
Community Response	Administration (superintendent) at one school would not allow a girl to go to the women's restroom. She had to dress in the men's bathroom, do her long hair, and put on her makeup in the men's bathroom.
Inclusive Language	Old habits die hard. I felt the biggest challenge was the correct usage of pronouns.
Student Support	The depression the singer often feels.
Teacher Knowledge	Hard to figure out technique for folks taking hormones. Lots of trial and error and more limited ranges. Definitely a struggle for me to give specific technical advice.
None	None

factor influencing this decision was because there was no need to do so. "I have not made any changes because I have not had any students to necessitate the changes. When I have them, I will absolutely make the changes," is a participant response characteristic of those categorized, no need. Sixteen percent ($n = 8$) indicated that their teaching practices were already gender-inclusive, including one participant who stated, "I am a first-year teacher and

started out inclusive of gender. I advise the Genders and Sexualities Alliance at my school." Similarly, 16% (*n* = 8) of respondents cited vocal health as a reason for not embracing gender-inclusive practices. For example, "This student was a soprano, and he was okay singing soprano because I told him the importance of vocal health … Singing in another register for long periods could damage the voice," is a participant response that illustrates those emphasizing vocal health. Three percent of participants (*n* = 2) expressed a disagreement with a gender-inclusive approach, including one participant who said:

> It is extremely difficult for me to reconcile gender preference with the anatomy and physiology of a physical male or a physical female because the voice can't be "chosen" without chemical or surgical intervention - if at all. It is disruptive to the choral ensemble, and confusing to students, when a student who physically has a certain voice part asks to sing a different part. How is this fair to the other kids? To the ensemble as a whole? In competition? I have had to alter rooming practices when traveling for performances or competition, and that has gotten parents in an uproar as well.

Voice Part Assignments, Gender-Based Choirs, and Concert Attire

Study participants reported variables (*n* = 579) they considered when assigning a singer to a voice part (soprano, alto, tenor, bass) in a choral ensemble. The survey provided four options, gender, vocal range, musical ability and other variables, and the ability to select more than one response. Forty seven percent of participants (*n* = 272) indicated they assigned voice parts based on vocal range, 27% (*n* = 156) reported musical ability, 13% (*n* = 75) chose gender and 13% (*n* = 75) indicated other variables influenced their voice part assignments.

When I asked respondents whether any ensembles in their school's choral program were identified by gender (e.g., men's choir, women's choir, or some other term/title indicating male or female) slightly more than half of participants (*n* = 126, 56%) reported no choral ensembles identified by gender and 44% (*n* = 101) of participants indicated having choral ensembles identified by gender. I asked choral directors who reported having gender-based choral ensembles if they allowed singers of a different gender to participate in one of these ensembles, and 78% (*n* = 79) of these teachers reported they would do so. Participants who indicated that they did not have choral ensembles identified by gender reported whether any of these groups performed repertoire exclusively written for any combination of soprano/alto or tenor/bass voices, and 54% (*n* = 68) of this group answered affirmatively. As a follow-up question, they were asked to provide names and voicings for these ensembles. Table 2 on the next page shows the voicings and names for ensembles reported as gender-neutral.

Survey participants answered a series of questions addressing concert attire for their choral ensembles. When I asked participants if they assigned concert attire based on gender (e.g., male students wear tuxes and female students wear dresses), 58% (*n* = 132) reported

Table 2

Ensemble Voicings and Names Reported as Gender Neutral

Voicing	Ensemble Name	Voicing	Ensemble Name
T/B	Aces	TTBB	Kapituran
SSAA	Advanced Treble Ensemble	T/B	Kor
T/B	Argo Chorus	S/A	Les Chanteus
T/B	BariTenors	TTBB	Lunch Ensemble
T/B	Basso	S/A	Lyric
SSA	Bel Canto	T/B	Primo Vox
S/A	Bella Voci	S/A or T/B	Primo, Secondo, Terzo (by hour/class period)
SSAA	Belle Ange	S/A	Sorellanza
SSAA	Cantando	T/B	Tenor/Bass Choir
TTBB	Cantate	T/B	The Black and Gold
SSAA	Choraliers	S/A	Treble Choir
T/B	Colt Choir	S/A	Treble Tempos
T/B	Concordia	TTBB	Troubadors
T/B	Doublewide	T/B	Viking Choir
T/B	Elements Choir Tenor Bass Ensemble	S/A	Virtuosa
S/A	Elements Choir Treble Ensemble	SSAA	Voca Lyrica
TTBB	Fortis Chorum	TTB	Voces Valientes
T/B	Glee Club	SSAA	Voci Etern
S/A	Kapelle	T/B	Voci Sonore

Note. Duplicate submissions and identifying names were not included.

concert attire was not assigned based on gender, and 42% (*n* = 95) reported gender-based concert attire. Respondents who indicated they assigned concert attire based on gender were asked if they made accommodations for students wishing to wear attire that did not traditionally match their section. Among those who did assign attire based on gender, 72% (*n* = 68%) noted that they did make accommodations for each singer to wear the concert attire with which they were most comfortable.

I asked study participants who did not assign concert attire based on gender to describe concert attire options for their singers. Eighteen percent (*n* = 30) of this group reported that their choral ensembles wore choir robes, 26% (*n* = 43) of participants reported that their choirs wore tuxedos or dresses and their singers could choose the option with which they were most comfortable, 41% (*n* = 69) of participants reported that their choirs wore gender-neutral concert attire, and 15% (*n* = 26) reported that their ensembles wore some other attire not assigned by gender. When I asked participants to describe their gender-neutral concert attire, responses included: (a) variations on all-black apparel, some including accessories like scarves, ties or pins often reflecting school colors and/or mascot or (b) a standard shirt (polo, t-shirt, or dress shirt) and pants or skirt.

Confidence in Teaching Transgender Singers

Participants rated each of the 13 confidence items presented in the survey, using a 4-point Likert-type scale (1 = *no confidence*; 4 = *very confident*). The first of the 13 statements asked participants to rate their overall confidence in their ability to teach a student who identified as transgender. Responses to this question yielded a group rating of *moderate confidence* (*M* = 3.07, *SD* = 0.76). In addition, I calculated an aggregate mean and standard deviation confidence rating for the remaining 12 survey items (see Table 3).

Table 3

Mean and Standard Deviation Scores for Confidence Statement Responses for All Participants (N=227)

Statements in Order of Reported Confidence	*M*	*SD*
I know how to apply the use of preferred pronouns (e.g., he, she, they) and *gender-neutral language (e.g., "sopranos, measure 24," versus "girls, measure 24")* during rehearsal and in the structure of my choral program.	3.60	0.63
I could describe the differences between the terms *sexual orientation and gender identity.*	3.59	0.69

I could define the term *transgender*.	3.55	0.63
I could explain what it means for a student who identifies as transgender to be *transitioning*.	3.54	0.71
I have knowledge of accommodations I could make related to *concert attire* for transgender students.	3.52	0.72
I am aware of the *social and emotional challenges* many transgender students encounter.	3.35	0.72
I have knowledge of accommodations I could make related to *choral standing formation* for transgender students.	3.27	0.93
I could describe the term *non-binary*.	3.09	1.08
I am aware of *positive representations of transgender individuals* that I could include in my teaching.	2.55	1.08
I am aware of other gender-related *medical treatments* that may impact a student's singing voice.	2.55	1.07
I understand how *hormone therapy* (taking estrogen or testosterone) impacts a student's speaking and singing voice.	2.54	1.06
I am aware of other gender-related *non-medical measures* that may impact a student's singing voice.	2.49	1.02

I used these scores to draw comparisons between participants' confidence in teaching singers who identify as transgender ($M = 3.07$) and the other twelve statements. Using a t test, I examined the possible differences in participants' self-reported confidence in working with students who identify as transgender between the two groups of choral directors who do/do not engage in gender-inclusive teaching practices. Results of the t test found significantly different confidence scores between the two groups, suggesting that a choral director who was confident in their ability to work with transgender singers has also adapted their teaching practices to be more gender-inclusive, $t(69) = 2.05$, $p = .04$.

I asked the choral directors in this study if they had received formal training (college coursework, conference presentations, professional development), informal training (discussions with colleagues, books/articles, individual informal research), or no training in teaching singers who identify as transgender. Fifty-one percent ($n = 116$) of participants reported receiving formal training, 34% ($n = 77$) of participants reported seeking out informal training, and 43% ($n = 98$) of participants stated they had not received any training.

Since the nature of a participants' training may impact their confidence in teaching a singer who identifies as transgender, I conducted a one-way analysis of variance (ANOVA) to compare the mean confidence scores of participants in each group (formal, informal, no training). There was a significant difference in the mean confidence scores among teachers who received different types of training, $F(2, 224) = 8.09$ $p = .0004$. I also conducted a Tukey post-hoc analysis and found a significant difference between the confidence scores of teachers who received formal training and informal training ($p = .002$), and between teachers who received formal training and no training ($p = .001$). There was no significant difference between teachers who received informal training and teachers who received no training. Teachers who received formal training reported being more confident ($M = 3.27$, $SD = 0.67$) than teachers with informal training ($M = 2.92$, $SD = 0.76$) and teachers who never received training ($M = 2.80$, $SD = 0.87$).

Discussion

Secondary school choral directors participating in this study ($N = 227$) responded to questions surrounding gender-inclusive instructional practices and confidence in teaching students who identify as transgender. I developed the survey based on best practices that emerged in extant related research (Bergonzi, 2009; Moisescu, 2014; Nichols, 2012; Palkki, 2017; Roulston & Misawa, 2011; Trollinger, 1993). Results of the present study underscore the findings of existing research addressing gender-inclusive teaching in choral music and highlights areas for future inquiry. Further, I found that many study participants have begun or are beginning to adjust teaching practices to be more inclusive of singers who identify as transgender, a question that does not appear to have been explored in previous research.

Experiences Teaching Transgender Singers

A majority of the choral directors in this study (68%) reported having taught a choral ensemble singer who identified as transgender. This finding seems predictable, based on previous research which pointed to an increase in the number of students in secondary schools who openly identified as transgender (Kosciw et al., 2016). Study participants reported their formal or informal training related to teaching students who identify as transgender. While an overwhelming majority of study participants (93%) indicated having explored this topic in some way, most of those experiences were informal or self-motivated (e.g., books, articles, conversations with colleagues). Only 5% of participants said that gender-inclusive teaching practices were addressed in their undergraduate or graduate course work and only 3% reported having had a school-administered professional development session on the topic. The contrast between the increasing number of students in schools who openly identify as transgender and the small number of formal learning experiences for preservice and in-service choral music educators underscores an area for concern and action. Data

analysis also revealed that formal training experiences not only influenced the likelihood that a choral director would engage in gender-inclusive teaching but also their confidence in doing so. Attempts to bridge this gap in professional development and music education curricula may allow choral music educators to make more informed decisions about their gender-inclusive instructional practices. Efforts to reform music teacher development and training may also reduce the possibility of homophobic and transphobic bias being part of music teacher training (Garrett, 2012).

When I asked participants how many transgender students they have had in their ensembles, 79% reported having taught one to five singers who identified as transgender. Of these participants, 20% indicated that they became aware of the gender identity of their student(s) based on their own observations. Not explored in this study were variables that led these participants to conclude their singer(s) identified as transgender. However, these findings seem to perpetuate the troublesome practice of making assumptions based on one's own observations regarding gender identity and underscore the need to explore the consequential implications of teaching decisions informed by stereotypes (Bergonzi, 2009; Palkki, 2017).

Previous research has drawn attention to the underrepresentation of LGBTQ students based on the geographic location of an individual school (Kosciw et al., 2016; Silveira & Goff, 2016). It is interesting to note in this study, school community (urban, suburban, rural) or geographic location did not have a statistically significant effect on the variables related to a participant's experience teaching a student who identifies as transgender.

Gender-Inclusive Teaching Practices

Observations of various gender-related changes taking place in choral music and the findings of this research point to a growing trend toward gender-inclusive practices in school choral ensembles. Seventy-eight percent of participants in this study reported changing their instructional practices to be more inclusive of singers who identify as transgender. Efforts toward gender-inclusive teaching reported by participants in this study are similar to practices proposed in previous research (Bergonzi, 2009; Moisescu, 2014; Nichols, 2012; Palkki, 2020; Trollinger, 1993). In addition to confirming that choral music educators were making efforts to be more inclusive of gender diversity in their teaching, the findings of the present study also show that, while there were areas for growth in regard to in-service and preservice teacher development, the work scholars have done on this topic is indeed influencing the instructional practices of choral music educators.

The number of study participants who reported having altered their teaching and the specific changes they reported making seems to be in agreement with increased implementation of practices found to be inclusive of gender diversity reported in schools (Kosciw et al., 2016). The shift toward representation, inclusion, and empowerment of transgender students found in the present study and in extant research is perhaps most notable because these reforms have been found to decrease harassment and victimization and improve the overall school experiences of LGBTQ students (Kosciw et al., 2016).

The majority of participants in this study who indicated they changed their instructional practices were choral directors teaching at the high school level. The factors influencing a greater number of high school choral directors to alter their instructional practices may be related to variables such as voice change or stages of gender identity development attributed to high school aged students (Brill & Pepper, 2008). In addition, Parker (2020) posits the important role music-making plays in the lives of adolescent singers and the multifaceted process of musical identity development. Both previous research and the findings of this study support a deeper examination of the intersection of gender and school choral music at all levels (elementary, middle school, high school, college). Investigating the elements of choral singing experiences that advance a binary view of gender and gender stereotypes by grade level may reveal more specific areas for improvement related to level of singer development.

Choral directors participating in this study who previously or currently had a singer who identified as transgender were also more likely to alter their teaching practices. Although this affirms again that choir teachers have made and are making efforts to meet the needs of gender diverse-students, it also highlights that they are most likely to attempt to do so after a transgender singer has begun participation. Similarly, a majority of the subgroup of participants who said they made no changes to their teaching indicated it was because there was no need, exemplified by comments like, "I have not had a student like this." Such statements expressed that the need to move toward gender-inclusive teaching had not emerged because the teacher had not experienced teaching a singer who identified as transgender. Both of these findings indicate that some choral directors may see gender-inclusive teaching as outside of standard practice and merit an instructional accommodation or needs-based approach. However, if the heteronormative, transphobic, and gender stereotypes reinforced in many choral classrooms (Palkki, 2020) are indeed harmful, adopting a gender-inclusive approach, regardless of need, elevates the music learning experiences of all students. Further, reinforcing stereotypes associated with gender, sexual orientation, race, and others negate the goal of educational equity and a growing trend toward culturally responsive teaching, universal design for learning, and social and emotional learning (Humphrey et al., 2020; Rose, 2000; Vavrus, 2008; Warren, 2018). This investigation did not discriminate between gender-inclusive instructional practices that were approached as an accommodation and those that were comprehensive changes to the structure of a given choral program regardless of need. However, an examination of these two approaches, their ethical considerations, outcomes, and their impact on students may better inform the profession regarding the nature and delivery of choral music instruction.

The use of inclusive language emerged as a leading theme for study participants when reporting both successes and challenges with gender-inclusive teaching. Participant responses portrayed the use of inclusive language as a practice that was easily adopted but also described the difficulty in the shift with comments like, "Old habits die hard. I felt the biggest

challenge was the correct usage of pronouns." It is also interesting to note that many of the participants who did not make changes to their teaching practices discussed gender-inclusive language as a factor. Respondent emphasis on inclusive language used during instruction and a systematic approach for implementing this change presents an area for further research.

Concert attire and gender-based choirs were two elements explored in this study. Participant responses resulted in a potential resource regarding gender-inclusive concert attire and gender-neutral ensemble names. An investigation of these and other similar questions should be posed to a larger sample of choral educators and shared widely. Further, studying the traditional gender-based choral experience (men's choirs and women's choirs) to determine the role that these ensembles play in the structure of a choral landscape that seeks to be inclusive of gender-diversity is a critical extension of this and similar studies (Apfelstadt, 1998; Freer, 2012; Graf, 2016; Ramsey, 2013).

Confidence in Teaching Transgender Singers

Overall, choral directors in this study reported that they were *moderately confident* in their ability to work with singers who identified as transgender (see Table 2). When asked about specific aspects of gender-inclusive teaching, respondents were most confident in the application of gender-neutral language and preferred pronouns, and least confident in their knowledge of medical and non-medical gender-related treatments and their impact on the singing voice. While inclusive language related to gender has emerged as an important theme in this study, findings indicating that this is an area of high confidence may suggest that future research should focus on areas of less confidence. Results indicating study participants were less confident in their knowledge of medical and non-medical interventions and their impact on the singing voice highlights the need for this information to be communicated to the profession in a broad manner and included in formal training experiences for choral music educators.

Conclusions

The findings of the present study suggest choral directors participating in this research changed their teaching practices to be more inclusive of singers who identify as transgender. Data also imply that participants who taught high school or had previous experience teaching students who identify as transgender were more likely than other participants to engage in gender-inclusive instructional practices. These results indicate that study participants were moderately confident in their ability to teach singers who identify as transgender. On average, respondents were most confident with gender-inclusive language and least confident regarding the implications of medical and non-medical gender-related interventions on the singing voice.

The relevance of this study and others like it were underscored by participant comments

when asked if they had anything additional to add before they submitted their survey. Participant remarks illustrated the demand for more research in this area and for research findings to be shared widely with others in the profession. One participant's comment captured the sentiment of many regarding the importance of this topic.

> Taking this survey made me realize that even though I strive to be gender-inclusive in my choirs, I am not sure if I am being explicit enough. I want choir members to wear comfortable attire, but I asked myself, "do my students know that it's ok for a soprano to wear a tuxedo?" Also, I do not know of many transgender/non-binary composers or influential musicians. Resources and repertoire suggestions would be welcome in publications or convention workshops.

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Appendix

Survey

Choral Directors' Gender-Inclusive Teaching Practices

Introduction
I need your help in finding out more about the gender-inclusive teaching practices of middle school and high school choral directors...

You are invited to complete a nine-minute online survey as part of a research study investigating the gender-inclusive teaching practices of secondary school choral directors. By completing this survey, you are agreeing to participate in this research. You may choose to stop at any time. If you have any questions about this study, you may contact the investiga-

tor via email. Sharing your unique perspective will inform our field's understanding of current practice and establish a framework for approaches to create inclusive and welcoming choral music education experiences for all singers.

- I agree to participate in this study

Teaching Transgender Singers
For the purposes of this survey the term transgender is broadly used to describe individuals whose gender expression or gender identity differs from the sex they were assigned at birth.

- I am interested in learning about your experience teaching transgender singers.

Please indicate training you have received or sources with which you have engaged related to teaching transgender students: *(check all that apply)*

- None
- Undergraduate or graduate coursework
- Professional development provided by my school district
- Conference presentation(s)
- Books or articles
- My own research
- Discussions with colleagues
- Other, please specify:

Have you ever taught a singer who identified as transgender in a school choral ensemble?

- Yes
- No
- I don't know.

Approximately how many singers who identified as transgender have you taught?

- 1-5
- 6-10
- 11-15
- 15 or more

How did you know your student(s) identified as transgender? *(check all that apply)*

- The student(s) told me.
- The parents told me.
- Other students told me.
- My own observations.
- Other school staff told me.
- Other. Please specify:

When did you teach a student who identified as transgender? *(check all that apply)*

- Currently
- 1-5 years ago
- 6-10 years ago
- 11-15 years ago
- 16-20 years ago
- 20 or more years ago

How did your student(s) who were transgender identify? *(check all that apply)*

- Female to Male (FTM)
- Male to Female (MTF)
- Non-Binary (both or no gender)
- Something else. Please specify:
- I don't know.

Gender Inclusive Teaching Practices
The number of students who identify as transgender has seen a steady increase over the past decade. I'm interested in exploring how this trend may be influencing the teaching practices of secondary choral directors.

Have you made changes to your teaching practice and/or structure of your choral program to be more inclusive of singers who identify as transgender?

- Yes
- No

Describe *one success* you encountered in working to create a more inclusive environment for singers who identify as transgender.

Describe *one challenge* you encountered in working to create a more inclusive environment for singers who identify as transgender.

Describe the most important factor(s) influencing your decision not to make these changes.

When assigning a singer to a section (e.g. soprano, alto, tenor, bass) what variables do you consider? *(check all that apply)*

  • Gender

  • Vocal Range

  • Musical Ability

  • Other variables. Please specify:

Are any of the ensembles in your choral program identified by gender *(e.g. women's choir, men's choir, or some other term/title indicating male or female)*?

  • Yes

  • No

Do you/would you allow singers of a different gender to participate in one of these groups if their vocal range and ability matches that of the ensemble?

  • Yes

  • No

  • Other. Please explain:

Does your choral program offer ensembles that exclusively sing repertoire composed for any combination of tenor/bass or soprano/alto voices?

  • Yes

  • No

What do you call these ensembles? Please indicate the ensemble name and primary voicing. *(e.g. Bass Clef Choir, T/B)*

Do you assign or require concert attire based on gender *(e.g. male students wear tuxes and female students wear dresses)*?

- Yes
- No

Do you accommodate students who wish to wear concert attire that doesn't traditionally match their section *(e.g. a soprano wants to wear a tux)*?

- Yes
- No

Check all that apply regarding concert attire for your choral program:

- We wear choir robes
- We wear tuxes and dresses. Students can select the option with which they are most comfortable.
- We wear gender-neutral concert attire. Please specify:
- Other. Please specify:

Confidence in Teaching Transgender Singers

How confident are you in your ability to work with singers who identify as transgender?

- No Confidence
- Slight Confidence
- Moderate Confidence
- High Confidence

The following statements are based on best practices identified in previous research regarding teaching transgender students and are designed to gather information about your own confidence in working with these singers in your ensemble(s). Please indicate your level of confidence *(No Confidence, Slight Confidence, Moderate Confidence, High Confidence)* in the following statements:

- I could define the term *transgender.*
- I could describe the differences between the terms *sexual orientation* and *gender identity.*

- I know how to apply the use of preferred pronouns *(e.g. he, she, they)* and *gender-neutral language (e.g. "sopranos, measure 24" verses "girls, measure 24")* during rehearsal and in the structure of my choral program.

- I am aware of the social and emotional challenges many transgender students encounter.

- I could describe the term *non-binary*.

- I could explain what it means for a student who identifies as transgender to be *transitioning*.

- I understand how *hormone therapy* (taking estrogen or testosterone) impacts a student's speaking and singing voice.

- I am aware of other gender-related *medical treatments* that may impact a student's singing voice.

- I am aware of other gender-related *non-medical measures* that may impact a student's singing voice.

- I have knowledge of accommodations I could make related to *concert attire* for transgender students.

- I have knowledge of accommodations I could make related to *choral standing formation* for transgender students.

- I am aware of positive representations of transgender individuals that I could include in my teaching.

Thanks for sharing your insights, please tell me a little bit about yourself!

Secondary grades you currently teach: *(check all that apply)*

- Middle School (6th - 8th Grades)
- High School (9th - 12th Grades)
- Other, please specify:

Number of years you have taught (including this year):

- 1-3 Years
- 4-6 Years
- 7-9 Years
- 10-19 Years
- 20 Years or more

State in which you teach:

How would you describe the community in which you teach?

- Rural

- Suburban

- Urban

- Other, please specify:

Gender

- Male

- Female

- Transgender

- Non-Binary

- Some other gender, please specify:

- I prefer not to answer.

Choose one or more races that you consider yourself to be:

- American Indian or Alaska Native

- Asian

- Black or African American

- Hispanic, Latino or Spanish Origin

- Middle Eastern or North African

- Native Hawaiian or Other Pacific Islander

- White

- Some other race, ethnicity, or origin, please specify:

- I prefer not to answer.

Which of the following best describes your sexual orientation?

- Heterosexual (straight)

- Homosexual (gay)

- Bisexual

- Other, please specify:

- Prefer not to say

Your responses will help inform the profession about this emerging topic. Please feel free to offer any other thoughts you have below:

Thank you for sharing your experiences and insight. I am grateful for your participation! If you would like to receive a summary of the findings from this survey, CLICK HERE.

Request for Results

To receive a digital summary of the findings from this survey, please provide your email address. The email address you enter here will not be connected in any way to your previous survey responses.

Undergraduate Singers' Voice Use During an Intensive Week of Choir and Musical Rehearsals: A Case Study

Matthew Schloneger[1]

Abstract

The purpose of this case study was to document undergraduate students' (*N* = 2) voice use before, during, and after an intensive week of choral and musical theatre rehearsals through (a) acquired voice dosimeter data; (b) daily surveys, (c) participant activity logs, (d) 3 administrations of the Singing Voice Handicap Index (SVHI), and (e) administrations of the Keirsey Temperament Sorter. Two female students (pseudonyms Kathy and Melissa) wore dosimeters during waking hours for 9 days, including two baseline days prior to an intensive rehearsal week, a five day week in which they participated in a total of 39+ hours of choral and musical rehearsals, and two baseline days one week after the intensive period. Mean phonation time dose percentages (Dt) for both participants during the intensive week (Kathy 18.53%; Melissa 13.76%) exceeded mean Dts during pre and postbaseline days (6.94%; 10.86%). Likewise, mean daily distance doses (Dd) during the intensive week (Melissa 7,216m; Kathy 10,608m) exceeded mean daily Dds during the baseline periods (2,469m; 5,236m). Phonation doses were disaggregated by choir rehearsals, musical rehearsals, and non-rehearsal time. Daily surveys of vocal health evidenced declines in at least six of nine areas between Monday and Friday of the intensive week for both participants. However, SVHI results showed that Kathy, a self-described introvert, experienced an increase in perceived voice handicap between the pre-baseline period and the intensive week while Melissa, a self-described extrovert, perceived less voice handicap. Results and suggestions for further study are discussed in terms of voice use expectations for these participants and possible relationships among voice use, perceptions of fatigue, and personality traits.

Keywords: voice use, vocal dose, voice dosimeter, vocal demand

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Development of an understanding about how much is too much for young singers is unclear in part because of the complex relationship among vocal demand, vocal demand response, vocal effort, and vocal fatigue (Hunter et al., 2020). Research has suggested that different individuals may tolerate higher vocal demands than others before experiencing fatigue and functional decline. These differences may be attributable to a complex variety of factors, from habilitation to vocal hygiene to personality factors.

Following the lead of exercise science, the voice science community has begun to examine the relationship among voice habilitation, fatigue resistance, and metabolic mechanisms as they relate to vocal fatigue, noting differences between individuals based on factors such as aerobic conditioning (Nanjundeswaran et al., 2017; Smith et al., 2017). Sandage and Hoch's (2019) comparison of vocal dose measurements and perceived effort during a training regimen for a recital performance found that with training considerations, perceived vocal fatigue decreased over the same vocal dose following training. In terms of vocal function, Whitling et al. (2017) found that women with functional dysphonia (a voice problem without an obvious physical cause) took longer to recover from a 30-minute vocal loading task than those without.

A group of studies has examined the relationship between personality traits or psychological factors and vocal health. In a large survey analyzing risk factors for voice problems in teachers ($N = 1878$), Kooijman et al. (2006) found that voice load and environment were less important risk factors for voice problems than were physical and psycho-emotional factors. Roy and Bless (2000) theorized that introverts who tested high for negative emotionality were more at risk for functional dysphonia, and extroverts who tested high for negative emotionality were more at risk for vocal fold nodules. Roy et al. (2000a) found patients with functional dysphonia were "introverted, stress reactive, alienated, and unhappy" (p. 521) compared to control groups, and patients with vocal fold nodules were more "socially dominant, stress reactive, aggressive, and impulsive" (p. 521). Further research also suggested that the above traits may put individuals more at risk for functional vocal problems (Roy et al., 2000b). Verduyckt et al. (2019) found that children with vocal fold nodules were significantly more extroverted than controls. Dietrich and Verdolini Abbott (2012) found that introverts and extroverts both exhibited increased perceived vocal effort and decreased acoustic measures during an activity designed to create psychological stress (public speaking) but that increased intrinsic laryngeal muscle activity was significantly correlated with introversion and Voice Handicap Index scores.

Younger singers may be the most at risk of high vocal doses due to their still developing voices, yet they may also be less aware of the risk to their voices. Daugherty et al. (2009) examined self-reports of high school students at a summer choral camp in order to examine voice use. Participants ($N = 141$) were surveyed prior to and following an intensive week of singing (up to eight rehearsal hours per day) to see if students perceived any changes in their vocal production. In questions regarding 12 aspects of vocal health, students reported deterioration in six categories, including hoarseness, tiredness, dryness, throat pain when singing, straining to sing, and more effort needed to sing or talk. Students also reported a significant increase in "vocal difficulty" between the pre and posttests. However, there was

no significant change from the pre to posttest regarding the prompt, "I have taken good care of my voice this past week."

Daugherty et al. (2011) asked two singer participants to wear voice dosimeters during the three days of an all-state choral music festival. The students had phonation percentages (percentage of recording time the vocal folds were vibrating) of 20.92% and 20.34% in rehearsal and 17.96% and 19.88% out of rehearsal, indicating that a great deal of voicing was happening outside of rehearsal despite the vocal intensity of the weekend. While the choral conductor used a rehearsal style that emphasized vocal pacing and rest, the participants both indicated perceived declines in vocal efficiency over the weekend. In fact, in surveys distributed to the entire all-state choir ($N = 256$), participants indicated a mean decline in several vocal-health factors over the weekend. However, a majority said they felt that they were taking good care of their voices.

Likewise, undergraduate voice students may have not received enough vocal health education necessary for good vocal hygiene. Flynn (2019) surveyed 352 singers within five years of college graduation and found that many schools did not provide adequate vocal health education. Only 45% percent of graduates reported vocal health taught in an organized setting such as a workshop or class lecture, 48% had vocal health taught only as it happened to come up in lessons or class, and 31% had the information presented multiple times. Seventy-three percent responded that they or someone they knew had a vocal injury while in school.

Researchers have implemented a considerable body of studies that have captured real-time data through voice dosimeters to reveal information about typical human voice use (Assad et al., 2017). Terminology regarding collected vocal dose data can be defined as follows:

> *Phonation time dose* (Dt) refers to the cumulative duration of time (hr,min,s) or the percentage of time the vocal folds have actually touched in a given period.
>
> *Fundamental frequency* (F_0) describes the rate at which the vocal folds vibrate, measured in Hz. It is perceived as pitch.
>
> A *vibratory cycle* is one complete sequence of opening and closing the vocal folds.
>
> *Cycle dose* (Dc) refers to the accumulated number of such repetitive cycles in a particular time period.
>
> *Distance dose* (Dd) is an estimate of "how far" vocal folds travel in a period of time using a mathematical formula that incorporates dose time, frequency, and amplitude. This measure provides a more complete view of vocal demand.

A number of vocal-dose studies have examined the voice use of university singing students. These students may experience higher vocal doses and more voice disorders than other university students and the broader population (Gaskill et al., 2013). Austin and

Hunter (2010) used dosimeters to monitor the voice use of eight vocal performance majors during waking hours over the course of a typical five-day week. Vocal dose time (Dt) ranged from 9% to 26% and the distance dose ranged from .69 m/s to 1.37 m/s. Gaskill et al. (2013) monitored six student singers for four or five class days and reported average daily Dt of 12.91%. Manternach (2014) found that preservice music educators' Dt ranged from 6.87% to 13.52% during a typical week during a school year. Although voice emphasis students experienced raised Dt percentages during voice lessons (38.54%), choral rehearsals (30.33%), and vocal performances (24.82%), participants were afforded rest times during other school-related activities (e.g., nonperformance music classes and non-music classes). Manternach and Schloneger (2019) monitored eight female university students of various majors over seven days and recorded a mean Dt of 8.76%. Distance dose averaged 212.61 meters per hour and ranged from 89.55 for a psychology major to 338.65 for a voice performance major. Toles et al. (2020) monitored vocally healthy females ($N = 64$) currently enrolled in a vocal performance or similar program at a college or university over a seven-day week. Participants had a total Dt of 8.4%, spending 6.2% of the total monitoring time speaking and 2.1% singing.

Schloneger and Hunter (2017) followed 19 university students who each wore a dosimeter for all waking hours during three consecutive days. These singers had an average voicing percentage of 11.92%, with 38% voicing in choral rehearsals and 35% voicing in solo singing activities. Over the three days, they totaled an average of 4.15 million vibratory cycles and a distance dose of 15.8km. While their phonation percentages were highest in singing, 88% of their mean recording time was during non-singing periods, which meant that the overall cycle dose and distance dose was more than double for non-singing periods than singing over the study period. Student vocal-dose data were compared with voice-quality data acquired from the accelerometer over the three days. The study found that higher vocal doses, as a whole, corresponded with significantly greater voice amplitude, more vocal clarity (pitch strength and Harmonic to Noise Ratio), and less perturbation (shimmer and jitter). This corresponded with laboratory studies that found these factors could have occurred due to increased muscular compensation after fatigue-inducing vocal loading (Boucher, 2008). It was unclear for which students the voice quality changes were due to a warming-up effect and for whom the changes were due to fatigue-induced compensation.

In a companion study to the present case study, Schloneger (2011) examined graduate voice students' ($N = 2$) voice use before, during, and after an intense week of opera rehearsals through (a) acquired voice dosimeter (APM 3200) data, (b) daily surveys, (c) participant activity logs, (d) three administrations of the perceptual Singing Voice Handicap Index (SVHI), and (e) pre- and post-stroboscopic laryngeal examinations. Two female graduate students, both of who were cast in a university opera production and served as graduate teaching assistants in voice, wore ambulatory phonation monitors (APMs) during waking hours for nine days. Replicating the present study, they were monitored for two pretest baseline days, a five-day intensive rehearsal week just prior to the opera production week, and two baseline days after opera performances were completed. Mean Dt and daily Dd averages were similar among the pretest days (15.7%, 4481m/day and 15.3%, 4247m/day),

posttest days (13.0%, 2010m/day, and 17.6%, 4306m/day) and the intensive week (11.8%, 4448m/day and 14.1%, 3841m/day). Disaggregation of acquired data by four types of activities (opera rehearsals, personal practice time, voice teaching time, and non-rehearsal or teaching time) indicated that the highest mean Dts and Dds were acquired during personal practice time and voice teaching time. Perceptual data (daily surveys and SVHI), as well as the pre- and post-stroboscopies, indicated no notable changes occurring in vocal health. Results suggested that these graduate student singers were conscious about their voice use during periods of extensive performance demands.

There remains a limited amount of empirical data regarding vocal doses acquired by college and university students during intensive rehearsal and performance periods of the semester and the relationship between vocal demands and students perceived vocal health and function. Few researchers have observed singing student voice use at smaller liberal arts colleges, where numerous performance opportunities exist for ambitious voice students or compared collected voice use data with personality inventories. Research has yet to indicate optimum levels of vocal dose, both in terms of duration or sound pressure levels for the development of young college-age singers.

The purpose of this case study was to document undergraduate voice students' ($N = 2$) voice use before, during, and after an intense week of choral and musical theatre rehearsals at a small liberal arts college through (a) acquired voice dosimeter (APM 3200) data, (b) participant activity logs, (c) daily surveys, (d) three administrations of the Singing Voice Handicap Index, and (e) the Keirsey Temperament Sorter.

The following research questions guided this investigation: (a) What do ambulatory phonation monitor data indicate about phonation time and distance doses acquired by participants during different periods of activity? (b) What do daily surveys and SVHI scores indicate about participant's perceptions of vocal use? and (c) What do personality inventories tell us about voice use?

Method

Participants

Participants ($N = 2$) in this study were two female singers active in the vocal program at a small Midwestern liberal arts college. The participants were members of the college's select 24-voice choir and were also cast in principal roles in the production of the musical *Quilters.* Both groups were preparing major performances for the college's centennial homecoming celebration early in the semester, so both the choir and the musical cast began an intensive week of rehearsals one week before the fall semester commenced. The select choir met daily throughout the semester, and the director traditionally brought students one week prior to the fall semester for performances at the college's opening weekend celebrations. The early musical production was unique to this centennial year, so the theatre directors' decision to also bring the musical cast one week prior to the semester created a uniquely intense rehearsal week for those singers involved in both activities.

Melissa (pseudonym), 19, was an undergraduate sophomore with an undecided major and was considering a major in music. A mezzo-soprano, she had been involved in singing and theatre throughout her high school and collegiate careers, participating in select choirs in high school (including all-state chorus her senior year) and as a college freshman. She had completed four years of private voice lessons and had studied both classical and contemporary commercial singing techniques. Melissa was also the lead singer in a popular campus bluegrass band. *Quilters* marked her third principal role in a collegiate theatre production.

Kathy (pseudonym), 18, also a mezzo-soprano, was an incoming freshman music major. She studied both voice and clarinet privately throughout her high school career. Kathy was selected to the all-state band her junior and senior years, received superior contest ratings in voice and clarinet at the state level, sang in her high school's select choir, and performed the leading role in her school's production of *Oklahoma!* as a high school senior.

During the five-day intensive rehearsal week (IRW) conducted the week prior to the beginning of the fall semester, the students were involved in a total of seven to nine hours of rehearsals each day and were in a situation where a large amount of speech would be expected as the participants settled into campus, catching up with friends and making new acquaintances.

Procedures

The participants agreed to wear voice dosimeters for two baseline days during the weekend immediately prior to the intensive rehearsal week (prebaseline), for five days during the intensive rehearsal week, and for two baseline days one week after the intensive rehearsal week ended (postbaseline). In addition, the participants completed a daily voice health survey, kept a daily log of their activities, completed a Singing Voice Handicap Index evaluation at the end of each of the three study periods, and completed the Keirsey Temperament Sorter.

Phonation Monitors

Study participants wore the Ambulatory Phonation Monitor 3200 (PENTAX Medical, Lincoln Park, NJ). These APMs consisted of a small accelerometer transducer attached to the anterior base of participants' necks at the sternal notch (i.e., below the larynx and directly above the sternum). The accelerometer sensed phonation vibrations and captured raw data at a rate of 20 samples per second. A cable conveyed these data to a battery-powered microprocessor unit worn in a fanny-pack. The microprocessor stored and calculated (according to formulas established by Švec et al., 2003) information including dose time (Dt), distance dose (Dd), fundamental frequency (F_0) and voice amplitude as measured by sound pressure levels (SPL) in decibels (dB). Acceptable SPL levels were set at 35-130 dB, and acceptable frequency range was set at 130-1000 Hz (approximately C0-C3) (Colton et al., 2011). The accuracy of the APM 3200 has been evaluated, along with other dosimeters, in several studies (Bottalico et al., 2018; Carullo et al., 2015; Hillman et al., 2006; Švec et al., 2003).

Data were obtained over the entire course of each day. The participants met the researcher early each morning to download the previous day's data and attach and calibrate the APMs according to the manufacturer's protocols. The participants wore the monitors 13-15 hr each day, removing the monitors just before retiring for the evening. The one exception was the fifth and final day of the IRW, in which both participants sang in a short evening choral performance. At the participants' request, the APMs were removed for the evening immediately prior to their stage entrance. I remained available by phone throughout the study period in the event that APM units became unattached and needed reattachment and recalibration.

Prebaseline monitoring days ($N = 2$) occurred during the final summer weekend before the students moved into their dorm rooms to commence fall semester activities. Postbaseline monitoring days ($N = 2$) occurred one week after the IRW. Both students remained on campus during this weekend as they commenced their normal fall semester routines.

Activity Logs

In order to determine what activities occurred during each recorded phonation period, the participants completed daily activity logs. The logs were used to separate and calculate voice use during different activities.

Daily Vocal Health Surveys

At the end of each monitored day, both participants completed a vocal dosage case study daily survey (Appendix). The participants recorded their hours of sleep from the previous night, the time they left their home or dorm room, and the overall quality of their singing voice. They also responded to ten vocal health questions using a Likert scale with a range of one to seven, with one being *strongly disagree,* four being *not sure,* and seven being *strongly agree.* The questions ranged from "I am doing a good job taking care of my voice today" to various indicators of perceived vocal stress, including comfortableness of high range, throat clearing, airiness/breathiness, strain, fatigue, throat pain, hoarseness, wobble/shaky voice, and singing pain.

Singing Voice Handicap Index

The participants also completed the SVHI at the end of each of the three monitored periods of the study: prebaseline, IRW, and postbaseline. Cohen, et al. (2007) created and validated the SVHI as a tool for measuring self-perceived handicap in singing. The questions used a five-point Likert scale, with a continuum between *never* (score of zero) and *always* (score of four), and related to the physical, emotional, social, and economic impact of singing voice problems. The SVHI gave more complete and comparable indication of the participants' perception of vocal health. The SVHI was scored on a single scale of 0-100, with a higher score indicating more voice handicap. In a pilot study, a control group of singers ($N = 129$) reporting no dysphonia had a median SVHI score of 22, while singer

participants with a diagnosed vocal dysfunction ($N = 112$) had a median score of 61 (Cohen et al., 2007).

Keirsey Temperament Sorter

Both participants completed the Keirsey Temperament Sorter, one of the most widely administered personality tests and a readily available test completed by all freshman at the college (Keirsey, 1978/1998) The test asks 70 questions each with two possible answers and places individuals on continuums of introvert-extrovert, sensing-intuiting, thinking-feeling, and judging-perceiving and places individuals in one of sixteen personality categories based on test scores. The Keirsey Temperament Sorter has been validated and employed in numerous studies (Dodd & Bayne, 2007; Kelly & Jugovic, 2001).

Results

Results are reported in order of the research questions posed for this investigation.

Voice Use Data

Both participants wore the APM units for an average of more than 13 hours each day over the course of nine monitoring days. There was only one occurrence of the APM monitor becoming unattached from the skin, necessitating recalibration. This occurred on the first day of baseline monitoring when Melissa was at the mall trying on clothes. The APM was restarted about 1.5 hours after this occurrence and Melissa wore the monitor for the rest of the evening.

Table 1 on the next page displays overall phonation data for the prebaseline, IRW, and postbaseline periods. Both participants used their voices more frequently during the IRW nearly doubling their average daily phonation times. Following their final summer weekend at home, the students participated in an average of nearly eight rehearsal hours per day, including an average of 5.1 hours of musical rehearsal and 2.75 hours of choral rehearsal daily. As compared to recorded phonation time in the prebaseline period, both participants doubled their cycles of vibration per day and either tripled or nearly tripled their distance dose per day during the IRW. In terms of both Dt and Dd, Melissa used her voice more than Kathy throughout all monitored periods of time.

Over the course of the IRW, the participants participated in a total of at least 39 hours of rehearsals, with 13.7 hr in choir rehearsals and 25.5 to 26.5 hr in musical rehearsal. By comparison, 24-26.5 hr of non-rehearsal hours were recorded, consisting of the majority of the remaining time both participants were awake. Table 2 on the next page shows the APM data for the different activity periods throughout the IRW. Dose time was the highest during choir rehearsals, with Dts of 31.93% and 27.86%. Musical rehearsals, which combined singing, choreography, and blocking, necessitated less Dt (12.74% and 11.28%). The participants used their voices differently in non-rehearsal times than choir rehearsal times, with Melissa's Dt and Dd approximately doubling that of Kathy's during non-rehearsal

Table 1

APM Data – Baseline and Intensive Rehearsal Week (IRW) Weighted Averages

Measure	Melissa			Kathy		
	Pretest baseline (2 days)	Intensive week (5 days)	Posttest baseline (2 days)	Pretest baseline (2 days)	Intensive week (5 days)	Posttest baseline (2 days)
Duration of monitoring (hh:mm)	13:37	13:08	12:14	14:14	13:08	14:16
Phonation %	10.86%	18.53%	12.95%	6.94%	13.76%	7.31%
F_0 Mode -Hz	253	244	195	229	300	229
F_0 Average - Hz	297	311	248	316	354	301
Amplitude Avg - dB	64.01	74.36	69.91	62	70.61	65.52
Vibratory Cycles (Dc)	1,357,375	2,708,560	1,416,918	1,169,842	2,336,635	1,212,575
Dc - Per Hour	99,685	206,236	115,824	82,190	177,916	84,994
Distance dose (Dd) - m	3,468	10,608	5,236	2,469	7,216	3,297
Dd – Per Hour	255	808	428	173	549	231

Table 2

APM Data - Intensive Rehearsal Week Breakdown by Activity

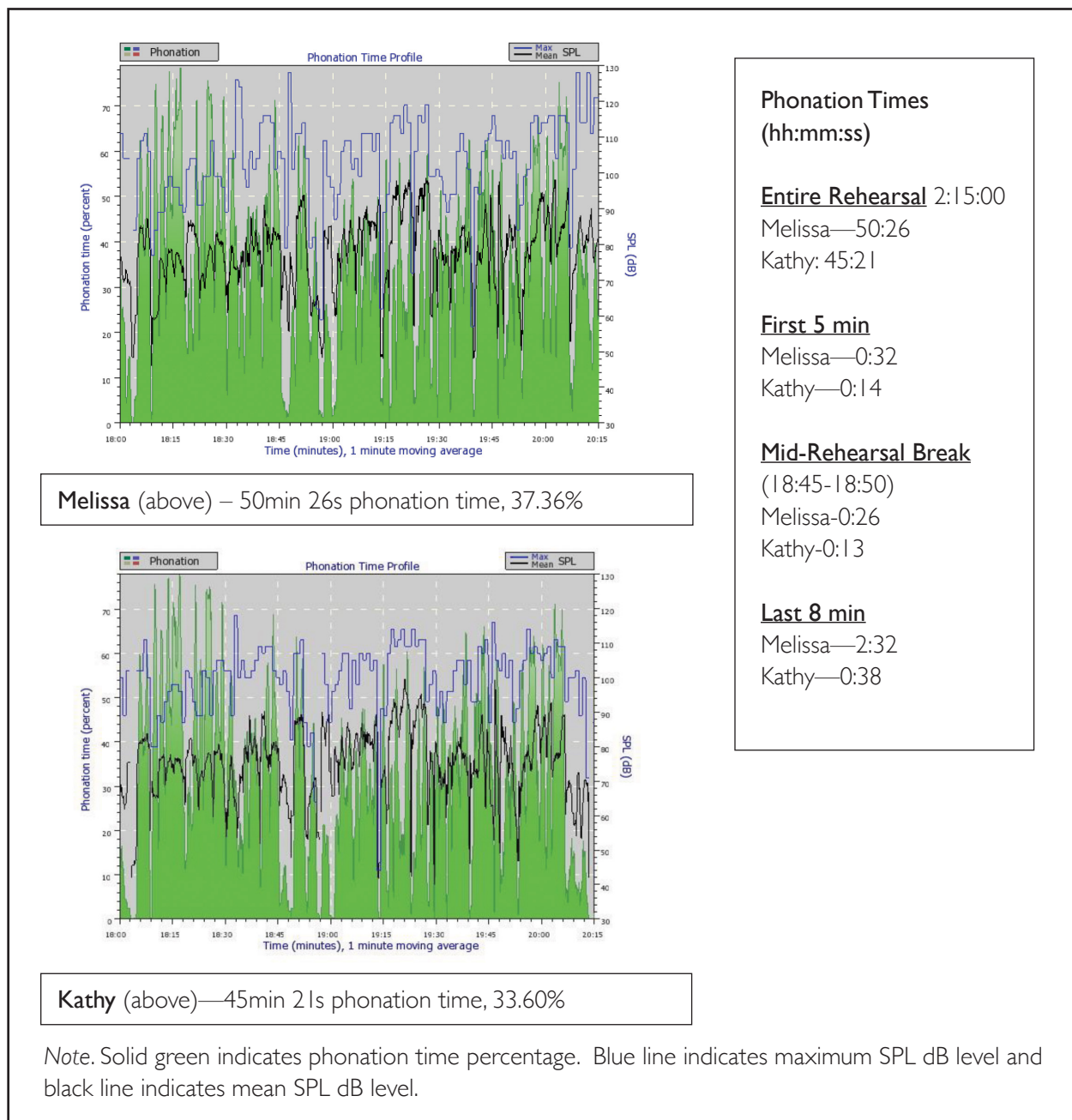| Measure	Melissa			Kathy		
	Choir rehearsal	Musical rehearsal	Non-rehearsal time	Choir rehearsal	Musical rehearsal	Non-rehearsal time
Duration of monitoring* (hh:mm)	13:40	26:34	24:02	13:42	25:30	26:39
Phonation % (Dt)	31.93%	12.74%	17.30%	27.86%	11.28%	8.92%
F_0 Mode - Hz	362	266	210	368	341	249
F_0 Average - Hz	374	298	267	376	364	303
Amplitude Avg - SPL dB	76.88	75.89	70.95	70.75	75.36	64.76
Vibratory Cycles (Dc)*	5,729,748	3,652,626	4,013,007	5,168,382	3,735,593	2,602,170
Dc - Per Hour	19,250	137,489	166,977	377,254	146,494	97,642
Distance dose (Dd) - m*	21,894	15,318	15,343	14,975	13,887	7,239
Dd – Per Hour	1602	577	638	1093	545	272

Note. * Indicates total of entire period. Other measures represent weighted averages.

periods throughout the IRW.

It is notable that Melissa displayed consistently more Dt than Kathy during choir rehearsals, a period during which both students were singing the same voice part. Kathy reported that she talked very little in and around rehearsal, while Melissa reported that she made regular comments during rehearsals and talked and hummed frequently during rehearsal breaks. By identifying periods of time in choral rehearsals where the APM registered F_0 levels consistent with speech, non-singing periods during choir rehearsals were identified and confirmed by the choral conductor. The data revealed that Melissa used every rehearsal break opportunity to phonate. As an example, Figure 1 displays the phonation time of each singer during the same choral rehearsal. Though Melissa used her voice more

Figure 1

Comparison of Phonation Activity by Melissa and Kathy in a Choir Rehearsal

Melissa (above) – 50min 26s phonation time, 37.36%

Kathy (above)—45min 21s phonation time, 33.60%

Phonation Times (hh:mm:ss)

Entire Rehearsal 2:15:00
Melissa—50:26
Kathy: 45:21

First 5 min
Melissa—0:32
Kathy—0:14

Mid-Rehearsal Break
(18:45-18:50)
Melissa-0:26
Kathy-0:13

Last 8 min
Melissa—2:32
Kathy—0:38

Note. Solid green indicates phonation time percentage. Blue line indicates maximum SPL dB level and black line indicates mean SPL dB level.
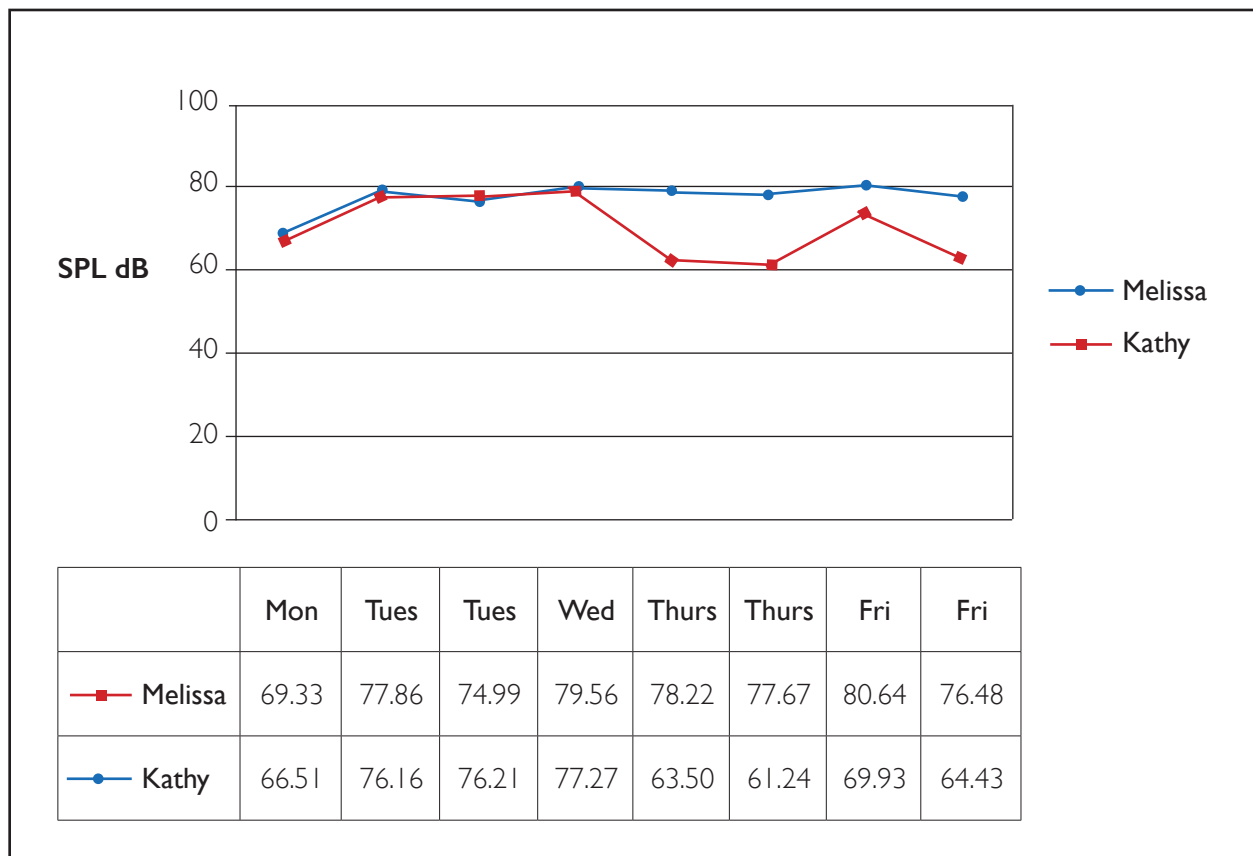
than Kathy, Kathy's average amplitude in choir rehearsal decreased in the final two days of the IRW, while Melissa's stayed consistent (Figure 2).

Non-rehearsal times consisted of different activities, ranging from sleeping to organized social events, some of which occurred after long days of rehearsals. Wednesday evening of the IRW, for example, ended with a choir bonding time of games and sharing. This activity followed a day that included 6.5 hours of musical rehearsal and 2.25 hours of choir rehearsal. Melissa and Kathy ended this day with a social activity that yielded the phonation data found in Table 3.

Figure 2

Average amplitude (SPL dB) in intensive week choral rehearsals.

	Mon	Tues	Tues	Wed	Thurs	Thurs	Fri	Fri
Melissa	69.33	77.86	74.99	79.56	78.22	77.67	80.64	76.48
Kathy	66.51	76.16	76.21	77.27	63.50	61.24	69.93	64.43

Table 3

Voice Use Data for Melissa and Kathy during a 3 Hr Non-Singing Choir Social

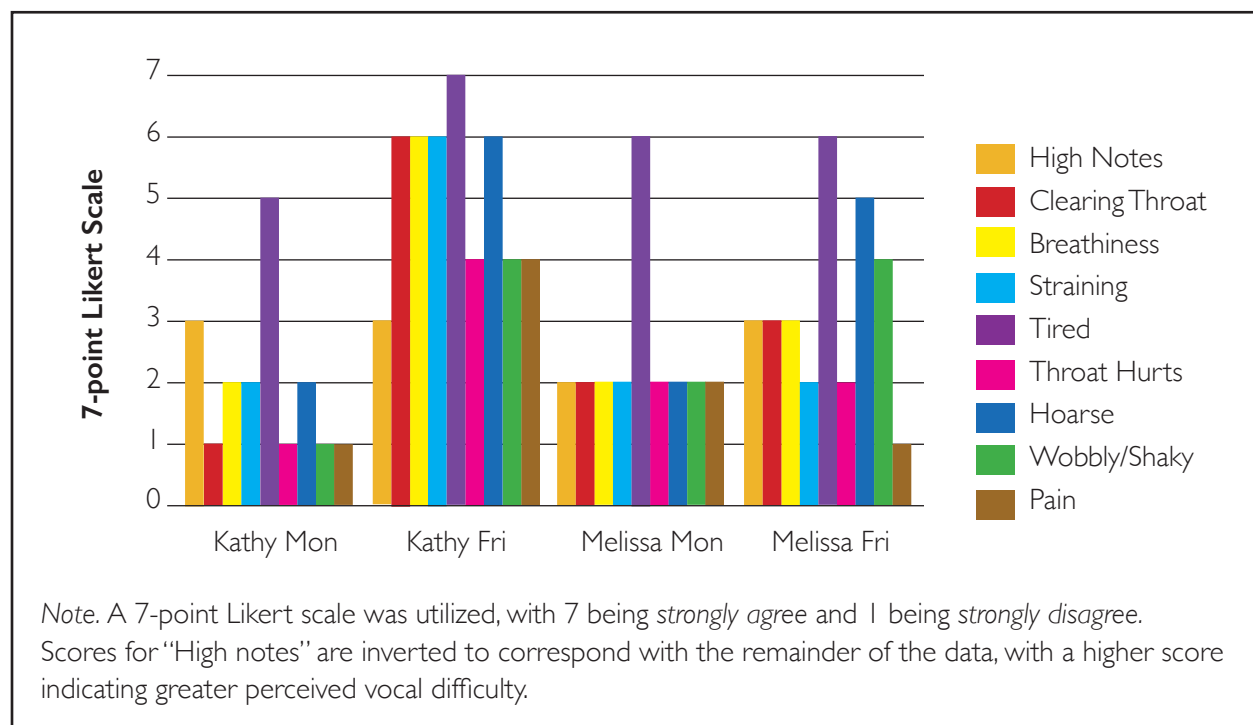| Measure	Melissa	Kathy
Phonation %	19.44%	15.21%
SPL Level	80.76 dB	73.82 dB
Distance Dose	3339m	2071m

Voice Survey Data

In response to the 11 vocal health questions in the daily survey, both singers reported a decline in nearly every vocal health category between Monday and Friday of the IRW. Kathy reported declines in each category, and Melissa in all but two (straining and throat hurts) (Figure 3). Kathy's scores declined an average of 3.11 points on the seven-point scale and Melissa's scores decreased an average of 0.88 points.

In comparing the average daily survey responses of the prebaseline and postbaseline periods with the average responses during the IRW (Figure 4 on the next page), Kathy reported declines in every area of vocal health, while Melissa reported improvements in some areas. Compared to the mean survey scores of the baseline periods, Melissa reported overall IRW averages that were more positive in terms of breathiness, strain, throat hurts, shake/wobble, and pain. She reported overall declines only in the areas of fatigue and "Today, I can comfortably sing the higher notes of my voice range." Kathy's mean daily survey scores were 1.68 points higher (with higher scores indicating greater vocal difficulty) in the IRW than in the two prebaseline days, while Melissa's mean daily survey scores were 0.48 points lower.

Both singers reported similar amounts of sleep, with Kathy averaging 7 hr nightly and Melissa 7.5 hr nightly during the IRW. In response to the prompt "I am doing a good job taking care of my voice today," Melissa answered *agree* or *somewhat agree* all nine days of the study, while Kathy noted some decline throughout the IRW (Figure 5 on the next page).

Figure 3
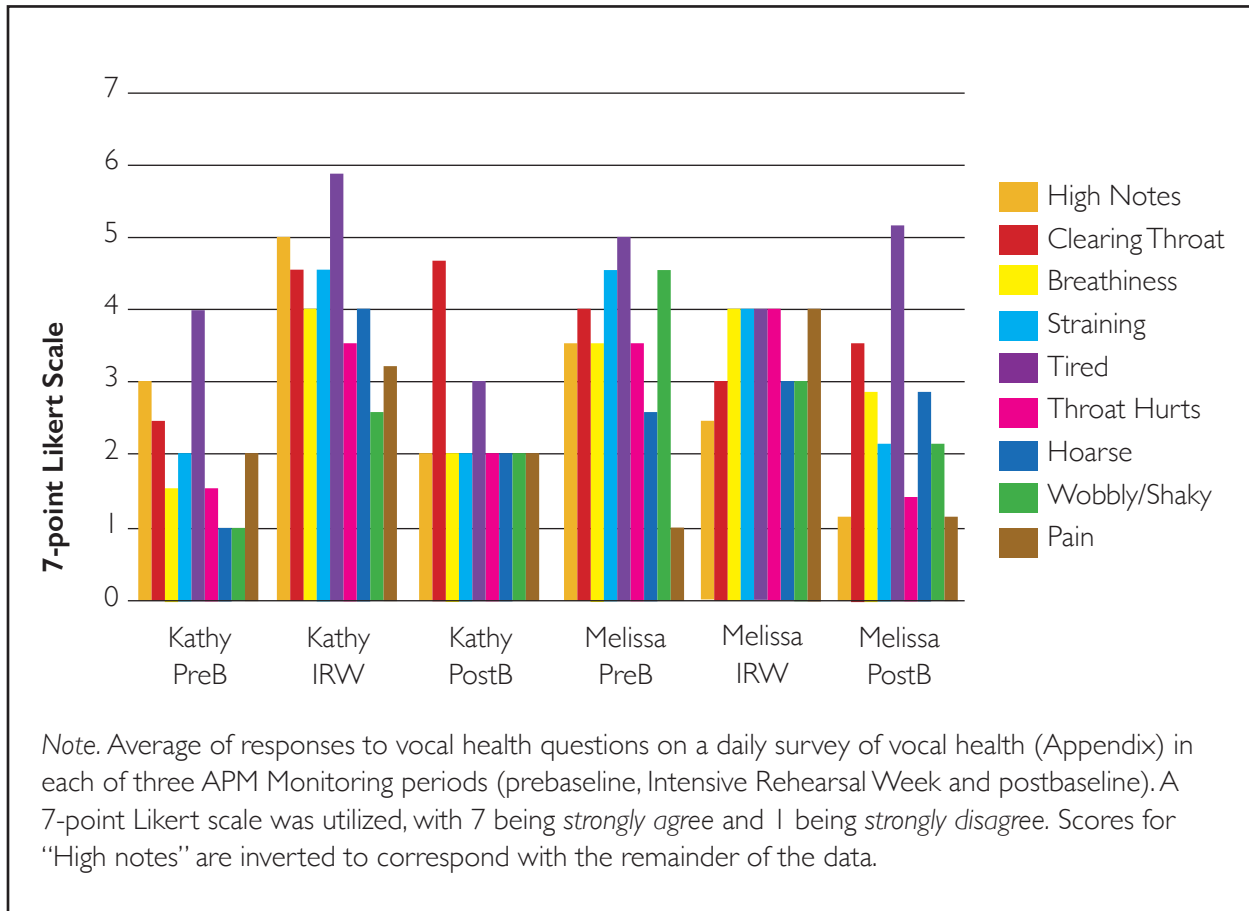
Responses to vocal health questions on a daily survey of vocal health on the first and last days of an intensive rehearsal week.

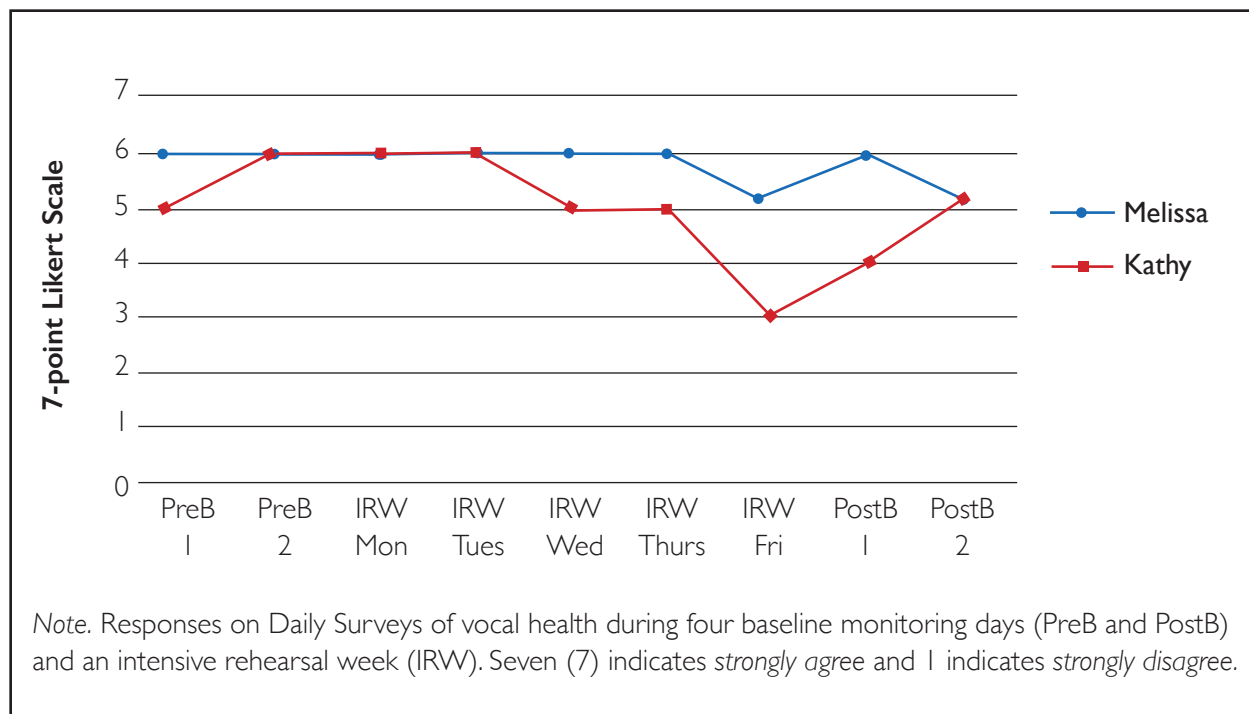*Note.* A 7-point Likert scale was utilized, with 7 being *strongly agree* and 1 being *strongly disagree*. Scores for "High notes" are inverted to correspond with the remainder of the data, with a higher score indicating greater perceived vocal difficulty.

Figure 4

Average of responses to vocal health questions on a daily survey of vocal health.

Note. Average of responses to vocal health questions on a daily survey of vocal health (Appendix) in each of three APM Monitoring periods (prebaseline, Intensive Rehearsal Week and postbaseline). A 7-point Likert scale was utilized, with 7 being *strongly agree* and 1 being *strongly disagree*. Scores for "High notes" are inverted to correspond with the remainder of the data.

Figure 5

Responses to the question "I am doing a good job taking care of my voice today"

Note. Responses on Daily Surveys of vocal health during four baseline monitoring days (PreB and PostB) and an intensive rehearsal week (IRW). Seven (7) indicates *strongly agree* and 1 indicates *strongly disagree*.
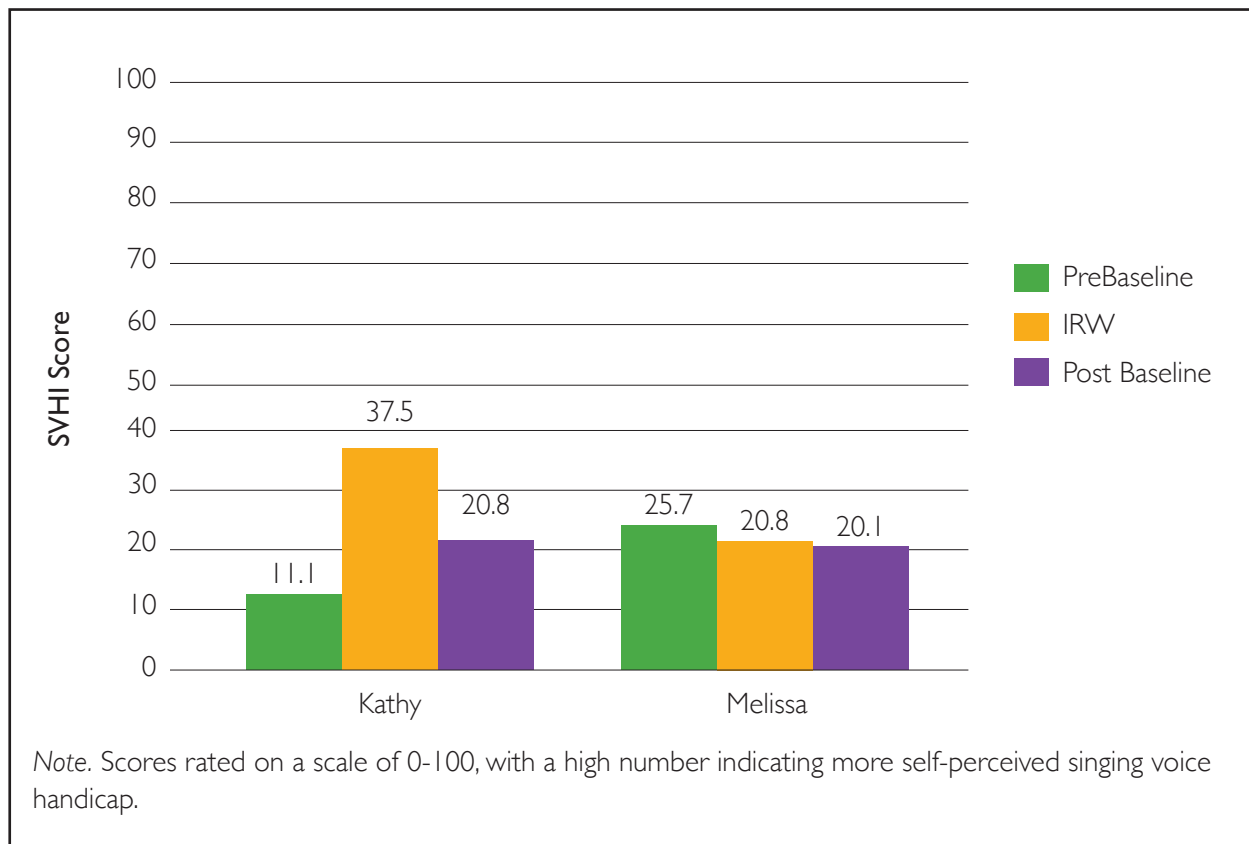
Singing Voice Handicap Index

SVHI responses are compiled and placed on a continuum of 0-100, with a higher score indicating greater perceived vocal difficulty (Figure 6). The SVHI indicated that Kathy perceived more vocal difficulties during the IRW than during the baseline periods, with a decline of 26.4 points. During the prebaseline and postbaseline periods, Kathy reported no scores of *always* or *almost always.* By contrast, Kathy answered *almost always* to 11% of the questions and *sometimes* to 47% of the questions immediately following the IRW (Figure 7 on the next page). She responded *almost always* to the following questions: (a) it takes a lot of effort to sing, (b) I have to "push it" to produce my voice when singing, (c) my speaking voice is hoarse after I sing, and (d) my singing voice tires easily. In the post-baseline-SVHI after a week of rest, Kathy reported no *always* or *almost always* problems, though her overall SVHI score was 9.7 points higher than her pre-SVHI score.

Melissa's SVHI score improved 4.9 points between the prebaseline period and the end of the IRW. At the end of the IRW, Melissa responded *never* or *almost never* to all 36 vocal health questions. She responded *sometimes, almost always,* or *always* to 25% of the questions following the prebaseline period and 9% of the questions in the postbaseline period. The one question to which Melissa responded *almost always* or *always* following both baseline periods was "My speaking voice is not normal."
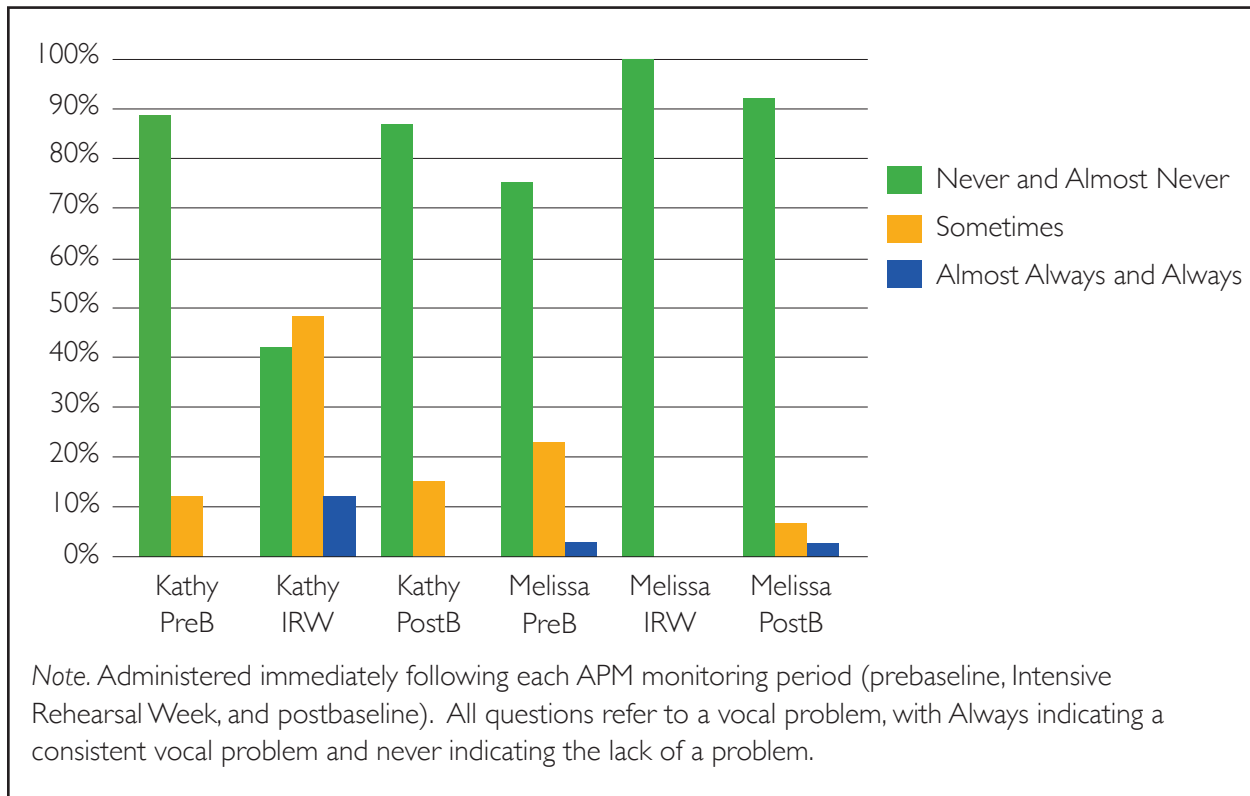
Figure 6

Adjusted SVHI scores for Melissa and Kathy following each of the three study periods

Note. Scores rated on a scale of 0-100, with a high number indicating more self-perceived singing voice handicap.

Figure 7

Responses to 36 questions in the Singing Vocal Health Index

Note. Administered immediately following each APM monitoring period (prebaseline, Intensive Rehearsal Week, and postbaseline). All questions refer to a vocal problem, with Always indicating a consistent vocal problem and never indicating the lack of a problem.

Additional Perceptions

The participants described their perception of vocal health and recovery several weeks following the IRW via e-mail:

Melissa:

My voice was tired at the end of that crazy week but it wasn't anything I had never experienced before…. My voice has grown stronger and more efficient. My voice has also learned to endure a lot so it honestly didn't take extremely long to get back to normal. After 3 or so days of regular/no singing, it was fine. I think all that singing probably did help to keep building my endurance.

Kathy:

After [the intensive rehearsal week] I was very relieved to cut back on the amount of singing I did in a day. My voice felt a lot better right away … but I know for about a week I didn't use my full voice in practice … I felt like I couldn't get my voice to come out and I had a lot of trouble singing loud. After that first week of normal classes, however, I was for the most part back to normal … [The intensive rehearsal week left my voice] tired and my singing did not sound as good.

These comments corresponded with the Voice Survey and SVHI data, with Melissa perceiving that the IRW helped develop her vocal endurance and Kathy perceiving a temporary decline in vocal efficiency.

Keirsey Temperament Sorter

Kathy tested as an INFJ (Introverted, Intuitive, Feeling, and Judging), which is categorized as an Idealist-Counselor. As introverts, INFJs are characterized as private and introspective. Melissa tested a ESFJ (Extraverted, Observant, Feeling, and Judging), which is categorized as a Guardian-Provider. As extroverts, ESFJ's are considered to be among the most sociable of personality types. In short, the results of the temperament sorter affirmed participants' self-perceptions.

Discussion

The purpose of this study was to document in detail the voice use of singing students at a liberal arts college during an IRW. Acquired data confirmed that the singers used their voices much more during the IRW than they did during the baseline periods. While the singers used their voices differently and perceived different levels and types of decline in voice health, both appeared to reach their physical limits by the end of the IRW, marking *somewhat agree, agree,* or *strongly agree* in response to the questions "Today, my voice feels tired," "Today, my voice is hoarse," "Today, I find myself clearing my throat more than I typically do," and "Today, I sense airiness/breathiness in the sound of my voice." While the circumstances surrounding the IRW were not the norm at this institution, the data suggest that the vocal expectations placed on these young singers may have been excessive, especially at the beginning of the school year before the singers developed stamina from daily singing activities

These singers' overall vocal doses of 18.53% Dt (Melissa) and 13.76% Dt (Kathy) generally exceeded the doses of university singers in several other small dosimeter studies. (Gaskill et al., 2013; Manternach, 2014; Manternach & Schloneger, 2019; Schloneger, 2011; Schloneger & Hunter, 2017; Toles et al., 2020) Gaskill et al. (2013) did record two undergraduate voice majors exceeding 17% overall Dt for a full week of classes, and Schloneger and Hunter (2017) did record an overall Dt of a voice major exceeding 20% Dt over three-semester weekdays. These two studies showed mean Dts 12.9% over five days ($N = 6$) and of 11.92% over three days ($N = 19$) respectively and did not compare singers to baseline periods. Additional studies covering a full semester, following the methodology of Sandage and Hoch (2019), would be helpful in learning more about the development of vocal stamina over a period of practice.

The appropriate amount of vocal dose for student singers in choral rehearsals needs further analysis. Vocal dose in the choral rehearsal is largely in the hands of the conductor, and all conductors work differently. In choral rehearsals throughout the IRW, the participants in

this study averaged approximately double the phonation percentage of all other activities, leading to the highest distance doses in the study. This difference was consistent with other dosimeter studies of choral singers (Daugherty et al., 2011; Gaskill et al., 2013; Manternach & Schloneger, 2019; Schloneger, 2011; Schloneger & Hunter, 2017). Numerous and more extensive replications of studies such as this could help conductors learn optimal levels of vocal dose in rehearsal settings. It is notable that in 13.7 hr of choral rehearsal, Melissa's Dd exceeded that of Kathy's by 6,919 m/day, even though both students were singing the same voice part. Distance dose is heavily influenced by amplitude, so this difference is attributable in part to the fact that Melissa's mean amplitude level in choir rehearsal exceeded Kathy's by 6.13 Db. This difference also occurred because Melissa talked, sang, and hummed frequently in and around rehearsal times while Kathy did not.

The two participants had different vocal doses and different levels of perceived fatigue. Melissa used her voice more frequently with higher amplitude levels and a lower fundamental speaking frequency than Kathy. Nevertheless, while Melissa did report some fatigue by the end of the IRW, she appeared to retain a perception of relatively good vocal health. Kathy, on the other hand, experienced more substantial symptoms of vocal fatigue by every measure. Data suggest that Kathy continued to consistently sing near full-voice during rehearsals through the end of the IRW, even though she reported symptoms that should have led her to mark or simply stop singing. These diverging results support ongoing research that suggests that voices respond to vocal demands differently due to a complex array of factors, including their vocal demand response and their individual vocal effort, both functional and perceived (Nanjundeswaran et al., 2017; Sandage & Hoch, 2019; Smith et al., 2017).

Personality type may have played a part in the differences in phonation activity between the two participants. As indicated by the Keirsey Temperament Sorter, Kathy was an introvert, and Melissa was a strong extrovert. While this personality trait may have contributed to the difference in voice use between the two participants, further study could further explore the findings of Koojman et al. (2006) regarding the relationship of psychological factors to vocal dysfunction. Relationships among personality type, vocal production, and tendencies for vocal fatigue or dysphonia could be examined.

Voice use outside of rehearsal is important to overall voice use and care, and acquired dosimeter data revealed vocal habits of concern for both students. Melissa's 17.3% Dt for non-rehearsal times exceeded her 12.74% Dt in musical rehearsal. By contrast, the more experienced participants in Schloneger (2011) companion study of graduate voice students appeared to be cognizant of their heavier rehearsal demands and used their voice outside of rehearsal less during their IRW than they did during the baseline periods. Voice education regarding vocal warning signs, healthy speaking levels, and attention to voice use outside of rehearsals during intense periods could help young students like Melissa and Kathy keep their voices healthy in demanding situations. Such vocal health education should take place from the first day classes for freshmen and be reinforced regularly prior to IRW. Music faculty could benefit from careful planning that encourages or schedules quiet activities

following intense periods of voice use, rather than activities like the vocally-intensive choir social that took place Wednesday evening of the IRW.

Over the course of nine full days ranging from 10-14+ hours of monitoring, both of the APMs performed without fail and gathered consistent daily data. Both participants recorded a consistent F_0 Mode for speech periods throughout all nine days - 207 Hz for Melissa and 229 Hz for Kathy. The transducers remained attached until voluntarily removed for all but one instance. The only unforeseen difficulty was that by the end of seven consecutive days of monitoring, both participants had developed skin irritation at the location of the transducer (the thyroid notch). This risk should be noted for future studies that employ a glued transducer.

Limitations

Due to the intensive time requirements for both the participants and the investigator, the extensive manual data analysis requirements, and the fact that only two APMs were available, this study was limited to two participants. As such, these data cannot be generalized beyond the present participants. We were also unable to conduct pre- and post-stroboscopies of the vocal folds and as such were able to rely only on perceptual data regarding the vocal health of the participants due to the lack of a nearby research partner with the required skills or equipment.

Regarding the APM equipment, the acquired amplitude and related distance dose data appeared high compared to other studies of this type. While the vocal doses recorded were unusually high, it is possible that the APM overestimated mean amplitude (and thereby also Dd) as was suggested by Bottalico et al. (2018). While there were currently no commercial voice dosimeters available for purchase in 2021, future studies, employing continually improving technology such as the analysis of the full accelerometer signal developed and employed by Hunter (Hunter, 2013; Schloneger & Hunter, 2017), would allow for increased assurance of accuracy in dosimeter measurements. The development of affordable, accurate commercial voice dosimeter technology and many more ambulatory field studies of singer behavior are needed to acquire normative vocal dose data and to determine safe and appropriate vocal demand levels for developing voices.

Conclusion

Two female collegiate voice students in this case study of an intensive five-day rehearsal week at a small liberal arts college, which included nearly 40 hours of combined choral and musical rehearsals, acquired higher vocal doses than recorded in similar studies of college/university singing students during periods of typical collegiate activities. One participant, an extrovert, recorded higher vocal doses and less perception of vocal decline than did the other student, an introvert, who recorded lower vocal doses and greater perception of vocal

decline. Both participants experienced a perception of less efficient vocal function at the end of the rehearsal week compared with baseline readings.

Collegiate faculty focused more on perceived departmental rehearsal needs during this week than the vocal health of the students, resulting in declines, rather than improvement, in perceived vocal function. Scheduling based on these supposed needs without sufficient thought and care to student vocal demands and vocal conditioning could not only put students at risk of vocal injury, but could also result in an inferior final performance product. University performing arts faculty could work carefully to put student vocal health first by avoiding excessive vocal demands on students, providing ongoing vocal health education, and building in vocal-rest activities during intensive periods. Faculty could put vocal health at the forefront by keeping students' overall vocal demands in mind when making casting decisions, scheduling less overall choral rehearsal time (acknowledging that fewer rehearsal hours with fresh voices may yield similar or improved results to more rehearsal hours that lead to tired voices), building effective nonperformance-volume singing into the choral rehearsal, scaling rehearsal time throughout the semester to increase vocal conditioning, and avoiding the scheduling of loud social activities in the midst of intensive periods. By placing such considerations of student vocal health first, faculty could ensure positive student outcomes, improved performance outcomes, and long-term vocal development.

Appendix: Vocal Dosage Case Study Daily Survey

Your responses to this anonymous survey will college faculty assess various aspects of the opening week schedule. Please respond HONESTLY and CANDIDLY.

<u>PART ONE</u>:   Name: _____   Age: _____

Last night I got _____ hours of sleep. I left my home at _____ a.m. today.

<u>PART TWO</u>:
For statements 1-7 below, please <u>circle</u> your agreement or disagreement with each statement, using the following scale:

1	2	3	4	5	6	7
strongly disagree	disagree	somewhat disagree	not sure	somewhat agree	agree	strongly agree

1. I am doing a good job taking care of my voice today.

   1   2   3   4   5   6   7

2. Today, I can comfortably sing the higher notes of my voice range.

   1   2   3   4   5   6   7

3. Today, I find myself clearing my throat more than I typically do.

   1   2   3   4   5   6   7

4. Today, I sense airiness/breathiness in the sound of my voice.

   1   2   3   4   5   6   7

5. Today, I feel like I'm straining when I sing.

   1   2   3   4   5   6   7

6. Today, my voice feels tired.

   1   2   3   4   5   6   7

7. Today, my throat hurts when I sing.

   1   2   3   4   5   6   7

8. Today, my voice is hoarse.

   1   2   3   4   5   6   7

9. Today, my voice feels wobbly/shaky.

   1   2   3   4   5   6   7

10. Today, I feel pain when I sing.

    1   2   3   4   5   6   7

11. Right now, the overall quality of my singing voice is (circle one):

    Very Poor   Poor   Average   Good   Excellent

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Gospel Choir as a Space for Racial and Religious Expression for Black Students at a Predominantly White Institution

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Abstract

This ethnography aimed to describe the culture and philosophy of the Northwestern Community Ensemble (NCE), a predominantly Black gospel choir at a predominantly White institution. Data collection comprised standard ethnographic procedures—31 hours of observation at rehearsals and concerts as a non-participant observer, 28 hours as a participant observer, and 15 semi-structured interviews with ensemble members and support people. Data consisted of interview transcripts, fieldnotes, and material culture, including concert programs, the ensemble's website and social media pages, policy documents, and other documents from the Northwestern University Archives. Analysis involved a process of open and closed coding, with Randall Collins' (2005) interaction ritual theory serving as the theoretical framework. This theory effectively described the interpersonal exchanges between ensemble members and the symbols mediating those processes. The findings suggest gospel music was the unifying force that connected all elements of participation in NCE—music experience, racial identity, religious identity—and helped foster group solidarity and spiritual growth. These findings highlight the importance of social identity-based music ensembles for marginalized racial and ethnic groups at predominantly White institutions.

Keywords: choral culture, interaction ritual, gospel choir, social identity-based student organization, Black student organization, culturally relevant pedagogy

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Gospel Choir as a Space for Racial and Religious Expression for Black Students at a Predominantly White Institution

Choir director Gwen presses "play" on her music streaming app. The singers cannot contain themselves and start dancing out of their seats the second Israel Houghton's "You are Good" blasts out of the Bluetooth speaker. "Kids' church!" Olivia yells excitedly, recalling her experience singing this song growing up in her church's children's ministry. On my right, C.J. uses two pencils as drumsticks and bangs on a seat cushion, while across the room, holding a textbook and a notebook, Brennan sings along while finishing up some homework. Varied and beautiful tones of black and brown skins fill the room, and a variety of hair-styles ornaments the scene. The guys wear a short haircut or short Afro with curls with faded sides and back, most with an impeccable hairline neatly styled with a t-blade trimmer. The girls wear different lengths of natural curls, braids, wigs, or weave extensions. During a quick break, one singer greets another and compliments her on her hairdo: "Girl! You did that!" Gwen recounts with much dismay a recent episode when a random White lady tried to touch her freshly done braids. The other girls laugh and say, "Oh, no ma'am!"

"There are, like, 'six' Black people on campus. What am I going to do?" These were the words of Blake, a singer in and executive board member of the Northwestern Community Ensemble (NCE).[2] She transferred to Northwestern University, a predominantly White institution (PWI), during her sophomore year and faced early on the challenges of building close relationships and finding a sense of belonging. While longing for deep, meaningful relationships and fearing isolation are common attitudes during the young adult years (Erikson, 1968), college students from marginalized racial and ethnic groups may face additional challenges in PWIs. For instance, observations of and experiences with racism may increase stress in students of color and affect their commitment to the institution (Johnson et al., 2014). Furthermore, a lack of cultural representation in college spaces may lead students from marginalized ethnic groups to feel "absent while present" (Hotchkins & Dancy, 2017).

Black[3] student enrollment at U.S. postsecondary institutions represented 12% of all undergraduate students in fall 2020 (National Center for Education Statistics, 2020a). Although that number has increased from 9.6% since 1976, Black student representation remains drastically low in many postsecondary institutions. At Northwestern University, Black or African American students comprised 6% of the undergraduate enrollment in fall 2020, White students 42%, and Asian students 19% (National Center for Education Statistics, 2020b).

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[2] Given the historical significance of this organization, its real name is being used with permission.

[3] The data do not specify the number of nonresident aliens (i.e., international students) or students of Hispanic ethnicity who also identify as Black (National Center for Education Statistics, 2020a).

For many Black students, one way to cope with feelings of isolation and marginalization at a PWI is to join a Black student organization (Deckman, 2013b; Harper & Quaye, 2007; Harrison, 2015; Museus, 2008; Sablo, 2008; Strayhorn, 2011). One category of student organizations found in colleges and universities all across the United States is gospel choirs. A survey of music department chairpersons from 34 U.S. colleges and universities showed that 99% of collegiate gospel choir members at HBCUs and 82.4% at PWIs were Black students, and most of those gospel choirs were student organizations (Young, 2005). The present study focused on one such student organization, the Northwestern Community Ensemble (NCE), a student-led, primarily Black gospel choir at Northwestern University, a primarily White institution. This study explored the culture and philosophy of NCE, examining the relationship between singers' identities and their participation in the ensemble.

Definition of Key Terms

In this article, *culture* refers to "a particular way of life, whether of a people, a period, a group, or humanity in general" (Williams, 1985, p. 90). Elements representing NCE's culture include but are not limited to rituals, beliefs, procedures, and habits. *Philosophy* describes "a system of principles for guidance in practical affairs" (Dictionary.com, n.d.-b). NCE's philosophical underpinnings include the ensemble's perceived values, purposes, and mission. The term *predominantly White institution* (PWI) is commonly used in the United States to describe colleges and universities where White students comprise most of the student enrollment (i.e., 50% or greater; Brown & Dancy, 2010). However, Bourke (2016) emphasized that the term also highlights the historical and current role of race and racism in those institutions. In this paper, *PWI* refers to colleges and universities characterized by either numerical or sociocultural dominance of White students and Whiteness.

Review of the Literature

Previous studies have shown that students from marginalized racial or ethnic groups perceived their campus racial climate more negatively than White students attending the same institutions (D'Augelli & Hershberger, 1993; Nora & Cabrera, 1996; Rankin & Reason, 2005). The lowest levels of satisfaction tended to be among Black students, even compared to other marginalized groups (Ancis et al., 2000; Cabrera & Nora, 1994; Harper & Hurtado, 2007; Suarez-Balcazar et al., 2003). One reason for students' negative perception was the lack of a sense of belonging (Harper et al., 2018; Hurtado & Carter, 1997; Johnson et al., 2007; Nora & Cabrera, 1996). Vaccaro and Newman (2016) documented that the definition of belonging varied between privileged and minoritized college students. While all students saw belonging as feeling comfortable and "fitting in," only minoritized students associated belonging with respect, safety, building deeper relationships rooted in authenticity and self-awareness, and feelings of not being "the only one."

To improve the experiences and well-being of students from marginalized racial and ethnic groups, postsecondary institutions have implemented strategies including offering

ethnic studies courses (Nuñez, 2011) and sponsoring multicultural centers and social identity-based student organizations (Means & Pyne, 2017; Museus, 2008; Vaccaro & Newman, 2016). Besides helping students of color feel welcome (Vaccaro & Newman, 2016), identity-based student organizations provided cultural validation (Fiorentino, 2020; Museus, 2008) and opportunities for students' self-awareness of their racial backgrounds (Means & Pyne, 2017). Fiorentino (2020) sought to understand whether membership in a student organization focusing on music students from marginalized identities influenced students' experiences of belonging and citizenship in a PWI. Membership in the student organization helped mitigate the students' feelings of marginalization and isolation. The two participants in Fiorentino's (2020) case study—both undergraduate music students of color who were members and founders of the organization—acknowledged the student organization's role in supporting and validating its members.

Ethnic student organizations have focused on music performance as a means of social integration and cultural validation. At the Kuumba Singers of Harvard College, Harvard's oldest Black student organization and the institution's largest multicultural organization, students achieved their mission by "working together as a collective to promote the uplift of the black community through music, dance, and writing" (Deckman, 2013a, p. 281) with a focus on music and dance from across the African diaspora. Results from Deckman's (2013b) ethnography revealed that participants valued the organization's musical and social aspects, and the ensemble director believed it was crucial to keep a balance between both.

Researchers have suggested that participation in gospel choir helped foster African American college students' social integration at PWIs (Harrison, 2015; Pope & Moore, 2004; Sablo, 2008; Strayhorn, 2011). Strayhorn (2011) explored the experiences of 21 African American students who sang in a gospel choir at a PWI. Participation in the gospel choir helped students establish a sense of belonging, reduce feelings of marginalization and social isolation, and develop ethnic pride. Singing songs that highlighted Afrocentric musical features and addressed the "struggles for freedom and justice" (p. 144) helped choir members to educate themselves and the community about Black culture "while developing pride in their own ethnic identity" (p. 144).

Gospel music has been considered "a profound statement of black culture" (Williams-Jones, 1975, p. 384). Expanding on the extant literature on the lived experiences of Black gospel choir members at PWIs is crucial to broadening our understanding of gospel choirs' role at colleges and universities and the significance of gospel music for Black students at PWIs. The purpose of this ethnography (Spradley, 1979) was to describe the culture and philosophy of the Northwestern Community Ensemble, a predominantly Black gospel choir at a predominantly White institution. The following research questions guided this study: (a) How are the ensemble's culture and philosophy manifested? (b) How do the singers' identities and cultural background shape their participation in NCE? (c) How does participation in NCE shape the singers' identities and their experiences at a PWI?

Theoretical Framework

A holistic study of a choral culture must consider not only music and singers' interaction with music but also the processes and interpersonal interactions in those spaces. Collins (2005) stated, "Rituals generate symbols; experience in rituals inculcates those symbols in individual minds and memories" (p. 44). In other words, singers' collective experiences with and through symbols in the choral rehearsal may lead to a shared experience unique to that ensemble. Collins (2005) developed a micro-sociological theory (concerned with small-scale, face-to-face sociological interactions) called *interaction ritual theory*, which describes how individuals develop emotional energy and feelings of group membership (or group solidarity) when involved in certain interpersonal exchanges. A small body of education research has featured interaction ritual theory as a framework to examine a fourth-grade language learner's interactions with their peers in a multilingual classroom in Luxembourg (Wilmes & Siry, 2018), students' perception of emotional climate in a preservice secondary science teacher education class in Bhutan (Rinchen et al., 2016), and the relationship between eighth-grade students' engagement with science and learning environments in a U.S. private school (Olitsky, 2007).

Interaction rituals (IR) involve emotional, behavioral, and cognitive connections between individuals (Collins, 2005). There are three stages in interaction ritual theory. In the first stage, *ritual ingredients*, individuals come together (group assembly or bodily co-presence) with a common goal or mutual focus of attention (an event or activity) while sharing a mood or emotional experience. Clear boundaries or barriers exclude outsiders from participating in the interaction ritual or from successfully achieving a sense of group membership. The interactions progress to moments of shared excitement and enjoyment (emotional entrainment, shared emotion, or feelings of intersubjectivity), leading to the second stage called *collective effervescence*, which is characterized by moments of exhilaration (Collins, 2005). Even though those moments are short-lived, they lead to prolonged results. These results are part of the third stage, ritual outcome, which include group solidarity or feelings of membership and emotional energy in the individual. Other outcomes include symbols of social relationship or sacred objects (tangible or intangible representations of the group) and standards of morality towards the group and its symbols.

Using firefighters' training as an example, Collins (2005) explained, "'Training' is not simply a matter of learning; it is above all establishing identity with the group who carry out their skills collectively. Maintaining collective identity is an ongoing activity, an IR chain" (p. 91). In that sense, when choir singers attend a rehearsal, they are not merely learning music and preparing for a performance. Through successful interaction rituals, singers develop a collective identity as members of the ensemble. Continuous attendance at rehearsals and prolonged interaction between the singers foster the development of their collective identity. I adopted interaction ritual theory as a theoretical framework to help understand the social interactions in NCE, the role of music in those interactions, and the personal and collective outcomes of those interactions. Race and religion represent some of the most

complex issues in the United States, particularly considering that people's racial and religious experiences are not monolithic. Interaction ritual theory can effectively explain which racial and religious symbols are significant to a group and the unique ways group members may use those symbols and make them their own to develop and maintain their collective identity.

Site and Context

Northwestern Community Ensemble

This study focused on the Northwestern Community Ensemble (NCE), a student-led gospel choir at Northwestern University. The choir was founded in 1971 during a time of significant racial distress and a moment of collective Black resistance on Northwestern's campus. On April 22, 1968, members of For Members Only (FMO) and the Afro-American Student Union (AASU)—Black student organizations at Northwestern University—presented a statement and petition demanding better conditions for Black students at the university (*Black student statement and petition,* 1968; Wilson, 2018). Because the university did not promptly respond to the demands, over 100 Black students occupied the bursar's office on May 3, 1968 (Wilson, 2018). The 38-hour protest ended when students and the school's administration reached an agreement ("Black students win many demands," 1968). The event became known as the Bursar's Office Takeover. One of the demonstration's achievements was the establishment of the Black House—a house on campus that serves as a social and cultural hub for Black students (Wilson, 2018).

Three years after the takeover, Eileen Cherry, FMO's Cultural Affairs coordinator, brought together 15 singers to perform at an FMO-sponsored fundraiser on campus (Wilson, 2021). After a successful event, Cherry met with two other Black Northwestern students, Clifton Gerring III and Lurell Stanley Davis, and they decided to form the Northwestern Community Ensemble. The group's creation came in response to collective interest in a Black choir at Northwestern and the need for a safe space for Black students who felt unwelcome in other choral groups (Northwestern Community Ensemble, n.d.). The first audition was held on May 8, 1971, and the group had its first performance the following fall. An announcement in the university's newspaper read:

> Northwestern's first black choir, the Northwestern Community Ensemble, will sing gospels, spirituals, hymns and anthems in "An Evening of Music" at 7:30 p.m. Friday, Alice Millar Chapel. Tickets are $1 and available at Scott Hall Activities Office and Black House, 619 Emerson (Taylor, 1971, p.7).

The ensemble's successful first year paved the way for a vibrant legacy on Northwestern's campus and in the Evanston community, including frequent participation at church services at Evanston's Ebenezer African Methodist Episcopal Church (Northwestern Community Ensemble, 1972).

After 50 years, NCE has continued to offer a space where Northwestern students could

gather to worship God and enjoy each other's company while singing gospel music. The organization's constitution (Northwestern Community Ensemble, 2017) stated:

> The purpose of NCE is to serve God and to give students and the surrounding community a chance to worship God and Jesus Christ, and to experience both in concert form and worship. Also [sic] to teach students different section parts and how to sing in concert with others. (p. 4)

The students handled all operations in NCE. Ensemble members elected all executive board members except the choir directors. During this study, the executive board invited one choir director based on their previous musical experiences; that director, in turn, invited other experienced choir members to co-direct. The opportunity to engage in decision-making affecting all processes set NCE apart from participants' previous ensemble experiences and other ensembles led by university-appointed faculty or staff. Rosa (sophomore, 2nd-year member) explained, "I feel we're freer to give recommendations and work together through things." Vocal coach David pointed out that the "element of student voice would be significantly lower" if NCE was a for-credit course rather than a student organization. "Because of that," David added, "some people may want it to remain that way." Participants seemed to not only value student engagement and leadership but also to protect that structure. Speaking about the choir director position, choir director Gwen (senior, 4th-year member) shared, "The dedication that you have as someone who is a working person with a job and potentially a family or starting a family or whatever is not the same as a student that's in it." Student leadership has been a fundamental aspect of NCE, and participants believed it should be preserved.

All students were welcome to audition and join the choir, though a special effort to recruit Black students was evident. Pianist and choir director Patrick (freshman, 1st-year member) spoke of his first encounter with members of NCE's executive board at the student organization fair:

> They were screaming, like, "Hey, you're Black. Do you like Black people? Do you like music too?" I was like, "Yeah, I like all that." They're like, "You should join our choir." And I was like, "Okay, but I'm not singing, so I'll play the piano for you."

Rehearsals took place every Saturday at Alice Millar Chapel's choir room from 10:00 a.m. to 1:00 p.m. NCE held two major annual performances. For the winter concert, the choir hired a professional gospel artist to perform with them. Gospel artists who performed with NCE in recent years included Fred Hammond, Marvin Sapp, and Tye Tribbett. The group had also participated in annual campus events, including the Dr. Martin Luther King Jr. Candlelight Vigil and *Harambee*—the kickoff to Black History Month at Northwestern University.

Membership in NCE was open to all Northwestern students, and at the time of this study, all singers in the group were undergraduate students. Approximately 20 singers joined the choir each year. During the 2019–2020 academic year, 19 singers were listed on the fall concert program, and 22 singers were on the path to performing in the 2020 winter concert when the event was canceled due to the COVID-19 pandemic. Though nearly all NCE members were Black, non-Black students were welcome and often joined the ensemble. Only two White students joined the ensemble during the 2019–2020 academic year (one in the fall and another in the winter). The ensemble was also open to students holding diverse religious beliefs.

Method

Genesis of the Study

I first reached out to NCE because of a qualitative data collection assignment for a doctoral research methods class. After learning about the ensemble on Northwestern's student organization directory, I attended one of their rehearsals in November 2018. I had been at Northwestern for a few months, but that was the first time I was in a room where most people were Black. As a Black Christian music educator, I was struck by the ensemble's beautiful sound, the competence of their student-based leadership, their unapologetic faith, and their radiant culture. Shortly after that first encounter, I launched this ethnography.

Data Collection

I began to formally collect data upon receiving permission from the Institutional Review Board in April 2019. This study was exempt from IRB oversight as it was determined "not research involving human subjects." Using standard ethnographic procedures (Emerson et al., 2011; Spradley, 1979), I observed 31 hours of rehearsals and concerts as a non-participant observer. After auditioning and joining the ensemble as a singer in January 2020, I continued to collect data as a participant observer (Spradley, 2016) for an additional 28 hours. I conducted semi-structured interviews (Spradley, 1979) with 13 ensemble members (two out of 34 members in the 2018–2019 academic year, 11 out of 22 members in the following academic year), their professional vocal coach, and the organization's advisor.

After receiving support from NCE's executive board to conduct this study, I shared my research purposes with the singers at the beginning of a rehearsal and invited them to participate in an interview. Singers signed up for an interview through a Google form or by directly scheduling an interview using the Acuity online scheduling service (https://www.acuityscheduling.com). The group's president frequently reminded ensemble members to sign up for an interview if they were interested. As I became more familiar with NCE's history and legacy as a Black student organization at Northwestern, I honed the focus of this study to Black students' experiences, which made more evident the need to center Black students' voices. Hence, although I interviewed one White NCE member who had signed up, I did not include that student in the final pool of participants. All other singers I interviewed identified

as Black or African American and remained in the final pool. All students interviewed in this study identified as Christian or had some connection with the Christian faith. I also contacted NCE's vocal coach and advisor by email, describing my research and inviting them to participate in an interview.

All participants in this report are represented by pseudonyms. The academic year and membership year shown in parentheses next to the choir member's name reflect when individual interviews took place. Because the ensemble had more than one choir director each year, this report shows multiple participants with that title. Most interviews ranged from 30 to 60 minutes and totaled over 16 hours of audio recordings. The interview with one of the choir directors was 136 minutes long. I recorded in-person interviews with the Voice Memos iPhone application and the interviews via Zoom video communication software with its built-in recording feature. For the latter, I used the audio-only recordings to generate the interview transcript. I transcribed the interviews using either the Transcribe by Wreally (https://transcribe.wreally.com/) or Otter.ai (https://otter.ai) websites, resulting in 252 pages of transcribed interviews. Other forms of data included fieldnotes and memos (Emerson et al., 2011) and material culture—concert programs, the ensemble's website and social media pages, official documents, and other records from the Northwestern University Archives.

Data Analysis

I used MAXQDA software to analyze all the data, starting with a process of open coding (Emerson et al., 2011). First, I coded the interview transcripts by using "first cycle codes" (Miles et al., 2014) such as descriptive (e.g., "NCE as a Family," "Racial [Under]representation)," in vivo (e.g., "Am I Black Enough?", "Halftime Bible Time"), and process codes (e.g., Building Relationships). Using "second cycle coding" (Miles et al., 2014), I looked for patterns between the codes and grouped them into themes (see Table 1 on the next page for themes and respective codes). Lastly, I used a process of focused coding (Emerson et al., 2011) to analyze other forms of data, such as memos, fieldnotes, and material culture, looking for data that would confirm or disconfirm my assertions. Throughout the coding process, I wrote memos to register early insights and interpretations, which later developed into deeper assertions. I examined and interpreted the emergent themes and assertions using interaction ritual theory (Collins, 2005) as a framework to organize and understand the central phenomenon. In this study, *assertion* refers to "a declarative statement of summative synthesis, supported by confirming evidence from the data and revised when disconfirming evidence or discrepant cases require modification of the assertion" (Miles et al., 2014, p. 99).

Trustworthiness

I applied several validation strategies suggested by Creswell and Poth (2018) in order to achieve trustworthiness. Due to this study's qualitative nature, the findings are not generaliz-

Table 1. Emergent Themes and Respective Codes

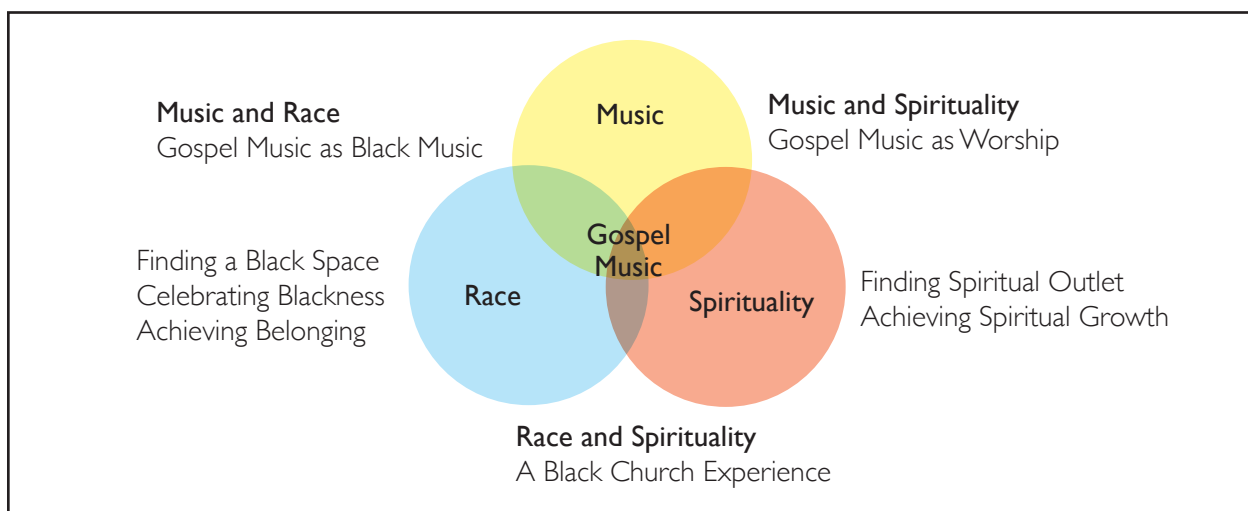| Category	Themes	Codes
Religion and Spirituality	Finding Spiritual Outlet	• Spiritual Outlet • "Halftime Bible Time" • Home Church • Evangelism
	Achieving Spiritual Growth	• Religious Agency • Spiritual Growth
Race	Finding a Black Space	• Racial (Under)representation • Comfort • "Am I Black Enough?"
	Celebrating Blackness	• The Joy of Blackness • African American Culture
	Achieving Belonging	• Belonging • Building Community • NCE as a Family • Building Relationships
Gospel Music	Gospel Music as Worship	• Worship
	Gospel Music as Black Music	• Black Aesthetics • Contemporary Christian Music
	A Black Church Experience	• Black Church • Never Sung in a Gospel Choir

able beyond this organization and the cohort interviewed. Nevertheless, attending rehearsals and concerts for over a year—including every rehearsal in the 2019–2020 academic year—helped assure prolonged engagement and afforded me rich data to inform a thick description (Geertz, 2002) of the ensemble and its culture. Hopefully, such a strategy will help readers to make naturalistic generalizations (Stake & Trumbull, 1982). I also introduced myself to the choir and made my intentions and the purpose of my presence clear in order to lessen any effect of "researcher on site" (Miles et al., 2014). Not all choir members during this study volunteered to be interviewed, and singers' voices only represented those who participated in the study. However, I strove not to depend only on data from interviews. I triangulated with all types of data—interview transcripts, fieldnotes, and material culture— throughout the process of data analysis, actively seeking disconfirming evidence to dispute the preliminary assertions and provide more accurate interpretations.

Considering my role as participant observer and my personal familiarity with certain aspects of the ensemble's culture, I aimed to mitigate researcher subjectivity (Roulston & Shelton, 2015) by disclosing to participants my identity as a Christian, a Black man, and a vocal music educator and how it was my goal during this study not to assume that my experiences through those identities were the same as those of the participants. My identities and cultural background helped me notice and understand elements in the ensemble's culture that could have gone unnoticed by others unfamiliar with those traditions (e.g., references to biblical texts, jargon and customs associated with the Black Christian tradition, slangs used among Black youth in America, performance practice in the gospel music tradition). Nevertheless, I employed reflective practices that were often uncomfortable (Pillow, 2003) but were crucial for challenging me to explore issues of race, spirituality, and musicianship beyond my own experiences and epistemologies. Peer debriefers in sociology, education, and music education provided feedback during the data collection period, analysis, and writing of this report. Lastly, I applied member checking by asking participants for clarification after the interviews, presenting the research findings to members of the ensemble, and sharing assertions with individual participants. I asked them to provide feedback confirming, challenging, or expanding on my assertions and interpretations.

Findings

Through data collection and analysis, I developed the general assertion that NCE provided a unique space for students at Northwestern University to express their Black and Christian identities through singing gospel music in a community of like-minded people. I organized the themes into three categories: "Religion and Spirituality," "Race," and "Gospel Music." Figure 1 presents a model of the NCE experience, containing each of these three categories and their respective emergent themes. Because "music" was an integral aspect of each of the three categories in NCE's culture, I did not address it as a separate category. I will introduce each category by highlighting different aspects of the ensemble's

Figure 1: The NCE Experience Model

Music and Race
Gospel Music as Black Music

Music

Music and Spirituality
Gospel Music as Worship

Gospel Music

Finding a Black Space
Celebrating Blackness
Achieving Belonging

Race

Spirituality

Finding Spiritual Outlet
Achieving Spiritual Growth

Race and Spirituality
A Black Church Experience

culture through vignettes representing a collage of episodes I have observed.

Religion and Spirituality

> *All singers reconvene in the choir room after sectionals to run through Chance the Rapper's arrangement of "How Great is Our God." When the voices go from unison to three-part harmonies, the singers look at each other with excitement. Once the sonic residues of the final chord fade away, choir director Gwen calls for a break. It is Halftime Bible Time. Wearing a lime green sweatshirt that says, "God is Dope," chaplain Brittany reads a passage from the Bible found in Philippians 4:4: "Rejoice in the Lord always." Brittany adds, "Don't wait until spring to rejoice. Make a choice to worship now." The rehearsal resumes with singers refreshed by such encouraging words. At the end of rehearsal, all singers stand up and hold hands in a circle as executive board member Sarah asks the group if anybody has any praise reports. One senior shares about a post-graduation job offer. With a thankful tone, a singer shares about a school project that went well while another is excited about dropping "orgo" (Organic Chemistry) and feeling good about it. When Sarah asks who needs prayer, singers mention an upcoming school exam and healing for a family member. With heads bowed and eyes closed, singers listen and respond in agreement: "Yes, Lord. Amen."*

Participation in NCE provided students at Northwestern the opportunity to fulfill their spiritual needs within a community of Christian singers. Participants in this study came from various Christian denominations, including but not limited to Pentecostal, Non-Denominational, and Catholic, with demographic makeup spanning from African to African American to predominantly White. Amidst such varied church backgrounds, participants found common goals and values that helped them explore their religious beliefs and spirituality in a collective setting. In this section, I will describe two emergent themes: "Finding Spiritual Outlet" and "Achieving Spiritual Growth." While the former describes NCE as an external avenue for students' religious expression with other students, the latter describes participants' internal, personal outcomes from a religious experience in that setting.

Finding Spiritual Outlet. NCE functioned as a spiritual outlet for students who felt connected to the Christian faith. Participants often described their transcendent experiences during rehearsals and concerts. Sarah stated, "Sometimes we'd be singing, and you could feel the presence of God." Having a spiritual outlet like NCE was vital for singers to maintain their faith, particularly those away from their hometowns who were not connected to a local church. Executive board member Blake (senior, 3rd-year member) explained, "I enjoy the fact that [NCE] lets me tap into the spiritual, religious aspect of my life. I don't go to church every Sunday. […] But my Saturdays were always dedicated to NCE." While some participants did not attend church regularly, others were a part of religious organizations or attended churches in the community. For singers who attended church or other campus religious groups consistently, NCE's uniqueness was highlighted by music's role as a means

to spirituality.

NCE's culture incorporated elements common to a church experience. Those familiar cultural elements—including prayer and Bible reading—helped singers connect to their spirituality. NCE members prayed together at the beginning and the end of rehearsals. They also prayed together before walking on the stage to perform. Sharing praise reports—accounts of blessings received from God—took place at least once during rehearsals when singers gathered to pray. Halftime Bible Time, a bible-study-like interaction, was often mentioned by participants as one of their favorite parts of rehearsal. Rosa was pleased with the opportunity for self-reflection: "[It involves] taking the words we're singing and then looking at Scripture, relating it and then saying, 'Okay, how can we apply this to our lives?'" These procedures were crucial in helping singers develop a special meaning—a spiritual one—to their musical experience beyond aesthetic and social aspects of music participation.

Participants talked about the emotional and psychological benefits of attending rehearsals, including finding relief from academic stress and anxiety. Eve (senior, 2nd-year member) remarked, "It's been a really positive impact on me, especially dealing with depression and anxiety at the school. It's always been a place that even when I'm low […] I know, like, 'Okay, God is here.' It's so good!" Being a part of the ensemble has helped her find peace during challenging times in school.

Performing gospel music to the broader Northwestern community allowed singers to share their faith with others. Because evangelism (reaching those outside the Christian faith and encouraging them to believe in Jesus) has been an integral aspect of Christianity and one aspect of NCE's mission, participants viewed it as an essential part of their participation in the ensemble. Patrick shared that part of NCE's mission has been "to create [an] ensemble—with our music, with our worship, with our praise—to be able to use our voices, use our abilities to sort of evangelize, to bring people closer to God." According to executive board member Sarah (senior, 4th-year member), "being able to share [her] faith and the Gospel[4] with people that come to [NCE's] concerts" was one of the reasons she continued to participate in the ensemble throughout her years at Northwestern. Joining NCE and participating in its evangelistic mission functioned as a means for singers to express their Christian identity and to achieve a sense of fulfilled purpose by being a part of a greater mission.

Achieving Spiritual Growth. Participation in NCE allowed singers to grow in their faith. Participants expressed that being in college and away from their family made them realize that they should now be in charge of their spirituality. Sarah remarked, "I've tried to learn how to be independent in my own faith, and NCE has helped with that." Similar to joining a church and attending church services regularly, the choice of joining NCE and committing to weekly three-hour rehearsals exemplified the level of commitment singers must make if they wanted to express their faith and spirituality in a collective setting. In

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[4] The use of upper-case G in Gospel refers to the Gospel of Jesus Christ.

college, that was a choice only they could make for themselves.

Many participants emphasized the ensemble's extramusical role and the impact participation had on their spiritual growth. The centrality of the religious themes embedded into every song and the procedures in place during rehearsals and concerts allowed singers to achieve spiritual growth. Gwen articulated, "It's not trivial. [NCE is] not just a performance group. It's something that makes me a better Christian, it makes me a better person, it makes me a better friend." Participants' spiritual experiences in NCE have allowed them to enjoy personal growth that positively affected other areas of their lives.

Race

> *"Make sure y'all keep that beat subdivision in mind," Gwen reminds the singers, explaining the 12/8 meter in John P. Kee's "Clap Your Hands." After singing the last phrase in the chorus, "Clap your hands and say, 'Amen,'" a couple of times, everybody is ready for a break. It is time for a game! As the singers walk to an open space, a few first stop by the snack table and grab some Cheez-Its, Oreos, Doritos, and home-baked chocolate chips cookies. "Let me explain how this will go down," Geoffrey says and goes over the game rules in which each person should say their name and make gestures with their hands, feet, or the whole body. When some singers use famous hip hop dance moves as their gesture—including the "Dougie" and the "Milly Rock"—all other singers mimic and laugh hysterically. As everybody walks back to their seats, Geoffrey reminds everyone to pay their dues, noting, "Y'all, we need food for the concert!" "Soul food?" one singer asks, and Blake responds, "Black people food." "Mac and Cheese?" somebody else asks. After a short pause, Blake explains, "Nah. Another type of Black people food."*

Participation in NCE provided Black students at Northwestern the opportunity to express their Black identity within a community of Black singers. The emergent themes explored in this section include "Finding a Black Space," "Celebrating Blackness," and "Achieving Belonging."

Finding a Black Space. As a Black student organization at a PWI, NCE afforded Black students the valuable opportunity to be in a space where most people looked like them, in contrast to experiencing the feeling of being "the only one" in most academic spaces on campus. Executive board member Amaia (senior, 3rd-year member) explained her approach to socializing on campus: "The way I navigate Northwestern is [by] immersing myself into Black spaces as much as I can." She added, "You stick to what you know, you stick to what's safer for you." The intentional pursuit for Black spaces positioned students to collectively express their Black identity in an environment where they felt safe and gave them some level of control over their own experience on campus.

Participants described feeling comfortable in NCE and often credited such feeling with

Black representation. Kelly (freshman, 1st-year member) shared, "I have met some good friends [in another Christian student organization], but NCE is probably the one [organization] where I feel most comfortable." During member checking, Kelly expanded, "Being around other Black people at a predominantly White institution makes me feel comfortable, welcome, and like I'm in the right place." Black representation in NCE was crucial for participants to find comfort by expressing their Black identity. Esther (senior, 1st-year member) explained, "[NCE is] a group of your peers that look like you; there's just an increased comfortability." While Esther also felt safe in other spaces on campus, being a part of a welcoming Black organization such as NCE made her feel more comfortable expressing her true self.

NCE has been a diverse Black choir. In this study, participants described their identity as African American, African, first-generation African American (born in the U.S. of African parents), or Caribbean. Participants who identified as Black but not African American also described their nationality (e.g., Nigerian, Jamaican) or specific ethnic groups. A respect for singers' diverse backgrounds and diverse expressions of Blackness was evident. For instance, during my time as a singer in NCE, the repertoire included songs from Black Christian traditions outside the United States, including "Caribbean Medley," recorded by African American gospel artist Donnie McClurkin, and "African Medley," recorded by African American gospel artist Tye Tribbett.

Some participants expressed their concern with tensions within the broader Black community at Northwestern and its apparent divide. For instance, participants described the feeling of not being "Black enough" based on unrealistic standards and expectations by some members of the Black community. Executive board member Katie (junior, 3rd-year member), who used to be very vocal about issues of race and diversity in her high school, explained that she did not feel the same enthusiasm in college: "Here [at Northwestern], I feel silenced because I am not Black enough to the general group." In contrast, participants shared that NCE is a space where their individual expression of Blackness was respected and welcomed. Katie remarked, "We don't talk about who's Black [enough] or who's not. We don't make those distinctions, and I feel like...that's a safer place for me to be myself." Sarah shared her perception of how NCE compared to the broader Black community: "I don't think [NCE] is a reflection of what the rest of the Black community looks like. I think we're actually a reflection of what we could look like." As a safe and welcoming Black space at a PWI, NCE allowed Black singers to express their Black identity without fear of rejection or judgment.

Celebrating Blackness. Despite the challenges of being Black at a PWI, participation in NCE allowed Black students to celebrate their Black identities, enjoy positive and uplifting moments, and share emotional experiences rooted in Black pride and joy. Gwen explained that such experiences were extended to the broader Black community at Northwestern and helped display a holistic representation of what it means to be Black:

[Many people] come to our choir concerts just to have fun, even if they're not Christian but to just, like, hoot and holler with us and stomp around and be joyful and Black in spaces that tell us Blackness is a constant struggle, and Blackness is, you know, sadness and pain and all of that. But also, there's so much joy in Blackness and love in Blackness and community in Blackness, and that really gets embodied at our concerts.

Participants often mentioned how much fun they had in NCE, and expressions of Black American culture often ignited episodes of collective joy and facilitated rapport building between choir members. For instance, rehearsals always incorporated elements from Black music. One common vocalise consisted of the first phrase of the song "My Way" by rapper Fetty Wap. Another warm-up comprised a high-to-low glissando using the words "soul train."[5] Occasional use of African American Vernacular English (AAVE) was evident during conversations or even when a singer wore a t-shirt to rehearsal that spelled and defined the word "periodt."[6] At another rehearsal, that same singer wore a t-shirt that read, "I LOVE MY BLACKNESS AND YOURS," with fonts that resembled the colors and ornaments on a dashiki. Such intentional gestures celebrating Blackness were consistent with NCE's positive and uplifting culture.

Achieving Belonging. NCE's culture allowed Black students at Northwestern to achieve a sense of belonging beyond mere group membership. Patrick shared, "To have that sense of belonging and to know, without any shadow of a doubt, that people want me to be here is a great feeling." The depth and quality of the bond developed between ensemble members allowed them to feel like they belonged to the group and to know those relationships and welcoming attitudes surrounding them were genuine.

According to participants, the ensemble rarely gathered outside of weekly functions as a group. Nevertheless, the prolonged interactions during rehearsals and concerts helped singers build a sense of community and closeness. On concert days, singers usually spent as much as six hours together. Kelly recalled the weekend of her first performance with the choir: "This particular weekend, I spent so much time with them, like, 13 hours total [laughs], and I even feel—just for those few days—I got a lot closer to people in there." Each gathering involved opportunities for social interactions—planned or spontaneous—helping participants create special bonds.

Participants often used the words "community" and "family" to describe their feelings of belonging in NCE. While they enjoyed the act of singing together, the meaning attached to the collective singing was also associated with the bond they developed. Eve shared her

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[5] Soul Train was a television show that featured music and dance of the African American tradition (IMDb, n.d.).

[6] "*Periodt* comes from *period*, used as an interjection to show a statement is final, that there is nothing else to be said or debated. Conversation over. No more discussion […]. *Periodt*, pronounced and spelled with a final *T*, is generally credited to Black English." (Dictionary.com, n.d.-a)

excitement about attending rehearsals: "I'm coming to hang out with my brothers and sisters!" Eve felt connected with other ensemble members despite the level of their friendship, and such a bond between singers in NCE represented their achievement of a sense of belonging.

Gospel Music

> *It is a cold Sunday evening in March. Cahn Auditorium is packed. I have been here before for another event, but one aspect is pleasantly different this time: there are lots of Black people of all ages. The emcee, David, walks on stage, and the piano plays softly in the background, filling the atmosphere with $ii^7–V^7–IM^7$ chord progressions and melodies beautifully ornamented with passing tones and appoggiaturas. "Praise the Lord everybody," David greets the audience, "Do I have any believers in the house tonight?" The audience responds in agreement with claps, shouts, and amens. As David shouts the name of different locations in Chicagoland, the audience reacts euphorically. Some people even came all the way from Chicago's South Side. As David transitions into the concert, the other instruments—guitar, bass, and drum set—join the piano, and the music gets louder and louder. People in the audience stand up, clap, and shout enthusiastically. Like in a traditional Black church choir processional, the choir moves to the risers coming from the stage left wing in a celebratory fashion, wearing beautiful purple robes that match the school's color. Clapping on two and four while one singer plays the tambourine, the choir sings John P. Kee's "I Believe." The energy spreads through the entire auditorium, and the audience claps and sings along passionately. This college campus auditorium is now fully transfigured. It feels like church. A Black church.*

Race and religion have been fundamental aspects of NCE since the group's early years, and music—specifically Black Christian music—has been the vehicle driving the ensemble's philosophy. An early document describing the ensemble stated, "The group intends to continue its mission of filling a spiritual void and working toward liberation through song" (Northwestern Community Ensemble, 1972, p.2). This study's findings suggest that gospel music was the unifying force that connected the singers' racial and religious identities through culturally relevant processes and repertoire. The three themes presented in this section explore intersections among music, spirituality, and race: "Music and Spirituality: Gospel Music as Worship," "Music and Race: Gospel Music as Black Music," and "Race and Spirituality: A Black Church Experience."

Music and Spirituality: Gospel Music as Worship. As a sacred music genre, gospel music allowed NCE singers to experience spirituality through music. Katie shared, "There was some moment in high school where I really decided that gospel music was the way that I best connected to God." While a desire to continue singing after high school motivated

Katie to join NCE, her love for gospel music and the spiritual experience it provided encouraged her to return each year.

Participants emphasized the distinction they made between the physical act of singing and the spiritual act of worshiping God through songs. Executive board member Geoffrey (junior, 3rd-year member) believed such distinction was part of the group's culture: "I would say that we are not only a performance group but also a spiritual community as well because that is a really big aspect of what we do—not only sing but [also] worship." In some cases, it was evident that the singers' worship mindset influenced the musical outcome. For example, during a pre-concert run-through, vocal coach David noticed the choir sounded significantly better when singing one of the songs and asked the singers why that was so. "We are actually worshiping," one singer said out loud. Attaching spiritual beliefs to the singing experience allowed singers to create meaning around a musical experience that was spiritually, emotionally, and aesthetically satisfying.

The spiritual and aesthetic experiences gospel music provided seemed intimately intertwined at times. Geoffrey remarked, "I love the music that we do. I love gospel music. It's so enriching—spiritually, musically—just hearing the different chords and progressions: it slaps[7] every time." The experience through gospel music, a sacred music genre significant to participants, helped them simultaneously fulfill their spiritual and artistic needs.

Music and Race: Gospel Music as Black Music. Participants recognized and valued gospel music's stylistic features and its roots in the African American music tradition. On one occasion, when executive board members were discussing the songs for an upcoming concert, they watched a YouTube video of the song "O Come to the Altar." Though members of Elevation Worship, a contemporary Christian worship band, originally wrote and recorded this song, the version NCE members watched was arranged and performed by Trey McLaughlin and the Sounds of Zamar, a contemporary gospel group. While the video was playing, one of the executive board members smiled and said, "This is Black people appropriate." During the interview, Geoffrey, who was present during the exchange, remarked:

> Contemporary Christian [music] is just code for White people Christian music as opposed to Black people Christian music—which is gospel—and "O Come to the Altar" is a White people Christian music song. Then, Black people took it and made a gospel version and then slap[!], you know what I mean?

Geoffrey's comment displayed his appreciation for the gospel music stylistic features in that arrangement in contrast with the pop-influenced original recording. Gospel music features in that arrangement included call and response, lead singer's variations and improvised melismatic ornamentation (known in gospel music as "runs"), and an emphasis on the choir singing three-part harmonies. Those features were significant to participants' connection to

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[7] "*Slap* is slang verb meaning 'to be excellent or amazing.' It's especially used to refer to a song someone finds extremely good, as in *This song slaps!*" (Dictionary.com, n.d.-c)

gospel music as a genre and as an identifier in the African American culture.

Race and Spirituality: A Black Church Experience. As a cultural element often associated with American Black churches, gospel music in NCE provided a familiar environment to singers with a Black church background. Blake remarked, "That's one of my favorite parts of the Black church—the music and the worship and what not. So, that is part of why I love [NCE] so much." C.J. (senior, 1st-year member) elaborated:

> Like in church, we all get together, sing *Igwe*,[8] dancing up and down the aisle, shaking the tambourine, giving each other hugs, high-fives. That's just like, you know, that's the joy of gospel music to me.

For singers with no previous Black church experience, singing gospel music in NCE allowed them to connect with such an experience for the first time. Derek (junior, 3rd-year member) remarked, "For some reason, I was just never in a church choir. I feel probably that's because where I'm from, [Chicago suburbs], it's a very White place. So, it's not very gospel-oriented, you know what I mean?" By singing gospel music in NCE, Black Christian students at Northwestern could connect or reconnect to symbols that facilitated their religious and racial identity expression.
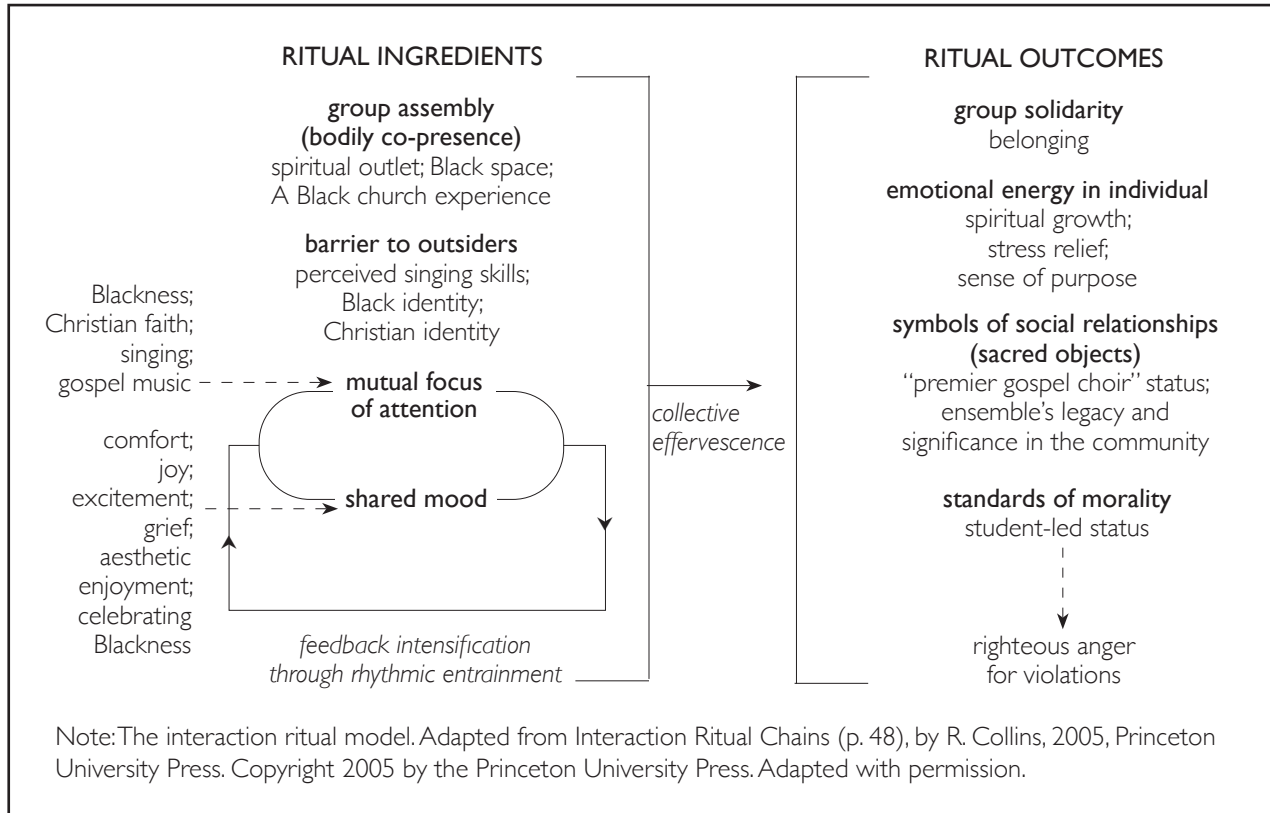
Discussion: NCE as an Interaction Ritual Chain

Examining NCE through the lens of interaction ritual theory (Collins, 2005) illuminated how the elements mediating interactions between individuals in a group or setting—*ritual ingredients*—may result in emotional gains for the individual and feelings of membership between those involved—*ritual outcomes*. Figure 2 on the next page presents Collins' (2005) model, to which I have added the findings in this study as examples of ritual ingredients and ritual outcomes. Specific illustrations of interaction ritual elements drawn from observations and participants' voices are shown in Table 2 on the next page. In NCE, consistent group assembly in weekly rehearsals allowed singers to experience *bodily co-presence*, a ritual ingredient that is the starting point for each subsequent step in the interaction ritual chain (Collins, 2005). The significance of bodily co-presence for NCE members lies in the singers' opportunity to share a physical space with other Black students in a predominantly White institution and the exercising of the Christian tradition of gatherings for worship. In the Bible, Jesus encouraged his followers to gather in fellowship: "For where two or three are gathered together in my name, there am I in the midst of them" (King James Bible, 1769/2017, Matthew 18:20). When singers were physically together, they could see one another and perceive each other's actions and reactions. Such perception was a crucial prerequisite for emotional entrainment between singers.

The role of racial identity, religious identity, and music background in NCE's culture

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[8] *Igwe*, recorded by Midnight Crew, is a popular Nigerian gospel song that combines Igbo, Yoruba, and English.

Figure 2: Interaction Ritual Model

RITUAL INGREDIENTS

**group assembly
(bodily co-presence)**
spiritual outlet; Black space;
A Black church experience

barrier to outsiders
perceived singing skills;
Black identity;
Christian identity

Blackness;
Christian faith;
singing;
gospel music → **mutual focus
of attention**

comfort;
joy;
excitement;
grief;
aesthetic
enjoyment;
celebrating
Blackness → **shared mood**

*feedback intensification
through rhythmic entrainment*

*collective
effervescence*

RITUAL OUTCOMES

group solidarity
belonging

emotional energy in individual
spiritual growth;
stress relief;
sense of purpose

**symbols of social relationships
(sacred objects)**
"premier gospel choir" status;
ensemble's legacy and
significance in the community

standards of morality
student-led status

righteous anger
for violations

Note: The interaction ritual model. Adapted from Interaction Ritual Chains (p. 48), by R. Collins, 2005, Princeton University Press. Copyright 2005 by the Princeton University Press. Adapted with permission.

Table 2: Interaction Rituals in NCE (Examples from Observations and Interviews)

	IR Element	Observed Examples	Supporting Quotes
Ritual Ingredients	group assembly	• rehearsals • concerts	"Even if I have a busy schedule or if I'm tired and I don't feel like going or whatever, whenever I go or whenever I finally get there, then it's fun.'" (Derek)
	barrier to outsiders	• perceived singing skills • racial identity • religious identity	"I didn't think that there was room for people who didn't have spectacular voices." (Esther)
	mutual focus of attention	• Blackness • Christian faith • singing gospel music	"NCE is here to provide a space or like a haven for college students to kind of express their religion and also their love of music at the same time." (Blake)
	shared mood/ emotional experience	• comfort • joy • excitement • grief • aesthetic enjoyment • celebrating Blackness	"One of my favorite things about the group is that we've had a good time, we've had fun. It hasn't been all stress." (David)

Collective Effervescence		• moments of collective exhilaration	"When [choir member] left […], we were all crying and praying. That's a real community to me." (Patrick)
Ritual Outcomes	group solidarity	• belonging	"It just completely changed my life at Northwestern, because NCE was my first family." (Blake)
	emotional energy in the individual	• stress relief • spiritual growth • sense of purpose	"NCE gives my day some purpose, it gives me something to do, people to see." (Kelly)
	symbols of social relationship	• "premier gospel choir" status • legacy and significance in the community	"I've always had that respect for NCE and what they have been able to do for Northwestern and the Evanston community." (David)
	standards of morality	• student-led status	"There was talk about bringing alumni back that lived in the area, but […] that would have changed the dynamic of the choir." (Gwen)

reflected two interaction ritual ingredients: *barriers to outsiders* and *mutual focus of attention.* There were no formal barriers in NCE since all students at Northwestern were welcome to join the ensemble. However, not being a singer, a Christian, or Black could have discouraged one from joining the ensemble. These aspects are noteworthy because they were embedded in the ensemble's culture; all interactions in NCE were focused on one or more of them. NCE members created meaningful connections and develop rapport by focusing on Blackness, the Christian faith, singing, and gospel music. Collins (2005) explained, "In actuality, the group is focusing on its own feeling of intersubjectivity, its own shared emotion; but it has no way of representing this fleeting feeling, except by representing it as embodied in an object" (p. 37). As the one aspect connecting all others, the gospel music genre was a crucial ingredient that contributed to NCE members experiencing feelings of intersubjectivity and shared emotion.

Participants' feelings of comfort, the ensemble's culture of celebrating Blackness, and the singers' worship mindset while singing exemplified the *shared moods* or *emotional experience* in interaction ritual theory. Participants' emphasis on how much fun they had at rehearsals, their transcendent experience, and the reverence I observed during prayer also portrayed shared emotional experiences between ensemble members. The intensifying interaction between these shared moods and the aforementioned mutual focus of attention resulted in moments of "high level of emotional entrainment" (Collins, 2005, p. 81), labeled in interaction ritual theory as *collective effervescence.* Exhilarating episodes of collective laughter, tears, or dancing and shouting during performance illustrated some of those moments in NCE.

While collective effervescence is ephemeral, it may have prolonged effects (Collins, 2005). In NCE, singers' spiritual growth and relief from stress and anxiety aligned with a ritual outcome described as *emotional energy in the individual.* According to Collins (2005), emotional energy is what individuals seek in the first place. He stated, "Situations are attractive or unattractive to [individuals] to the extent that the interaction ritual is successful in providing emotional energy" (Collins, 2005, p. 44), and that might explain why many singers continued to participate in the ensemble week after week, year after year.

Achieving a sense of belonging related to *group solidarity,* another outcome of successful interaction rituals. Interviewees' use of words such as "community" and "family" exemplified the depth of their relationships with other singers and their connection with the ensemble. Being a part of this ensemble with other Black Christian singers was not solely a means to display or express that preexisting identity, but "a way of strengthening it, re-creating or even creating it" (Collins, 2005, p. 83). In that sense, participants' preexisting identities (e.g., racial and religious identities) also contributed to singers' development of a shared identity as ensemble members.

Participants' description of NCE as Northwestern's premier gospel choir and their pride in the organization's history, legacy, and significance to the Northwestern community aligned with the *symbols of social relationship* (or *sacred objects*) described by interaction ritual theory. This ritual outcome related to how NCE members used those highly valued symbols to represent how they wanted to be seen by the community. Participants' protective attitudes towards the aspect of student leadership represents the *standards of morality*, the last of four ritual outcomes in interaction ritual theory. Such attitude, along with feelings of group solidarity and respect for symbols of social relationships, gives insight into NCE's longevity and the continuity of its culture and philosophy across generations of singers.

Conclusion

The purposes of this ethnography were to examine the culture and philosophy of the Northwestern Community Ensemble (NCE), a primarily Black gospel choir at a PWI, and to understand the role of singers' racial and religious identity in their participation in the ensemble. Through the lens of interaction ritual theory (Collins, 2005), the analysis showed that singers' interpersonal exchanges through symbols in NCE's culture (e.g., singers' Black and Christian identities, singing gospel music, a shared sense of joy and comfort) contributed to a sense of belonging, perceived spiritual growth, stress relief, and a sense of fulfilled purpose. These findings add to a limited body of research on the experiences of Black students in collegiate gospel choirs (Harrison, 2015; Pope & Moore, 2004; Sablo, 2008; Strayhorn, 2011) and the significance of race (Deckman, 2013a; Deckman 2013b), spirituality (Pope & Moore, 2004), and culturally relevant music (Strayhorn, 2011) as means of cultural expression in ethnic student organizations.

NCE members enjoyed gospel music for music's sake and also valued how that music culture fostered the expression of their racial and religious identities. This holistic interaction

with music is consistent with the notion that "people make music meaningful and useful in their lives" (Wade, 2004). The ensemble supported the experiences of Black students at Northwestern University, allowing them to find cultural representation and achieve a sense of belonging at a PWI. These findings are in line with previous studies exploring the role of social identity-based student organizations at PWIs (Fiorentino, 2020; Means & Pyne, 2017; Museus, 2008; Vaccaro & Newman, 2016), including how participation in a gospel choir helped Black college students achieve social integration (Harrison, 2015) and develop ethnic pride (Strayhorn, 2011). Those in higher education might evaluate their community's needs and consider supporting the creation and promotion of social identity-based organizations focusing on music performance. University music faculty might offer support by advising student-leaders and choir directors, facilitating workshops with choristers, and providing access to choral libraries and facilities for rehearsal and performance. Future research might investigate the experiences of students from other marginalized racial and ethnic groups in student-led collegiate music ensembles, particularly ethnic student organizations, and the role of culturally relevant music in their experiences.

For over 50 years, NCE has allowed Black students at Northwestern University to find a space to fully express their racial and religious identities through collective singing while building community with like-minded peers. The personal and collective benefits of participation in NCE and the ensemble's significance in the Northwestern community highlight the critical need for spaces where college students from marginalized groups can engage in artistic endeavors that help fulfill their needs for socialization and cultural expression. Supporting student engagement in such organizations may afford students from marginalized groups the opportunity to participate in meaningful music-making experiences that enhance their overall college experience and affirm their identities.

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Supplemental Materials

Interview Protocol—Choir Members

1. Tell me about yourself. Where are you from? What's your major? How long have you been at Northwestern?

2. Could you tell me about some musical experiences you've had as a singer or musician before college?

3. Are you currently part of any other performing ensemble?

4. How long have you been in the Northwestern Community Ensemble?

5. What made you join the group?

6. What do you enjoy about it?

7. How has participation in the ensemble affected you?

8. How would you describe NCE to somebody who has never been to a rehearsal or concert?

9. How does NCE compare to other choirs you have participated in?

10. Do you see any difference between NCE and other gospel choirs?

11. What is the purpose of the group?

12. I am interested in learning about the collective identity of people in this choir.

    How do you describe your identity?

13. Why is the choir important enough that you make time for it in your busy schedule?

14. What's your favorite part about NCE?

15. Are there any challenges?

16. Is there anything about your experience in this choir that I didn't ask but you would like to talk about?

Interview Protocol—Executive Board

1. Tell me about yourself. Where are you from? What's your major? How long have you been at Northwestern?

2. Could you tell me about some musical experiences you've had as a singer or musician before college?

3. Are you currently part of any other performing ensemble?

4. How long have you been in the Northwestern Community Ensemble?

5. What made you join the group?

6. Why do you continue to participate in the group?

7. What do you enjoy about it?

8. How has participation in the ensemble affected you?

9. How would you describe NCE to somebody who has never been to a rehearsal or concert?

10. What is the mission of the group?

11. What is the philosophy of the group?

12. How did the group start?

13. Why did you want to take on a leadership role?

14. What is the role of the executive board?

15. Do you see any difference between NCE and other gospel choirs?

16. What is the purpose of the group?

17. What is the purpose of the group for you as a singer? Other singers?

18. What is the purpose of the group in the community? Significance?

19. How would you describe your role in the group?

20. I am interested in learning about the collective identity of people in this choir. How do you describe your identity?

21. What's your favorite part about NCE?

22. Are there any challenges?

23. Besides singing, what is your favorite part of the rehearsal?

24. Where do you hope to see the group ten years from now?

25. Is there anything about your experience in this choir that I didn't ask but you would like to talk about?

Interview Protocol—Vocal Coach

1. Tell me about yourself. What do you do? What's your relationship with the Northwestern Community Ensemble?

2. How long have you known of NCE, and how long have you been associated with the group?

3. How did you start working with NCE?

4. What do you enjoy about the group? What do you enjoy about working with NCE?

5. How would you describe NCE to somebody who has never been to a rehearsal or concert?

6. What is the purpose of the group?

7. What is the mission of the group?

8. How did the group start?

9. Do you see any difference between NCE and other choirs? What about other gospel choirs?

10. How would you describe the musical style and genre performed by NCE this year? How does it compare with previous years since you've been working with them?

11. What has changed and what has not changed since you started working with NCE?

12. What aspects of your musical background do you feel have prepared you to do this work with NCE?

13. What is the significance of the group in the community (Northwestern, Northwestern Black community, Evanston, Evanston Black community)?

14. I am interested in learning about the participants' identity (how they identify as individuals and as part of a broader group or community). How do you describe your identity?

15. What aspects of your own identity are the most significant in your work with NCE? How?

16. What's your favorite part about NCE?

17. Are there any challenges?

18. What can other groups learn from NCE?

19. Is there anything about your experience in this choir that I didn't ask but you would like to talk about?

Interview Protocol—Advisor

1. Please tell me about yourself. What is your role at Northwestern? What's your relationship with NCE? Weekly meetings?

2. How long have you been working with the group?

3. How did you start working with NCE?

4. What do you enjoy about the group? What do you enjoy about working with NCE?

5. How would you describe NCE to somebody who has never been to a rehearsal or concert?

6. What is the purpose of the group?

7. What is the purpose of the group in the Northwestern community?

8. Do you see any difference between NCE and other student organizations at Northwestern?

9. What has changed and what has remained the same since you started working with NCE?

10. Community members have joined the group in the past. Is that currently possible?

11. What aspects of your professional and personal background do you feel have prepared you to do this work with NCE?

Participants

Pseudonym	Year in School*	Year in NCE*	Function+	Music Background
Amaia	Senior	3rd	executive board member	no formal music participation background
Blake	Senior	3rd	executive board member	school music, church music
C.J.	Senior	1st	director	school music
Derek	Junior	3rd	singer	school music
Esther	Senior	1st	singer	church music
Eve	Senior	2nd	singer	school music
Geoffrey	Junior	3rd	executive board member	school music, church music
Gwen	Senior	4th	director	school music
Katie	Junior	3rd	executive board member	school music, community music
Kelly	Freshman	1st	singer	school music
Patrick	Freshman	1st	pianist/director	school music, church music
Rosa	Sophomore	2nd	singer	school music, church music
Sarah	Senior	4th	executive board member	school music, church music
David	(not a student)	8th	vocal coach, concert emcee	singer, pianist, choral music educator
Rayne	(not a student)	3rd	advisor	-

* Year during interview
+ All members of the executive board also performed as singers